

Problem Behavior in Young People

Raising and Addressing Issues in Sociological Research

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INTRODUCTION

In contemporary western society, adolescents are considered as a “vulnerable and malleable group deserving of special attention” (Fatusi & Hindin, 2010, p. 500). The period connecting childhood with adulthood is marked by sharp biological, socio-cognitive and emotional changes which prepare the adolescent for a successful transition into adulthood. This transition has become increasingly prolonged in post-industrial societies, and not only adolescence but also emerging adulthood is conceptualized as a developmentally vulnerable period (Schwartz, Côté, & Arnett, 2005). For most young people this period passes by relatively problem-free, but for a substantial proportion it is marked by an increase in behavioral and emotional problem behavior such as excessive substance use, sexual risk-taking, eating disorders, depression and suicidal behavior. Reference has been made of approximately 20% (Offer & Schonert-Reichl, 1992) to 26% (Garnefski, Kraaij, & van Etten, 2005) of young people experiencing some sort of behavioral or emotional problem behavior. In addition, adolescence (also including late adolescence and emerging adulthood) is a period of increased vulnerability for victimization of physical and sexual violence (Bonomi, Anderson, Nemeth, Bartle-Haring, Buettner, & Schipper, 2012). Accordingly, morbidity and mortality rates sharply increase during this stage of life, which has been referred to as the *health paradox of adolescence*; that the healthiest stage of the lifespan in physical terms is also characterized by higher incidences of disease and death (Forbes & Dahl, 2010, pp. 66-67). In Belgium, the chance of dying in the upcoming year increases progressively from 143 per 100.000 at age 14 to 844 per 100.000 at age 25 (Statbel, 2013). Almost 10% of the yearly ‘deaths in traffic’ occur between the ages of 20 to 24, an age group in which men have proved particularly vulnerable (Statbel, 2009). In addition to direct challenges to physical and mental health and wellbeing, engagement in problem behavior may negatively affect longer-term life chances as well, not least through its adverse effects on educational attainment and employment (McLeod, Uemura, & Rohrman, 2012). So there are clear rationales for conducting research on the occurrence and etiology of problem behavior in young people, and only through a thorough understanding of the issue, can tailored prevention measures be put in place.

Much research has been devoted to understanding why this developmental period imposes increased risks for some young people while it does not do so for others. A tremendous amount of research has been carried out on the topic through various disciplinary research fields such as biology, psychology, and sociology, and entering the term *adolescence* and *problem behavior* in the *web of knowledge* academic search engine, identifies 3619 articles published since the year 2000 alone. From a sociological perspective, problem behavior in adolescence and young adulthood has successfully been explained by frameworks such as strain theory (Agnew, 1992),

social control theory (Hirschi, 1969/1994), social learning theory (Akers, 1998), and problem behavior theory (Jessor & Jessor, 1977). Interdisciplinary research, however, covering explaining factors from different disciplinary research fields, remains relatively underdeveloped. This seems at odds with the recognition that adolescence, and its associated behavioral changes, covers the entire spectrum of biological, socio-cognitive, and emotional changes taking place. But different disciplinary research fields do not only tend to focus on different types of etiological risk factors, they also focus on different types of problem behaviors. Problem behavior which is directed inward, without the involvement of others such as depression or eating disorders, is typically more studied in the disciplines of psychology and psychiatry. However, recognition grows that such types of problem behavior are a valid subject of sociological research as well.

On a more conceptual level, issues arise with regard to what is exactly understood as *problem behavior*. While some behaviors are inherently risky or problematic, other behaviors are considered problematic merely because they break societal beliefs on what is normal or appropriate for a given age. From this follows that the social context is a crucial aspect of defining a certain behavior as problematic, and as a result also the consequences of engaging in a certain behavior are place and time-specific. In addition, much variation goes behind the engagement in a certain type of problem behavior, and the extent to which a certain behavior is potentially harmful may also depend on factors such as repetition over time, the intensity with which the behavior is engaged in, or the conditions under which the behavior is engaged in (e.g. where, with whom, whether or not under influence of substances). Research on adolescent problem behavior tends to focus on revealing general patterns and risk factors, while paying less attention to these nuances and the contextuality of the problem behavior itself.

Thus, what is studied as problem behavior, how such problem behavior is interpreted and the etiological risk factors that are included, are the result of choices made by researchers which are heavily discipline-specific and may even be normatively biased. Such choices have great impact on how problem behavior in young people and its (adverse) health outcomes are understood. In order to improve the sociological research on problem behavior in young people, it is of the utmost importance to reflect on these issues because it not only affects what is known about the etiology of problem behavior in this life stage, it also affects what types of behavior are regarded as “in need of prevention” and what preventive measures are suggested. The goal of this dissertation is to raise certain issues regarding the sociological research of problem behavior in young people. More specifically, it aims to shed some more light on the question *is adolescence necessarily a vulnerable period and is problem behavior always that problematic?* To answer this question, interdisciplinary research is needed which takes into account biological and

psychological vulnerabilities of the adolescent period, and problem behavior needs to be understood from a more nuanced perspective. The dissertation does not test an overall theoretical model of problem behavior nor does it intend to develop such a model. According to Gagnon (as cited in Bancroft, 2000) “there are no theoretical ways to construct interdisciplinary theories. All you get is talk about talk. That ends up being a sterile exercise” (p. 68). Rather than such a “sterile exercise”, the dissertation studies problem behavior from different angles making use of explaining factors from different disciplinary research fields. The dissertation consists of four empirical studies which cover different types of problem behavior, including substance use, aggressive and non-aggressive antisocial behavior, non-suicidal self-injury, the experience of first intercourse at an early age, and sexual risk-taking, as well as sexual victimization. Furthermore, the studies cover quantitative as well as qualitative data analysis. The empirical choices that are made are clearly theory-based, however, and the theoretical background of the dissertation offers theoretical guidance on the concepts that are included in the studies.

The dissertation is built up as follows: the first chapter gives a theoretical background on the study of problem behavior in young people and concludes with some specific issues in the sociological study of the topic. The second chapter describes the methodologies and data that were used in the dissertation. The third through the sixth chapter consist of the four empirical studies. The chapters are based on articles which have been submitted for publication in international peer-reviewed journals, and the abstracts of these studies can be found in appendix 1. The final chapter sets forward the most important findings, and discusses theoretical implications as well as directions for further research on the topic.

Chapter 1

Theoretical background

There is no clear definition of what is researched as ‘adolescent problem behavior’ and it covers a range of behaviors which are considered as norm-breaking, risky or unhealthy. The distinction between internalizing and externalizing problem behavior is commonly made and somewhat clarifying, with the former referring to behaviors directed inwardly without the involvement of other people and the latter referring to behaviors directed outwardly, affecting other people and the environment (Reitz, Dekovic, & Meijer, 2005; Garnefski, Kraaij, van Etten, 2005). Typical examples of internalizing problem behaviors are depressive mood, anxiety or eating disorders whereas externalizing problem behavior typically refers to aggressive and non-aggressive antisocial behavior, delinquency or conduct disorder. However, the dichotomization internalizing/externalizing it is not always clear-cut or applicable. Substance use for example is sometimes considered as an externalizing problem behavior and sometimes as a category in itself. Sexual risk-taking is also anomalous in this regard, and it is unclear on which side of the dichotomy it should fall.

Adolescent problem behavior shares conceptual overlap with what is generally understood as *deviance*, in terms of deviation from “commonly accepted rules or norms” (Traub & Little, 1994, p. 1), or “banned or controlled behavior which is likely to attract punishment or disapproval” (Downes & Rock, 1988, p. 28). While deviance is sometimes used in a rather restricted form, referring to deviance from *legal* norms (such as crime and delinquency), adolescent problem behavior is understood more broadly and it also covers behaviors that deviate from what is considered appropriate or healthy. In that sense adolescent problem behavior also covers what is understood as *risk-taking* in terms of “the engagement in behaviors that are associated with some probability of undesirable results” (Boyer, 2006, p. 291). Likewise, the rationale for studying adolescent problem behavior is not in the first place in the disruption of the social order it causes but rather in the potential adverse effects it has on the health and wellbeing of the adolescents themselves and on their future opportunities in life. In this dissertation, the concepts of adolescent problem behavior, deviance and risk-taking are used interchangeably.

The chapter starts with a discussion of what is studied as adolescent problem behavior, the contextuality and relativity of the concept and the real-life consequences of labeling certain behaviors as problematic. Attention then turns to the developmental specificities which make adolescence a particularly vulnerable

period for the engagement in problem behaviors. In the third section, the main sociological explaining frameworks which underpin much of the research on adolescent problem behavior are discussed. The chapter concludes with a discussion of several issues that arise when reflecting on the body of research on adolescent problem behavior.

1.1 DEFINING ADOLESCENT PROBLEM BEHAVIOR

What is defined as deviant is heavily embedded in a socio-cultural context and relative to time and space. For example, self-injurious behavior is not deviant under certain conditions, such as having an ear pierced, and a depressed mood is not regarded as problematic after the occurrence of a dramatic life event such as the death of a loved one (Curra, 2011). As further discussed below, the label of deviance is in constant negotiation and has real-life consequences for those to whom the label is attached. It is also discussed that adolescent problem behavior is a particular type of deviance because it also refers to behaviors that are merely age inappropriate.

1.1.1 The deviant label and its negotiation

Labeling theorists regard deviance as a label that is designated to certain behaviors rather than that a behavior is deviant in and by itself. American sociologist Howard Becker made great contributions to labeling theory and pointed out that “deviance is not a quality of the act the person commits but rather a consequence of the application by others of rules and sanctions to the ‘offender’ ” (as cited in Grattet, 2011, p. 187). Such labeling approaches have been criticized for taking an all-too-relativistic stance towards deviance, and for being driven by ideological hopes of liberating those believed to be unjustly labeled by society (Dellwing, 2011). However, rather than claiming that there is no such thing as deviance, labeling approach focuses on how the deviant label is developed and who it is applied to. The merit of a labeling approach to deviance is in making the relativity of deviance explicit, understanding deviance not as a static condition but instead as a social achievement, something that is developed through social interactions (Dellwing, 2011).

Who defines what counts as deviance is the product of structural power divisions, social debates and negotiations. Adler and Adler (2006) describe this as follows: “By defining the other side as deviant, moral entrepreneurial and advocacy parties stigmatize and disempower each other. At the same time, by doing so, they elevate their own status and power. These are sometimes legal but more often ideological contests” (Adler & Adler, 2006, p. 133). Deviant labels are more easily applied to the powerless, the disadvantaged and the poor. Therefore individuals who belong to

groups stereotypically associated with criminality, including the lower classes, minorities and young adults, run a higher risk for being labeled as deviant (Matsueda, 1992). In this regard it is important to be aware that adolescence as a separate life stage is a social construct. The identification of adolescence as a distinct period in the lifespan, connecting childhood with young adulthood, is not universal and is a relatively new concept in modern western society (Fatusi & Hindin, 2010). As described by Nancy Lesko (1996), the scientific focus on adolescence dates back to the late 1800s. She illustrates how the viewing of adolescence as a pivotal and problematic life stage gave the power to adults to define what counted as normal versus deviant in this period of life, and that these definitions were based on the ideal model of the middle-class white adult male. She further argues that the very construction of the adolescent period and the way this period is represented in research “sets up a clear positional superiority of adults over adolescents based on age” (Lesko, 1996, p. 149). As further discussed in the next sections, the empirical grounds for distinguishing adolescence as a separate developmental period in life are overwhelming. However, such developmental specificity should not be a license for adults (mainly researchers, educators and policy makers) for weakening young people’s voices and defining deviance unilaterally.

It is argued that in modern western society a certain relaxation has taken place concerning the behaviors that are labeled as deviant, and behaviors previously labeled deviance are increasingly seen as *tolerable differences*. Such tolerable difference refers to behaviors that are illegal, immoral or contra-normative, but at the same time not condemned by the wider society (Stebbins, 1996 as cited in Hathaway & Atkinson, 2001). Hathaway and Atkinson (2001) point out that increased tolerable differences render the engagement in these behaviors less stigmatized, problematized and sanctioned, and that they can form part of an otherwise “normal” lifestyle. The use of soft drugs is a typical example of a behavior for which a certain normalization has taken place, with larger groups of people who engage in it and the lowered social sanctions it elicits. But such tolerable differences may also become a subject of intense debate by groups of people who have different opinions, and who may seek to re-label the behavior as deviant. In this way, groups with moralistic undertones have had differential success in inciting moral indignation and moral panic, with the aim of renewing social disapproval of certain behaviors deemed “immoral” (Hathaway, Comeau, & Erickson, 2011).

1.1.2 Consequences of the deviant label

In addition to focusing on the development of the deviant label, label theory also focuses on what happens to an individual once he or she has become singled out as deviant. Erick Goffman used the concept of stigma to describe the negative attributions that are made to individuals or groups who carry a certain attribute or

engage in a certain behavior, and which leads to the social isolation and social devaluation of those individuals (Goffman, 1968). In relation to deviance in adolescence, Tannenbaum points out in a classic work from 1938, that “The young delinquent becomes bad because he is defined as bad and because he is not believed if he is good. There is a persistent demand for consistency in character. The community cannot deal with people whom it cannot define” (Tannenbaum, 1938/1994, p. 294). Building further on concepts from symbolic interactionism, label theory posits that the perceived appraisals from significant others form the basis for the individual’s self-assessment or self-appraisal, and ultimately for the labeling of the self (Adams, Robertson, Gray-Ray, & Ray, 2003). Perceived negative societal reactions will affect the labeled individual’s self-conception, who will self-label as deviant and who will subsequently act according to the expectations of this label. The initial deviant act which activated the deviant labeling might have been relatively harmless, or the label might have even been attributed ‘falsely’ without an initial deviant act, as is more often the case for those belonging to disadvantaged groups, but either way the labeling in itself will alter self-conceptions and as such it will elicit further deviance (Matsueda, 1992). All this does not imply that the individual is a passive receptor of the deviant label, and research shows that the deviant label can be resisted rather than straightforwardly accepted and internalized. Young people with mental illness have been found to define themselves in less pathological terms rather than in terms of ‘mentally ill’ (Moses, 2009). Also among incarcerated delinquent youth it is found that not all youths formally labeled as delinquent also identify as such (Chassin, Eason, & Young, 1981).

The increased deviance as a consequence of the deviant label is referred to as the *secondary deviation hypothesis*, which was originally developed with reference to mental illness (Lemert, 1951/1994). Youths with mental disorders report the experience of stigmatization by peers, parents and school staff (Moses, 2010). However, when measuring attitudes towards mental illness, it is found that most young people do not hold stigmatizing views. It is suggested that the label of mental illness is not necessarily harmful but instead it may facilitate help-seeking among those who suffer from it (Wright, Jorm, & Mackinnon, 2011). Secondary deviation is also hypothesized to be a mechanism explaining a further involvement in delinquency after the deviant labeling and self-labeling. As such it is found that youths who refer to a greater number of negative descriptive adjectives for describing their self-concept, report a higher involvement in delinquency (Adams et al., 2003). Among incarcerated youths it was found that those with a deviant self-concept (in terms of delinquent or disturbed self-concepts) endorsed more deviant feelings and behaviors as compared to those who resisted the deviant label (Chassin et al., 1981). The self-concept, as resulting from the perceived appraisals from others is thus an important factor for explaining further deviation.

In addition to transformations of the self-concept, labeling can introduce *structural impediments to a conventional life* (Grattet, 2011, p. 193). This refers to the cumulative disadvantages experienced by those being labeled as deviant and the snowball effect of engaging in deviant behaviors, subsequent exclusion and loss of opportunities, which in turn elicits further deviance. A study using panel data, following a random sample of males from age 13.5 to 22 years, investigated such a cumulative disadvantage effect of official (police) intervention in adolescence on future life chances in early adulthood. The study showed official intervention in adolescence increased the involvement in crime in early adulthood due to the negative effect of the intervention on educational attainment and employment (Bernburg & Krohn, 2003).

1.1.3 Deviance as age inappropriateness

As adolescents are not granted fully behavioral independence, they need to follow behavioral norms as prescribed by adults. Much of what is considered adolescent problem behavior in fact refers to behaviors that are considered problematic merely because they occur in adolescence. Age-specific norms are grounded in the belief that certain types of behavior require a developmental readiness, and that young people who engage in those behaviors before they are developmentally ready will suffer from adverse outcomes. Thus age-specific norms use age as “a predictor of an individual’s physical and emotional maturity, of an individual’s readiness to assume certain responsibilities” (Settersten & Mayer, 1997, p. 239). The argument of developmental readiness is especially invoked with regard to the believed harmfulness of engaging in early sexual activity. By invoking the concept of developmental readiness, a seemingly objectified criterion of harm is applied in the judgement of what constitutes deviant behavior. Nevertheless, this concept still leaves much room for interpretation and as a consequence legal age norms which aim to protect young people from engaging in behaviors for which they are supposedly insufficiently competent, vary widely across time and space. For example the legal age for sexual intercourse differs substantially across the European Union, ranging from a minimum of 13 years in Spain to a maximum of 18 years in Malta. The legal minimum age for purchasing alcohol is 16 in some European countries including Belgium, Germany and the Netherlands, while it is 18 in most other European countries.

Statistical regularities in behavior can be used as a “proof of normality” and they can be seen as an objective way of distinguishing “normal” from “abnormal” behavior. Age norms can also refer to what is collectively believed to be the ideal or optimal age for a certain life transition to be made (Settersten & Mayer, 1997). Legal, statistically regular, and commonly believed optimal age norms do not necessarily overlap. With regard to becoming sexually active in Belgium, 75% of young people

think this should happen before the age of 18, and 50% believes that 17 is the ideal age for having the first experience of intercourse (Vettenburg, Deklerck, & Siongers, 2010). At 15.5 years, 20% of boys and girls have had sexual intercourse. The 20-per cent threshold is sometimes used to refer to the age at which it is no longer “an exception” to have had sexual intercourse. And thus it can be argued that from that age on, sexual intercourse is statistically no longer ‘early’. At 17.5 years, 50% of the girls, and at 18 years 50% of the boys have had sexual intercourse (Beyers, 2010). From a legal perspective, sexual intercourse under the age of 16 is norm-breaking given that the legal minimum age for sexual consent is 16.

Age norms may also depend on who they are applied to. A perpetuated double standard underpins differences in what is believed acceptable at a certain age for both genders (Shoveller, Johnson, Langille, & Mitchell, 2004). Research in four Nordic countries showed that the age considered appropriate for having sexual intercourse ranges from 16 to 17 for girls and is 16 for boys. Yet girls are considered mature one or two years earlier than boys (Räsänen, 2009). This double sexual standard also refers to the contexts collectively believed appropriate for engaging in sexual intercourse, and especially for losing virginity. According to existing cultural sexual scripts, it is expected that boys will propose sexual intercourse, while girls are expected to refuse or at least try to postpone it (Holland, Ramazanoglu, Sharpe, & Thomson, 2000). It is plausible that a gendered socialization also attaches gender-specific meanings to the engagement in other behaviors considered problematic, with alcohol use and antisocial behavior fitting better in a script for “male behavior” while eating disorders and depression are more seen as female behavior.

1.1.4 Concluding remarks

This section illustrated that what is understood as adolescent problem behavior is not clear-cut but also that attaching the *deviant label* may have potential adverse consequences. This is not to suggest that all behavior that is labeled as problematic will also create stigma. The concept of stigmatization should be preserved for what is described by Dijker as “denigration and social exclusion, transforming an undesirable or deviant attribute into a defining or essential property of the ‘whole’ person or group (associating the property with their ‘identity’), thereby also obscuring the presence of other and potentially desirable attributes” (Dijker, 2013, p. 23). The interactionist approach on defining adolescent problem behavior as presented, intended in the first place to clarify that what counts as problematic is not absolute but is instead negotiated through social interactions. As social researchers are in a rather powerful position in defining what constitutes problematic behavior (or at least sufficiently problematic to be the subject of research), it is important to reflect on the labels that are applied.

The constant renegotiation in defining adolescent problem behavior can be illustrated by some concrete examples related to sexual behavior in adolescence. In Belgium, the lowering of the legal minimum age of consent for sexual intercourse has been debated at length in recent years. Suggestions have been made to include circumstantial conditions of sexual intercourse, such as the age difference with the partner, rather than focusing merely upon age. However, due to the sensitivities of the topic, the debate has not advanced significantly, and sexual intercourse before the age of 16 remains illegal. In the UK, high rates of teenage pregnancy when compared to its European counterparts have incited national concerns akin to a “moral panic”. The harmfulness that is thereby implied in early pregnancy has become overtly questioned by academics, and especially the stereotypical moral portrayal of the actors involved, with the teenage mother as the victim and the teenage father as an immoral perpetrator, has been criticized (Duncan, 2007; Jewell, Tachi, & Donovan, 2000). It is suggested that those who label teenage pregnancy as a problem are not always sufficiently aware of the lived realities of the young people themselves for whom young parenthood might in fact make sense (Duncan, 2007).

1.2 DEVELOPMENTAL SPECIFICITIES

From a lifecourse perspective, adolescence has become understood as a distinct developmental period in which new behaviors and roles are undertaken and which prepare an individual for adulthood. The preceding shaping phase of childhood affects the behavioral competences in adolescence, while at the same time adolescence lays a further base for the transition into adulthood (Kirkpatrick Johnson, Crosnoe, & Elder, 2011). Adolescents need to assume new roles and responsibilities such as an increased individuation from the family, the development of a clear sense of personal and sexual identity, and the development of more intimate relationships with peers and potential romantic partners (Fatusi & Hindin, 2010). This section discusses how these behavioral changes and demands of adolescence can be linked to cognitive, socio-emotional, and motivational changes taking place in this period which support the young person in the adoption of new roles and behaviors but which are also related to the engagement in problem behavior. Furthermore, these changes on the psychological level have biological underpinnings as well, related to drastically increasing hormonal levels and neurological development in puberty.

1.2.1 Development of the self-concept and social re-orientation

The understanding of adolescence as a period of progressive development towards a stable sense of personal identity is the legacy of Erik Erikson. Erikson distinguished between *identity synthesis* and *identity confusion* and proposed that developing an

integrated sense of self is a core developmental task of adolescence. Identity synthesis means that different aspects of one's identity are integrated into the whole, while identity confusion refers to a state in which one lacks a clear sense of purpose and direction (Erikson, 1968). Furthermore, the relevance of identity formation to mental health and behavioral outcomes was one of the primary emphases within Erikson's work (Schwartz et al., 2009). Erikson proposed that industrialized societies experience a prolonged adolescence wherein the young person is granted more time and freedom for role experimentation (Erikson, 1968). Scholars have suggested that this period of prolonged adolescence should be considered as a separate developmental stage, referred to as *emerging adulthood*, characterized by profound change and exploration of possible life directions but without the normative expectations and responsibilities of adulthood (Arnett, 2000; Schwartz, Côté, & Arnett, 2005).

Erikson's theory on identity formation was elaborated by James Marcia, who proposed concrete developmental processes which steer this identity formation in adolescence and emerging adulthood. Marcia proposed two complementary processes of *exploration* and *commitment*, the first referring to sorting through developmental alternatives and the latter referring to selecting among those alternatives as well as engaging in relevant activities towards the implementation of these choices. According to Marcia, *identity achievement* (which coincides with Erikson's concept of identity synthesis) can only be reached after extensive exploration (Schwartz et al., 2011). Later on, research has distinguished between more sub-dimensions of exploration and commitment, and identity formation processes have been charted more precisely by age and gender (Ritchie et al., 2013; Klimstra, Hale III, Raaijmakers, Branje, & Meeus, 2010). Overall it is found that across adolescence personal commitments will be increasingly explored, but in the process adolescents also become increasingly certain regarding their commitments and they will come to a more stable, *synthesized identity*. Girls have a more stable identity profile as compared to boys in early adolescence, but boys catch up with girls later on in adolescence (Klimstra et al., 2010). A failure to construct an integrated sense of self is related to an increased engagement in internalizing and externalizing problem behavior. Ruminative exploration, in terms of worrying and obsessing over making the perfect choice, is associated with distress and risk-taking, and a lack of identity commitment is associated with substance use and unsafe sex (Ritchie et al., 2013). Difficulties in personal development and the engagement in problem behavior also both reinforce each other so that the young person may end up in a negative spiral. Longitudinal research shows that the engagement in internalizing as well as externalizing problem behaviors early in adolescence is a risk for the development of a firm sense of personal identity later on in adolescence (Crocetti, Klimstra, Hale III, Koot, & Meeus, 2013; Crocetti, Klimstra, Keijsers, Hale, & Meeus, 2009).

In this process of psychological individuation, adolescents become increasingly aware of themselves as well as their environments. Their ability to evaluate other people's emotions and appraisal progresses and adolescents become increasingly aware that other people have the ability to judge them as well (Burnett, Thompson, Bird, & Blakemore, 2011; Sebastian, Burnett, & Blakemore, 2008). This awareness leads to an increased concern with the perspective of others and the belief that others are constantly observing and evaluating the self, referred to as the *imaginary audience* (Kelly, Jones, & Adams, 2002). The information that they retrieve from these (perceived) views of others is used by adolescents in the construction of the self-concept (Sebastian et al., 2008). Thereby it is information retrieved from peers that plays a particularly crucial role and spending time with peers becomes highly rewarding (Sebastian et al., 2008). A consequence of this is that adolescents become more susceptible to peer influence and peer pressure. Research indicates that adolescents are more vulnerable to peer pressure than adults (Steinberg & Monahan, 2007) and that adolescent problem behavior is highly predicated by the problem behavior of peers (Wissink, Dekovic & Meijer, 2009; Lundborg, 2006; Ali & Dwyer, 2009). A heightened feeling of imaginary audience is also related to increased interpersonal concerns. It is related to social anxiety (Kelly et al., 2002) and it explains why adolescents become increasingly vulnerable or sensitive for negative social feedback (Sebastian et al., 2008; Somerville, 2013). Concerns about how they are regarded by others and fear of embarrassment is also related to a lower engagement in sexual protective measures such as condom use and information-seeking (Bell, 2009). So the increased ability of perspective-taking and of understanding other people's emotions elicits an increase in those emotions that require an assessment of other people's mental state, such as embarrassment, guilt, and shame but also status and pride.

1.2.2 Cognitive and affective aspects of the decision-making

The increased engagement of adolescents in high-risk behaviors has been interpreted in terms of immature decision-making due to a lack of cognitive skills. As such, adolescents would lack the ability to assess the risks that are involved in certain behaviors and in addition they would underestimate their own vulnerability. However, such cognitive 'immaturity' has not been empirically corroborated and research shows that the cognitive abilities of adolescents for assessing risk and vulnerability are not worse than those of adults (Albert & Steinberg, 2011; Boyer, 2006). The finding that adolescents engage more in risk behavior than adults while their cognitive competences have reached an equally high level, is paradoxical.

It is suggested that cognitive development has been conceptualized too narrowly in terms of a unidirectional shift from simple intuitive cognition to more computationally complex, deliberative cognition (Klaczynski & Cottrell, 2004). More

recent approaches to judgment and decision-making differentiate between more processing systems that play a role in the eventual decision-making outcome. As such, the *dual-processing model of decision-making* proposes that decision-making not only results from cognitive information processing, but from the interactions between two processing systems. One refers to an *analytic system*, concerned with conscious, deliberate, explicit cognition and reasoning; and one refers to an *experiential system*, which is intuitive, fast and automatic and which operates at a minimally conscious level (Klaczynski & Cottrell, 2004; Albert & Steinberg, 2011). Because experiential reasoning is based on heuristics instead of normative rules, it is more open to biases. Experiential reasoning is applied throughout the entire lifecourse and adults obviously make irrational decisions based on biased heuristics in much the same way. However, the ability to resist the use of biased heuristics, and to engage in analytic processing when necessary does improve across adolescence (Klaczynski & Cottrell, 2004). Apart from the dual-processing model, other models of judgment and decision-making have been developed over the past decade (Boyer, 2006). For example, a three-dimensional network of processes has been proposed, with deliberative, experiential and affective processes each interacting with each other in the decision-making (Strough, Karns, Schlosnagle, 2011). The academic debates regarding the systems and processes involved in judgment and decision-making and how these explain developmental differences in behavioral outcomes is still ongoing. Discussing all of these different theoretical approaches to adolescent judgment and decision-making would be too far-reaching for this introductory chapter. What is important from this, however, is the established recognition that judgment and decision-making entails far more than a cognitive outweighing of risk and benefits. More appreciation now goes to the social, motivational and affective influences on everyday cognitive activities, which can help understand why adolescents make more risky choices as compared to adults (Jacobs & Klaczynski, 2002).

In the recognition that judgment and decision-making not only result from cognitive competences but also from socio-emotional and motivational tendencies, some developmental specificities of adolescence can explain the increased vulnerability for engagement in problem behavior. First, the content of adolescent decision-making becomes more emotional in the sense that adolescents focus more on the expected emotional benefits of engaging in a certain behavior. Adolescents do not engage in risk behavior because they perceive themselves as invulnerable – as is popularly believed – but because they perceive that the benefits of engaging in the behavior are high (Zimmerman, 2010). The increased sensitivity to social feedback and increased orientation towards peers discussed in the former section explain why certain high-risk behaviors become especially rewarding in this period. Also sensation seeking, which peaks in adolescence and which refers to the need for thrills and novelty, explains why some behaviors are highly emotionally rewarding.

Sensation seeking is associated with a range of risk behaviors such as sexual risk taking, reckless driving, substance use, and social violations (Charnigo, Noar, Garnett, Crosby, Palmgreen, & Zimmerman, 2013; Horvath & Zuckerman, 1993; Desrichard & Denarié, 2005). Research found that the link between sensation seeking and risk behavior is mediated by a higher perceived benefit of engaging in the risk behavior (Zimmerman, 2010). Secondly, adolescents are more prone to impulsive decision-making, whereby the more analytic decision-making process becomes overruled. Impulsivity is linked to high emotionality and sensation seeking (Horvath & Zuckerman, 1993) and is consistently related to various risk behaviors as well (Charnigo et al., 2013; LaBrie, Kenney, Napper, & Miller, 2014). The improvement of impulse control and the maturation of self-regulatory capacity gradually improves across adolescence and into the twenties (Albert & Steinberg, 2011). Thus taken together, to understand why adolescents make more “risky decisions” the focus has shifted from the cognitive decision-making skills to the socio-emotional and self-regulatory aspects of the decision-making in which differences between adolescents and adults are more pronounced. On the one hand adolescents focus more on the positive emotional outcomes of engaging in risk behavior (limiting negative affect and maximizing positive affect), while on the other hand the decision-making itself is more ruled by impulsivity whereby crucial information might be omitted from the decision-making. While adolescents are cognitively *capable* of rational decision-making, in practice much depends on the particular situation in which the decision is made (Reyna & Farley, 2006).

1.2.3 Biological underpinnings for increased problem behavior in adolescence

The constellation of emotional and behavioral changes taking place in adolescence have biological underpinnings. Thereby it is useful to accentuate the distinction between *adolescence* and *puberty* as both concepts are sometimes wrongly used interchangeably. Adolescence refers to the entirety of socio-emotional and behavioral-motivational changes taking place, while puberty refers to the physical maturation driven by increased hormone levels (Steinberg, 2008). This physical maturation refers to a further development of the primary sex organs, the development of the secondary sex characteristics, and changes in physical appearance such as growth in height and changing body fat composition (Forbes & Dahl, 2010).

Puberty is induced by a massive increase in the release of sex hormones, of which testosterone has received most attention in relation to changing behavioral tendencies. Testosterone is a sex hormone which is secreted by the gonads, the organ that produces the gametes (eg. spermatozoids and eggs): the testes in men and the ovaries in women. Steroid hormones are heavily active in the fetus and

during this developmental stage they are responsible for the sex differentiation (the development of the male and female sex organs) as well as the neurological organization into the “male” and “female” brain (Morris, Jordan, & Breedlove, 2004). This different wiring of the male and female brain is associated with reproductive behavior later in life and differences in social behavior between both sexes (Bao & Swaab, 2011; Hines, 2006). After this period of pre- and perinatal activity, steroid hormone levels drop in childhood. After a long period of quiescence, they rise again at the beginning of puberty, and as such puberty refers to this rise in hormonal levels and the physical changes it induces (Schulz, Molenda-Figueira, & Sisk, 2009). These physical changes have important psychosocial consequences, in terms of their effects on identity-formation and social expectations (a young person who has physically matured is treated differently from a young person who has not physically matured yet). Early physical maturation is a problem when it precedes socio-emotional maturation and it is related to problem behavior such as early sexual transition, substance use and antisocial behavior (Downing & Bellis, 2009; Costello, Sung, Worthman, & Angold, 2007).

Mounting research evidence suggests that these pubertal hormones not only stimulate the maturation of the primary and secondary sex characteristics, but that they also influence the development of brain systems related to cognitive and affective processing. Neuroimaging studies show that the brain regions involved in self-reflection and perspective-taking (awareness of other people’s perspectives) undergo protracted anatomical development until late in adolescence (Sebastian et al., 2008; Burnett et al., 2011). This can be related to the increased self-awareness and awareness of other people in the construction of a stable and socially integrated self-concept as discussed in the former section. Developmental neuroscience has also identified changes in the brain regions related to decision-making which can help understand why adolescence is a period of increased risk-taking. In order to explain why adolescents engage more in behaviors that are guided by affect and impulsivity, neurodevelopmental research investigated how the “adolescent brain” differs from the “adult brain” when it comes to those brain areas involved in decision-making (Luna, Padmanabhan, & O’Hearn, 2010). Age related changes in brain functioning that are found by such research support the idea that adolescence is a transitory period marked by structural and functional maturation and could explain the typical behavioral profile of adolescents. On the one hand, changes in the brain’s socio-emotional system lead to an increased reward-seeking, while on the other hand changes in the brain’s cognitive control-system – which improves the individual’s capacity for self-regulation – lag behind and do not fully develop until late adolescence or early adulthood (Steinberg, 2008). A higher activation of the reward-seeking brain structure has effectively been associated with more subsequent risk-taking (Galvan, Hare, Voss, Glover & Casey, 2007).

Research shows that this higher reward-seeking trait in adolescence is only activated under certain conditions: when the need for decision-making is low (and behavior is more saliency-driven) and when the reward magnitude is high (Jarcho et al., 2012). Also the presence of peers has found to additionally activate the reward-seeking brain structure. It was found that the presence of peers created a heightened sensitivity to the potential reward value of a risky decision among adolescents, while this was not the case for adults in a comparable setting (Chein, Albert, O'Brien, Uckert, & Steinberg, 2011). This confirms what was mentioned in the former section, namely that adolescents might be cognitively *able* to act rationally but that their increased affective decision-making, especially in the presence of peers, might prevent them from actually *doing so*.

Given the limited knowledge and preliminary character of the findings on neurological functioning, cautiousness is warranted against drawing far-reaching conclusions on the supposed biological vulnerability of adolescents (Males, 2009). However, these findings do support the research literature regarding the socio-cognitive and emotional changes which were discussed in the former section.

1.2.4 Concluding remarks

This section aimed to substantiate the idea of adolescence as a developmentally vulnerable period for the engagement in problem behavior, by focusing on the challenges in the construction of a self-concept, increased sensitivity for the perceived views of others, emotionality in the decision-making, and biological underpinnings of these developments. To this, two conclusive remarks are made. First, the focus on the developmental vulnerabilities does not imply that adolescence or emerging adulthood should be conceived as periods of developmental strain. The idea of adolescence as a period of "storm and stress" (a term originally used to refer to German novels depicting the "excesses of youthful behavior and emotion") has found wide entrance in the academic research literature (Arnett, 2007, p. 23). Such problematic conceptualization of adolescence has become challenged, however. It is argued that research should focus more on the processes which can positively stimulate the socio-emotional and cognitive development because such positive stimulation will prevent the engagement in problem behavior. This is seen in the *positive youth development movement* which focuses on "the strengths, resilience, and competencies that youth possess rather than highlighting only the risks, problems, and crises that they face" (Zurbriggen, 2009, p. 31). It is noted that the conceptualization of adolescence in research is increasingly positive, with more attention paid to positive aspects such as resilience, while emerging adulthood has now become the focus of negative conceptualizations (Arnett, 2007).

Secondly, in the light of the developmental tasks of adolescence, the engagement in experimental behavior may be adaptive in the sense that it supports the adolescent

in adapting new roles and learning new behaviors, achieving individualization from parents, and affiliating with peers and potential romantic partners. From this follows that, as adolescents grow older and have achieved a more stable self-concept, risk behavior will lose its functionality and therefore the engagement in it will decline. Longitudinal research confirms such a tendency, showing a steady decline of cannabis use and antisocial deviance (theft, violence, blackmail and property vandalism) between the ages of 16 to 29, while smoking and drunkenness increase during late adolescence and then slowly decrease from the mid-twenties onward (Brodbeck & Bachmann, 2013). What counts as problematic engagement in certain behaviors then also depends on the propensities of the behavior itself and its significance within the broader developmental pathway of the adolescent. Such a distinction has been made regarding antisocial behavior, distinguishing between life-course persistent antisocial behavior, emerging in childhood and persisting up into adulthood, and adolescence-limited antisocial behavior (Moffitt, 1993). Adolescence-limited antisocial behavior is found to be less associated with violent crime and less predicated by social, familial and neurodevelopmental risk factors as compared to life-course persistent antisocial behavior (Moffitt, Caspi, Harrington & Milne, 2002; Odgers et al., 2008). Thus in so far as the engagement in problem behavior can be normative and adaptive in this stage of life, *experimental engagement* should be seen as distinct from more *chronic engagement* in problem behavior.

1.3 SOCIOLOGICAL FRAMEWORKS FOR UNDERSTANDING PROBLEM BEHAVIOR

The occurrence of problem behavior in adolescence results from a web of risk- and protective factors on the personal, environmental and societal level. Sociological frameworks offer tools for creating order in this maze of etiological factors so that it is not only understood which factors predict the occurrence of adolescent problem behavior but also *why* they do so. Sociological theories on problem behavior essentially shift the focus from individual characteristics, discussed in the former section, to anomalies in the individual's environment or in the interaction between the individual and his or her environment. With regard to internalizing and externalizing problem behavior in adolescence, research has largely focused on factors related to parents and peers as these are the main contexts for adolescents (Lee & Bukowski, 2012). Much of the research on adolescent problem behavior does not explicitly depart from a particular sociological framework. However, such frameworks do clearly underpin the choices that are made for the inclusion of certain explaining factors and they also steer how the found relationships with adolescent problem behavior are interpreted. The goal of this section is to introduce

some of the main sociological frameworks which have underpinned and steered the sociological research of deviant behavior in adolescence and emerging adulthood.

In explaining deviant behavior, sociological frameworks can be distinguished according to where they position the source of the *drive* for engaging in the behavior. As explained further below, *social control* (Hirschi, 1969/1994) and *social strain* (Agnew, 1992) theories conceptualize deviance as resulting from weak bonds to conventional society or as a response to experienced strain from that society respectively. While the elicitor of deviance is thus located in the individual's environment, the drive for engaging in deviant behavior comes from within the individual him- or herself. Strain as well as control theories are ultimately rooted in the concept of *anomie* which was introduced in sociology by Emile Durkheim in the late 19th century (Durkheim, 1951/1994). Durkheim argued that the needs and desires of human beings are by nature unlimited and therefore per definition insatiable. Such insatiability leads to perpetual unhappiness and mental suffering because progress towards the achievement of one's desires can never be made and each effort one makes in that direction is per definition in vain (Durkheim compares this state with the agony of an inextinguishable thirst). Therefore it is crucial that the moral needs are controlled or regulated and such regulation needs to come from outside the individual. When traditional norms become less binding, society loses its ability to exercise control and guidance on human desire and behavior. This state of deregulation is what Durkheim refers to as *anomie*. From a social control perspective, *anomie* leads to the unleashing of a natural deviant drive of human beings, while from a strain perspective *anomie* pressures the (otherwise not-deviant) individual into deviance.

Theories of *social learning* do not accept the idea that a lack of social bonding or the experience of strain leads to deviant behavior and argue that deviant behavior is learned in much the same way as conventional behavior (Akers, 1998). This perspective positions the origin of the drive for engaging in deviant behavior in the immediate social environment rather than in the individual him- or herself. Finally, *problem behavior theory* (Jessor & Jessor, 1977) offers a psychosocial framework which incorporates aspects of strain, social control and social learning but which also pays attention to personal and behavioral risk- and protective factors. Furthermore, problem behavior theory is widely applied in explaining why different types of problem behavior tend to co-occur rather than occurring separately.

1.3.1 Deviance as the default and social control

According to Durkheim, a situation of *anomie* in terms of a weak bond between the individual and society and a greater dependency on oneself alone, makes it more likely that the individual will deviate from the behavioral and moral norms of society. Social control theory can be seen as an extension to this, in so far as it

considers the social bond as the central mechanism which explains *conformity* and by consequence also its counterpart *deviance* (Chriss, 2007). According to social control theory, deviant behavior is a natural force inherent to human beings and social structures need to be installed which can contain such impulses. In this respect, social control theory as elaborated by Travis Hirschi (1969/1994) has been very influential in research on deviance among young people. Hirschi argued that the bond that exists between the individual and society makes the individual more conformist to the social norms which prescribe behavior. As a consequence, when an individual's bond to society is weak or broken, he or she will engage in deviant behavior. To describe this bond with society more precisely, Hirschi deconstructed this bond to four elements. Firstly, *attachment* refers to affective ties to significant others and caring about other people's wishes and expectations. Without such attachment, one is freed from moral constraints and thus will engage in deviant acts. Secondly, *commitment* refers to the future aspirations and ambitions one has and the risk of losing the investment one has already made in conventional behavior (for example academic and occupational careers). For most people, engaging in criminal acts would endanger future interests and therefore they will not deviate. Thirdly, *involvement* refers to the extent to which one engages in conventional activities which decrease practical opportunities for engaging in non-conventional activities. This can refer for example to engagement in leisure activities or work, which organize and fill up ones' pastime. Finally, *belief* refers to the acceptance of the societal norms and values. The less one feels bound by the rules (which are nevertheless recognized) the more likely deviance becomes. Summarized, a failed bond to society frees the individual from conforming to social norms and instead makes it possible to engage in delinquent behavior (Hirschi, 1969/1994).

Empirical testing of social control theory among young people has led to further theoretical specifications of the internal structure of the *social bond*. For example, personal ability and social class have been found to affect the components of the social bond, and school is identified as a primary institution of socialization (Wiatrowski, Griswold, & Roberts, 1981). Measures of the social bond have been related more strongly to less serious types of deviance such as alcohol and marijuana use or status defenses and minor delinquency as compared to hard drug use and more serious delinquent behavior (Krohn & Massey, 1980). However, it has been pointed out that the results relating to this differ from research to research, with some research showing that the social bond is more strongly related to more serious (criminal) misconduct (Longshore, Chang, Hsieh, & Messina, 2004).

Later on, Hirschi moved away from the emphasis on the social bond as a predictor for deviant behavior and instead argued, together with Gottfredson, that self-control is most important. Low self-control thereby refers to a heightened vulnerability to the temptations of the moment and it is related to an ineffective socialization early

in life. Low self-control is perceived as an explanatory factor for a lack of bonding to conventional society (Gottfredson & Hirschi, 1990). Low self-control has effectively been related to the four parameters of social bonding but social bonding as a mediating factor between low self-control and deviant behavior (tested in terms of drug use) was not convincing (Longshore et al., 2004). It is also argued that social control and self-control are not that different as explanatory mechanisms for conformity and deviance. As most social control on behavior is not exerted explicitly but implicitly through socialization and the internalization of norms and values, it is argued that the switch from social- to self-control is nothing but logical (Chriss, 2007).

1.3.2 Deviance in response to strain

While control theories argue that deviance results from the failure of society to constrain the individual, strain theories suggest the opposite, namely that the social structure pushes the individual into deviance. Over the course of the 20th century, the sociological use of the concept of anomie became widely spread, referred to as the *anomie tradition* (Passas, 1995, p. 91), but it also became used in more diverse ways as originally proposed by Durkheim. Robert Merton played a pivotal role in redefining the concept¹. Merton focused on the socially approved and institutionalized goals which emphasize (especially monetary) success, power and status. While these goals are recognized and shared by most people in society, the socially approved means to achieve these goals are not equally distributed due to structural inequalities. In Merton's theorizing anomie refers to this imbalance between the importance of attaining culturally prescribed goals on the one hand and the availability of legitimate, institutionalized means to achieve these goals on the other hand (Merton, 1968). Individuals who do recognize the institutionalized goals of status and success but who reject the socially prescribed means for goal achievement, have a higher chance of engaging in alternative but illegitimate means in the form of delinquent behavior. In Merton's theory of strain the engagement in deviant behavior is thus principally instrumental by nature, as a means towards a goal that can not otherwise be achieved. This implies that delinquency should be highest among those with high aspirations and low expectations for achievement. Empirical studies, however, do not sufficiently support this hypothesis and delinquency is found to be highest among those with low aspirations as well as low expectations. Such a finding is somewhat supportive of Hirschi's social control

¹ Thereby it is important to take account of the social contexts in which Durkheim and Merton developed their anomie theories. Durkheim witnessed a late 19th century fast-changing French society under the industrial revolution while Merton studied American society from the 30s and onward and witnessed the glorification of the "American dream" (Passas, 1995).

theory, suggesting that people with low commitments to institutionalized goals will be more inclined to engage in deviant behavior because they have less to lose in the first place (Agnew, 1985).

In response to criticisms on strain theory, Robert Agnew adapted the model, eventually leading to the formulation of the *general strain theory* (1992). This model includes a broader range of possible sources of strain and it is psychosocial by nature, as Agnew drew heavily from the psychological literature on stress and coping in explaining the exact strain-deviance relationship. In this way, he aimed to explain why strain leads to behavioral responses and why not all strained individuals engage in deviant behavior. He also aimed to explain which types of strain lead to which specific behavioral outcomes. Firstly, as to the sources of strain, Agnew did not limit the model to structural inequalities as Merton did but he distinguished sources of strain which play at the individual level as well. The first type of strain refers to the failure in achieving positively valued goals, and overlaps with what was defined by Merton as the disjunction between aspirations (goals) and expectations for goal achievement. With regard to adolescents specifically it is argued that they are more focused on immediate goals such as popularity or good school grades rather than the long-term goals of status and success as proposed by the original strain theory. The second type of strain refers to the removal of positively valued stimuli, for example the loss of a friend or having to change school. The third type refers to the presentation of noxious or adverse stimuli such as negative relations with parents or peers, or being the victim of a criminal act (Agnew, 1992). This type also constitutes some sort of goal-blockage as described in the original strain theory, although the goal is substantially different. The difference between the two types of goal-blockage is described by Agnew as follows: “In the blockage of goal-seeking behavior, the individual is walking *toward* a *valued goal* and his or her path is blocked. In the blockage of pain-avoidance behavior, the individual is walking away from an *aversive situation* and his or her path is blocked” (Agnew, 1985, p. 154). Frustration over the inability to avoid negative environments is especially relevant in adolescence, as young people are compelled to remain in certain contexts such as the family or the school (Agnew, 1985).

Secondly, Agnew integrated personal-level mechanisms which explain why strain elicits behavioral responses in different ways across individuals. He proposed that the experience of strain elicits emotional reactions such as anger, frustration, fear and depression (Agnew, 1992; Agnew, 2013). While depression is an emotional reaction of powerlessness, anger is an emotion that gives energy and motivates to engage in delinquent behavior. So depending on the type of emotional response to strain, the engagement in problem behavior becomes more or less likely. He also included *adaptations to strain* referring to how the individual deals with the emotions elicited by the experience of strain, including: cognitive coping (redefining

the situation), behavioral coping (minimization of the source of strain or revenge), and emotional coping (all sorts of behavior which may alleviate negative emotions such as drugs or meditation) (Agnew, 1992). Personal characteristics of negative emotionality and low constraint have been added as mechanisms which increase the effects of strain on criminality in particular (Agnew, Brezina, Wright, & Cullen, 2002). These adaptations to strain theory imply that the behavioral responses to strain are not necessarily instrumental – in terms of reaching a desired goal – but may also be affective – in terms of escaping from negative emotions. This also broadens up the range of behaviors that can be included – Agnew recognizes that most coping happens within the boundaries of the law and that it can also contribute to constructive problem solving (Agnew, 2013).

Psychosocial research which conceptualizes internalizing and externalizing problem behavior as symptoms of maladjustment to experienced strain is in line with a general strain model. Research found for example that higher levels of experienced daily stress and the experience of stress in multiple life domains is associated with an increased risk for violent behavior as well as depression (Estrada-Martínez, Caldwell, Bauermeister, & Zimmerman, 2012). The search for the mediators between strain and behavioral outcomes remains ongoing. For example, longitudinal research found that anger and hostility as emotional reactions to the experience of negative life events play a causal role in fostering aggressive forms of delinquency. While strain was also related to non-aggressive forms of delinquency and the use of soft drugs, this causal relationship was not explained by an increased level of anger (Aseltine, Gore, & Gordon, 2000).

1.3.3 Deviance as learned behavior

Theories of social control and social strain explain the occurrence of deviance by the social structure, which seeks to restrain the individual into conformity or which pushes the individual into deviance respectively. Theories of social learning question the explanatory power of internal impulses and strain in explaining deviance and give more theoretical foundation for explaining how an individual *becomes* deviant through interactions within the immediate social environment (Akers, 1998). Social learning theory departs from the notion that deviant and criminal behavior is learned through the same cognitive and behavioral mechanisms as conforming behavior. This learning takes place through direct and indirect, verbal and nonverbal communication, interaction, and identification with others, also referred to as *differential association* (Akers, 1998). The concept of differential association was developed by Edwin Sutherland who used it to refer to variations in the frequency, duration, priority, and intensity with which one becomes associated with criminal as well as anticriminal behavior and values (Sutherland & Cressey, 1978/1994). Sutherland posits that “a person becomes delinquent because of an

excess of definitions favorable to violation of law over definitions unfavorable to violation of law” (Sutherland & Cressey, 1978/1994, p. 193). What is learnt, exactly, refers to the behaviors themselves as well as to the inclinations for engaging in the behavior, namely: motives, drives, rationalizations and attitudes (Sutherland & Cressey, 1978/1994). So while control- and strain theories position the behavioral *drive* for deviance inside the individual (as a natural state or as a response to strain), social learning theory focuses on the immediate social environment in which not only behavior but also behavioral drives are learned.

Efforts have been undertaken to integrate theories of strain with elements of social learning and differential association. Albert Cohen (1955/1971) elaborated on Merton’s strain model with the concept of subcultures and the installment of alternative value systems for those who can not accept their low social position but who do not have access to the means for “climbing the social ladder”. Cohen argued that frustration from the lack of access to the means for achieving socially prescribed goals may lead to *reaction formation*: the installment of alternative values and goals and the rejection of the values of the dominant class. The achievement of status in that particular subgroup, then, does not run through conventional behavior but instead through unconventional behavior (Cohen, 1955/1971). Richard Cloward built further on strain theory, integrating this into the concept of differential association. He acknowledged Merton’s idea of disjunctions between culturally prescribed goals and access to legitimate means, but he also incorporated the idea of *differentials in access to success and goals by illegitimate means* (Cloward, 1959). Specifically, he points out that the illegitimate means referred to by Merton also need to be *accessible* for the individual. In much the same way as conventional means are differentially distributed, the illegitimate means for goal achievement are not accessible to the same extent for all. Access to these illegitimate means, then, refers to the extent to which necessary values and skills can be learned through interactions in the environment. Depending on one’s social context, different skills and values can be learned for different types of illegitimate means towards goals and success.

Research on adolescent problem behavior has put great emphasis on the importance of the peer group, and research results consistently show that adolescent problem behavior is highly predicted by the problem behavior of peers (Wissink, Dekovic & Meijer, 2009; Lundborg, 2006; Ali & Dwyer, 2009). The correct interpretation of such findings is troubled by the active choices adolescents make regarding who they want to associate with. For example, adolescents can choose to “hang out” with others based on similarities in deviant behavior rather than that the deviant behavior (and pro-deviant attitudes) is learned from those others. In addition to selection effects, the effect of *parallel events* needs to be taken into account, with reference to the fact that members of the same peer group will have greater chances

of experiencing similar environmental influences (Jaccard, Blanton & Dodge, 2005). From a social learning perspective it is suggested that the engagement in deviant behavior prior to the association with a deviant peer group might be anticipatory – in order to match one’s behavior with that of the group one wants to belong to. Furthermore, peer associations are more commonly formed around factors such as common interests, shared beliefs, or other behavioral patterns which are not directly related to deviance but which are the result of social learning as well. Therefore it is concluded that “a peer ‘socialization’ process and a peer ‘selection’ process in deviant behavior are not mutually exclusive, but are simply the social learning process operating at different times” (Akers, 1998, p. 56). Social learning also plays a role in behaviors that are considered “private” or manifestations of internalized problem behavior. Suicide for example is a socially contagious behavior, whereby it is suggested that suicidal “role models” increases suicide acceptability, suicidal ideation and suicide (Dunlop, More, & Romer, 2011; Stack & Kposowa, 2008). Also non-suicidal self-injury, longtime exclusively studied from a pure individualistic perspective, has an identified social learning or “social contagion” component (LeCloux, 2013; Jarvi, Jackson, Swenson, & Crawford, 2013).

1.3.4 Problem behavior theory as an integrative framework

Problem behavior theory is developed by Jessor and Jessor (1977) and deploys a psychosocial framework in which problem behavior is conceived as resulting from person-environment interactions. The original explaining framework consisted of three systems: the personal, the perceived environment, and the behavioral system. Each of these systems consists of *instigators* and *controls*, which increase the likelihood for engagement in problem behavior or control against engagement respectively. The personal system refers to factors such as personal values and attitudes whereby for example a high value on academic achievement controls against problem behavior and a high tolerance towards deviance functions as an instigator. The perceived environment system refers mainly to factors related to parents and peers, such as parental control or peer behavior as a model for the behavior of the adolescent. And finally the behavioral system refers to the engagement in other behaviors, both conventional as well as non-conventional. The engagement in unconventional behavior is in itself a risk for more engagement in such behavior because of the context in which it takes place (that is in contexts which are conducive for more unconventional behavior); and the engagement in conventional behavior such as school-related activities or church attendance are believed to foster further conventionality. So the balance between instigators and controls in each system defines the young person’s susceptibility to engagement in problem behavior (Jessor & Jessor, 1977). Later on, Jessor adapted this framework by referring to *risk factors* and *protective factors* instead of instigators and controls. In this way, he stressed that protective factors can mitigate the effect of risk factors

(Jessor, 1991). In addition, the conceptual domains of risk- and protective factors were elaborated with two new domains: the social environment, referring to risk factors such as poverty and racial inequality and protective factors such as high-quality schools and a cohesive family; and the biological/genetic system including risk factors such as a natural inclination for addiction and protective factors such as high intelligence (Jessor, 1991).

Problem behavior was defined by Jessor and Jessor as “behavior that is socially defined as a problem, a source of concern, or as undesirable by the norms of conventional society” (Jessor & Jessor, 1977, p. 33), and as such it explicitly refers to a wide variety of behaviors. The finding that such problem behaviors tend to co-occur rather than occur as individual behaviors, led to the hypothesized existence of a *problem behavior syndrome*. This was defined by Jessor and Jessor as an underlying set of variables which refer to a general tendency towards unconventionality causing different types of problem behavior, rather than each problem behavior having its own specific cause (Jessor and Jessor, 1977). The problem behavior syndrome originally referred to more traditional problem behaviors such as alcohol use, cigarette smoking, the use of marijuana and other illicit drugs, delinquent behavior and precocious sexual intercourse. The current problem behavior theory framework also includes inadequate social role performance (such as academic underachievement), health-comprising behavior (such as poor dietary practices), and mental health difficulties (such as depression) (Donovan, Jessor, & Costa, 1991). So from this perspective, qualitatively different behaviors such as drug use or premature sexual initiation might serve the same underlying functions.

The hypothesized existence of a higher order construct of unconventional personality has been supported by research undertaken in different settings and with regard to a range of problem behaviors (Madkour, Farhat, Halpern, Godeau, & Gabhainn, 2010; Vazsonyi et al., 2008). However, it is possible that the found correlations between different types of problem behavior have been too eagerly interpreted in terms of a “syndrome” (Benda, 1999). A review by Guilamo-Ramos, Litardo and Jaccard (2005) showed that different types of problem behavior are explained by more unique rather than common causes. Thus it is suggested that more differentiation should be made between the different types of problem behavior and the intensity with which they occur (Childs & Sullivan, 2013; Sullivan, Childs, & O’Connell, 2010). In terms of sexual risk-taking in particular it might be questioned whether this can be conceptualized as a personal tendency toward unconventionality. Recent research found no evidence for including sexual risk-taking in the problem behavior syndrome (Sullivan et al., 2010; Willoughby, Chalmers, & Busseri, 2004).

1.3.5 Concluding remarks

This section discussed some of the popular sociological theories that are applied to research on problem behavior. Strain, social control and social learning/differential association theories all refer to the relationships between the individual and his or her social context in explaining deviant behavior. However, they all attach a different meaning to this relationship. While for strain theory, deviant behavior is explained by a negative relationship between the individual and his or her environment, social learning/differential association theories emphasize positive relationships to deviant others. In turn, social control theory focuses on relationships with *conventional* others as well as institutions in explaining why people *conform*. It should be clear that no single theory explains all problem behavior and that none of them claims to do so. Instead, different types of explanatory factors can work together in explaining who engages in deviant behavior. Problem behavior theory offers an integrative approach to the study of problem behavior, and presents good opportunities for including the findings from different disciplinary fields, including those of biology and psychology.

1.4 SOCIOLOGICAL RESEARCH OF PROBLEM BEHAVIOR IN YOUNG PEOPLE: A NEED FOR INCLUDING NUANCE

Many research articles, including the introduction to the present dissertation, lead with some alarming figures regarding adolescent morbidity and mortality, which seek to reinforce the very importance of the research in question. Adolescent morbidity and mortality are self-evidently serious concerns, and such figures provide objective information on the health of a demographic group. In addition to adverse health outcomes, the engagement in problem behavior can compromise future opportunities in life. Nevertheless, the high problematization of adolescent behavior is also problematic in itself. This introduction showed that adolescence is an intense period of identity-formation and social re-orientation, and thereby some experimentation with new behaviors, especially within the peer group, may be highly rewarding. In addition, not all behavior that is labeled as problem behavior in the research literature is necessarily harmful, and the labeling of what constitutes problematic behavior has much to do with subjectivity and normative beliefs on what is “appropriate”, rather than or in addition to pure objective information on the harmfulness of the behavior.

The demand for a more positive approach towards adolescent behavior is growing in academic research literature. Firstly, the use of the concept of adolescent problem behavior is criticized for being normatively biased and too restrictive. It is suggested that the experimental engagement in problem behavior should not be

problematized, especially when no inherent health risks are involved. In this regard, adolescent sexual behavior and substance use in particular tend to be overly problematized in academic research (Michaud, 2006). Secondly, the focus on vulnerabilities and the conceptualization of adolescence and emerging adulthood as a period of “storm and stress” has also been subject to criticism, namely that high emotionality and impulsivity is a caricature which does not do justice to reality (Arnett, 2007). Furthermore, it can be argued that such a conceptualization suppresses young people’s voices as it does not encourage us to take them seriously. In contrast to a *deficit perspective* of adolescence, which focuses on vulnerabilities, a *positive youth development* approach posits that more appreciation should be paid to the strengths of adolescents and positive developmental outcomes (Zurbriggen, 2009). Positive youth development is an identified construct consisting of *the five C’s*: competence (e.g. interpersonal skills, cognitive abilities, academic competence), confidence (e.g. self-worth and self-efficacy), connection (positive bonds with people and institutions), character (e.g. respect for cultural and social rules, morality and integrity) and caring (a sense of sympathy and empathy for others) (Bowers, Li, Kiely, Brittian, Lerner, & Lerner, 2010). Research on positive youth development focuses on what makes an adolescent *thrive* instead of *fail*. Thriving is understood as the absence of risk-behavior and the contribution to the self, the family, the community and the civil society. Thriving adolescents are “positively engaged with and act to enhance their world. As well, they should be less prone to engage in risk/problem behaviors” (Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011, p. 1109).

While a positive youth development approach is successful in de-problematizing the adolescent period as such, it still highly problematizes the engagement in “problem behavior”. It can be argued, however, that such personal strengths may also improve opportunities for safely engaging in experimental behavior - including behavior that falls under the category of “problem behavior”. For example, with the right personal skills, the use of alcohol or soft drugs will not necessarily lead to excesses or reckless behavior; and the engagement in sexual behavior will not be risky when the young person has the skills to negotiate one’s personal boundaries or to negotiate condom use. Conclusively, it can be argued that the adolescent period and the behaviors adolescents engage in are in need of a more nuanced approach. This dissertation aims to add such nuance by presenting four empirical studies which each focus on different aspects of adolescence and adolescent problem behavior, and which together shed more light on the question *is adolescence necessarily a vulnerable period and is problem behavior always that problematic?* Thereby a sociological approach is followed, referring to the type of explaining factors that are included in the studies. As such, elements of strain and peer group influences can be found throughout the studies. But it is also inter-disciplinary in that personal-level strengths and vulnerabilities as well as hormonal factors are included.

First, as discussed, adolescence is regarded as a period of increased vulnerability for the engagement in problem behavior because of – among other things – the biological changes taking place, such as a sharp increase in steroid hormones. Given that biological factors cannot be altered – or at least it is not desirable to medically “treat” adolescents – it needs to be understood how such biological factors interact with personal inclinations and the social context in relation to behavioral outcomes. However, the integration of sociological and psychological explaining factors for problem behavior with factors from the field of biology is an underdeveloped research area. The first study adds to this part of the research literature by investigating how androgenic (male steroid) hormones interact with personal behavioral inclinations and the peer context in predicting problem behavior among boys in adolescence/emerging adulthood. The study is also unique in that it includes a genetic marker for androgenic sensitivity, which is believed to be an important link in the hormone-behavior cascade.

The second study of the dissertation focuses on a specific type of internalizing problem behavior which has been studied mainly in the field of psychology and psychiatry, namely non-suicidal self-injury. The research literature suggests that the behavior is highly problematic and it is commonly understood in terms of psychopathology. At the same time, the behavior typically peaks in adolescence and during this period it is highly co-morbid with other types of internalizing and externalizing problem behavior as well. It is possible that the problematization of non-suicidal self-injury is a consequence of the focus on clinical samples in most of the research on the topic. Large scale population studies do suggest that the behavior is not necessarily a symptom of underlying psychopathology and that the processes of sensation seeking and peer affiliation can also be held accountable. In order to better understand this type of problem behavior in adolescence, and to understand which young people are most in need of specialized support, more information is needed on its occurrence among young people who are not hospitalized. The second study investigates to what extent non-suicidal self-injury occurs in relation to other types of problem behavior in the period of adolescence/emerging adulthood. It is thereby also investigated whether and to what extent young people who self-injure are exposed to higher levels of psychosocial strain, when compared to young people who engage in other types of internalizing and externalizing problem behavior, or those who do not engage in any problem behavior at all.

A third focus of the dissertation concerns sexual risk-taking. A significant part of the research literature on problem behavior focuses on sexual risk-taking such as the early onset of sexual activity and promiscuity with multiple partners. It is important, however, to take into account that young people differ in their abilities to deal with the risks that accompany such behaviors. To understand such nuances, the data that

are used need to be nuanced as well. In this respect, qualitative data offer better opportunities as compared to quantitative data. The third study is a mixed-method study which focuses on the diversity that exists in a specific type of behavior that is highly problematized in the research literature, namely the early experience of the first sexual intercourse. By making use of quantitative and qualitative data analysis, the study researches the differences in emotional experience of such an early first intercourse. The final and fourth study is in the same line, and it focuses on bringing nuance to so-called sexual risk-taking. The study focuses on the risk for sexual victimization in relation to sexual exposure behavior, thereby taking into account personal strengths and vulnerabilities. Sexual exposure refers to those behaviors that increase proximity to potential perpetrators of sexual aggression, including starting early with sexual intercourse, having many different sex partners and having casual sex partners (i.e. outside a relationship context). It is researched to what extent personal strengths and vulnerabilities interact with sexual exposure behavior in relation to the experience of sexual aggression.

In conclusion, this chapter gave a theoretical introduction on problem behavior in adolescence and emerging adulthood, whereby biological and psychological developmental specificities were discussed together with sociological frameworks. It was also discussed that labeling certain behaviors as deviant can have adverse consequences, and that the very definition of problem behavior is in need of a more nuanced approach. Furthermore, the call for a more positive stance towards adolescents, rather than reducing them to hormone- and emotion-driven subjects, is growing louder. By means of four empirical studies, this dissertation adds substantial knowledge to the understanding of adolescence as a biologically vulnerable period and the problematization of the behaviors they engage in. The conclusions of these studies have clear implications regarding the research field of problem behavior in adolescence and emerging adulthood.

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Chapter 2

Methodology

The empirical studies were based on data that were retrieved from three different research projects. For a good overview, the data that were used in the empirical studies are described according to these research projects, which include Sexpert (Sexual health in Flanders), SAFE II (Sexual Awareness for Europe), and Y-SAV (Youth Sexual Aggression and Victimization). For each research project, the data collection strategy, the data collection tool, ethical issues, respondent characteristics, and the variables and scales that were used in the empirical studies are discussed. The exact univariate properties of the variables and scales are elaborately discussed in the studies themselves and are therefore not repeated in this chapter.

2.1 SXPART

The *Sexpert study* is a large-scale representative study on sexual health in Flanders and was funded by the Agency for Innovation by Science and Technology (IWT). The study took place from January 2010 to January 2013. Sexual health was studied from a bio-psycho-social perspective, taken into account that factors from the different research fields mutually interact with each other in defining sexual health outcomes. The intense collaboration between University departments of medicine (Ghent University Hospital), psychology (Ghent University), sexology (Catholic University of Leuven) and sociology (Ghent University) assured the achievement of such a multidisciplinary approach to sexuality. A specific module was foreseen for the group of young people aged 14 to 25, which allowed for answering specific research questions in the field of sexual as well as non-sexual problem behavior. The execution of the Sexpert project is elaborately described in the book *Seksuele gezondheid in Vlaanderen (Sexual health in Flanders)* (Buysse, Caen, Dewaele, Enzlin, Lievens, T'Sjoen, Van Houtte, & Vermeersch, 2013).

Study 1 and 2 (chapter 3 and 4 respectively) were entirely based on data from the Sexpert study, and study 3 (chapter 5) was a mixed method study which relied partly on this data.

2.1.1 Data collection strategy

For the selection of respondents, a representative sample was drawn from the Belgian national register. In order to be able to draw conclusions regarding different age groups, the sample was stratified according to age and one third of the sample was gathered in the respective age groups of 14 to 25, 26 to 49, and 50 to 80.

The interviews were performed by a market research firm, *Significant*. The Sexpert research team was intensively involved in the preparation, follow-up and quality control of the interviews. The interviewers received a training from the Sexpert team which included familiarization with the topic, a practical training for motivating respondents to participate, and a training concerning how to deal with a situation in which the questionnaire would elicit emotional distress in the respondent. The interviewers also needed to be trained on correctly collecting and storing saliva samples. This was a very fragile process whereby strict guidelines needed to be followed in order to achieve qualitative samples. The interviewers needed to store the saliva samples at home and the Sexpert team collected the saliva samples for processing at the Ghent University Hospital.

Interviews were done at the respondents' home by the professional interviewer. The interviews were done by a combination of computer assisted personal interviewing (CAPI) and computer assisted self-interviewing (CASI) for questioning the most sensitive information. The saliva samples were obtained through passive drooling. The mean duration of the interviews was 84 minutes.

2.1.2 Construction of the questionnaire

In a first phase a literature study was performed, information was retrieved from other European population studies on the topic of sexual health, and meetings were organized with representatives from sexual health organizations in Flanders as well as sexual health practitioners. The latter was very important considering that the Sexpert study made an important commitment towards valorization and the results of the study needed to answer concrete needs of people who work in sexual health promotion and prevention. The eventual questionnaire thus serves academic/theoretical purposes as well as more practical/policy purposes.

Focus groups were organized to assess the sensitivities and difficulties with surveying people on the topic of sexuality. The focus groups were organized separately by gender, sexual orientation, ethnic background and age. For the group of young people, two focus groups were organized, one consisting of 4 male participants and one consisting of 12 female participants. All participants were younger than 19. The focus group sessions generated useful information regarding what would motivate young people to participate to the survey and what obstacles they might experience during the interview. For example, many young people have

no sexual experience but yet they too had to be convinced to participate to the survey. Also the use of certain words was discussed, mainly words referring to sexual acts and sexual partners. This way it was evaluated which words should be used in the questionnaire in order to prevent misunderstandings.

In a final phase, the questionnaire was piloted. In a first part of the pilot study, the Sexpert team conducted pilot interviews among 52 people. This part of the pilot focused on the clearness and readability of the items, interpretation of the questions and the general structure of the questionnaire. In a second part, the bureau 'Significant' performed ten tests in order to make a final testing of the duration and technical soundness of the questionnaire.

2.1.3 Ethical aspects

The research methodology and questionnaire were approved by the ethics committees associated to each of the partner faculties of the Sexpert project. Given the sensitive topics in the questionnaire, many efforts were undertaken to assure sufficient support for the respondents in case needed. Each respondent was offered a list with information on available support services (legal, medical and psychological support). In case of a need for help, the interviewers were instructed to explicitly refer to this list. When a more severe situation of emotional distress or need for more direct help would occur, the interviewer could exchange the respondents' contact information to two medical doctors who were part of the Sexpert team. This would of course only happen with the consent of the respondent. Given that the respondent sample was drawn from the Belgian national register, also strict guidelines from the Privacy Committee were followed. Eventually a balance was achieved between the concerns of the university's ethic committees (regarding support and aftercare for emotionally distressed respondents) and the guidelines of the Privacy Committee.

2.1.4 Respondent characteristics

In total 1.832 interviews were achieved. This comes down to a response rate of 38.1% of the eligible addresses that were drawn from the national register. This rate is in between what is found in comparable population studies in Europe on the topic of sexual health. For example, a population study in the Netherlands achieved a response rate of 20% (Bakker, de Graaf, de Haas, Kedde, Kruijer & Wijsen, 2009), a Finish population study reached a response rate of 46% (Haavio-Mannila & Kontula 2001), and 65% was achieved in a study in the UK (Johnson et al., 2001). The most common reason for non-response was refusal which occurred in 52.8% of the cases. Further cut down in sub-categories, this referred to *plain refusal* (26.6%), *refusal because of the topic* (11.4%), *refusal by making excuses* (14.1%), and *refusal at forehand* by calling the telephone number mentioned on the introduction letter that

was sent at forehand (0.7%). In 4% of the cases there was a refusal by a third person, whereby 1.5% of these concerned refusal by the parents of minors. In 4.7% of the cases the interviewer did not manage to find or talk to the respondent (not home or not answering the door), and in 0.2% of the cases the respondent was unable to take the interview.

Study 1 and 2 made use of the subsample of young people aged 14 to 25. This subsample consisted of 632 respondents. The gender distribution was about equal, with 47.6% male and 52.4% female respondents. A more detailed distribution according to age and gender is presented in table 2.1. For study 3, the subsample of respondents aged 14 to 35 was used. This subsample consisted of 890 respondents, of which 47.2% male and 52.8% female respondents. A more detailed distribution according to age and gender is also included in table 2.1 for this subsample.

Table 2.1 Distribution of respondents according to age and gender

	Male		Female	
	<i>n</i>	%	<i>n</i>	%
14 to 17 years	99	32.9%	83	25.1%
18 to 21 years	108	35.9%	138	41.7%
22 to 25 years	94	31.2%	110	33.2%
Total	301	100%	331	100%
14 to 20 years	186	44.3%	193	41.1%
21 to 27 years	142	33.8%	175	37.2%
28 to 35 years	92	21.9%	102	21.7%
Total	420	100%	470	100%

The sample was rather homogeneous in terms of socio-demographic background characteristics. As to religiosity, almost half of the respondents (42.4%, $n = 377$) aged 14 to 35 indicated that they were *not religious*, one fourth (25.6%, $n = 228$) indicated to be *Catholic* and another 14.7% ($n = 131$) indicated to be *Christian but not Catholic*. Only 17% ($n = 151$) indicated to belong to a different religion (Jewish, Muslim, ...). When asked for the frequency with which the respondents participated to religious activities, over the six months prior to the survey, 93.1% indicated that they did not engage in any activity at all or only on special occasions such as a wedding or funeral.

The sample was also homogeneous in terms of ethnic background. With a few exceptions ($n = 25$), almost all of the respondents held the Belgian nationality since

birth (97.2%, $n = 865$). When taking into account the nationality at birth of the respondents' parents, 92.7% of the mothers held the Belgian nationality since birth against 92.8% of the fathers. Italian, Moroccan and Dutch were the most popular non-Belgian nationalities at birth of the respondents' parents.

Table 2.2 Distribution of respondents according to highest educational level

		1	2	3	4	5	Total
14 to 18 years	<i>n</i>	270	9	1	6	0	286
	%	94.4%	3.1%	0.3%	2.1%	0%	100%
19 to 25 years	<i>n</i>	150	16	48	58	96	368
	%	40.8%	4.3%	13.0%	15.8%	26.1%	100%
26 to 35 years	<i>n</i>	4	13	50	57	111	236
	%	1.7%	5.5%	21.2%	24.2%	47.0%	100%
Total	<i>n</i>	424	38	99	121	207	889
	%	47.7%	4.3%	11.1%	13.6%	23.3%	

1 = still in education; 2 = no educational degree or only elementary school; 3 = lower secondary school; 4 = higher secondary school; 5 = higher education (bachelor/master)

When looking at the educational background (presented in table 2.2), almost half of the respondents aged 14 to 35 were still in the educational system, mostly those respondents aged 25 and under. The group of respondents who did not attain any educational degree or only attained a lower secondary high school degree was small (15.4% in total), and thus most of the respondents were either still in education either had achieved a high school degree or more. Among the young people who were still enrolled in secondary high school ($n = 228$), 27.2% ($n = 62$) was enrolled in the vocational track, 32.9% ($n = 75$) was enrolled in the technical education track, and 38.6% ($n = 88$) was enrolled in the general education stream which prepares for further studies. In addition, three respondents were enrolled in the arts education track. Among those who were not enrolled in secondary high school ($n = 653$), 28.8% ($n = 188$) were still in further higher education, 21% ($n = 137$) did not achieve an educational degree or a lower secondary school degree only, 18.5% ($n = 121$) achieved a higher secondary school degree, and 31.7% ($n = 207$) achieved a degree of higher education.

When looking at the monthly family income, 14.2% ($n = 126$) of the respondents reported a monthly income below €2000. When breaking the figures further down, about half of the respondents who reported a monthly family income below €2000, indicated to have a monthly income somewhere between €1500 and €2000, and the

other half had less than €1500 a month. Among those who reported a monthly income above €2000 (68.5%, $n = 610$), about half reported a monthly income somewhere between €2000 and €3200, and the other half indicated to have more than that amount each month. A substantial number of 17.3% of the respondents ($n = 154$) did not answer this question. In addition it was asked to what extent the respondent felt that he or she could live comfortably on the family income. This question was answered on a 7-point Likert-scale, going from *it is very difficult to get by/to manage* to *it is very easy to get by/to manage*. Only a minority of the respondents indicated a number of four or less than four on this scale.

Figure 2.1 Assessment of how comfortable it is to get by, according to age group

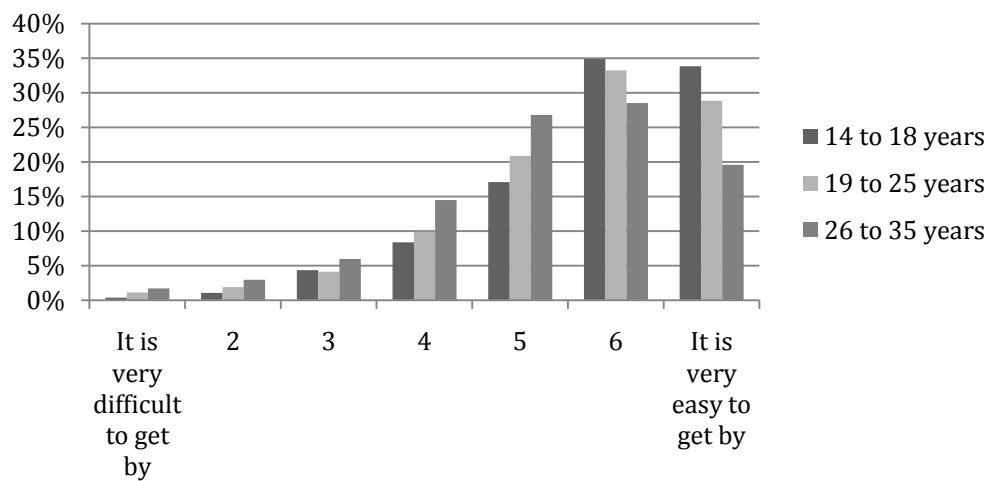
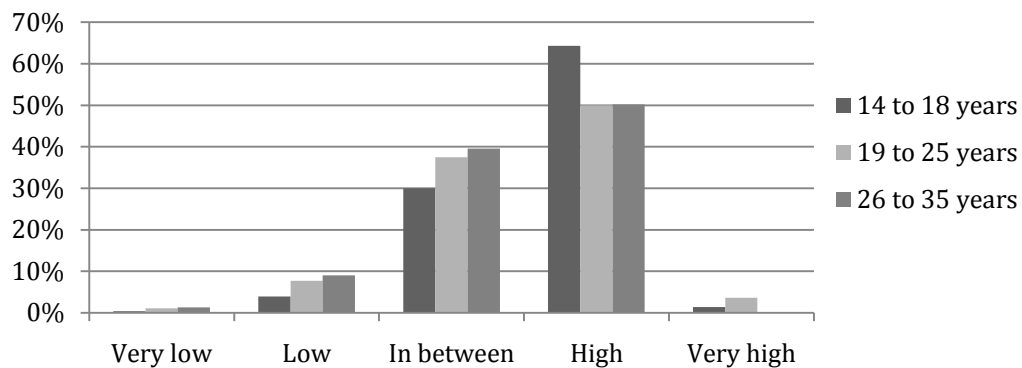


Figure 2.1 gives an overview of the results for this item. It indicates that overall the respondents feel like they can get by rather well to very well on their family income. The older the respondent the less 'easy' it is.

Apart from an objective income measure, also a subjective measure of the respondent's socio-economic status was included. This was measured by a method developed by Adler, Epel, Castellazzo, and Ickovics (2000). In this method, a picture of a ladder is presented and this is used as a metaphor for the social ladder, where each rung represents a social layer of society (the ladder has 10 rungs). The respondents were asked to put themselves on a rung of the ladder in terms of their position in society. Figure 2.2 presents these results in a simplified version (the number of categories was reduced to five). The figure shows that the respondents positioned themselves mainly on the higher half of the ladder, especially those in the age group of 14 to 18 years.

Figure 2.2 Self-assessment of social position in society, according to age group

Overall, the indicators of the respondents' socio-demographic background suggest that the respondents were mainly from a native middle class background. They were mostly Belgian since birth, just like their parents. The majority of those who already finished high school were either enrolled in higher education either already achieved a higher education degree. Only a small group had to get by on less than €2000 a month, and most respondents felt that it was rather easy to get by on their family income. In addition, most respondents assessed themselves as being "well-off" when comparing themselves to other people in society.

2.1.5 Variables and scales

The scales that were used in the empirical studies are presented in their entirety in appendix 2 (in the Flemish version). Questions referring to the experience of the first intercourse were measured in the CASI part of the questionnaire. All the other questions were part of the CAPI part of the questionnaire. In that case answering cards were used which means that the respondent only had to mention a number to the interviewer.

FIRST SEXUAL INTERCOURSE. Three characteristics of the first experience of sexual intercourse were included in study 3: the age at the first experience of intercourse, the time lapse between the first tongue kiss and the first experience of intercourse, and the age difference with the first partner. Therefore, the age at the first intercourse (range 11-35, $M = 16.78$, $SD = 2.38$), the age at the first tongue kiss (range 8-35, $M = 14.34$, $SD = 2.35$), and the age of the first partner (range 11-38, $M = 17.75$, $SD = 2.92$) were all measured in an open numeric question.

EXTERNALIZING PROBLEM BEHAVIOR AND SUBSTANCE USE. Measures of substance use, and aggressive- and non-aggressive antisocial behavior were used in study 1 and 2. The engagement in these three types of problem behavior was questioned with reference to the past six months, by means of a list with specific behaviors to which the respondent could indicate how often each of these behaviors occurred. The

items were based on the *Questionnaire Deviant Behavior* developed by Dekovi and Noom (1996) and the questionnaire from the *Zzzip@Youth-research* (Dewaele, Cox, Van Houtte & Vincke, 2008). The frequency of each behavior was measured on a 5-point scale, going from *never* (score 1), to *once* (score 2), *two to three times* (score 3), *four to ten times* (score 4), and *more than ten times* (score 5).

The items that were used for measuring substance use, were the following: drinking more than five alcoholic drinks in one occasion, smoking cigarettes, the use of soft drugs, and the use of hard drugs ($\alpha = .746$, range 1-5, $M = 2.53$, $SD = 1.17$). Aggressive problem behavior included: threatened to beat up another person, having beaten up another person, and gotten involved in a fight ($\alpha = .809$, range 1-5, $M = 1.68$, $SD = 0.89$). Non-aggressive problem behavior referred to: vandalism, putting something that belongs to somebody else on fire, stolen something of high value from a shop, broken into a car, and stolen something from someone ($\alpha = .678$, range 1-3.4, $M = 1.26$, $SD = 0.46$).

INTERNALIZING PROBLEM BEHAVIOR. The second study included three types of internalizing problem behavior: suicide ideation, non-suicidal self-injury, and depressed mood. Suicide ideation and non-suicidal self-injury were questioned with reference to the past six months and referred to the questions *How often in the past six months did you have suicidal thoughts?* and *How often in the past six months did you cut or harm yourself on purpose?* respectively. Both items were answered on a five-point Likert scale, going from *never* (score 1), to *once* (score 2), *two to three times* (score 3), *four to ten times* (score 4), and *more than ten times* (score 5) (range 1-5, $M = 1.37$, $SD = 0.89$ for suicide ideation; range 1-5, $M = 1.18$, $SD = 0.60$ for non-suicidal self-injury).

Depressed mood was measured by using the *Five-item Mental Health Inventory* (MHI-5) which is a short assessment of a respondent's mental health. The MHI-5 consists of the items which are best able to predict the total score on the extensive 38-item Mental Health Inventory, and the scale has been extensively validated (Berwick, Murphy, Goldman, Ware, Barsky, & Weinstein, 1991; Ware & Sherbourne, 1992). These five items refer to four mental health dimensions (fear, depression, loss of behavioral and emotional control, and psychological wellbeing), with reference to the preceding four weeks and which are answered on a 6-point scale ranging from *never* (score 1) to *constantly* (score 6). Within the group of young people (aged 14 to 25), the scale had a Chronbach's alpha of .696 (range 11-30, $M = 23.71$, $SD = 3.38$).

PROBLEM BEHAVIOR ENGAGED IN BY PEERS. Study 1 included a measure for problem behavior engaged in by peers. Therefore the respondent was asked to indicate the amount of immediate peers involved in three different types of problem behavior: the amount of friends who ever used hard drugs, the amount of friends who ever

stole something from someone, and the amount of friends who ever had a fight with someone. To each of the items, the respondent could choose between five categories: *none of my friends* (score 1), *some of my friends* (score 2), *more than half of my friends* (score 3), *most of my friends* (score 4), and *all of my friends* (score 5) ($\alpha = .615$, range 1-33, $M = 1.56$, $SD = 0.47$).

PEER PRESSURE. Studies 1 and 2 included a measure for sensitivity to peer pressure. This variable was measured by a validated scale developed by Santor, Messervey, and Kusumaker (2000). The scale consists of ten items referring to situations of peer pressure and respondents had to state how often these situations generally occurred, using a five-point Likert scale ranging from *never* (score 1) to *always or almost always* (score 5). In the group of young people, the scale had a Chronbach's alpha of .733 (range 1-3.8, $M = 1.73$, $SD = 0.43$).

FAMILY CONFLICT. Study 2 included the variable family conflict, which was measured by the item *How often are there conflicts between members of your family?* The respondent could answer on a five-point Likert scale, going from *never* (score 1) to *very often* (score 5) (range 1-5, $M = 2.81$, $SD = 0.75$). Respondents who grew up in different families were asked to think of the family in which they spent most of their time. For respondents who spent an equal amount of time in two different families, their answer for the first family situation was used.

BODY IMAGE. A measurement of body image was used in study 2. The measure was based on the *Body Image Scale* which was originally developed in the context of body image among people with cancer (Hopwood, Fletcher, Lee, & Ghazal, 2001). One item that explicitly referred to illness was removed and the response categories were adjusted from a four-point to a five-point Likert scale for reasons of consistency throughout the entire questionnaire. All items were answered on a scale from *not at all* (score 1) to *entirely* (score 5). The adjusted scale consisted of nine items referring to physical and sexual attractiveness, satisfaction about oneself dressed/naked, satisfaction with one's own body, integrity of one's own body, and avoidance of other people. Among the group of young people, the scale had a Chronbach's alpha of .932 (range 1-5, $M = 3.74$, $SD = 0.96$).

MOTIVATIONAL STRUCTURES FOR BEHAVIOR. A measurement for sensitivity to reward and inhibition was used in study 1. Therefore use was made of the *BIS/BAS-scale* (Behavioral Inhibition System/Behavioral Activation System), as developed by Carver and White (1994) and which was validated for use among adolescents (Cooper, Gomez, & Aucote, 2007). For this study the Dutch translation of the BIS/BAS-scale by Franken, Muris and Rassin (2005) was used. The entire BIS-scale (7 items) and the pleasure-seeking BAS-subscale (4 items) were included. Each item referred to a specific situation to which the respondent had to answer to what degree this was recognizable or applicable. Each item had to be answered on a four-

point scale: *strongly disagree* (score 1), *disagree* (score 2), *agree* (score 3), and *strongly agree* (score 4). Among the group of young people, the BIS-scale had a Chronbach's alpha of .697 (range 1-4, $M = 2.67$, $SD = 0.47$) and the pleasure-seeking subscale of the BAS-scale had a Chronbach's alpha of .554 (range 1-4, $M = 2.74$, $SD = 0.53$).

PEER AFFILIATION AND SUPPORT. A measurement of peer affiliation and support was used in study 2. This variable was measured by a self-constructed scale that included items referring to affiliation with a social network as well as perceived support from the network. Six items were included: When I feel alone, I have several people to talk to; People in my social network have the same interests and opinions as I do; If I want to go on a day out I can always find someone; I often have social contact with people from the same background as me; The people that I see have the same lifestyle as I do; When I am ill I can rely on someone. The items were measured on a five-point Likert scale with categories ranging from *do not agree at all* (score 1) to *totally agree* (score 5). Among the group of young people the scale had a Chronbach's alpha of .687 (range 2-5, $M = 4.02$, $SD = 0.52$).

ANDROGENIC HORMONES AND A GENETIC MARKER. Two androgenic hormones were included, testosterone and androstenedione, and a genetic marker for androgen sensitivity, CAG repeat length. Both hormones and CAG repeat length were measured on saliva samples, obtained through passive drooling. Salivary testosterone and androstenedione were analyzed with liquid chromatography-mass spectrometry, LC-MSMS (AB Sciex) with an LOQ of 0.07 ng/dl for testosterone and 0.1 ng/dl for androstenedione. A validation study was set up in order to test the validity of this method for the measurement of testosterone and androstenedione through saliva samples. The results showed that the level of both hormones as found by this method corresponded to the levels as found in serum.

For the determination of the CAG repeat length of the AR gene, the oligonucleotide primers 5'-6FAM-TCC AGA ATC TGT TCC AGA GCG TGC-3' and 5'-CTT GG G GAG AAC CAT CCT CA-3' were used to amplify a fragment comprising the CAG repeat (Mir, Edwards, Paterson, Hehir, Underwood & Bartlett, 2002). The polymerase chain reaction (PCR) was performed using the following conditions: 94°C for 1 min, 53°C for 1 min, 72°C for 1 min 20 s per cycle, for a total of 33 cycles. The PCR products were analyzed by capillary electrophoresis on a 3100 Genetic Analyzer (Applied Biosystems, Foster City, CA, USA). The length of the CAG repeat was determined by comparing the PCR product size to samples where the CAG repeat length had previously been determined using direct sequencing.

2.2 SAFE II

The *SAFE II project* (Sexual Awareness for Europe) is a qualitative study in the field of sexual health and rights of young people, funded by the International Planned Parenthood Federation – European Network (IPPF-EN). The project was executed by the Department of Sociology of Ghent University in collaboration with Sensoa, a Flemish expertise center on sexual health and prevention. The first gathering for the study took place in May 2010 and the project was finalized in May 2012. The study focused on the emotional experience of an early first intercourse and on understanding what circumstances define this experience. This required very personal in-depth information from young people, wherefore it was opted to apply the personal interviewing method. An important feature of the SAFE II study was the high involvement of youth throughout the entire research process. Youth participation in research is highly valued in the philosophy of IPPF, in order to produce research that is in line with the needs and views of young people themselves. The third empirical study combines quantitative data from the Sexpert study with the qualitative data from the SAFE II research.

2.2.1 Recruitment and characteristics of respondents

To answer the research questions, information from young people with an early experience of the first intercourse was needed. In addition the respondents needed to be able to reflect on their first intercourse. Four eligibility criteria were distinguished. First, the first intercourse was experienced at age 14 or younger. This was based on statistical findings on sexual behavior in Flanders showing that less than 20% of the young people have had sexual intercourse at that age (Hublet, Vereecken & Maes, 2010). Second, the age of the respondent at the time of the interview was between 16 and 18. The first intercourse still had to be fresh in the memory, but the young person also needed to have had enough time to reflect on it. Third, the first sexual intercourse took place in the absence of coercion. It should be noted, however, that the distinction between *forced* and *voluntary* can be blurred for the young person in question. The main goal of this condition was to exclude rape situations, and it was left for the young person him- or herself to judge whether or not the first intercourse took place voluntarily. Finally, the first intercourse happened with a partner from the opposite sex. This condition was motivated by the different sexual development paths of bisexual and homosexual young people as compared to heterosexual young people (Adelson, 2012). In sum, young people who met the following conditions were recruited:

- aged between 16 and 18;
- the first sexual intercourse took place at age 14 or younger;
- the first sexual intercourse was not forced; and
- the first sexual intercourse was heterosexual.

For finding eligible respondents, a short online questionnaire was developed which contained the questions necessary to select eligible young people. Using an online questionnaire meant that those eligible could be selected with a full guarantee of privacy. When answering the online questionnaire, young people only knew that they were 'applying' for participation in a personal interview about sexuality and that they would receive compensation for it. They did not know, however, that they could only participate if they experienced their first intercourse at the age of 14 or younger. Nor did they know the exact compensation they would receive in order to prevent participation for the wrong reasons.

The young people who filled in the questionnaire and who met the conditions were invited to fill in their contact information (telephone number and/or email address) so that they could be invited for the interview. The eligible young people who did so were then informed about the topic of the interview and about the reward they would receive. The compensation for participation was set at 25 Euros, in the hope of avoiding the loss of eligible respondents once they had been found.

To reach young people with the online questionnaire, different types of publicity were used. One of these was through organizations who work with young people and who made announcements on their websites with a link to the questionnaire. Sensoa in particular actively participated in the recruitment of young people via a website *allesoverseks.be* (*all about sex*) and the allied Facebook and Netlog pages, which all have a high readership among young people. Other youth organizations also posted the announcement on their website, including *MAKS* and *ZAP Magazine*. In addition, posters were distributed in secondary schools in two Flemish cities (Ghent and Mechelen) with the invitation to surf to the online questionnaire through the webpage of Sensoa.

The response to the online questionnaire was good. Although there was a big gender imbalance. In total, 404 young people filled in the online questionnaire, of which 152 or 37.6% were boys and 252 or 62.4% were girls. Of these, 7.7% dropped out because they were currently older than 18 and 3.7% because they were younger than 16. Among the young people in the eligible age category, 89.6% indicated that they had already had sexual intercourse. Eventually, after outfall due to same-sex first intercourse, involuntary first intercourse, and first intercourse at age 15 or older, the eligible group of young people consisted of 33 boys and 57 girls. These young people were contacted for participation to the interviews. Despite the reward for participation of 25 Euros, it was difficult to arrange appointments. Many of those who filled in their contact information did not respond to the personal invitation for the interview and compliance with the appointments made was low.

In addition to recruitment through an online questionnaire, the snowball method of recruitment was applied. Each recruited respondent was asked to provide other

potential respondents. However, this was completely optional for the respondents themselves and in no way a condition of participation. Six respondents were recruited through this snowball method. It was easier to make an appointment with these respondents and they were also less inclined to cancel.

In total 24 respondents were recruited and interviewed. The number of interviews was not set beforehand, but was left open depending on the amount of information gathered. In total, 24 interviews were conducted. Periodical data analysis showed that after 24 interviews enough variation was reached in the context as well as the experience of early first sexual intercourse. It was very difficult to reach boys, and only six were interviewed. Table 2.3 shows the distribution of respondents according to age at the time of the interview and age at the first intercourse.

The educational backgrounds of the respondents were varied, but the general education stream (preparing for further academic studies) was overrepresented with 15 respondents. Six respondents were in technical education. Three respondents had dropped out of high school before attaining a degree but were studying for their high school qualification through an alternative education program.

Table 2.3 Sample characteristics of the SAFE II research

Age at moment of interview / Age at moment of first intercourse	16	17	18	Total
11	1			1
12			1	1
13		3	1	4
14	7	6	5	18
Total	8	9	7	24

2.2.2 Data collection tool and strategy

The goal of the personal interview was both to give the fullest opportunity for the respondent to tell his or her story and to provide sufficient information for answering the research questions. Since specific information was needed to measure the concepts in the research questions, the structured interview method was applied. A topic list was used to guide the interview. The topic list was divided into three parts. First, questions were asked about the person with whom the first sexual intercourse took place. This included questions about the relationship with that person in terms of communication and expectations and how parents and friends regarded that relationship. Second, questions were asked about the first

intercourse itself. This included among other things the motives for it, contextual factors under which it took place, the use of contraception, the feeling of being ready for it at that time as well as retrospectively at the moment of the interview, and the experience of other types of less intimate sexual behavior before the first intercourse. Third, questions were asked about the sexual and relationship experiences that followed the first intercourse. The complete topic list can be found in appendix 3.

In order to improve youth participation, young people were recruited and trained as interviewers. Considering the delicate theme however, the interviewers had to be at least 21 years old. A recruitment announcement for interviewers was distributed at the faculty of psychology and education of Ghent University. All applicants were invited for a job interview in which specific interviewing experience, flexibility and discretion were prioritized. Personal beliefs and attitudes concerning early first intercourse were also discussed in order to minimize the risk of normative reactions during the interview itself. In addition, the ease and comfort with which the student could talk about sex and related topics was an important recruitment condition. Eventually, four students aged 21 to 24 were recruited and trained to perform the interviews. The interviewers recruited were all female. This was not assumed to be problematic because in earlier research performed by Rutgers Nisso it was found that both boys and girls feel most comfortable talking about sensitive topics with a woman. Three of the interviewers already achieved a masters degree in psychology and were enrolled for an additional masters. One interviewer had achieved her bachelors degree and was enrolled for the masters in education science.

The interviewers were fully trained for their task. The training was done by an experienced instructor in interviewing techniques in the field of sexual research and included practical exercises. Another important aspect of the training was how to deal with difficult situations since talking about their sexual lives and experiences might provoke intense emotions among the respondents. The interviewers practiced how to respond to such a hypothetical situation. They also had to be able to refer the respondent to another service when needed so they needed to have a good knowledge of the services available.

The interviews took place in neutral, easy accessible locations in three Flemish cities (Antwerp, Ghent and Mechelen). All the travel expenses of the respondents and the interviewers were refunded by the project. To prevent dropouts due to travel inconvenience, two interviews were conducted at the interviewee's home. In those cases, it was ensured that the interview took place in complete privacy.

2.2.3 Ethical aspects

Given the research group (young people, of whom many are under age) and considering the sensitive topic of this research, clear ethical guidelines were warranted. In line with the argumentation by Flicker and Guta (2007) it was considered undesirable and unnecessary to require parental consent for participation for this age group and for research on this topic. Parental consent might discourage a specific group of young people and as a consequence silence them. Furthermore, given the minimum participation age of 16, these young people can be considered able to make a responsible choice about participation.

Naturally, care was taken to provide information and support to the respondents where needed. Each received an information letter in which the goals of the research were broadly explained, though without giving too much information in order not to distort the results. The information letter also mentioned the possibility of sharing the results once the research finished. Before the interview started, each respondent had to sign an informed consent form. For respondents under the age of 18, this informed consent included the warning that if the respondent reported having been the victim of any legally punishable acts, this would be reported to the relevant authorities. In that case the commitment to anonymity would be partially broken. Specific measures were also taken concerning adequate after-care for the respondents once the interview has been conducted. Each respondent received an information folder with various services and phone numbers to turn to if needed.

2.2.4 Data analysis

The data were coded using the qualitative data analysis program Nvivo, applying a combination of deductive and inductive techniques. Because of the clear research questions, based on which the topic list was also developed, the coding of the data was guided by pre-defined categories. Thus the information needed to answer the research questions was systematically gathered from the interviews. The categories for coding by the deductive method were the following:

- Decision-making about first intercourse
- Aspects of first intercourse:
 - Emotional experience
 - Physical experience
 - Use of contraception
- Importance and meaning attached to first intercourse
- Aspects of the first relationship
- Attitudes/reactions of friends
- Attitudes/reactions of parents
- Sexual experiences before first intercourse
- Sexual experiences after first intercourse

- Need for information and support

Additional codes and categories were revealed by induction, mainly sub-categories of the main categories listed above. Thus more information was gathered in the interviews than was set out beforehand, and the data analysis was driven by the theoretical model, thereby leaving space for finding new and unanticipated results.

2.2.5 Advisory committee of young people

Another method for improving youth participation to the research (in addition to working with young interviewers) was through the establishment of a *youth advisory committee* which gave important input on how to evaluate and interpret the information from the interviews. This input was organized in the form of three group discussions. The committee members were recruited through several sources, including *in Petto*, a Flemish youth organization which aims to improve the wellbeing of young people in Flanders. Announcements were also made on the same websites mentioned above on which announcements were posted for the recruitment of respondents as well. The advisory committee consisted of eight boys and eight girls, aged between 15 and 19, and with diverse ethnic backgrounds (four members had a non-Belgian background). About half were in general education in secondary school (preparation for further academic studies) while the other half were in technical or vocational studies. Two members had already finished secondary school and were in their first year of higher education. The reasons for joining the advice committee varied strongly from curiosity as to how social research works to the more idealistic motive of wanting to *help improve young people's sexual health*. For most members though, the reason for participation was simply *because it seemed to be fun*. It was expected from the members to participate in each of the three meetings, but this was not a necessary condition for participation. To further motivate each member to continue their cooperation, they received a compensation of €20 for each meeting attended, and all transportation costs were refunded. Only two members took part in each of the three meetings, while eleven took part in only one and three took part in two meetings.

During the first meeting the topic list for the interviews was discussed. The second and third meetings served to correctly interpret the information obtained from the interviews. Open communication was achieved amongst the committee by using a methodology for group discussions developed by Sensoa, whereby great emphasis was put on respecting each other's opinions. This methodology also included several games which were played at the beginning of each meeting and which served to break the ice and to make the members more comfortable to talk about sex. The committee discussed general themes about relationships and sexuality and specific quotes from the interviews were presented for discussion. The members were not expected to talk about personal sexual experiences and preferences. They were

asked to focus on what they thought were general opinions among young people. However, personal opinions and preferences were frequently spontaneously mentioned, and were also valuable for the researcher to interpret the committees' discussion.

2.3 Y-SAV

Y-SAV stands for *Youth Sexual Aggression and Victimization* and the Y-SAV project was set up with the aim of building a multidisciplinary network of European experts in various member states, bringing together the knowledge on Y-SAV, developing a tool for measuring Y-SAV prevalence, and providing recommendations for strategic action to address Y-SAV in Europe. Therefore a gathering took place in Berlin in January 2011 to which representatives from 20 European countries participated. During that gathering it was decided that for the development of a Y-SAV measurement tool which would be valid for use across Europe, a pilot study was needed in different European countries. The pilot study was based on a questionnaire which was already developed by one of the initiators of the Y-SAV project, Barbara Krahe. Researchers from the departments of sociology and psychology of Ghent University, who were also present at the meeting in Berlin, collaborated to this tool development part of the Y-SAV project. Apart from Belgium, nine other European countries participated to this tool-development project and executed a pilot study. The fourth empirical study makes use of the Flemish data that were gathered for this pilot study.

2.3.1 Data collection tool and strategy

The tool that was used in the study was agreed upon by the *Y-SAV consortium* which gathered in Berlin. For measuring sexual aggression and victimization a questionnaire was used which was developed by Krahe and Berger (2013). In addition to this, some core correlates for sexual victimization and aggression were included, such as sexual assertiveness, the permissiveness towards the use of partner violence and the use of alcohol during sexual encounters. These tools were translated to Dutch by a translation-backtranslation procedure. In addition to this questionnaire as constructed by the Y-SAV consortium, the Belgian team added extra scales and variables for the achievement of personal research goals. These referred mainly to a further inclusion of variables measuring sexual behavior and variables related to personal strengths and vulnerabilities.

The data were gathered through an online survey among young people from 16 to 26 years old and this in the period of December 2012 to April 2013. The survey was spread through announcements on websites frequented by young people such as

Joetz (youth service which, among other things, offers information on health and sexuality) and *Sensoa* (the Flemish expertise center on sexual health and prevention).

2.3.2 Ethical aspects

At the beginning of the questionnaire respondents were informed on the content of the questionnaire and on the processing of the results (with the assurance that the results would be processed anonymously and used for research purposes only). Before starting the questionnaire, respondents were asked to give consent for participation by ticking an *agreement icon*, confirming that they decided to participate voluntarily and acknowledging that they could stop participation at any time. Throughout the entire questionnaire, respondents could press a *help button* on the bottom of the screen, which directed the respondent directly to an information page with a list of various services to turn to if needed, including services offering legal and psychological support, information on sexual health, and anonymous help lines. This information page was also shown to all respondents who finished the questionnaire. The research design and the data collection procedure were evaluated and approved by the ethics committee of the Faculty of Social and Political Sciences of Ghent University.

2.3.3 Respondent characteristics

In total, 561 young people were reached to fill in the questionnaire of which 31.7% ($N = 178$) were male and 68.3% ($N = 383$) were female. For the specific study, only female respondents with voluntary sexual experience were retained. After a further strict data cleaning, in which respondents with multiple missing values on the study variables were deleted, 207 female respondents were retained for the study. The age ranged from 16 to 26 ($M = 21.25$, $SD = 2.68$). The majority of the eligible respondents were enrolled in higher education (64.7%), almost one fifth was enrolled in secondary high school (18.4%), and another minority had entered the labor market (16.9%). The vast majority was native Belgian (96.6%).

2.3.4 Variables and scales

The scales that were used in this study are presented in their entirety in appendix 4.

SEXUAL VICTIMIZATION SCALE. Sexual victimization was measured by a questionnaire developed by Krahe and Berger (2013). In order to exclude childhood sexual abuse, the questionnaire on victimization was preceded by an introduction explaining that only acts of sexual victimization experienced since the age of 16 were to be reported. Respondents first indicated whether they ever had a wanted or unwanted sexual experience with another man and/or woman, based on which a specific version of

the questionnaire was offered (in which the reference to the potential perpetrator was *a man, a woman or another person*). The questionnaire distinguishes between three coercive strategies: verbal pressure, physical force, and inability to resist due to alcohol or drugs consumption. For example it was asked “Has a man ever made (or tried to make) you have sexual contact with him against your will by threatening to use force or by harming you?” For each situation, the respondent had to fill in who was involved (a current or former partner, a friend or acquaintance, or a stranger), what exactly happened (sexual touch, attempted intercourse, completed intercourse, and other sexual acts), and how often it happened (once or repeatedly). In addition to these three coercive contexts, it was asked whether sexual victimization ever occurred by somebody who made abuse of his or her authoritative position (with again the distinction what sexual acts exactly occurred and whether this occurred once or repeatedly). Thus with the inclusion of abuse of authority, four coercive strategies were distinguished. About one fourth of the respondents (26.6%) reported at least one type of sexual victimization.

SEXUAL BEHAVIOR. Three types of sexual behavior were included: the age at the first experience of intercourse, the total number of sex partners, and the proportion of casual sex partners (outside a relationship context). The age at the first experience of intercourse and the total number of sex partners were measured by means of an open numeric question (range 13-22, $M = 16.65$, $SD = 1.75$ for age at the first intercourse; range 1-6, $M = 2.80$, $SD = 1.76$ for total number of sex partners). The proportion of casual sex partners was measured on a five-point scale going from *only casual partners* (score 1), to *mainly casual partners* (score 2), *just as many casual partners as partners in a relationship context* (score 3), *mainly partners in a relationship context* (score 4), and *only partners in a relationship context* (score 5) (range 1-5, $M = 3.62$, $SD = 1.18$).

SEXUAL ASSERTIVENESS. Use was made of the refusal subscale of the validated *sexual assertiveness scale* as developed by Morokoff et al. (1997). This subscale consists of five items such as “I refuse to let my partner touch my genitals if I don’t want that, even if my partner insists”, which are answered on a five-point Likert scale, going from *never* (score 1) to *always* (score 5). The refusal sexual assertiveness subscale had a Chronbach’s alpha of .791 (range 1.2-5, $M = 3.79$, $SD = 0.98$).

SELF-ESTEEM. Use was made of the validated *self-esteem scale* by Rosenberg (1965). This scale consists of 10 items such as “I am able to do things as well as most other people”, which are answered on a four-point scale going from *strongly agree* (score 1), to *agree* (score 2), *disagree* (score 3), and *strongly disagree* (score 4). The scale had a Chronbach’s alpha of .907 (range 1.1-4, $M = 2.76$, $SD = 0.58$).

EXPERIENCE OF VIOLENCE IN THE FAMILY. Four variables measured the experience of violence in the family: having witnessed verbal violence between the parents;

having witnessed physical violence or aggression between the parents; being victimized of verbal violence by one of the parents; and being victimized of physical violence or aggression by one of the parents. Each of the questions was measured on a five-point Likert scale, going from *never* (score 1) to *very often* (score 5). The four items also correlated with each other and had a Chronbach's alpha of .793 (range 1-5, $M = 2.15$, $SD = 0.86$). So even though the items were not derived from a pre-existing scale they had a good internal consistency and each item added to this internal consistency.

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Chapter 3

The effects of androgenic hormones on problem behavior among adolescent boys and moderating psychosocial factors²

On their way to adulthood, adolescents need to assume many new roles which imply behavioral changes like individuation from the family and a higher interest in peers and potential romantic partners (Beyers & Seiffge-Krenke, 2007). For a substantial part of adolescents this developmental period coincides with an increased demonstration of risk behavior like speed driving, binge drinking, sexual risk behavior, substance use and eating disorders (Cui, Ueno, Fincham, Donnellan, & Wickrama, 2012; Forbes & Dahl, 2010). Much research has been devoted to the question of what drives these behavioral changes, pointing to predictive factors from different disciplinary fields. In order to improve our knowledge on the underlying mechanisms at stake, multidisciplinary research, combining factors from the fields of sociology, psychology and biology, is of particular interest. This paper studies the effects of two androgenic hormones, testosterone (T) and androstenedione (A), and a genetic marker for androgen sensitivity (CAG repeat length) on problem behavior (PB) among adolescent boys. Furthermore, it is examined whether these effects are moderated by psychosocial factors, namely behavioral motivations (in terms of sensitivity to reward and inhibition) and the peer context (in terms of the amount of immediate peers who pose PB).

3.1 THEORETICAL BACKGROUND

3.1.1 Occurrence and co-occurrence of problem behavior in adolescence

In adolescence, different types of PB tend to co-occur rather than that they occur as singular behaviors. Such co-occurrence is explained by two broad classes of mechanisms: the existence of common underlying vulnerabilities and a *cascade*

² Symons, K., Vermeersch, H., T'Sjoen, G., & Van Houtte, M. The effects of androgenic hormones on problem behavior among adolescent boys and moderating psychosocial factors. *[Submitted for publication]*

mechanism in which the engagement in one type of problem behavior elicits engagement in more problem behavior (Lee & Bukowski, 2012). For example, genetic overlap has been found in the factors underlying substance use and both non-aggressive and aggressive antisocial behavior (McAdams, Rowe, Rijdsdijk, Maughan, & Eley, 2011), and longitudinal research found that antisocial behavior precedes substance use (Adalbjarnardottir & Rafnsson, 2002). Different types of PB also have substantial unique variability and unique underlying factors (Willoughby, Chalmers, & Busseri, 2004). As such, aggressive PB has been found to be more defined by genetic factors with little explaining power of environmental factors, while non-aggressive forms of PB are substantially predicted by genetic *and* environmental factors (Burt & Klump, 2009). Especially for substance use, the effects of environmental factors, mainly related to the family and peer context, have been elaborately studied (Clark, Shamblen, Ringwalt, & Hanley, 2012; Kaynak, Meyers, Caldeira, Vincent, Winters, & Arria, 2013). This study includes substance use, aggressive PB and non-aggressive PB, so that it can be tested whether these different types of PB are distinguishable in their biopsychosocial etiology.

3.1.2 Hormones and behavior

Much research from different disciplinary angles has been devoted to the question of what drives these behavioral changes and why some young people pose more PB than others. As adolescence (i.e. the whole of socio-emotional, cognitive and behavioral changes taking place) strongly overlaps with puberty (i.e. the maturation of the secondary sex characteristics elicited by a sharp increase in sex steroid hormones), sex steroid hormones have been researched not only as the elicitors of pubertal physical changes but also as causal factors for behavioral changes taking place in the same period. Especially at the beginning of puberty, when the increase in sex steroid hormones is the sharpest, it is likely that these hormones will generate certain behavioral outcomes or effects. Research on rodents showed that big hormonal perturbations have more chances to elicit reactions as compared to slow progressive changes (Sato, Schulz, Sisk, & Wood, 2008).

ANDROGENIC HORMONES. Androgens are a type of sex steroid hormones that increase exponentially in males during puberty (and to a lesser extent in females), and that have been described as important factors in the regulation of sexuality, aggression, cognition, emotion and personality (Ramirez, 2003). Especially testosterone (T), the most important male androgenic hormone, but also to a lesser extent androstenedione (A), the precursor of T, have been related to behavioral outcomes. For example, A and T have been associated with more overt expression of competitiveness (Cashdan, 2003) and aggression (Sánchez-Martín et al., 2011; Book, Starzyk, & Quinsey, 2001). It has been suggested that A-behavior effects are more likely to be found among prepubertal children because later during puberty, a

higher proportion of A will be converted to T (Dorn et al., 2009). Research shows that hormones can not only affect behavior through direct activational effects and indirect organizational effects (by triggering a restructuring of the neurological motivational structures for behavior), but hormones can be reactive to behavior or certain behavioral outcomes as well. For example it is found that T levels increase after certain behavior took place (specifically, aggressive and sexual behavior) or a certain behavioral outcome was achieved (after a competition was won or a rise in social status was achieved) (Archer, 2006). Therefore it is difficult to know whether the relations that are found between hormones and behavior are in fact causational or reactional by nature.

GENETIC ANDROGEN SENSITIVITY. Humans also differ genetically when it comes to androgen sensitivity, or the degree in which androgenic hormones can actually be *functional* in the body. Androgens bind to intracellular receptors and as such, these intracellular receptors moderate androgen-related changes in gene expression (Choong & Wilson, 1998). The androgen receptor gene is located on the X chromosome and is highly polymorphic. Reduction of androgen gene expression is thought to be proportional to the number of CAG repeats over the range of normal alleles, with the shorter alleles showing the greatest activity (Choong & Wilson, 1998). Shorter CAG repeat length has been associated with ADHD, conduct disorder and oppositional defiant disorder (Comings, Chen, Wu, & Muhleman, 1999) and to violent criminal behavior (Rajender, Pandu, Sharma, Ghandi, Singh, & Thangaraj, 2008). Others found that the relationship with criminal activity was small at best (Cheng, Hong, Liao, & Tsai, 2006). If androgen concentrations and androgen receptor sensitivity are both aspects of androgenic activity, it is important to assess the possible interactions between the two. Such interactions are theoretically hypothesized between T concentrations and CAG repeat length. Free T has effectively been found to be a better predictor for aggressive and non-aggressive risk-taking among adolescent males who had a shorter CAG repeat length and thus who were more sensitive to androgens (Vermeersch, T'Sjoen, Kaufman, Vincke, & Van Houtte, 2010). In this article, the effects of T, A and the CAG repeat length on different types of PB are researched, including the interaction between T and CAG repeat length.

3.1.3 Hormones and behavioral outcomes in a psychosocial context

Overall, hormone-behavior relationships are more clear-cut in animal research than in research among humans (see reviews by Archer (2006) and by Book, Starzyk and Quinsey (2001)). Humans are less than other mammals delivered to the effects of hormones, and instead social learning and the social context have become far more important (Curley & Keverne, 2005). Biopsychosocial models are therefore more promising when it comes to explaining differences in human behavior than when

departing from biological or psychosocial variables separately (Booth, Carver, & Granger, 2000).

SOCIAL CONTEXT. With regard to adolescent problem behavior, biosocial interactions have been researched for the effect of T in relation to the social context in which the behavior is shaped. Thereby, former research points in the direction of a dual hazards model of antisocial behavior in which biological propensities for antisocial behavior are exacerbated by harmful social contexts (Foshee et al., 2007; Rowe, Maughan, Worthman, Costello and Angold, 2004). Concrete, higher T levels have been associated with more delinquent behavior among boys from low-cohesion families while no such effect of T exists for boys from high-cohesion families (Fang et al., 2009). Higher T levels have also been associated with more alcohol use and cigarette smoking specifically among boys in a harmful peer context (Foshee et al., 2007). For A no research was found on behavioral outcomes in interaction with the social context. However, it can be expected that the effects of A will be moderated by the social context in a similar way as T. In this study, the amount of peers engaged in PB was included as an indicator of the social context in which the adolescent's behavior is shaped. It is expected that both androgenic hormones will have a stronger effect on PB among young people with peers who also pose PB.

BEHAVIORAL MOTIVATIONS. On the personal level, adolescence is characterized by a reorientation of behavioral motivations, like increased sensation-seeking, which in its turn is associated with an increased risk-taking (Forbes & Dahl, 2010; Maslowsky, Buvinger, Keating, Steinberg, & Cauffman, 2011). Positive relations have been found between T and sensation seeking (Aluja & Torrubia, 2004) but no studies are found in which interactions between hormonal factors and behavioral motivations are tested with regard to behavioral outcomes. However, it can be expected that also with regard to personal characteristics a dual hazards model exists in which androgenic hormones have a stronger effect on problem behavior among young people who are more risk-prone. In this study, behavioral motivations are included in terms of *sensitivity to reward* and *sensitivity to inhibition*. These are the two main underlying neurological structures which motivate behavior, as identified by J.A. Gray. It is the individual's sensitivity of both structures which organizes responses to environmental cues. BIS is theorized to be related to sensitivity to punishment and avoidance motivation, while BAS is theorized to be related to sensitivity to reward and approach motivation (Carver & White, 1994). An overactive BAS and/or an underactive BIS are associated with externalizing PB (Cooper, Gomez, & Aucote, 2007). It is expected that both androgenic hormones will have a stronger effect on PB among young people who are more sensitive to reward and less sensitive to inhibition.

3.1.4 Research goals

Biopsychosocial models are very promising but remain scarce when it comes to explaining adolescent PB. T has received the most attention in biosocial research, but it can be expected that also other hormonal factors will interact with social context characteristics. Likewise, it can be expected that not only interactions exist with the social context but also with personal-level characteristics such as behavioral motivations. This article contributes to this segment of the research literature by exploring if and how hormonal effects on adolescent PB differ according to the psychosocial profile of the adolescent in question. Three different types of PB outcomes are included in order to investigate whether and how underlying explaining processes differ according to the type of PB that is posed: substance use, aggressive PB and non-aggressive PB.

Two main research questions are addressed. First, what are the effects of androgenic hormones and genetic androgen sensitivity on different types of PB? It is hypothesized that T and A have a positive effect on PB outcomes, with an inverse interaction effect between T and CAG repeat length. Second, do androgenic hormones interact with psychosocial characteristics with regard to PB outcomes? It is hypothesized that T and A have a stronger effect on PB among respondents who are more risk-prone in their psychosocial characteristics (those who are more sensitive to reward, less sensitive to inhibition, and who have more friends who engage in PB).

3.2 METHOD

3.2.1 Sample

A subsample of the population survey *Sexual Health in Flanders* (Buysse et al., 2013) was used. This is a large-scale representative survey on sexuality, sexual health and relations in Flanders (northern, Dutch-speaking region of Belgium). From the sample, the male respondents between 14 and 25 years old were selected (N = 311). This selection is motivated by the fact that this study focuses on young people, and behavioral effects of androgenic hormones are expected to be more pronounced among males. The sample was homogeneous in terms of ethnical background, with 97.1% Belgian since birth.

All data were gathered via face-to-face interviews, with a combination of computer-assisted personal interviewing (CAPI) and computer-assisted self-interviewing (CASI), for questioning the most sensitive information. In addition, a saliva sample was taken in order to define hormonal levels and the CAG repeat length. A majority of 75% of the respondents agreed for this saliva sample to be taken ($n = 233$).

Respondents who were taking medication which could affect hormonal levels were excluded, which was the case for three respondents.

3.2.2 Measures

AGE. Age ranged from 14 to 25 ($M = 19.13$, $SD = 3.31$), and was included in the analysis as a control variable.

INVOLVEMENT IN PROBLEM BEHAVIOR. Substance use, aggressive PB and non-aggressive PB were included as three types of PB outcome. Each PB variable was constructed based on the occurrence of specific behaviors with reference to the past six months. The behaviors that were included were based on the *Questionnaire Deviant Behavior* developed by Dekovi and Noom (1996). The frequency of each behavior was measured on a 5-point scale, going from *never* (score 1), to *once* (score 2), *two to three times* (score 3), *four to ten times* (score 4), and *more than ten times* (score 5). For constructing the PB variables, the mean score for each type of PB was used. The items that were used for measuring substance use, are drinking more than five alcoholic drinks in one occasion, smoking cigarettes, the use of soft drugs and the use of hard drugs (Chronbach's $\alpha = .746$). The variable *substance use* ranged from 1 to 5 ($M = 2.53$, $SD = 1.17$). Aggressive PB included threatened to beat up another person, having beaten up another person and gotten involved in a fight (Chronbach's $\alpha = .809$). The variable *aggressive PB* ranged from 1 to 5 ($M = 1.68$, $SD = 0.89$). Non-aggressive PB referred to vandalism, putting something that belongs to somebody else on fire, stolen something of high value from a shop, broken into a car and stolen something from someone (Chronbach's $\alpha = .678$). The variable *non-aggressive PB* ranged from 1 to 3.4 ($M = 1.26$, $SD = 0.46$).

TESTOSTERONE, ANDROSTENEDIONE AND CAG REPEAT LENGTH. Both hormonal levels and CAG repeat length were measured on saliva samples, obtained through passive drooling. Salivary T and A were analyzed with liquid chromatography-mass spectrometry, LC-MSMS (AB Sciex) with an LOQ of 0.07 ng/dl for T and 0.1 ng/dl for A. A validation study was set up in order to test the validity of this method for the measurement of T and A through saliva samples. The results showed that the level of both hormones as found by this method corresponded to the levels as found in serum. One outlier for T was excluded from the analyses (value of 33.44 ng/dl). The eventual range for T levels was 0.36 ng/dl to 17.16 ng/dl ($M = 6.67$, $SD = 3.07$). The levels of A ranged from 0.32 ng/dl to 17.11 ng/dl ($M = 6.04$, $SD = 3.39$).

For the determination of the CAG repeat length of the androgen receptor gene, the oligonucleotide primers 5'-6FAM-TCC AGA ATC TGT TCC AGA GCG TGC-3' and 5'-CTT GG G GAG AAC CAT CCT CA-3' were used to amplify a fragment comprising the CAG repeat (Mir, Edwards, Paterson, Hehir, Underwood, & Bartlett, 2002). The polymerase chain reaction (PCR) was performed using the following conditions:

94°C for 1 min, 53°C for 1 min, 72°C for 1 min 20 s per cycle, for a total of 33 cycles. The PCR products were analyzed by capillary electrophoresis on a 3100 Genetic Analyzer (Applied Biosystems, Foster City, CA, USA). The length of the CAG repeat was determined by comparing the PCR product size to samples where the CAG repeat length had previously been determined using direct sequencing. The CAG repeat length ranged from 14 to 31 ($M = 21.79$, $SD = 2.80$). The average mean for T and A were in the normal range for this age group, however with a range from prepubertal to adult values. The mean CAG repeat length was comparable to what other studies on individuals of Caucasian origin found (Zitzmann & Nieschlag, 2003).

BEHAVIORAL MOTIVATIONS. Sensitivity to reward and inhibition were measured by the *BIS/BAS-scale* (Behavioral Inhibition System/Behavioral Activation System), as developed by Carver and White (1994) and which was validated for use among adolescents (Cooper et al., 2007). For this study the Dutch translation of the BIS/BAS-scale by Franken, Muris and Rassin (2005) was used. The entire BIS-scale (7 items) and the pleasure-seeking BAS-subscale (4 items) were applied. Each item referred to a specific situation, to which the respondent had to answer to what degree this was recognizable or applicable. Each item had to be answered on a four-point scale: *strongly disagree* (score 1), *disagree* (score 2), *agree* (score 3), and *strongly agree* (score 4) (Chronbach's $\alpha = .697$ for the BIS-scale; Chronbach's $\alpha = .554$ for the BAS-scale). As the BIS/BAS-scale is a validated instrument, each of the items was maintained in the calculation of the eventual BIS- and BAS score. The BIS- and BAS-score referred to the mean score on the items from the respective subscale. The BIS-scores ranged from 1.29 to 4 ($M = 2.67$, $SD = 0.47$), the BAS-scores ranged from 1 to 4 ($M = 2.74$, $SD = 0.53$).

THE PEER CONTEXT. The peer context was measured by the amount of immediate peers who pose three different types of PB: the amount of friends who ever used hard drugs, the amount of friends who ever stole something from someone, and the amount of friends who ever had a fight with someone. To each of the items, the respondent could chose between five categories: *none of my friends* (score 1), *some of my friends* (score 2), *more than half of my friends* (score 3), *most of my friends* (score 4), and *all of my friends* (score 5) (Chronbach's $\alpha = .615$). The variable *peer context* refers to the mean score on these three items and ranged from 1 to 3.33 ($M = 1.56$, $SD = 0.47$).

3.2.3 Analyses

Before answering the research questions, the bivariate Pearson correlations of the study variables are presented. To answer the research questions, stepwise multivariate regression analysis was applied. For testing interaction effects between T and CAG repeat length, and between both androgenic hormones and the psychosocial factors, interaction terms were calculated. Before calculating the

interaction terms, all variables were standardized in order to prevent problems with multicollinearity. The models were built up in four steps: first, the control variable age was included, second the hormonal factors, third the psychosocial factors, and fourth the interaction terms. To avoid problems of multicollinearity, both androgenic hormones were not included in the same regression model. As such, in total six models were constructed: one for T and one for A, and this for each problem behavior outcome.

3.3 FINDINGS

3.3.1 Bivariate description of the variables and relations with age

The bivariate Pearson correlations between the variables are presented in table 3.1, and are further discussed below. The three types of PB correlated strongly with each other. Age correlated strongly with substance use, and to a lesser extent with non-aggressive PB, but not with aggressive PB. Curve estimation analysis showed that the relation between age and aggressive PB followed a quadratic curve, whereby the occurrence of aggressive PB was the lowest for the youngest as well as the oldest adolescents. The quadratic relation between age and aggressive PB had to be taken into account when including aggressive PB as the outcome variable in the multivariate regression analyses. Therefore, apart from age, also the standardized residual value from the effect of age on age squared (measured by linear regression analysis) was included as a control variable in the multivariate regression models with aggressive PB as the outcome variable.

Both androgenic hormones correlated with each other but there was no correlation with CAG repeat length. For T also a positive correlation with age was found. Only for A, a positive correlation with PB was found, and this for substance use and non-aggressive PB. There were no correlations between the hormonal factors and the psychosocial factors.

Finally, a higher sensitivity to reward and having more friends who are engaged in PB were associated with more substance use, more aggressive PB and more non-aggressive PB. Sensitivity to inhibition did not correlate with any type of PB.

Table 3.1 Bivariate correlations between dependent and independent variables (N = 311 for correlations excluding hormonal factors and CAG repeat length; N = 233 for correlations including hormonal factors and CAG repeat length)

	Age	Sub	Agg. PB	Non-agg. PB	T	A	CAG	BIS	BAS	PG
Age	1	.268***	-.105	.121*	.231***	.126	.058	.147*	-.034	-.042
Sub		1	.382***	.419***	.111	.213**	.090	-.043	.213***	.347***
Agg. PB			1	.444***	-.012	.106	.092	-.104	.156**	.511***
Non-agg. PB				1	.068	.194**	.022	.007	.193**	.423***
T					1	.650***	.110	-.008	.032	-.057
A						1	.113	.026	.057	.066
CAG							1	-.026	-.080	-.020
BIS								1	.154**	.008
BAS									1	.134*
PG										1

Sub = Substance use; Agg. PB = Aggressive problem behavior; Non-agg. PB = Non-aggressive problem behavior; T = Testosterone (nanogram/dl); A = Androstenedione (nanogram/dl); CAG = CAG repeat length; BIS = Sensitivity to inhibition; BAS = Sensitivity to reward; PG = Peer group (amount of peers engaged in problem behavior)

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

Table 3.2 Multivariate regression analyses for substance use (β -values)

	Testosterone ($n = 215$)				Androstenedione ($n = 219$)				
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	
Age	.182**	.168*	.198**	.199**	Age	.192**	.169*	.203**	.205**
T		.041	.057	.061	A	.182**	.140*	.119	
CAG		.073	.082	.085	BIS		-.072	-.070	
BIS			-.070	-.068	BAS		.181**	.178**	
BAS			.219***	.217**	PG		.341***	.332***	
PG			.368***	.365***	A*BIS			.029	
T*CAG				.001	A*BAS			.012	
T*BIS				.057	A*PG			.103	
T*BAS				.032					
T*PG				.038					
<i>Adj. R²</i>	<i>.028**</i>	<i>.027*</i>	<i>.212***</i>	<i>.204***</i>	<i>Adj. R²</i>	<i>.033**</i>	<i>.061***</i>	<i>.212***</i>	<i>.213***</i>

T = Testosterone (nanogram/dl); A = Androstenedione (nanogram/dl); CAG = CAG repeat length; BIS = Sensitivity to inhibition; BAS = Sensitivity to reward; PG = Peer group (amount of peers engaged in problem behavior); Adj. R² = Adjusted R²

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$

Table 3.3 Multivariate regression analyses for aggressive PB (β -values)

	Testosterone ($n = 215$)				Androstenedione ($n = 219$)				
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	
Age	-.146*	-.152*	-.137*	-.146*	Age	-.145*	-.161*	-.139*	-.139*
Age ²	-.055	-.057	-.030	-.030	Age ²	-.049	-.021	-.013	-.013
T		-.012	.026	.016	A		.125	.082	.080
CAG		.122	.117*	.135*	BIS			-.064	-.062
BIS			-.074	-.058	BAS			.071	.071
BAS			.091	.071	PG			.493***	.492***
PG			.506***	.495***	A*BIS				.018
T*CAG				-.043	A*BAS				.015
T*BIS				-.037	A*PG				.004
T*BAS				.145*					
T*PG				-.060					
Adj. R ²	.016	.022	.290***	.298***	Adj. R ²	.015	.026*	.275***	.265***

T = Testosterone (nanogram/dl); A = Androstenedione (nanogram/dl); CAG = CAG repeat length; BIS = Sensitivity to inhibition; BAS = Sensitivity to reward; PG = Peer group (amount of peers engaged in problem behavior); Adj. R² = Adjusted R²

* $p < 0.05$. *** $p < 0.001$

Table 3.4 Multivariate regression analyses for non-aggressive PB (β -values)

	Testosterone ($n = 215$)				Androstenedione ($n = 219$)				
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	
Age	.055	.043	.035	.037	Age	.057	.035	.033	.035
T		.051	.084	.112	A	.190**	.150*	.143*	
CAG		.008	.013	-.006	BIS		.058	.060	
BIS			.053	.043	BAS		.088	.092	
BAS			.105	.102	PG		.414***	.399***	
PG			.438***	.452***	A*BIS			.118	
T*CAG				-.013	A*BAS			-.022	
T*BIS				.097	A*PG			.147*	
T*BAS				-.061					
T*PG				.175**					
<i>Adj. R²</i>	<i>-.002</i>	<i>-.008</i>	<i>.195***</i>	<i>.215***</i>	<i>Adj. R²</i>	<i>-.001</i>	<i>.030*</i>	<i>.210***</i>	<i>.236***</i>

T = Testosterone (nanogram/dl); A = Androstenedione (nanogram/dl); CAG = CAG repeat length; BIS = Sensitivity to inhibition; BAS = Sensitivity to reward; PG = Peer group (amount of peers engaged in problem behavior); Adj. R² = Adjusted R²

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.00$.

3.3.2 Multivariate analysis

Tables 3.2 to 3.4 show the results for the multivariate regression analyses. The results are further discussed in function of the research questions.

RESEARCH QUESTION 1: WHAT ARE THE EFFECTS OF ANDROGENIC HORMONES AND GENETIC ANDROGEN SENSITIVITY ON DIFFERENT TYPES OF PB? Overall, adding the hormonal factors to the models did not or only marginally increased the explained variance of the models. Under control of age, no direct effects of T on PB were found. There was a significant positive effect of A on substance use and on non-aggressive PB. There were no significant interaction effects between T and the genetic marker for androgen sensitivity.

RESEARCH QUESTION 2: DO ANDROGENIC HORMONES INTERACT WITH PSYCHOSOCIAL CHARACTERISTICS WITH REGARD TO PB OUTCOMES? Adding the psychosocial characteristics to the models generated a strong increase in the total explained variance of the models, as could be expected given the strong bivariate correlations that were found as well. The total explained variance explained by the models is similar for each of the PB outcomes.

With regard to interaction effects between the androgenic hormones and the psychosocial factors, several significant results were found. A positive interaction effect was found for T with sensitivity to reward on aggressive PB, and a positive interaction effect was found for both T and A with the amount of peers engaged in PB on non-aggressive PB. These significant interaction effects are visualized in figures 3.1 to 3.3. For constructing the figures, the respondents were divided in three equal groups according to their score on sensitivity to reward and amount of peers engaged in PB. The figures show that for respondents who are most sensitive to reward, a positive relation between T and aggressive PB exists, while there is no such relation for respondents who scored in the low or medium group of sensitivity to reward. Likewise, for respondents who had the most friends engaged in PB, a positive relation existed between T as well as A and non-aggressive PB, while there was no such relation for the respondents whose friends engaged less in PB.

Figure 3.1 The effect of testosterone on aggressive problem behavior according to sensitivity to reward

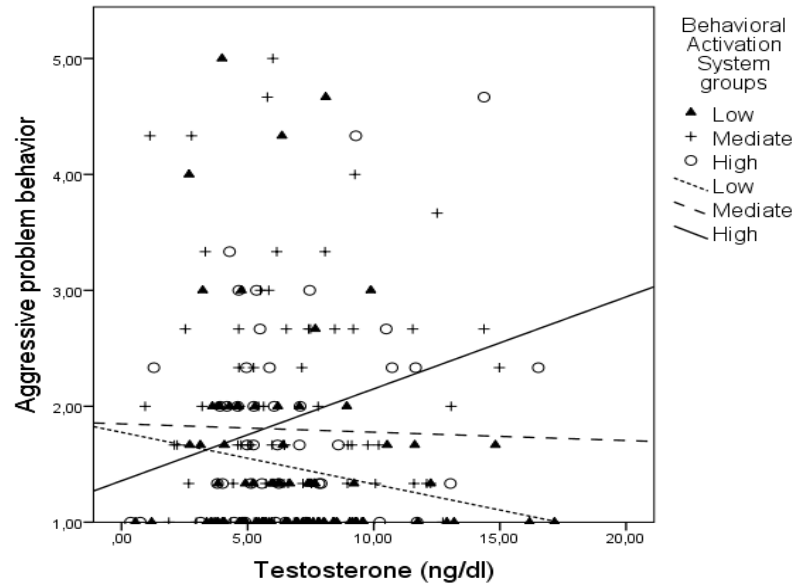


Figure 3.2 The effect of testosterone on non-aggressive PB according to PB posed by peers

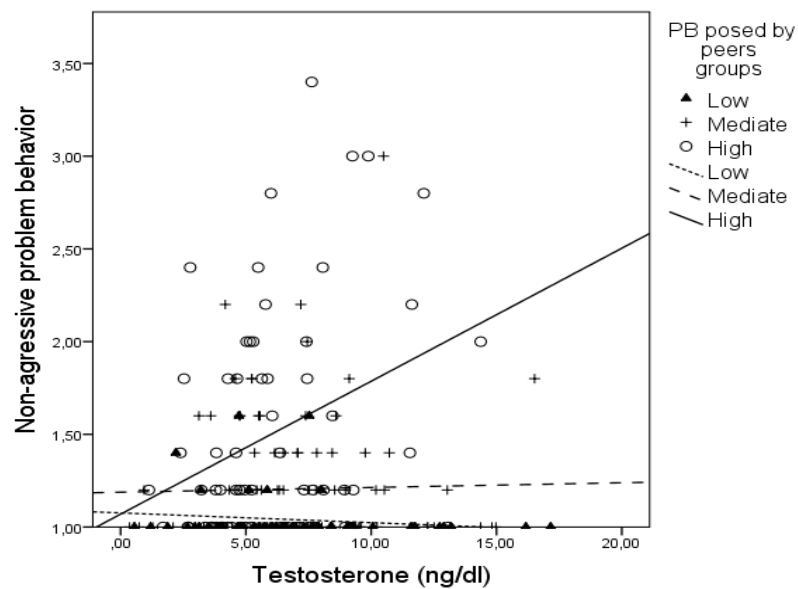
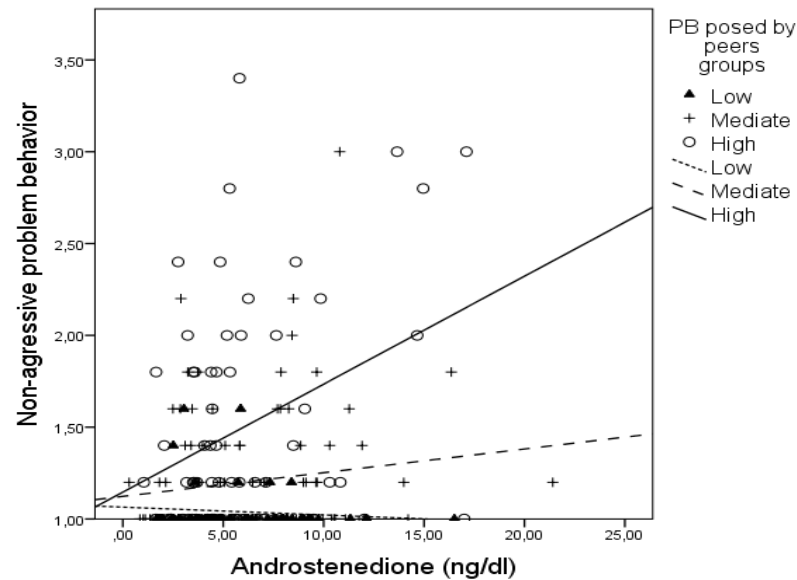


Figure 3.3 The effect of androstenedione on non-aggressive PB according to PB posed by peers



3.4 DISCUSSION

The goal of this study was to elaborate the scarce research knowledge on biopsychosocial interactions with regard to adolescent problem behavior (PB). Former research suggests that this is a promising approach for better understanding the phenomenon. A first research question that was addressed, was to what extent androgenic hormones (testosterone (T) and androstenedione (A)) could be related to different types of PB (substance use, aggressive PB and non-aggressive PB) and whether the relationship with T interacted with a genetic marker for androgen sensitivity (CAG repeat length). Overall, the explained variance of the models including hormonal factors was very low. However, some significant effects were found, whereby a higher level of A was related to more substance use and more non-aggressive PB. For T no significant effects were found. Also no interaction between T and the CAG repeat length were found.

The second research question was whether androgenic hormones interacted with psychosocial characteristics with regard to PB outcomes. Thereby a dual hazards model was hypothesized in which the relation between androgenic hormones and PB would be stronger for respondents who were risk-prone based on their peer context and behavioral motivations. Three interactions were found: T was only positively related to aggressive PB among respondents who were highly sensitive to reward, and T as well as A were positively related to non-aggressive PB only among respondents who had many friends engaged in PB. It should be noted that salivary

testosterone levels are lower than what can be found in serum. Thus it can be expected that the associations found in this study are an understatement of the real existing associations. This underestimation is more likely to occur in females, but can also play a role in studies with male subjects (Granger, Shirtcliff, Booth, Kivlighan & Schwartz, 2004).

The results showed that the three types of PB differed with regard to their biopsychosocial explaining mechanisms. While for substance use no biopsychosocial interactions were found, interactions were found with sensitivity to reward and with the peer context for aggressive PB and non-aggressive PB respectively. This could confirm the proposed idea of aggressive PB as a rather stable personality trait, while non-aggressive PB was more defined by environmental factors (Harris, 1999; Burt & Klump, 2009). However, this remains very speculative and further research is needed to reveal these behavior-specific biopsychosocial mechanisms at stake.

3.4.1 Methodological limitations and recommendations

First, as indicated in the introduction, hormone-behavior relations can work in both directions, whereby hormonal factors can influence behavior but hormonal levels also react to behavior and behavioral outcomes. To establish causal relations, multiple hormonal samples need to be taken at different points in time. The data that were used in this research were cross-sectional and it was not possible to draw conclusions regarding causality.

Second, as also indicated in the introduction, it can be expected that hormonal effects on behavior are stronger when big perturbations occur. Given the strong increases in androgenic hormones at the beginning of puberty, it can be expected that especially during that period hormonal effects on behavior will be found. This research included adolescents aged 14 to 25, whereby no age-specific effects were tested. Future research could pay more attention to how hormone-behavior relations differ according to the exact phase in the pubertal development.

Third, distinction was made between three types of PB, but former research shows that it is also useful to distinguish according to the timing of the onset and persistence of the antisocial behavior across the life-course (Moffitt, 1993). Thereby, adolescence-limited antisocial behavior has been found to be more normative and is less associated with social, familial and neurodevelopmental risk factors as compared to life-course-persistent antisocial behavior (emerging in childhood and persisting up into adulthood) (Odgers et al., 2008). By means of the data used in this study, it was not possible to make such distinctions. It can be expected that social factors like the peer context have more impact on adolescence-limited PB while stable personality traits are more important in explaining life-course-persistent PB.

Future research could give more attention to this distinction in PB according to the timing of the onset and persistence of the antisocial behavior.

Fourth, this research showed the central importance of the peer group. Interaction effects were found between the peer group and both androgenic hormones with regard to non-aggressive PB and having more friends who are engaged in PB was strongly related to a higher occurrence of each type of PB. This is in accordance with the literature on peer influence (Wissink, Dekovic, & Meijer, 2009; Jaccard, Blanton, & Dodge, 2005). However, this research was not able to explain why the peer group is so important or what precedes the peer group construction. Similarity in behavior among peers results from several simultaneous processes, of which peer influence is only one. Selection effects (young people choose friends who are similar to themselves) and the exposure to parallel events (members of the same peer group have more chance to experience similar environmental influences) are additional reasons why members of the same peer group pose the same behavior (Jaccard et al., 2005). This research was not able to disentangle these sources of behavioral similarities within the peer group.

Fifth, this research focused on problematic behavioral outcomes of androgenic hormones in relation to psychosocial factors. In general, positive functions of hormonal increases in adolescence remain neglected and sex steroid hormones are mainly studied in relation to negative outcomes (van Honk, Terburg, & Bos, 2011). Nevertheless, in animals clear associations between the pubertal neural development and subsequent positive changes in adaptive social behavior have been established (Russell, Richardson, & Sisk, 2002). Future research could pay attention to the positive effects of sex steroid hormones on an adaptive development including individuation from the family and the establishment of an individual identity (Forbes & Dahl, 2010).

Finally, and in addition to the former remark, it has been suggested that T is not related to specific behaviors but rather to a tendency towards the search for and maintenance of *social status* (Eisenegger, Haushofer, & Fehr, 2011) or *social dominance* (Booth, Granger, Mazur, & Kivlighan, 2006). Thereby, aggression (and by extension antisocial behavior) is only one of the many possible outcomes, depending on the socio-cultural values surrounding social status and the appropriateness of aggression as a response to threats to social status (McAndrew, 2009). This means that in more prosocial contexts, T will stimulate different behavior which will increase social status in that particular context. Future interdisciplinary research could pay more attention to the effect of androgenic hormones on prosocial types of dominant behavior in relation to prosocial contexts.

3.4.2 Conclusions

Overall this research showed that psychosocial factors, especially the peer context, are by far stronger predictors of PB in adolescence as compared to hormonal factors. Nevertheless, androgenic hormones can be related to PB as well and interactions with psychosocial characteristics were established in which support was found for a dual hazards model. However, the current knowledge on biopsychosocial interactions with regard to behavioral outcomes remains scarce and rather speculative. Future research on adolescent PB should incorporate more factors from different disciplinary fields so that our knowledge on what constitutes PB in this developmentally vulnerable period can be better understood.

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Chapter 4

Non-suicidal self-injury in adolescence: Association with other problem behavior and the importance of psychosocial strain³

Adolescence is recognized as a vulnerable period with regard to a wide range of behavioral and emotional problems, sometimes dichotomized as *externalizing problem behavior* (such as aggression and vandalism) versus *internalizing problem behavior* (such as depression and eating disorders) (Hopwood & Moser, 2011; Reitz, Dekovic, & Meijer, 2005). The understanding of problem behavior as a maladaptive response to experienced distress is one specific explanatory mechanism that has received a great deal of empirical and theoretical support, for example in general strain theory (Agnew, 1992; Agnew, Brezina, Wright, & Cullen, 2002; Posick, Farrell, & Swatt, 2013) and coping theory (Connor-Smith, Compas, Wadsworth, Harding Thomson, & Saltzman, 2000). Different types of problem behavior also tend to co-occur in adolescence (simultaneously or sequentially), rather than occurring as singular behaviors. This clustering of problem behaviors is explained by two broad classes of mechanisms: directional (or bi-directional) effects of problem behaviors amongst each other (a *cascade mechanism*), and a common vulnerability (in terms of common underlying risk factors) (Lee & Bukowski, 2012).

Non-suicidal self-injury (NSSI) is a type of problem behavior linked to adolescence, which usually stops spontaneously before adulthood (Moran et al., 2012). Research on NSSI to date has been mostly clinical by nature, which might be a logical consequence of the fact that this behavior is traditionally associated with psychiatric comorbidities (Selby, Bender, Gordon, & Nock, 2012). However, NSSI is also found in a non-clinical population (Klonsky, 2007) and a substantial proportion of young people who engage in a mild form of NSSI exhibit neither any psychopathology nor an increased suicide risk (Bracken-Minor, McDevitt-Murphy, & Parra, 2012). This suggests the need for an accurate understanding of the etiology of this behavior from a non-clinical perspective.

This current research investigates NSSI in a community sample of adolescents and offers unique insights into how NSSI relates to other types of problem behavior with regard to non-clinical etiological risk factors. NSSI tends to co-occur with other

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internalizing and externalizing problem behavior and etiological overlap is suggested in terms of maladaptive response to distress. The goal of this research is to investigate whether young people who engage in NSSI can be differentiated from young people who engage in other problem behavior with regard to their exposure to psychosocial strain, and whether the exposure to such strain is predictive of NSSI after taking into account comorbidity with other problem behavior. This can ultimately lead to a better understanding of the occurrence of NSSI in a non-clinical population of young people.

4.1 THEORETICAL BACKGROUND

4.1.1 The occurrence of NSSI and comorbidity with other problem behavior in adolescence

NSSI is defined as the direct, deliberate destruction of a person's own body tissue without suicidal intent (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008). Research in non-clinical population samples of adolescents has shown that NSSI is associated with depression, anxiety, and suicide ideation (Bakken & Gunter, 2012; Ross & Heath, 2002; Klonsky, Oltmanns, & Turkheimer, 2003). The co-occurrence of NSSI with eating disorders and externalizing problem behavior including substance use, antisocial behavior, and sexual risk-taking, is also well established (Moller, Tait, & Byrne, 2012; Bakken & Gunter, 2012; Hilt et al., 2008; Brown, Houck, Hadley, & Lescano, 2005). Engaging in externalizing problem behavior has been conceptualized as a risk factor for NSSI, and longitudinal research has effectively established a sequence between externalizing problem behavior and later engagement in NSSI (Lundh, Wangby-Lundh, & Bjärehed, 2011; Sourander et al., 2006). In addition to a cascade of problem behavior, engaging in NSSI could chronologically follow externalizing problem behavior if the latter is felt as no longer being sufficient. Compared with other types of problem behavior, high costs are attached to engaging in NSSI. On the personal level there is the risk of scarring and feelings of guilt, while on the social level NSSI is a highly stigmatized behavior (Nock, 2008). Given the increased cost and severity of the behavior, it can be expected that engaging in NSSI will only occur after engaging in other 'less serious' types of problem behavior. This suggests that NSSI does not necessarily have unique risk factors compared with other problem behaviors, but that some etiological overlap might exist.

4.1.2 Problem behavior in adolescence as a maladaptive response to strain

The explanatory mechanism for NSSI that has received the greatest support in research literature is *emotion dysregulation* and an associated *avoidance coping style*, in which NSSI is used to deal with (to escape, manage, or regulate) intense negative emotions (Klonsky, 2007). Emotion dysregulation refers to experiencing high emotional intensity, an intolerance to negative emotions, and difficulty in self-regulation when emotionally aroused (Chapman, Gratz, & Brown, 2006). However, emotion dysregulation is not unique to NSSI, but is associated with a range of problem behaviors and psychopathologies including substance use, antisocial or aggressive behavior, eating disorders, sexual risk taking, and anxiety (Weiss, Tull, Viana, Anestis, & Gratz, 2012; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Herts, McLaughlin, & Hatzenbuehler, 2012; Silk, Steinberg, & Morris, 2003). Individuals who are sensitive to emotion dysregulation are more likely to adopt an avoidance coping style when experiencing distress, where avoidance coping refers to “any behavior that functions to avoid, or escape from unwanted internal experiences or those external conditions that elicit them” (Chapman et al., 2006, p.374). Accordingly, avoidance coping is not exclusively related to NSSI and has been identified as an important explanatory factor for a range of problem behaviors (Kingston, Clarke, & Remington, 2010).

This current research builds further on the idea that NSSI and other problem behaviors can occur as maladaptive responses to experienced distress. The actual resulting problem behavior in response to distress depends on many other personal-level characteristics than just emotionality and coping style. Gender is the most frequently studied personal characteristic in relation to strain outcomes, where women are found to have a more emotional and avoidance coping style than men (Matud, 2004). In addition, women mostly internalize emotions while men mostly externalize (Kaess et al., 2011). With regard to NSSI, some community research has found that it is more common among females (Bakken & Gunter, 2012; Laye-Gindhu & Schonert-Reichl, 2005), although other research has not found this gender difference (Hilt et al., 2008). It has also been suggested that the gender ratio is age dependent, with more females than males engaging in NSSI in adolescence and a reversed gender ratio later in life (Hawton & Harris, 2008). In this current research, the focus is on the sources of experienced distress rather than mediating personal-level factors, in order to explain how this distress is processed and eventually leads to maladaptive behavioral outcomes. However, given the well-documented gender differences in responses to experienced strain, as well as in engaging in NSSI, gender is taken into account in the analyses as much as possible.

4.1.3 Psychosocial sources of strain

Research on the etiology of adolescent problem behavior has shown that individual sources of distress are more important with regard to internalizing problem behavior, while environmental factors are associated with both internalizing and externalizing problem behaviors (Dekovic, 1999; Hargreaves, McVey, Nairn, & Viner, 2013). When the actual sources of strain have been incorporated in research on NSSI, this has usually concerned severe traumatizing experiences in childhood (which can interfere with learning emotion regulation skills), such as sexual abuse, emotional neglect, or losing a parent (Gratz, 2003; Gratz, Conrad, & Roemer, 2002). However, as discussed in this section, there are indications that less severe “routine” sources of psychosocial strain are also related to NSSI.

Most studies into the environmental sources of strain related to adolescent problem behavior have referred to adverse family and peer relationships, given that these are the main social contexts for an adolescent (Lee & Bukowski, 2012). Factors such as conflicts with parents, parents’ marital distress, and bullying by peers, have been clearly related to internalizing and externalizing problem behavior (Buehler & Gerard, 2013; Sweeting, Young, West, & Der, 2006). Recent research has shown that adverse familial and peer relationships are also predictive with regard to NSSI (Adrian, Zeman, Erdley, Lisa, & Sim, 2011; Fisher, Moffit, Houts, Belsky, Arseneault, & Caspi, 2012; Jutengren, Kerr, & Stattin, 2011).

Building and maintaining good relationships with peers is a developmental task in adolescence associated with becoming more independent from parents and failing in this task is associated with adverse behavioral outcomes. Feelings of loneliness and a lack of affiliation have been identified as risk factors for internalized problems in adolescence (Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007). Difficulty in making and keeping friends has also been found to be predictive for NSSI among girls in a non-clinical population sample (McMahon, Reulbach, Corcoran, Keeley, Perry, & Arensman, 2010). Susceptibility to peer pressure is an individual source of distress that is of specific interest when studying adolescents, as it has been interpreted as a broader marker for problems in functioning and psychosocial development. High susceptibility to peer pressure is associated with depression, where it is hypothesized that a lack of autonomy with regard to the peer group gives rise to feelings of uncertainty regarding a person’s own social position (Allen, Porter, & McFarland, 2006).

A low body image is a typical individual risk factor related to internalizing problem behavior, but also to substance use (Lee, 2012; Palmqvist & Santavirta, 2006). A low body image has also been related to NSSI both directly, and indirectly through emotion dysregulation (Duggan, Toste, & Heath, 2013). A lack of satisfaction with the body can make it ‘easier’ to engage in behavior that is harmful in a direct or indirect way. Furthermore, a low body image has been associated with negative

emotions (Heron & Smyth, 2013), suggesting that it is a source of distress that can lead to problem behavior.

In addition to the individual importance of different sources of strain, these sources tend to cluster, leading to an increased *cumulative risk exposure* that is particularly harmful for adolescents in terms of problem behavior (Gerard and Buehler, 2004; Appleyard, Egeland, van Dulmen, & Sroufe, 2005). Given the high (personal and social) costs of NSSI, it can be expected that adolescents who engage in this behavior are not only exposed to increased levels of psychosocial strain but also to a greater number of individual sources of strain, compared with adolescents who engage in other types of problem behavior.

4.1.4 Hypotheses

It can be concluded that NSSI is well established as a comorbid problem behavior and that both NSSI and other internalizing and externalizing problem behaviors can be conceptualized as maladaptive reactions to experienced distress. However, it remains unclear how different sources of psychosocial strain relate to NSSI compared with other problem behavior outcomes, and to what extent the exposure to strain is still relevant for predicting NSSI when taking into account the comorbidity with other problem behaviors. The goal of this research is to bring clarification to these matters. Therefore, three hypotheses are formulated based on existing literature.

HYPOTHESIS 1. NSSI is a typical comorbid problem behavior, co-occurring with internalizing and externalizing problem behaviors.

HYPOTHESIS 2. Adolescents who engage in NSSI are exposed to increased levels of psychosocial strain and a greater number of individual sources of strain compared with adolescents who engage in other problem behavior, who in turn are exposed to increased levels of strain and a greater number of individual sources of strain compared with adolescents who do not engage in any problem behavior.

HYPOTHESIS 3. Exposure to psychosocial strain predicts engagement in NSSI and this effect is in part mediated by engagement in other problem behavior.

To test the hypotheses, four types of internalizing and externalizing problem behaviors that are commonly researched with regard to adolescence are included: substance use, antisocial behavior, depressed mood, and suicide ideation. Four sources of psychosocial strain are included, related to the family and peer contexts as well as individual sources of strain (the relevance of which with regard to problem behaviors in adolescence—including NSSI—has been described above): family conflict, peer affiliation and support, sensitivity to peer pressure, and body image.

4.2 METHOD

4.2.1 Sample

For this study, a subsample of the population survey *Sexual Health in Flanders* (Buysse et al., 2013) is used. This was a large-scale representative survey on sexuality, sexual health, and relationships carried out in Flanders (the northern, Dutch-speaking region of Belgium), in which a wide array of non-sexual problem behavior was also examined. Data were collected between February 2011 and February 2012. The final database consists of 1832 respondents (a response rate of 39.0% of eligible participants). Participants were randomly drawn from the Belgian National Register and therefore the sample is very homogeneous in terms of ethnic composition. All data were gathered via face-to-face interviews, with a combination of computer-assisted personal interviewing (CAPI) and computer-assisted self-interviewing (CASI), the latter for the most sensitive information. For this current research, respondents between 14 and 25 years old were selected (N = 632) from the sample.

4.2.2 Measurements

NSSI AND INTERNALIZING/EXTERNALIZING PROBLEM BEHAVIORS. In addition to NSSI, four other types of problem behavior are included as dependent variables: substance use, antisocial behavior, suicide ideation, and depressed mood. Each of the variables (except depressed mood) refers to the six months prior to the survey, in terms of how often certain behaviors occurred. Each of the variables (again, except depressed mood) is measured on a five-point Likert scale, ranging from *never* (score 1) to *more than ten times* (score 5). NSSI is measured by the item *How often in the past six months did you cut or harm yourself on purpose?* Substance use is measured by four items: drinking more than five alcoholic drinks on any one occasion, smoking cigarettes, the use of soft drugs, and the use of hard drugs (Chronbach's $\alpha = .727$). Antisocial behavior refers to aggressive as well as non-aggressive antisocial behavior, and includes seven items: threatened to beat up another person, beat up another person, got involved in a fight, engaged in vandalism, stole something of high value from a shop, and stole something from someone (Chronbach's $\alpha = .760$). Suicide ideation is measured by the item *How often in the past six months did you have suicidal thoughts?*

Depressed mood is measured using the *Five-item Mental Health Inventory* (MHI-5), which is a short assessment of a respondent's mental health. The MHI-5 consists of the items which are best able to predict the total score on the extensive 38-item Mental Health Inventory, and the scale has been extensively validated (Berwick, Murphy, Goldman, Ware, Barsky, & Weinstein, 1991; Ware & Sherbourne, 1992).

These five items refer to four mental health dimensions (fear, depression, loss of behavioral and emotional control, and psychological wellbeing), with reference to the preceding four weeks and which are answered on a 6-point scale ranging from *never* (score 1) to *constantly* (score 6) (Chronbach's $\alpha = .696$).

Because most of the problem behaviors occurred relatively rarely, they are all recoded as dichotomous variables with the categories *occurred* (score 1) or *not occurred* (score 0). This way, information concerning the frequency of occurrence is lost for the benefit of usability and uniformity of the variables. Substance use and especially alcohol use is fairly common among adolescents in Belgium (where the legal minimum age for alcohol use is 16), and the majority of both male and female respondents reported substance use over the relevant six months. Therefore, only the upper quartile of the accumulated rate for the four substance use items is counted as problematic and scored as *occurred*. Antisocial behavior was also somewhat common for male respondents (61.6% engaged in at least one of the antisocial behaviors) and here also, only the upper quartile of the accumulated rate is counted as problematic. For female respondents, antisocial behavior was less common and engagement in any of these behaviors is automatically counted as problematic. For depressed mood, the cut-off point is based on a relevant study on this matter with regard to the MHI-5 scale (Kelly, Dunstan, Lloyd, & Fone, 2008). All values below 23 out of a total score of 30 are scored as depressed mood *occurred*. Suicide ideation is counted as *occurred* if there is more than one occurrence during the six month period. Any engagement in NSSI is counted as *occurred*, regardless of the frequency of occurrence.

PSYCHOSOCIAL RISK FACTORS. FAMILY CONFLICT is measured by one item, *How often are there conflicts between members of your family?* The respondent could answer on a five-point Likert scale, from *never* (score 1) to *very often* (score 5). Respondents who grew up in different families were asked to think of the family in which they spent most of their time. For respondents who spent an equal amount of time in two different families, their answer for the first family situation is used.

PEER AFFILIATION AND SUPPORT is measured by a self-constructed scale that includes items referring to affiliation with a social network as well as perceived support from the network. Six items are included: When I feel alone, I have several people to talk to; People in my social network have the same interests and opinions as I do; If I want to go on a day out I can always find someone; I often have social contact with people from the same background as me; The people that I see have the same lifestyle as I do; When I am ill I can rely on someone (Chronbach's $\alpha = .687$). The items are measured on a five-point Likert scale, with categories ranging from *do not agree at all* (score 1) to *totally agree* (score 5). The accumulated mean is used for analysis.

SENSITIVITY TO PEER PRESSURE is measured by a validated scale developed by Santor, Messervey, and Kusumaker (2000). The scale consists of ten items referring to situations of peer pressure and respondents had to state how often these situations generally occurred, using a five-point Likert scale ranging from *never* (score 1) to *always or almost always* (score 5) (Chronbach's $\alpha = .733$). The accumulated mean is used for analysis.

BODY IMAGE. An adjusted version of the *Body Image Scale* (Hopwood, Fletcher, Lee, & Ghazal, 2001) is used. This scale was originally developed in the context of body image among people with cancer. One item that explicitly refers to illness is removed and the response categories are adjusted from a four-point to a five-point Likert scale for reasons of consistency throughout the entire questionnaire. The adjusted scale consists of nine items referring to physical and sexual attractiveness, satisfaction about oneself dressed/naked, satisfaction with one's own body, integrity of one's own body, and avoidance of other people (Chronbach's $\alpha = .932$). All items were answered on a scale from *not at all* (score 1) to *entirely* (score 5). The accumulated mean is used for analysis and the scores are adjusted so that a higher score refers to a more positive body image.

BACKGROUND VARIABLES. As noted previously, gender is an important variable that needs to be taken into account in the study of NSSI. Engaging in NSSI is also age specific and in addition, social background has been related to NSSI, with socially-deprived young people being more likely to engage in it (Ayton, Rasool, & Cottrell, 2003). Accordingly, gender in particular, and to some extent age and social background are taken into account in the study, as further discussed in the analyses section.

The gender distribution is approximately equal, with 47.6% male and 52.4% female respondents. Age is measured with an open numeric question, and the mean age of respondents is 19.62 years. The highest educational level attained by the mother is included as a proxy for social background, because respondents gave more accurate information on this variable than on, for example, family income. Educational level is measured as an ordinal variable, consisting of five categories: no education or only primary school, lower secondary school education (equivalent to middle school), higher secondary school education, short-term higher education (equivalent to a bachelor's degree), and longer-term higher education (equivalent to a master's degree or doctorate).

4.2.3 Analyses

Before testing the hypotheses, the sample characteristics are presented separately for both male and female respondents. Gender-specific Pearson correlations are also performed for NSSI, using age and the mother's highest educational level. The first

hypothesis is tested by measuring to what extent the different types of problem behavior occurred as either singular or co-occurring behaviors. This is examined separately for male and female respondents. In addition, chi-square tests are applied to determine whether respondents who engaged in NSSI also engaged significantly more in each type of problem behavior. To test the second hypothesis, four groups of respondents are constructed based on their involvement in the different types of problem behaviors. The first group consists of respondents who did not engage in any problem behavior ($n = 252$, 40.1%). The second comprises respondents who engaged in substance use and/or antisocial behavior, but not in internalizing problem behavior or NSSI ($n = 137$, 21.7%). The third group includes those respondents who engaged in internalizing problem behavior, regardless of their engagement in substance use and antisocial behavior, but who did not engage in NSSI ($n = 168$, 26.6%). The fourth group consists of respondents who engaged in NSSI ($n = 71$, 11.2%). Due to the typical co-occurring character of the different problem behaviors, these groups were not behavior exclusive. Accordingly, respondents in the third and fourth groups also engaged in externalizing problem behavior to a large extent. In addition, an 'accumulated risk variable' is constructed, measuring the number of risk factors for which the respondent scored in the top third of the scales. This accumulated risk variable ranges from 0 (the respondent did not score in the top third of the scale for any of the risk factors) to 4 (the respondent scored in the top third of the scale for every risk factor). Next, gender-specific ANOVA tests are applied to establish whether the psychosocial risk factors, as well as the accumulated risk factor, differ significantly across the four problem behavior groups. The third hypothesis is tested by performing a stepwise dichotomous logistic regression, with engaging in NSSI as the dependent variable and subsequently the background variables (gender, age, and mother's educational level), the psychosocial strain variables, and internalizing and externalizing problem behaviors as the independent variables. This final analysis is not performed separately by gender, but instead gender is included as one of the background variables. A gender-specific test of the model was not possible due to the low number who engaged in NSSI, especially among the male respondents.

Table 4.1 Univariate results for each of the variables included, according to gender

	Male (<i>n</i> = 301)		Female (<i>n</i> = 331)		Test statistic		
	% occurred (<i>n</i>)	% not occurred (<i>n</i>)	% occurred (<i>n</i>)	% not occurred (<i>n</i>)	χ^2		
<i>Dichotomous variables</i>							
Substance use	29.3% (87)	70.7% (210)	25.2% (83)	74.8% (264)	(1)		
Antisocial behav.	27.3% (81)	72.7% (216)	32.9% (109)	67.1% (222)	(1)		
Depressed mood	24.3% (73)	75.7% (228)	37.2% (123)	62.8% (208)	12.276***		
Suicide ideation	9.0% (27)	91.0% (273)	11.8% (39)	88.2% (291)	1.331		
NSSI	6.6% (20)	93.4% (281)	15.5% (51)	84.5% (279)	12.235***		
<i>Ordinal/metric variables</i>	Range	M	SD	Range	M	SD	<i>t</i> -test
Age	14-25	19.44	3.21	14-25	19.77	3.04	1.335
Education mother	1-5	3.21	1.20	1-5	3.04	1.17	1.826
Family conflict	1-5	2.70	0.80	1-5	2.90	0.83	-3.489**
Group aff./supp.	2.86-5	4.11	0.47	2.57-5	4.20	0.44	-2.414*
Sensitivity PP	1-3.80	1.78	0.44	1-3.30	1.70	0.42	2.347*
Body image	1.56-5	4.00	0.82	1-5	3.50	1.02	6.985***

Antisocial behav. = Antisocial behavior; Group aff./supp. = Group affiliation and support; Sensitivity PP = Sensitivity to peer pressure **p*<.05. ***p*<.01. ****p*<.001. (1) χ^2 not applicable due to fixed cut-off points for constructing the variable, at highest 25-30%

4.3 FINDINGS

4.3.1 Univariate results and occurrence of NSSI

The univariate characteristics of the study variables are shown in table 4.1. NSSI occurs for 11.2% of the respondents ($n = 71$), separated as 6.6% of the male respondents ($n = 20$) and 15.5% of the female respondents ($n = 51$). Depressed mood and NSSI are more frequent among the female than the male respondents. As described in the methods section, substance use and antisocial behavior occur more among the male than the female respondents, but after recoding these variables into dichotomous variables, this gender difference is no longer apparent.

Bivariate Pearson's correlations show that for female respondents a negative relationship exists between age and engaging in NSSI ($r(229) = -.151, p = .006$). For the male respondents there is no such relationship with age. There is no relationship between NSSI and the mother's educational level for either gender.

The male and female respondents show different sources of psychosocial strain. Female respondents reported more family conflict and a lower body image compared with male respondents, while the male respondents reported less group affiliation and support and a higher sensitivity to peer pressure. However, these latter gender differences are relatively small.

Table 4.2 Different types of PB as singular versus co-occurring behaviors, by gender

	Male			Female		
	Total	Singular	Co-occurring	Total	Singular	Co-occurring
Substance use	87	31.0%	69.0%	83	28.9%	71.1%
Antisocial behavior	81	22.2%	77.8%	109	25.7%	74.3%
Depressed mood	73	45.2%	54.8%	123	39.0%	61.0%
Suicide ideation	27	11.1%	88.9%	39	0%	100%
NSSI	20	15.0%	85.0%	51	3.9%	96.0%

4.3.2 Hypotheses testing

HYPOTHESIS 1. NSSI IS A TYPICAL COMORBID PROBLEM BEHAVIOR, CO-OCCURRING WITH INTERNALIZING AND EXTERNALIZING PROBLEM BEHAVIORS. Table 4.2 illustrates the degree to which each problem behavior occurs, either as a singular behavior or co-occurring with other problem behaviors, and shown separately by gender. The results show that substance use, antisocial behavior, and depressed mood are relatively common as singular behaviors, while suicide ideation and NSSI are almost by definition co-occurring behaviors, especially for girls.

Table 4.3 compares the group of respondents who engaged in NSSI with the group who did not, with regard to their engagement in other problem behaviors, again shown separately for male and female respondents. Almost every problem behavior is more common in the group of respondents who engaged in NSSI than in the group who did not. The exception to this is substance use among male respondents, for which the increased prevalence is not significant. This might be due to a lack of statistical power, given the low number of male respondents who engaged in NSSI. Depressed mood is more prevalent among respondents who engaged in NSSI than those who did not, but is not a necessary condition for the occurrence of NSSI. The increased occurrence of depression among respondents who engaged in NSSI was also comparable with the increased occurrence of substance use and antisocial behavior. The most striking increase of occurrence is found for suicide ideation, which occurred seven to eight times more often among respondents who engaged in NSSI than among those who did not.

Table 4.3 Co-occurrence of NSSI with other PB with chi-square test and by gender

	Male			Female		
	No NSSI	NSSI	Ratio	No NSSI	NSSI	Ratio
Substance use	28.4%	42.1%	1.48	22.9%*	38.0%*	1.66
Antisocial behavior	25.6%*	50.0%*	1.95	25.8%***	72.5%***	2.81
Depressed mood	22.8%*	45.0%*	1.97	31.9%***	64.7%***	2.03
Suicide ideation	6.4%***	45.0%***	7.03	5.8%***	45.1%***	7.78

*p<.05. ***p<.001.

Table 4.4 Mean values of independent variables and ANOVA results by gender

		No PB (1)	Substance use / antisocial (2)	Internalizing (3)	NSSI (4)	<i>F-value</i>
FC	Male	2.62	2.68	2.82	2.81	1.346
	Female	2.65(2,3,4)	2.97(1)	3.06(1)	3.13(1)	8.093***
Social aff./supp	Male	4.15	4.15	4.03	4.01	1.675
	Female	4.27(4)	4.33(3,4)	4.13(2)	3.97(1,2)	9.007***
Sens.PP	Male	1.71(3)	1.80	1.91(1)	1.66	3.737*
	Female	1.53(2,3,4)	1.70(1)	1.80(1)	1.90(1)	14.131***
BI	Male	4.16(3)	4.07(3)	3.72(1,2)	3.78	5.677**
	Female	3.83(3,4)	3.62(4)	3.26(1)	3.00(1,2)	11.457***
Acc. risk	Male	0.99(3)	1.03(3)	1.60(1,2)	1.55	8.106***
	Female	0.80(3,4)	1.03(3,4)	1.47(1,2,4)	1.98(1,2,3)	21.334***

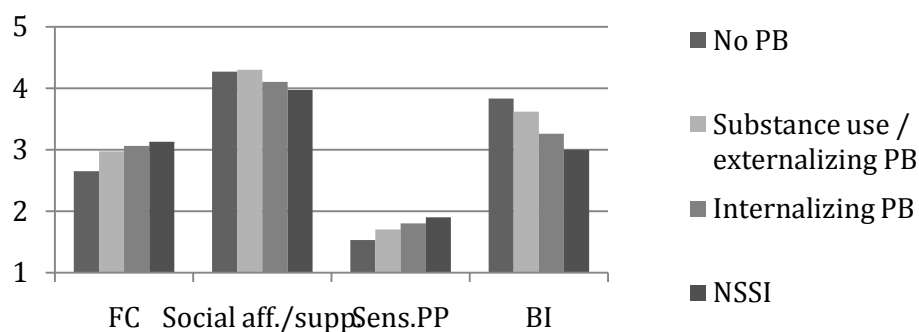
FC = Family conflict; Social aff./supp. = Social affiliation and support; Sens.PP = Sensitivity to peer pressure; BI = Body image; Acc. Risk = Accumulated number of risk factors; PB = Problem behavior; NSSI = Non-suicidal self-injury

* $p < .05$. ** $p < .01$. *** $p < .001$.

HYPOTHESIS 2. ADOLESCENTS WHO ENGAGE IN NSSI ARE EXPOSED TO INCREASED LEVELS OF PSYCHOSOCIAL STRAIN AND A GREATER NUMBER OF SOURCES OF STRAIN, COMPARED WITH ADOLESCENTS WHO ENGAGE IN OTHER PROBLEM BEHAVIOR, WHO IN TURN ARE EXPOSED TO INCREASED LEVELS OF STRAIN AND A GREATER NUMBER OF INDIVIDUAL SOURCES OF STRAIN COMPARED WITH ADOLESCENTS WHO DO NOT ENGAGE IN ANY PROBLEM BEHAVIOR. Table 4.4 shows the results of the ANOVA tests, with the mean values for each of the independent variables for each problem behavior group, again shown separately for male and female respondents. For male respondents, only body image and sensitivity to peer pressure differ significantly across the groups. Specifically, male respondents who engaged in internalizing problem behavior reported a more negative body image than male respondents who did not engage in any problem behavior or who engaged only in substance use or antisocial behavior. Male respondents who engaged in internalizing problem behavior also reported a higher sensitivity to peer pressure than male respondents who did not engage in any problem behavior. No significant differences are found between the group who engaged in NSSI and the other problem behavior groups. This could be due again to a lack of statistical power given the small number of male respondents who engaged in NSSI.

For the female respondents, the differences between the problem behavior groups are larger and more significant. Each independent variable differs significantly across the constructed groups. Figure 4.1 illustrates these differences. It is apparent that a hierarchical pattern emerges in which no engagement in problem behavior, engagement in substance use/antisocial behavior, engagement in internalizing problem behavior, and engagement in NSSI are each associated with subsequently increased levels of psychosocial strain.

Figure 4.1 Experienced strain according to PB group, female respondents only



FC = Family conflict; Social aff./supp. = Social affiliation and support; Sens.PP = Sensitivity to peer pressure; BI = Body image; PB = problem behavior

Table 4.5 Logistic regression for testing a model of psychosocial strain for predicting NSSI ($N = 622$)

	Model 1		Model 2		Model 3	
	Exp(B)	SE	Exp(B)	SE	Exp(B)	SE
Age	0.919	0.045	0.914	0.047	0.898*	0.051
Gender	2.980***	0.299	2.681**	0.325	2.559**	0.343
Educ. mother	0.903	0.115	0.881	0.117	0.868	0.128
Family conflict			1.025	0.192	0.759	0.205
Peer aff. and support			0.414**	0.312	0.420*	0.335
Sens. PP			1.629	0.326	0.888	0.358
Body image			0.668**	0.147	0.715*	0.160
Internalizing PB					3.414***	0.320
Externalizing PB					6.531***	0.361
<i>Nagelkerke R</i>	<i>0.063***</i>		<i>0.143***</i>		<i>0.306***</i>	
<i>Chi-square step</i>	<i>18.710***</i>		<i>24.437***</i>		<i>53.135***</i>	

Educ. mother = educational level of mother; Peer aff. and support = Peer affiliation and support; Sens. PP = Sensitivity to peer pressure; PB = Problem behavior; * $p < .05$. ** $p < .01$. *** $p < .001$.

With regard to the number of stressors exposed to, the male respondents who engaged in NSSI did not significantly differ from the other groups, while the male respondents who engaged in internalizing problem behavior reported more sources of strain than the groups who did not engage in internalizing problem behavior. The female respondents who engaged in NSSI reported the highest number of individual sources of strain, followed by the respondents who engaged in internalizing problem behavior.

HYPOTHESIS 3. EXPOSURE TO PSYCHOSOCIAL STRAIN PREDICTS ENGAGEMENT IN NSSI AND THIS EFFECT IS IN PART MEDIATED BY ENGAGEMENT IN OTHER PROBLEM BEHAVIOR. Table 4.5 presents the results of the stepwise binary logistic regression. Controlling for age, gender, and the mother's educational level, only low social affiliation and support and low body image predict engagement in NSSI. The third model shows that engaging in internalizing and externalizing problem behaviors are by far the strongest predictors for engagement in NSSI and including these behavioral factors doubles the variance explained by the model. Engaging in externalizing problem behavior is a better predictor for engagement in NSSI compared with engaging in internalizing problem behavior. The effect of social affiliation and support and body image is not mediated by engagement in other problem behaviors, but both types of predictors are cumulative.

4.4 DISCUSSION

Non-suicidal self-injury (NSSI) is a harmful type of problem behavior linked to adolescence and associated with underlying psychopathologies. However, while it occurs in non-clinical populations, little is known from a non-clinical perspective about what differentiates these young people from those who engage in other, less severe types of problem behavior. This current research investigates NSSI in a community sample of adolescents, with a focus on comorbidity with other types of problem behavior (substance use, antisocial behavior, depression, and suicide ideation) and the relative importance of exposure to psychosocial strain (family conflict, social affiliation and support, sensitivity to peer pressure, and body image) in predicting engaging in NSSI rather than other problem behaviors.

The results show that NSSI is by far more prevalent among female than male respondents, which is in line with what has been found in former research concerning this age group (Hawton & Harris, 2008). However, part of the gender difference found could be due to the method of questioning, by directly referring to 'cutting oneself' in the question formulation. It has been found that cutting is the most common type of NSSI for girls, while in boys this comes only second after hitting, biting, or punching oneself (Laye-Gindhu & Schonert-Reichl, 2005).

The hypothesis that NSSI is a typical comorbid problem behavior is confirmed. In this regard, co-occurrence with externalizing problem behavior is as prevalent as co-occurrence with internalizing problem behavior. However, the increased occurrence of suicide ideation among respondents engaging in NSSI is far higher than the increased occurrence of the other types of problem behavior. This is in line with previous research showing that NSSI is a well-established predictor for later suicide and suicide attempts (Guan, Fox, & Prinstein, 2012; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

Because of the high cost of engaging in NSSI, it was hypothesized that NSSI is associated with increased levels of psychosocial strain as well as exposure to a greater number of individual sources of strain. This hypothesis can be only partially confirmed. The group of female respondents who engaged in NSSI was effectively exposed to increased levels of strain compared with the group who engaged in externalizing problem behavior, but not compared with the group who engaged in internalizing problem behavior. However, female respondents who engaged in NSSI did report a greater number of individual sources of psychosocial strain than the female respondents who engaged in internalizing problem behavior. The male respondents who engaged in NSSI could not be distinguished from the male respondents who engaged in other types of problem behavior, which could be due to the low number of applicable male respondents.

Finally, it was hypothesized that NSSI could be predicted by exposure to psychosocial strain, but that part of this effect would be mediated by engaging in other problem behavior. Controlling for age, gender, and the mother's educational level, engagement in NSSI is predicted by less social affiliation and support and a lower body image, and these effects remain intact after taking into account engaging in other problem behavior. Furthermore, engaging in externalizing problem behavior is shown to be by far the strongest predictor for engaging in NSSI. Therefore, although NSSI is clearly linked to internalizing problem behavior, this is not a more important risk factor for NSSI than is externalizing problem behavior. Further, notwithstanding the importance of internalizing and externalizing problem behavior in predicting NSSI, this does not outweigh the relevance of exposure to psychosocial strain in this regard. These findings suggest that young people who engage in NSSI also engage more in other problem behavior and in addition, they are more vulnerable to exposure to psychosocial strain than are young people who do not engage in NSSI.

The formulation of the research goals was based on the finding that NSSI shares functional overlap with other internalizing and externalizing problem behaviors, in terms of dealing with distress. However, other functions and mechanisms of NSSI have been reported in addition to the regulation of emotions (Nock & Prinstein, 2004). For example, the second important function of NSSI is the communication of

distress in order to gain care and attention from somebody else (Nock, 2008). In this regard, NSSI has been associated with a nonresponsive environment and a lack of communication skills (Nock and Mendes, 2008). NSSI can also be posed for the goal of group affiliation, in which a process of social learning is important (Hodgson, 2004; Jarvi, Jackson, Swenson, & Crawford, 2013), and it has been conceptualized as a reward-driven high-risk behavior (Klonsky, 2007) related to underlying impulsivity (Madge et al., 2011). Although these different functions may overlap (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007), this suggests that NSSI should best be regarded as a heterogeneous behavior. Depending on the functions attached to NSSI for the individual engaged in it, different constellations with other problem behaviors and different sources for etiological overlap can be expected.

4.4.1 Methodological limitations

Several methodological limitations should be noted. First, the measurement of NSSI is very rudimentary, in terms of engaging or not. This is necessary, given that NSSI is not very common. For methodological reasons, engagement in the other problem behaviors is also dichotomized, which implies that relevant information on the intensity of these behaviors is lost.

Second, this research is unable to pay sufficient attention to the moderating role of structural factors, such as age, gender, and socioeconomic status (SES). For example, risk factors related to the family may be more important in early adolescence, when orientation towards the family is stronger, compared with later adolescence, when risk factors related to the peer group may become more important. In addition, gender differences have formerly been found in the correlates and causes of NSSI (Bakken & Gunter, 2012; Bjärehed, Wangby-Lundh, & Lundh, 2012). The univariate results also suggest that family conflict and body image might be more important for female than for male respondents. However, due to the relatively low number of respondents in the sample who engaged in NSSI, gender, age, and SES (operationalized as the highest educational level of the mother) were cancelled out in the analyses rather than being studied as crucial moderating factors.

4.4.2 Recommendations for future research

Several recommendations for future research are made. First, no distinction here is made with regard to the actual type of NSSI (in terms of cutting, bruising, burning, etc.), the degree of intensity and severity, or the underlying functions or motivations for engaging in it. However, former research has shown that these are in fact important distinctions and as noted above, might provide a different view on the gender difference found and on the constellations occurring with other types of problem behavior. This research is not able to make such distinctions and NSSI is thus in fact wrongly treated as 'one behavior.' Given the relatively low occurrence of

NSSI in community samples, NSSI should be included in large-scale research so that such differentiations can be made.

Second, former research has shown that young people who engage in NSSI also have a higher risk of suicidal behavior, and NSSI predicts later suicide and suicide attempts even after controlling for shared risk factors (Whitlock et al., 2013; Guan, Fox, & Prinstein, 2012; Nock et al., 2006). However, recent research has found that for a substantial number of young people, NSSI engagement is in a mild form and for the purpose of experimentation without any psychopathology or increased suicide risk (Bracken-Minor, McDevitt-Murphy, & Parra, 2012). The results of the current research confirm that respondents who engaged in NSSI were also more likely to engage in suicide ideation, but that this was not the case for all respondents who engaged in NSSI. Due to the limited sample, however, the current research is not able to distinguish between suicide prone and non-suicide prone respondents who engaged in NSSI and therefore no knowledge can be added concerning how the two groups differ from each other with regard to their engagement in other types of problem behavior and exposure to psychosocial strain. Future research should make efforts to make this distinction.

Third, this research produces the finding that engagement in internalizing and externalizing problem behaviors are better predictors for NSSI than is exposure to psychosocial strain. It is possible that different results could be produced if different sources or more sources of strain were included. In addition, this research pays no attention to the mediating role of factors such as temperament, coping style, and social support. Former research has shown that coping style and social support in particular are very important in explaining NSSI (Willimas & Hasking, 2010; Evans, Hawton, & Rodham, 2005; Gratz, 2003; Hampel & Petermann, 2006). It is possible that young people who engage in NSSI can be better distinguished from young people who engage in other problem behaviors when the mediators of strain are taken into account in addition to the sources of strain.

4.4.3 Conclusions

NSSI is a type of problem behavior which is to a degree prevalent among adolescent girls and which is typically comorbid with other types of problem behavior. Engagement in NSSI is associated with psychosocial strain, especially for girls. The inclusion of NSSI in large-scale community research on problem behavior in adolescence is fruitful, and further inclusion in future community research will allow a better understanding of this behavior and of the diversity in which it occurs.

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Chapter 5

The emotional experience of early first intercourse: A multi-method study⁴

An early age at first intercourse is related to adverse health outcomes by a large body of existing research. First intercourse at an early age tends to be less safe in terms of condom use and contraception in general (O'Donnell, O'Donnell, & Stueve, 2001), and early starters tend to end up in a pattern of unsafe sexual behavior later throughout adolescence (Kaestle, Halpern, Miller, & Ford, 2005; Edgardh, 2002; O'Donnell et al., 2001). It is also associated with negative psychological outcomes, mostly in terms of feelings of regret (Hawes, Wellings, & Stephenson, 2010). Notwithstanding the undeniable value of existing research, the focus on chronological age at the time of the first intercourse and its negative health outcomes fosters the image of early starters as a homogeneous group of risk takers. It also hinders a broader understanding of *why* an early age at first intercourse might be seen as a potential health threat. The goal of this study is to investigate the emotional experience of the first intercourse among early starters and to add knowledge concerning the mechanisms which make it either more or less emotionally harmful. Although quantitative data can provide us with information on statistical effects and their extent, it is less useful in understanding how these effects occur. Therefore, quantitative as well as qualitative data are used in this study.

5.1 THEORETICAL BACKGROUND

5.1.1 (Gendered) cultural norms regarding first-time intercourse and the Flemish context

The first sexual intercourse is not only an important personal milestone but is also heavily subject to legal and societal norms. Accordingly, the experience at a specific age will have different consequences depending on where it takes place. Legal norms regarding age and the organization of sex education can give an indication of the acceptance of adolescent sexual activity in a given cultural context. Accordingly, early commencement of sexual activity is discouraged by legal norms concerning age in many western countries and postponement of first intercourse is a common

⁴ Symons, K., Van Houtte, M., & Vermeersch, H. The emotional experience of early first intercourse: A multimethod study. *[Accepted for publication in Journal of Adolescent Research]*

standard in the evaluation of the effectiveness of sex education (Mueller, Gavin, & Kulkarni, 2008; Kirby & Laris, 2009). In Flanders, the northern Dutch-speaking region of Belgium where this study was conducted, the legal age of consent for sexual intercourse is 16, regardless of the age difference between partners. Current debates on adjusting the law show a difficult-to-reach balance between on the one hand, protecting the rights of young people to normal sexual experimentation, and on the other, protecting young people against sexual victimization.

Sex education is part of the official secondary school curriculum (generally attended by students aged 12 to 18), but the practical implementation of sex education is not regulated and is left to the arbitrary decisions of school staff. As a consequence, the timing, amount, and content of sex education young people receive largely depends on the school they attend. Currently, efforts are being made to increase the uniformity of sex education in schools. In addition to formal sex education, several publicly funded non-governmental organizations are active in Flanders, and provide young people with information and support during their transition into becoming sexually active. These organizations do not suggest the “ideal age for first intercourse,” but instead aim to offer the support that young people need when making their personal sexual choices. Overall, the right of young people to healthy sexual experimentation is widely acknowledged in Flanders, however, with regard to sexual activity in early adolescence in particular, different approaches exist side by side.

Another way of assessing the cultural context with regard to becoming sexually active is by looking at not only the age, but also the circumstances collectively believed appropriate for making the transition. Such norms are traditionally centered around ethnicity, social class, religion, and gender (Carpenter, 2005). In addition, statistical regularities regarding behavior are often used as a “proof of normality” (Settersten & Mayer, 1997). In Flanders, most young people (75%) believe that it is desirable to have started having sexual intercourse before the age of 18, and 50% believe that 17 is the ideal age for losing virginity (Vettenburg, Deklerck, & Siongers, 2010). About 50% of young people in Flanders have had sexual intercourse by the age of 18 and within this group the mean age for first intercourse is around 15.5 years for both boys and girls (Vettenburg et al., 2010). In the Netherlands, boys are on average slightly younger than girls when they first have intercourse (de Graaf, Kruijer, van Acker, & Meijer, 2012). Data from Belgium and the Netherlands show that young people from lower educational tracks are more sexually experienced than their same-aged peers from higher educational tracks (Symons, Van Houtte, & Vermeersch, 2013; de Graaf et al., 2012). In addition, data from the Netherlands show that boys from ethnic minorities are more experienced than boys with a Dutch ethnic background, while for girls the opposite is true. Further, girls for whom religion is important (regardless of which specific

religion, though mostly Christian and Muslim) are less experienced than girls for whom religion is not important, while for boys there is no difference in this regard (Bakker, de Graaf, de Haas, Kedde, Kruijer, & Wijzen, 2009; de Graaf et al., 2012).

Although adolescent boys and girls do not differ strongly with regard to their age when they first engage in intercourse, there are strong gender differences concerning the emotional experience of it. Boys are more likely than girls to have a positive experience of intercourse for the first time (Sprecher, Barbee, & Schwartz, 1995; Guggino & Ponzetti, 1997). These gender differences can be traced back, at least in part, to a perpetuating double standard regarding sexual behavior, in which virginity is more highly encouraged for girls than it is for boys. Girls are more likely to regard their virginal status as a “special gift” to a partner (Carpenter, 2005). They also have higher expectations concerning the conditions they consider appropriate for losing their virginity in terms of relationship commitment (Taris & Semin, 1997), and they are more likely to feel ambiguous about losing their virginity than boys are (Holland, Ramazanoglu, Sharpe, & Thomson, 2000). The different meanings attached to (losing) virginity also affect the behavior that is expected from boys and girls. While it is expected that boys will propose sexual intercourse, girls are expected to refuse or at least try to postpone it (Holland et al., 2000). This expectation could put an extra strain on girls who engage early in sexual activity because it implies that they have failed in their responsibility to postpone it.

5.1.2 Personal sexual readiness

Becoming sexually active is a normative aspect of adolescent development, which includes the acquirement of a range of sexual skills (Tolman & McClelland, 2011). This skill development has been linked to daily social interactions within the family (Pearson, Muller, & Frisco, 2006) and with (opposite sex) peers (Grover, Nangle, Serwik, & Zeff, 2007), but also with more specific sex education in schools (Kirby & Laris, 2009) and within the family (Downing, Jones, Bates, Sumnall, & Bellis, 2011). Research on the harmful health outcomes of early first intercourse in fact uses chronological age as “a predictor of an individual’s physical and emotional maturity, of an individual’s readiness to assume certain responsibilities” (Settersten & Mayer, 1997). However, although age is an important predictor of sexual readiness, age and readiness do not entirely overlap given the different pace of sexual development among young people. Indeed, research shows that sexual competence at the time of first intercourse – in terms of the absence of duress and regret, autonomy of decision, and use of a reliable method of contraception – is not exclusively reserved for people whose first experience of intercourse is at the average age or older. About a third of those young people who first have intercourse at the age of 15 are found to have been sexually competent at that time (Wellings et al., 2001).

A more indirect way of assessing personal sexual readiness at the time of first intercourse, is by evaluating the preceding trajectory of sexual development. Research shows that young people tend to progress gradually from less intimate to more intimate sexual behavior (O'Sullivan, Mantsun Cheng, Mullan Harris, & Brooks-Gunn, 2007). Such behavioral regularity suggests that there might be developmental benefits involved and that behaving differently entails certain risks. Research from the Netherlands has related sexual health behavior later in adolescence to the timing, the progression, and the pace of young people's sexual trajectories. In this regard, a smoothly progressing sexual trajectory is associated with less sexual risk behavior later in adolescence compared with a trajectory in which steps are skipped or the young person progresses very quickly through the different stages of intimacy (de Graaf, Vanwesenbeeck, Meijer, Woertman, & Meeus, 2009). Accordingly, sexual readiness and the preceding sexual trajectory are useful concepts for understanding the "earliness" of first intercourse from a more personal developmental perspective, and for taking into account inter-individual differences in the timing and pace of sexual development.

5.1.3 Harmful circumstances for (early) first intercourse

Research on the specific harmful contexts for (early) first intercourse has paid great attention to the importance of the characteristics of the relationship with the first partner. First-time intercourse that takes place in the context of a relationship is more likely to be experienced positively than in the context of a casual sexual encounter (Hawes et al., 2010; Houts, 2005; Sprecher et al., 1995). However, the protective power of a relationship is only realized when certain standards are met. In essence, a high degree of relationship commitment is a strong predictor of a positive experience of first intercourse (Meier, 2007). Furthermore, if the relationship ends shortly after first-time intercourse, this negatively impacts on the subjective experience of it retrospectively and more so for girls than for boys (Sprecher et al., 1995).

Another well-documented relationship characteristic is the age difference between partners. Experiencing intercourse for the first time with an older partner tends to be less safe in terms of contraceptive use, and is associated with more regret afterwards (Mercer et al. 2006). For girls, having an older first partner is associated with a lesser degree of wanting first-time intercourse, especially among girls younger than 16 (Abma, Driscoll, & Moore, 1998). It is likely that in a relationship with an older partner, power relations are out of balance, especially if the younger partner is still very young. Notably, having an older first partner has been related to more sexual risk behavior even into adulthood, suggesting that it is an early marker of a high propensity for sexual risk taking (Senn & Carey, 2011). Another adverse contextual factor related to early sexual intercourse is if it is not anticipated (Hawes

et al., 2010). When first-time intercourse is planned or foreseen, it is associated with safe sexual behavior, with sexual satisfaction, and with less subsequent regret (Mitchell & Wellings, 1998).

5.1.4 Research goals

Based on existing literature it can be concluded that starting sexual activity young is more likely to be experienced negatively, especially for girls, but that a great deal depends on the personal sexual readiness of the young person and the concrete circumstances in which intercourse takes place for the first time. However, the existing body of research pays little attention to this variation among the group of early starters. This study aims to add knowledge about the experience of early first intercourse specifically by addressing the following research questions: First, how is first intercourse at an early age experienced? Second, how does this experience vary among early starters? Last, how is this experience related to the circumstances in which it took place? Both quantitative and qualitative methods are used in a complementary way. Quantitative data are mainly used to define the overall importance of age in predicting the emotional experience of intercourse for the first time, whereas qualitative data reveal the variation that exists within the group of early starters regarding their feelings. The study is limited to heterosexual first intercourse for reasons of comparability, given the unique (sexual) developmental challenges faced by non-heterosexual adolescents (Adelson, 2012).

5.2 METHOD

5.2.1 Quantitative analysis

RESPONDENTS AND DATA COLLECTION. A subsample of the population survey *Sexual Health in Flanders* (Buisse et al., 2013) was used as the source of data. This is a large-scale, representative survey on sexuality, sexual health, and relationships with the approval of the ethics committee of Ghent University Hospital (UZ Gent). Data were collected between February 2011 and February 2012 by means of face-to-face interviews, with a combination of computer-assisted personal interviewing (CAPI) and computer-assisted self-interviewing (CASI), the latter being used for the most sensitive information. The final database consisted of 1,832 respondents (a response rate of 39.0% for eligible respondents), randomly drawn from the Belgian National Register. For this study, respondents between 14 and 35 years of age who had experience of sexual intercourse were selected (N = 705, 324 men and 381 women). The selection of this subgroup was motivated by the fact that for this age group, the time and circumstances of first intercourse are likely to be remembered accurately, while socio-cultural generational differences among the respondents will not be too

great (given that studying cross-generational differences is outside the scope of this study). The sample was very homogeneous in terms of ethnic composition: a majority of 97.1% had held Belgian nationality since birth and only 4.1% had at least one parent who was not Belgian by birth. Most respondents were Christian (40.4%) or atheist (42.7%), with a minority belonging to a different religion (3.7%) or identifying themselves as religious but not further specified (13.2%).

INDEPENDENT VARIABLES. Three predictors were included for the experience concerning early first intercourse: the age at the time of first intercourse, the duration of the sexual trajectory from the first tongue kiss to first intercourse (as a proxy for the pace of the preceding sexual trajectory), and the age difference with the first partner. For calculating these variables, the age at first intercourse, the age at first tongue kiss, and the age of the first sexual partner were established by the use of numeric, open questions.

DEPENDENT VARIABLES. Two variables were used as indicators of the feelings about first-time intercourse and the degree of readiness, both measured on a five-point Likert scale. The first variable was obtained from the question "How was your experience of sexual intercourse for the first time?" with possible answers ranging from *very negative* (score 1) to *very positive* (score 5). The second variable referred to the question "To what degree would you say now that you were ready for intercourse at that time?" with answers from *not ready at all* (score 1) to *completely ready* (score 5).

CONTROL VARIABLES. Three control variables were included: the age of the respondent at the time of the survey, their subjective socioeconomic status (SSES), and the personal importance of religion. The SSES was used because this allowed the same analysis to include both respondents who were still attending school and those who had already commenced employment. SSES was measured by a method developed by Adler, Epel, Castellazzo, and Ickovics (2000). In this method, a picture of a ladder is presented and this is used as a metaphor for the social ladder, where each rung represents a social layer of society (the ladder has 10 rungs). The respondents were asked to put themselves on a rung of the ladder in terms of their position in society. The personal importance of religion was measured using a five-point Likert scale, ranging from *not important at all* (score 1) to *very important* (score 5).

ANALYSIS PROCEDURE. First, the univariate measurements for each variable were calculated according to gender, including independent samples t-tests for testing gender differences. Second, bivariate correlations for the dependent and independent variables were calculated, for male and female respondents separately. Third, linear multiple regression analyses were applied in order to answer the research questions. The regression models were built up in four steps. First the control variables were entered, second the age at first-time intercourse, third the

two contextual factors, and lastly interaction terms for both contextual factors with the age at first intercourse. The feelings about first intercourse and the degree of readiness were included as dependent variables in two separate models. To avoid multicollinearity, the independent variables were standardized before calculating the product terms. Multicollinearity was also elaborately tested for by estimating the variance inflation factor (VIF), whereby each of the independent variables was inserted as a dependent variable in a linear regression model. For each regression, the VIF was lower than 1.6, indicating that no problematic multicollinearity was present. In order to gain an understanding of gender differences, the analyses were performed separately for male and female respondents.

5.2.2 Qualitative analysis

RESPONDENTS. The qualitative data were provided by the research part of the SAFE II project, which was initiated and funded by the International Planned Parenthood Federation-European Network (IPPF-EN) with the aim of improving the sexual health and rights of young people across Europe. Six European countries participated in the research section of the project and the topic for the research in each country was decided based on their specific need for information. The Belgian research focused on the experience of early first intercourse and 24 young people who had engaged in intercourse at a young age were interviewed. In this regard, “early” was defined as having first-time intercourse at the age of 14 or younger. This was based on the fact that in Belgium, less than 20% of people aged 14 or under have engaged in sexual intercourse (Hublet, Vereecken, & Maes, 2010), and therefore they can be categorized as early starters compared with their peers. A second criterion for selection was that respondents were aged between 16 and 18 at the time of the survey. This ensured that respondents were able to recall first-time intercourse in the light of later experience, while at the same time the first experience was still relatively fresh in their memory. Third, the first instance of sexual intercourse had to be voluntary and not forced. The boundary between voluntary and forced is sometimes blurred, but it was left to the respondent to decide whether the first time could be labeled as voluntary or not. Finally, for reasons of comparability the first experience of sexual intercourse had to be heterosexual.

For the recruitment of eligible respondents, a short online questionnaire was established. This online questionnaire contained the questions necessary to select eligible young people according to the conditions described above. The young people who filled in the questionnaire and who met the conditions were invited to fill in their contact information so that they could be invited for the interview. A link to the online questionnaire was posted on websites frequented by young people and posters were distributed in secondary schools in two Flemish cities (Ghent and

Mechelen) with the invitation to surf to the online questionnaire. In addition to recruitment through an online questionnaire, the snowball method of recruitment was applied whereby each recruited respondent was asked to provide other potential respondents. However, this was completely optional for the respondents themselves and in no way a condition of participation.

Eventually, 24 young people were recruited and interviewed, of whom 16 were girls and 8 boys. Most of the respondents ($n = 18$) experienced first-time intercourse at the age of 14, four were 13, one was 12, and one was 11. The social background of the respondents was relatively homogeneous and similar to the background characteristics of the respondents in the quantitative sample. All of the respondents had a Belgian ethnic background. Their educational backgrounds differed, but the general education stream (preparing for further academic studies) was overrepresented and comprised 15 respondents. Six respondents were in technical education, and three respondents had dropped out of high school before attaining a qualification, but were studying for this through an alternative education program.

DATA COLLECTION AND ETHICAL GUIDELINES. Because young people might feel uncomfortable discussing their sexual experiences when talking to someone much older, the chosen interviewers were young people aged 21 to 24, who were either taking a master's course in psychology or had already gained their degree. The interviewers received appropriate training, including dealing with difficult situations, as talking about their sexual experiences might invoke intense emotions among the respondents. The in-depth interviews were semi-structured and a topic list was used to ensure that the same categories were questioned in each interview, while allowing the respondents to speak freely. The construction of the topic list was based on the research questions that were formulated beforehand. The interviews lasted around one hour and took place at a location chosen by the respondent, mostly in an office of either the university or a sexual health organization, although some took place at the respondent's home.

Strict guidelines were followed regarding informed consent and the anonymous processing of the results. Before each interview started, the respondent received information about the research (from the interviewer as well as by means of written information) and an informed consent document was signed. For respondents under the age of 18, this consent included the warning that if the respondent mentioned having been the victim of any illegal acts, this would be reported to the relevant authorities. In such a case, the commitment to anonymity would be partially broken. Specific measures were also taken concerning adequate aftercare for the respondents once the interview had been conducted. Each respondent was given an information folder with telephone numbers and details of various services to turn to if needed. The research design and the data collection procedure were evaluated and approved by the ethics committee of the faculty of Sociology of Ghent University.

DATA ANALYSIS. The data were coded using the qualitative data analysis program Nvivo, applying a combination of deductive and inductive techniques. The coding was guided by the same broad predefined categories on which the topic list was based, and new additional categories were revealed by induction (mainly sub-categories to the predefined ones). The predefined categories that are relevant for this particular study are: decision making regarding first-time intercourse; aspects of the first act of intercourse itself (including the emotional experience, physical experience, and use of contraception); the importance and meaning attached to the first experience of intercourse; aspects of the first relationship (including characteristics of the first partner); sexual experiences before the first act of intercourse; and sexual experiences after first intercourse. During the coding phase, several meetings took place with the methodological supervisors of the SAFE II research project (Rutgers Nisso WPF, based in the Netherlands) with whom the categories were discussed. In addition, a youth advisory committee was established, consisting of 16 young people aged 15 to 19 who provided the researcher with suggestions regarding how the results from the interviews should be correctly interpreted from the viewpoint of young people. This prevented the subjective framework of the adult researcher from distorting the findings.

Table 5.1 Univariate characteristics of the dependent, independent and control variables

	Male respondents			Female respondents		
	M	SD	<i>n</i>	M	SD	<i>n</i>
Age	24.01	5.871	324	23.67	5.406	381
Subjective SES	6.53	1.308	320	6.34	1.207	373
Importance religion	2.14*	1.116	323	2.37*	1.102	380
Age at first intercourse	17.06*	2.631	301	16.54*	2.110	353
Age difference with first partner	.01*	1.626	288	1.78*	2.110	345
Time lapse (i)	2.7	2.280	270	2.39	1.844	336
First intercourse experience	3.90*	.925	323	3.34*	1.037	380
Feeling being ready for it	4.10*	1.019	324	3.67*	1.262	379

SES = Social-economic status; (i) duration of preceding time lapse since first tongue kiss

* Means were significantly different by gender, tested by an independent samples t-test

5.3 FINDINGS

5.3.1 Univariate and bivariate characteristics

The univariate characteristics of each variable included in the study are presented in table 5.1. Among the male respondents, the mean age at first intercourse was 17.06 years with 11.3% having first had intercourse at the age of 14 or younger. Among the female respondents, the mean age was 16.54 years, with 14.4% having first had intercourse at 14 or younger. As could be expected, the male respondents reported a more positive experience of first intercourse than did the female respondents and the male respondents also felt more ready. Table 5.2 shows the bivariate correlations for the dependent and independent variables. For both the male and female respondents, a younger age at first-time intercourse was associated with an older first partner and with less time having passed since their first tongue kiss. As could be expected, the emotional experience of first intercourse and the feeling of readiness correlated positively with each other. Remarkably, the emotional experience of first intercourse correlated less with the independent variables as compared with the feeling of being ready.

Table 5.2 Bivariate characteristics of the dependent and independent variables

	Male	Age at FI	Age difference with first partner	Time lapse (i)	FI experience	Feeling being ready for it
Female						
Age at FI		1	-.21***	.40***	.14*	.35***
Age difference with first partner		-.16**	1	-.15*	.01	-.01
Time lapse (i)		.53***	-.01	1	.04	.24***
FI experience		.05	-.09	.06	1	.47***
Feeling being ready for it		.34***	-.15**	.17**	.58***	1

FI = first intercourse; (i) duration of preceding time lapse since first tongue kiss
 *p<.05. **p<.01. *** p<.001.

Table 5.3 Stepwise multivariate regression for first intercourse experience (standardized b-values (β), standardized errors (SE))

	Male (<i>n</i> = 324)				Female (<i>n</i> = 381)			
	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Age	-.046 (.009)	-.109 (.010)	-.113 (.010)	-.107 (.010)	-.097 (.01)	-.115* (.011)	-.111 (.011)	.110 (.011)
Subjective SES	-.023 (.044)	-.040 (.044)	-.039 (.044)	-.043 (.044)	.170 (.045)	.161** (.045)	.153** (.046)	.148** (.046)
Importance religion	-.022 (.049)	-.046 (.049)	-.045 (.050)	-.046 (.050)	.046 (.051)	.039 (.052)	.045 (.052)	.051 (.052)
Age at FI		.187** (.061)	.202** (.067)	.213** (.069)		.058 (.061)	.023 (.072)	.020 (.075)
Time lapse			-.013 (.062)	-.003 (.066)			.045 (.067)	.055 (.07)
Age difference			.043 (.058)	.035 (.059)			-.064 (.058)	-.080 (.059)
Age at FI*Time lapse				-.044 (.037)				-.041 (.033)
Age at FI*Age difference				.056 (.041)				.112* (.039)
R^2	.003	.033	.035	.040	.041**	.044**	.049*	.063**
ΔR^2	.003	.030**	.002	.005	.041**	.003	.005	.014

SES = Social-economic status ; FI = First intercourse; * $p < .05$. ** $p < .01$.

Table 5.4 Stepwise multivariate regression for the feeling being ready for first intercourse (standardized b-values (β) and standardized errors (SE))

	Male (<i>n</i> =324)				Female (<i>n</i> =381)			
	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	Model 4 β (SE)
Age	.011 (.01)	-.129* (.01)	-.134* (.01)	-.131* (.01)	-.006 (.012)	-.115* (.012)	-.112* (.012)	-.116* (.012)
Subjective SES	.022 (.048)	-.013 (.045)	-.011 (.045)	-.012 (.045)	.243*** (.054)	.187*** (.051)	.181** (.052)	.172** (.051)
Importance religion	-.053 (.054)	-.104 (.051)	-.112 (.051)	-.109 (.051)	-.040 (.061)	-.081 (.058)	-.081 (.059)	-.074 (.059)
Age at FI		.412*** (.063)	.382*** (.069)	.373*** (.07)		.363*** (.069)	.363*** (.082)	.388*** (.085)
Time lapse			.129* (.064)	.166* (.067)			-.024 (.076)	.008 (.078)
Age difference			.091 (.06)	.095 (.06)			-.074 (.065)	-.073 (.066)
Age at FI*Time lapse				-.108 (.038)				-.112 (.037)
Age at FI*Age difference				-.018 (.042)				.060 (.044)
R^2	.004	.149***	.169***	.179***	.060***	.174***	.180***	.194***
ΔR^2	.004	.145***	.020*	.010	.060***	.114***	.006	.014

SES = Social-economic status ; FI = First intercourse; * $p < .05$. ** $p < .01$. *** $p < .001$.

5.3.2 The emotional experience of first intercourse from a quantitative perspective

Tables 5.3 and 5.4 show the results for the multiple linear regression analyses with the emotional experience of first intercourse and the feeling of being ready as the respective outcome variables. This is presented for the male and female respondents separately. Table 5.3 shows that the emotional experience of first intercourse was significantly predicted by the model for the female respondents, but not by the one for the male respondents. However, for the male respondents the age at first intercourse significantly predicted the emotional experience of it, and adding this variable to the model significantly improved it.

For the female respondents, the age at first intercourse only significantly predicted the emotional experience in interaction with the age difference with the partner. Further exploration of this interaction effect showed that only for those respondents who engaged in first-time intercourse at age 16 or younger, a greater age difference with the partner predicted a less positive emotional experience. This is in line with what could be expected based on the presumed increased vulnerability of early starters with an older partner. For female respondents, SSES was the most important predictor for the emotional experience of first intercourse. Female respondents with a higher SSES recalled a more positive experience.

Table 5.4 shows similar effects for the outcome variable “feeling ready,” but the variance explained by the models for both male and female respondents was much higher. As before, there was a significant positive effect of SSES for female respondents, but not for male respondents. Further, and as would be expected, for both male and female respondents, an older age at first intercourse predicted an increased feeling of being ready. This positive effect of age only marginally decreased for male respondents and actually increased for female respondents when adding additional variables to the model. It was also striking that an older age at the time of interview predicted a lower feeling of readiness among both genders.

5.3.3 The emotional experience of first intercourse from a qualitative perspective

The in-depth interviews with early starters revealed the variation in the emotional experience of first-time intercourse, which could in turn be related to the preceding sexual trajectory as well as to the decision making preceding the event. With regard to the age difference with the first partner, little variance existed among the respondents (for most, the first partner was two to three years older). The age difference was also not related to the emotional experience of first-time intercourse and is therefore not further discussed.

THE EARLY FIRST INTERCOURSE EXPERIENCE. To evaluate the feelings regarding first-time intercourse, both the emotions recalled from the time of the event and the emotions felt when reflecting on it at the time of the interview were taken into account.

Recalled emotions from the time of first intercourse. For 17 respondents (5 male and 12 female), positive emotions were recalled from the time of first intercourse, while seven respondents (three male and four female) recalled negative emotions. The positive emotions related to three things. First, the feeling of intimacy and closeness toward the partner was the most commonly mentioned, reported by four male and eight female respondents (for an illustration, see Quote 1 below). This is as expected, given that for the majority of the respondents ($n = 14$) their first experience of intercourse was in the context of a relationship. One girl who did not have a romantic relationship but a very close friendship with her first sexual partner also reported the feeling of “closeness” to that person as a positive experience.

Quote 1: It’s a whole new experience and you love that person and you long for him, and yeah, it’s a step further in your relationship [...] I think that you trust each other more, you give yourself more to that person and the bond grows. You get closer to each other. (Girl, 14 at first intercourse [FI] with partner after a relationship of four months)

A second source of positive emotions was physical pleasure and excitement at the moment itself, reported by five respondents (one male and four female, for an illustration see Quote 2). For one male and one female respondent who were not in a relationship with their first sexual partner, this was the main reason why it was a positive experience. Third, one male and one female respondent referred to the feeling of having done something important as a reason why they felt it was a positive experience (for an illustration, see Quote 3).

Quote 2: It was really terrific [...] the sex itself felt good, yeah, but when you come, that’s really the nicest feeling that I’ve ever had [...] The sex itself, I thought that it would have been better, the whole time, but coming, I hadn’t expected that it would be that good. (Boy, 14 at FI outside a relationship context)

Quote 3: Once it was over, I felt so relieved, like: “it’s happened, I succeeded”. And then you feel happy about that. (Boy, 14 at FI with partner after a relationship of four months)

Of the seven respondents with negative feelings about the first intercourse, four were not in a relationship with their first sexual partner (three male and one female) and the other three (female) respondents categorized their relationship as “not serious.” The negative emotions recalled from the first time related to two things. First, a deep disappointment due to a lack of meaning and pleasure was mentioned by five respondents (three male and two female, for an illustration see Quote 4).

Quote 4: It wasn't the fairy tale story that I had imagined about losing virginity. I can't even say what it was. Yeah, sex, nothing more than that. (Boy, 13 at FI outside a relationship context)

A second source of negative emotions was having sexual intercourse without fully wanting to. This was mentioned by two girls whose first experience of intercourse was in the context of a relationship (for an illustration, see Quote 5).

Quote 5: I had so much pain. I really didn't want to do it. I remember that I was crying [...] And so he said "do you want me to stop?" But I was too afraid to say "yes, please stop." He said "you love me, right?" So I didn't want to say anything. (Girl, 14 at FI with her partner after a relationship of "a few months" [she did not recall exactly how long])

In addition, pain was mentioned by two of the girls as a reason for the first intercourse being a bad experience. However, experiences of pain or disappointment did not necessarily lead to negative feelings about first-time intercourse, as they could also be considered "normal aspects of the first time." Among the respondents with positive feelings about the first intercourse, five girls reported the experience of pain and two girls also mentioned disappointment (for illustrations, see Quotes 6 and 7 respectively).

Quote 6: It was fun, and intimate, mainly intimate actually. I mean, he was really sweet. But apart from that, I can't say that I really enjoyed it. I mean, it mainly just hurt. I thought "I just have to go through this." I think that, even if I had waited another year, it would have hurt just as much. (Girl, 14 at FI after being in a relationship for two months)

Quote 7: My first time was just fun because it was so intimate and being together, and he is lying on top of you and that's just cozy [laughs]. He was doing foreplay and everything, and that was good, but the penetration itself, it wasn't to say like "wow!" Afterwards I thought "this was it or what?" but that's just because it's only the beginning. (Girl, 14 at FI after being in a relationship for two months)

Emotions when looking back on the experience at the time of the interview. When remembering the experience of first having sexual intercourse, each of the respondents who recalled negative emotions also reported regret about their first experience and said they wished they had done it differently (for an illustration see Quote 8).

Quote 8: Actually I "threw away" my first time. It was nothing special, no feelings. And now with my current girlfriend, I think maybe it would have been better to have done it with her, the first time. (Boy, 14 at FI outside a relationship context)

Respondents who recalled positive emotions could be categorized into two groups. One group of ten respondents did not report any feelings of regret (for an illustration see Quote 9), while the other group of seven respondents reported some ambiguity when thinking back. These ambiguous feelings concerned the person with

whom they experienced their first time or were about “meeting someone better” afterwards (reported by four female respondents) or the feeling that they might have been too young (reported by three female respondents) (for illustrations, see Quotes 10 and 11 respectively). However, importantly these respondents stated that they did not regret their first time.

Quote 9: By then [when the relationship was dissolved], I had been with him for three years and that makes a difference. That makes it easier. Because if I had waited until I was 15 or something, it wouldn't have made any difference. (Girl, 14 at FI after a relationship of two months)

Quote 10: After that, I had another relationship, and I had known that boy a very long time, and he had become my best friend, and my bond with him was different than with the first one. That was just a bit more special [...] And when I was with him, I thought: “It would have been just a bit more special to have experienced it with him.” But I have never regretted that I did it with the other one. (Girl, 14 at FI after a relationship of seven months)

Quote 11: I don't regret that person, but maybe the age. If later I have to tell my children when they come and ask me, “mummy when was your first time?” I don't want to say, “well, I was 14.” (Girl, 14 at FI after a relationship of two months)

THE SEXUAL TRAJECTORY. Given the young age at which the respondents first engaged in sexual intercourse, none of them progressed slowly from less intimate to more intimate sexual behavior. Even among those respondents who experienced a gradual transition, this took place at an accelerated pace compared with other young people (the time lapse between the first tongue kiss and the first experience of intercourse did not exceed one year for any of the respondents). Therefore, a distinction was made between early starters with a *progressive but accelerated sexual trajectory* and early starters with a *non-progressive sexual trajectory*. For 14 of the respondents (3 male and 11 female), the preceding sexual trajectory was categorized as progressive. These respondents did not feel as if they had moved too quickly and they felt the pace of progression was “comfortable” (for an illustration, see Quote 12).

Quote 12: It went step by step, and I think it was a serious relationship for both of us, even the first kiss and everything, at least for her it was, I had kissed before [...] It all happened with that one girl and I am happy about that. (Boy, 14 at FI with his girlfriend after a relationship of three months)

Apart from kissing, three of the male and ten of the female respondents had all their sexual experiences with the person they also had first-time intercourse with, and this was in the context of a relationship. However, there were large differences in the time between beginning a relationship and progressing to sexual intercourse: from one to seven months. The ten respondents (five male and five female) with a non-progressive sexual trajectory already had experience of kissing, but not of more intimate sexual behavior, including genital contact (for an illustration, see Quote 13).

Of these, one male and three female respondents were in a relationship with their first partner at the time of their first intercourse.

Quote 13: Interviewer: Did you have any other sexual experiences before that?
 Respondent: No, only kissing really, holding hands, and that was about it. But that was the first time he touched my body like that. It was very intimate all at once.
 (Girl, 14 at FI in a relationship context)

The preceding trajectory of sexual development could be associated with the emotional experience of intercourse for the first time. None of the 14 respondents with an (accelerated) progressive trajectory reported a negative emotional experience of first-time intercourse. However, among the ten respondents with a non-progressive trajectory, seven reported a negative experience. Respondents with a progressive sexual trajectory were also more likely to continue having sexual intercourse after the first time, which was also explained by the fact that it more often took place in the context of a relationship. Five respondents (three male and two female) with a non-progressive trajectory and for who the first time was outside a relationship context, waited a very long time (several years) before engaging in sexual intercourse again. In effect, the meaning attached to these later sexual encounters in the context of a more stable relationship, was similar to the meaning attached to the first experience of sexual intercourse by young people with a progressive sexual trajectory (for an illustration, see Quote 14).

Quote 14: After my 17th birthday, I did it another time. That was my second time ever. In fact it was just my new first time. (Girl, 14 at FI with someone she met on vacation [after two weeks])

Table 5.5 summarizes the qualitative findings with regard to the emotional experience of early first intercourse. The table shows that a positive experience of first-time intercourse (with or without ambiguous feelings about it afterwards) was associated with being in a relationship with the first sexual partner and with experiencing a progressive (accelerated) preceding sexual trajectory. However, this still does not explain why first-time intercourse is experienced more negatively by some early starters than by others.

Table 5.5 Summarization of the qualitative results

	In a relationship with first partner		Progressive sexual trajectory	
	Yes	No	Yes	No
Positive and no regret	8	2	8	2
Positive and ambiguous	6	1	6	1
Negative and regret	3	4	0	7
Total (boys/girls)	17 (4/13)	7 (4/3)	14 (3/11)	10 (5/5)

THE DECISION MAKING. The feelings about first-time intercourse and the preceding sexual trajectory could be related to differences in the sexual decision making. First, even though none of the respondents said that the first time they had intercourse was planned (because “that would take away the spontaneity”), a non-progressive sexual trajectory was associated with less anticipation compared with a progressive trajectory. Respondents with a non-progressive trajectory said that they “did not see it coming” and that it “came as a surprise” (for illustrations, see Quotes 15 and 16).

Quote 15: It was actually very unexpected when it happened. It was in a drunken state and yeah, it just happened [...] And yeah, I don’t know, we were so, so really in a drunken state and then it actually happened, without foreplay or anything, it was suddenly there. (Girl, 13 at FI after being in a “non-serious” relationship for twelve months)

Quote 16: I was really caught up in the moment, I didn’t see it coming. I was actually astonished. At that moment I was like “what is happening now”? (Girl, 14 at FI with somebody she had met on vacation a week beforehand)

For respondents with a progressive trajectory, the fact that the degree of intimacy built up gradually was in itself a way of anticipating that intercourse could happen (for an illustration, see Quote 17).

Quote 17: Interviewer: Did you expect that something would happen with that girl? Respondent: In the beginning I didn’t, but after a while when it had lasted a long time [...] Eventually you have also done other things. And it’s not like you get tired of that, but being interested in doing other things comes up. (Boy, 14 at FI in a relationship context after being together for four months)

Second, respondents with a non-progressive trajectory also found it rather difficult to say exactly why they engaged in intercourse for the first time (for an illustration, see Quote 18) or they referred to non-autonomous reasons (not for themselves but “for the other person.” For an illustration, see Quote 19). Respondents with a progressive trajectory, however, had given more previous thought to their motives

for engaging in intercourse and when asked, they could easily answer the question of why they did it (for an illustration, see Quote 20).

Quote 18: There were no motives, there was nothing, no feelings. It was just to get it over with. (Boy, 14 at FI outside a relationship context)

Quote 19: I didn't feel good, but I thought: "he likes it". So, at that point it felt good, like "I'm doing him a favor. If he likes it, then I'm also a little bit happy". (Girl, 13 at FI in a relationship context after 12 months)

Quote 20: We had been together for seven months and actually we had wanted to try it for a while, because you love each other and it just gives that extra dimension to your relationship. So we both felt really ready. (Girl, 14 at FI in a relationship after seven months)

Third, being put under pressure to engage in intercourse was reported by two girls who were in a relationship with their first partner and who experienced a non-progressive trajectory (for an illustration, see Quote 21).

Quote 21: He said "if you love me, then you'll do it". And I said "no, there are other ways to prove that". He said there weren't. (Girl, 14 at FI in a relationship context after being together for several months [she did not recall the exact amount of time])

5.4 DISCUSSION

The first experience of sexual intercourse at an early age has been established as sexual risk behavior, given its adverse effects on the physical and emotional health of the young person concerned. However, the diversity within the group of early starters as well as the actual processes that make early first-time intercourse (potentially) more harmful remain understudied. This study aimed to make a step toward closing this gap in the research by answering the following questions: First, how is first intercourse at an early age experienced emotionally? Second, how does this experience vary among early starters? Last, how is this experience related to the circumstances in which it took place? Both quantitative and qualitative data were used in the investigation.

With regard to the *emotional experience of early first intercourse*, the quantitative study showed that intercourse for the first time is in general a better experience for male than for female respondents, which is in line with expectations. For both male and female respondents, the age at first-time intercourse was positively related to the feeling of readiness, but for the male respondents only, it was also positively related to the general experience of first intercourse (which was not expected). In addition, for the female respondents subjective socioeconomic status was a strong predictor of the general experience of first-time intercourse as well as for the feeling

of being ready. This might indicate that for women, the experience of sexual behavior is more embedded in, or defined by, the social context. This is also in line with Baumeister's proposition that the female sex drive is more malleable than the male in response to sociocultural and situational factors (Baumeister, 2000). More research is needed to better understand the concrete nature of this relationship in the context of the experience of first intercourse. For example, girls with a higher socio-economic background might have better skills for negotiating the timing of the first intercourse as compared to girls from a lower socio-economic background. This could in turn be related for example to a different degree of internalization of traditional gender roles or differences in sex education received at school.

The qualitative part of the study explored the experience of first-time intercourse in greater depth and also gave more insights into the *variance that exists among early starters with regard to their first experience of intercourse*. For the majority of the respondents (17 out of 24), positive emotions were retrospectively recalled about the first intercourse at the time it occurred. These positive emotions were primarily related to the relationship in the context of which the activity took place, but also to aspects of physical pleasure and arousal, and the feeling of having done something important. Negative feelings about first-time intercourse related to the absence of any meaning and the experience of pressure from the partner. Furthermore, a negative experience of first-time intercourse was consistently associated with regret about it afterwards, while a positive experience was not. Some respondents with positive feelings about intercourse for the first time nevertheless reported some ambiguity with regard to either the timing of it or the partner, but they did not classify this as "regret." Overall, while most research has focused on the negative experiential aspects of first intercourse at an early age, these findings show that positive emotions are also a very important aspect. In addition, the emotions that are felt when recalling first-time intercourse cannot entirely be captured with the dichotomy regret/no regret. Young people may feel ambivalent about it, especially if the first time was experienced in a positive way. Such ambivalence has only received limited attention in former research (Holland et al., 2000; Abma et al., 1998).

With regard to the *circumstances that explain the emotional experience of first intercourse*, the quantitative part of the study showed that for girls who are sexually active at an early age, having an older partner predicts a less positive first experience of intercourse. This is in line with what could be expected based on former research. The duration of the preceding trajectory of sexual development after the first tongue kiss has no effect on the emotional experience or on the feeling of readiness. However, the qualitative part of the study showed that a gradually progressing sexual trajectory is more likely to result in a positive experience of first-time intercourse and indications are found that this is at least partly due to the higher quality of the decision making in such a trajectory. Being in a steady

relationship also seems to have improved the respondents' decision making and thus served as a protective factor, under the condition that no pressure was exerted by the partner. These results are in line with previous research showing the importance of the relationship context and of being in control of the decision-making process (Skinner, Smith, Fenwick, Fyfe, & Hendriks, 2008; Houts, 2005; Wight, Parkes, Strange, Allen, Bonnel, & Henderson, 2008). The current study adds new knowledge to previous findings by framing these protective factors within the broader sexual trajectory that precedes first-time intercourse. Furthermore, the sexual trajectory after first-time intercourse could also be related to the context in which it took place and how it was experienced.

STUDY LIMITATIONS. Several limitations are acknowledged regarding the present study. First, although representative with regard to having been taken from the Belgian National Register, the quantitative sample suffers from a low response rate of 39%. Considering the topic of the survey this is not extremely low, and similar response rates are found in other European population-based surveys on sexual health and/or sexual behavior. Second, both the quantitative and qualitative data are based on retrospectively recalled experiences of first-time intercourse. It is possible that later experiences, and the development of the relationship with the first partner, could color the memory of the first experience and create bias in the data. Third, the quantitative analyses showed gender differences with regard to the importance of the age at first-time intercourse, the age difference with the first partner, and the subjective socio-economic background. Also former research showed that adolescents' sexual experiences are embedded in their social context (Shoveller, Johnson, Langille, & Mitchell, 2004) and that gender is an important shaping factor of the adolescent's sexual experience (Tolman, Striepe, & Harmon, 2003). However, due to a lack of sociodemographic heterogeneity and insufficient male respondents in the qualitative sample, these differences that were found could not be further explored in depth. This is a clear limitation of this study. In addition, the homogeneity of both the quantitative and the qualitative sample in terms of the sociodemographic and ethnic background of the respondents means that the results are not generalizable to minority subgroups.

PRACTICAL IMPLICATIONS. This research can have several practical implications. First, it can stimulate researchers and policy makers to think of early starters in a more nuanced way. It is clear that not all early starters should be labeled as "victims" or "risk-takers" and that some young people who are sexually active at a relatively early age show a high level of responsible decision making with no subsequent regret. Second, the study can be used in connection with advocacy for more sex education starting at an early age. The qualitative part of the study in particular showed that for some early starters, a lack of decision-making skills leads to a negatively experienced and regretted start to sexual activity. Some of the

respondents were overwhelmed by the situation and no real decision making preceded the first-time intercourse, while others were not able to deal with the relationship dynamics of implicit and explicit pressure. Sex education has a clear role in preparing young people for dealing with such circumstances if they occur. Third, and associated with this, the results can help sexual health organizations to support young people in answering the question “how do I know when I’m ready?” This question is often posed by young people but it is not an easy one to reply to.

CONCLUSIONS AND RECOMMENDATIONS. Some general conclusions and suggestions for future research can be made. First, the relationship context in which first-time intercourse takes place is strongly associated with the emotional experience of it. In this regard, some of the more successful early starters show a high level of relationship commitment as well as responsible sexual decision making. To have a better understanding of an early start to sexual activity and the risks involved, it is suggested that future research pays more attention to framing this commencement of sexual activity in the context of the adolescent’s relationship skills. Research shows that “romantic development” passes through different phases and that there are inter-individual differences in the timing and pace of this development (Shulman & Seiffge-Krenke, 2001). At the same time, engagement in a committed relationship at a normatively early age in itself entails risks in terms of managing friendship relationships with same-aged peers (Zimmer-Gembeck, 2002). It can be expected that the experience of the first intercourse is intrinsically related to these broader contexts.

Second, the qualitative part of the study showed that the positive and negative emotions that were recalled from the first-time intercourse relate to an array of different underlying meanings. To reach a more nuanced understanding of early first-time intercourse, it will be necessary to incorporate more of these nuances in future research. In particular, positive emotions have mostly not been considered to date when studying early first-time intercourse, although they are a very important aspect of the experience.

Third, the study showed that understanding first-time intercourse from the context of preceding sexual experiences as well as those that follow, is an important aspect for understanding this stage of life and the risks involved. Former research on first intercourse insufficiently incorporates these other sexual experiences in adolescence, so that in fact little is known about the broader sexual trajectories that young people pass through and how these trajectories as a whole influence adolescents’ emotional and physical health. Further, the finding that for some young people their first experience of intercourse is not a marker of the beginning of their “sexually active life” has so far not been sufficiently acknowledged.

Last, some respondents were better able than others to create beneficial circumstances for their commencement of sexual activity. The results here are in line with what has been found in former research regarding the importance of good decision-making skills, such as control and anticipation (Mitchell & Wellings, 1998). Further research is needed in order to understand more about these sexual competences at the time of initiating intercourse, in order to better support young people in making the transition. Research should also pay more attention to how these sexual skills evolve during the course of adolescence. Especially given the link between early first-time intercourse and later sexual risk taking behavior, it is crucial to know how and why some young people with a high-risk introduction to sexual activity manage to acquire more relevant skills later during adolescence, while other young people are stuck in a pattern of unsafe sexual behavior. If the risks related to beginning sexual activity young result from a lack of sexual skills, a mere postponement of first-time intercourse will only be part of the solution to a healthy sexual development.

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Chapter 6

Sexual exposure, personal vulnerabilities and coercive strategy: Explaining sexual victimization among sexually active girls⁵

Victimization of sexual aggression in adolescence, encompassing a range of unwanted sexual behaviors obtained through the use of threat, coercion or physical force (Testa, Livingston, & Collins, 2000) is a serious public health concern. It is associated with problematic behavioral and mental health outcomes (Ackard, Eisenberg, & Neumark-Sztainer, 2007; Exner-Cortens, Eckenrode, & Rothman, 2013) and it may interfere with a healthy further development of the adolescent (Ackard & Neumark-Sztainer, 2002). Furthermore, sexual victimization tends to be a recurrent rather than a one-time experience (Bonomi, Anderson, Nemeth, Bartle-Haring, Buettner, & Schipper, 2012). Prevalence rates range widely depending on the definition of sexual victimization and the context in which it takes place, with some research focusing on dating- or couple violence while other research does not differentiate according to the context in which the victimization took place. But overall, research suggests that adolescence is a period of increased vulnerability for sexual victimization and this especially for adolescent girls (Livingston, Hequembourg, Testa, & VanZile-Tamsen, 2007; Hines, Armstrong, Palm Reed, & Cameron, 2012). Thus, it is of the utmost importance that the risk factors for sexual victimization in adolescence are understood and that tailored prevention programs are put in place. Therefore, this study aims to elaborate the knowledge of the risk factors for sexual victimization among girls in adolescence and early adulthood.

The risk factors for sexual victimization can be divided into *situational* versus *personal* risk factors. Situational risk factors refer to the contexts in which sexual aggression is more likely to occur, in its turn related to the types of behavior engaged in by the victim. As further discussed below, this has been framed within a routine activity/lifestyle framework which suggests that in certain settings more opportunities for crime are created and thus crime is more likely to occur (Clarke & Felson, 1993). Almost two decades ago, Finkelhor and Asdigian (1996) argued that personal characteristics are not sufficiently included in routine activity and lifestyle

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approaches to youth sexual victimization. They proposed that *target congruence* arouses the perpetrator to assault and is made up of target vulnerability (what makes it easier for a perpetrator to assault), target gratifiability (what the perpetrator is looking for) and target antagonism (what might spark hostility or resentment in the perpetrator). Research which combines both situational and personal risk factors is scarce, meaning that little is known about the relative importance of and interplay between both types of risk factors in explaining sexual victimization. In addition the importance of different risk factors may depend on the context in which the sexual victimization took place and in particular the coercive strategy that was used by the perpetrator. In short, this study investigates to what extent sexual victimization is explained by both behavioral and personal vulnerability factors, and whether the relative importance of these explaining factors is dependent on the coercive strategy that was used by the perpetrator.

The study is limited to women from 16 to 26 years old. This is not because sexual victimization would not be a problem among males in this age group, and research suggests that forced sexual contacts and dating violence more in general might be an underestimated issue among young men (Bonomi et al., 2012; Hines et al., 2012). However, because sexual victimization is so much entrenched with gender (White, 2009) the explaining factors may be substantially different for boys and girls and therefore both genders deserve a different set of hypotheses and explanatory frameworks.

6.1 THEORETICAL BACKGROUND

6.1.1 Sexual exposure behavior: creating proximity to a potential perpetrator

Routine activity theory and by extension lifestyle theories of victimization basically posit that the individual's routine activities or lifestyle are related to the exposure to potential perpetrators of crime, in the absence of immediate "guardians", and therefore some individuals have an increased likelihood of being victimized (Spano & Freilich, 2009; Clarke & Felson, 1993). These theoretical frameworks focus on elements of the situational contexts in which crime occurs rather than on personal propensities for perpetration and victimization. Although originally developed for explaining predatory crime, this explanatory framework has been extensively used for understanding violent offense crimes and sexual victimization as well.

With regard to sexual victimization, research shows that it tends to take place in certain settings and these settings are related to the routine activities/lifestyle of the victim. As such it is found that increased engagement in nightlife activities is related to sexual victimization and harassment, presumably due to an increased exposure to

potential perpetrators and a lack of immediate 'guardians' (Clodfelter, Turner, Hartman, & Kuhns, 2010; Vézina, Hébert, Poulin, Lavoie, Vitaro, & Tremblay, 2011; Hines et al., 2012; Franklin, Franklin, Nobles, & Kercher, 2012; Fisher, Daigle, & Cullen, 2010). Also from the underlying idea of creating a close proximity to a potential offender, certain types of sexual behavior have been associated with an increased risk for sexual victimization. This is further referred to as *sexual exposure behavior* and is the focus of this study. As such, an early age at first intercourse, a high frequency of sexual activity, a large number of sexual partners, and having casual sexual encounters have been related to increased sexual victimization rates (Watson, Taft, & Lee, 2007; Young & Furman, 2008; Howard & Wang, 2005; Holm Bramsen, Lasgaard, Koss, Elklit, & Banner, 2012; Koss & Dinero, 1989). While the age at the first intercourse is strictly spoken not a routine/lifestyle activity (given that it happens per definition only once), it is strongly related to increased sexual exposure behavior throughout adolescence (Kaestle, Halpern, Miller, & Ford, 2005; Edgardh, 2002; O'Donnell, O'Donnell, & Stueve, 2001) and therefore it can be considered as part of the entirety of sexual exposure behavior engaged in by the adolescent.

6.1.2 Personal vulnerabilities: high-risk interactions with a potential perpetrator

While behavioral risk factors might explain who is more likely to encounter a potential perpetrator and in which situation, personal vulnerabilities can explain for whom such an encounter is potentially more risky in terms of victimization. Specifically factors related to interpersonal effectiveness have been studied in this regard. Self-efficacy refers to the level of confidence a person has that she or he can successfully perform certain specific behaviors and is related to sexual victimization among female adolescents (Walsh & Foshee, 1998). Self-efficacy requires certain skills of which assertiveness, and more in specific sexual assertiveness, is the most thoroughly researched skill in relation to sexual victimization and revictimization (Walsh & Foshee, 1998; Livingston, Testa, & VanZile-Tamsen, 2007; Greene & Navarro, 1998; Kearns & Calhoun, 2010; Schry & White, 2013). Also more general personal characteristics can affect the confidence one has to actually use those skills. As such, women who feel insecure may not respond in an assertive way to unwanted sexual behavior because they worry about the negative social consequences such as rejection and embarrassment (Gidycz, McNamara, & Edwards, 2006; Young & Furman, 2008). Impaired self-reference and self-esteem are associated with sexual victimization although a review of the literature shows that this relationship is not entirely consistent (Messman-Moore, Coates, Gaffey, & Johnson, 2008; Vézina & Hébert, 2007).

A low interpersonal effectiveness has also been related to ontogenetic risk factors which may impair a normal psychosocial development of the adolescent. In this context the experience of powerlessness and lack of control may perpetuate the internalized idea of powerlessness and as such affect interpersonal skill development including sexual efficacy (Kearns & Calhoun, 2010; Wolfe, Wekerle, Scott, Straatman, & Grasley, 2004). Especially witnessing and experiencing physical and psychological violence in the family of origin, including childhood sexual abuse, is clearly related to sexual victimization later in life (Walsh, Messman-Moore, Zerubavel, Chandley, DeNardi, & Walker, 2013; Gagné, Lavoie, & Hébert, 2005; Gover, Kaukinen, & Fox, 2008; Lohman, Neppel, Senia, & Schofield, 2013; Bramsen, Lasgaard, Shevlin, Koss, & Elklit, 2013). Social learning offers an alternative explanation for this relationship between the early experience of (sexual) violence and later victimization, which suggests that behavior is learned and imitated and the acceptability of the use of violence is internalized (Tyler, Brownridge, & Melander, 2011).

6.1.3 Research gaps and formulation of the research goals

Former research has greatly improved insights on sexual victimization; however, some urgent issues need to be further addressed. First, while sexual exposure behavior and personal vulnerabilities are two categories of risk factors related to sexual victimization, the relative importance of both types of risk factors is not well understood because they are usually not included in the same research. The first goal of this research is to better understand the relative importance of both groups of risk factors for explaining sexual victimization in adolescence.

Second, it is not well understood how both types of risk factors interact with one another in relation to sexual victimization. One research was found which showed that sexual exposure behavior only relates to sexual victimization in the context of low sexual assertiveness (Walker, Messman-Moore and Ward, 2011) thus illustrating the importance of simultaneously considering both types of risk factors. Vice versa it could be hypothesized that personal vulnerabilities only increase the risk for sexual victimization among those adolescents who also display higher levels of sexual exposure behavior. The second goal of this research is to better understand the interplay between personal vulnerabilities and sexual exposure behavior with regard to sexual victimization.

Third, the context in which sexual victimization takes place such as the coercive strategy that was used by the perpetrator, is a crucial aspect for understanding its risk factors. Some research suggests that personal vulnerabilities related to self-image and sexual assertiveness are more important in the context of verbal coercion as compared to physical coercion (Testa & Dermen, 1999; Walker et al., 2011; Messman-Moore et al., 2008). It is plausible that while interpersonal skills can help

to regain control over the situation when verbal coercion is used, these skills are less relevant when physical force is used. The third goal of this research is to further understand the relative importance of different risk factors according to the coercive strategy that was used by the perpetrator, whereby the distinction is made between the use of physical force versus no use of physical force.

6.2 METHODS

6.2.1 Data collection and ethical guidelines

Data were gathered in the larger framework of the Y-SAV project (<http://ysav.rutgerswpf.org/>), a cross-national European study on Youth Sexual Aggression and Violence. The present study is based on the data gathered in Flanders, the Dutch speaking northern region of Belgium. For the aim of the study, questions on sexual behavior and psychosocial risk factors were added to the original Y-SAV questionnaire. The data were gathered through an online survey among young people from 16 to 26 years old (which is also an extension of the original Y-SAV project which was limited to the age range of 18 to 26), and this in the period of December 2012 to April 2013. The survey was spread through announcements on websites frequented by young people such as *Joetz* (youth service which, among other things, offers information on health and sexuality) and *Sensoa* (the Flemish expertise center on sexual health and prevention).

At the beginning of the questionnaire respondents were informed on the content of the questionnaire and on the processing of the results (with the assurance that the results would be processed anonymously and used for research purposes only). Before starting the questionnaire, respondents were asked to give consent for participation by ticking an *agreement icon*, confirming that they decided to participate voluntarily and acknowledging that they could stop participation at any time. Throughout the entire questionnaire, respondents could press a *help button* on the bottom of the screen, which directed the respondent directly to an information page with a list of various services to turn to if needed, including services offering legal and psychological support, information on sexual health, and anonymous help lines. This information page was also shown to all respondents who finished the questionnaire. The research design and the data collection procedure were evaluated and approved by the ethics committee of the Faculty of Social and Political Sciences of Ghent University.

6.2.2 Sample

In total, 561 young people were reached to fill in the questionnaire of which 31.7% ($n = 178$) were male and 68.3% ($n = 383$) were female. As argued above, for the aim of this study only the female respondents were selected. Given the focus in this study on sexual exposure behavior as an explaining factor, only those respondents who had experience with voluntary sexual behavior were retained. This excluded 54 female respondents who did not have any voluntary experience with sexual intercourse. After a further strict data cleaning, in which respondents with multiple missing values on the study variables were deleted, 207 female respondents were retained for this study. The age ranged from 16 to 26 ($M = 21.25$ years, $SD = 2.68$). The majority of the eligible respondents were enrolled in higher education (64.7%, $n = 134$), almost one fifth was enrolled in secondary high school (18.4%, $n = 38$), and another minority had entered the labor market (16.9%, $n = 35$). The vast majority was native Belgian (96.6%, $n = 200$). Thus the sample is informative on the native Belgian female adolescents/young adults who are still in the education circuit either have just left this circuit.

6.2.3 Measures

SEXUAL VICTIMIZATION. Victimization was measured by a questionnaire developed by Krahé and Berger (2013). In order to exclude childhood sexual abuse, the questionnaire on victimization was preceded by an introduction explaining that only acts of sexual victimization experienced since the age of 16 were to be reported. Respondents first indicated whether they ever had a wanted or unwanted sexual experience with another man and/or woman, based on which a specific version of the questionnaire was offered (in which the reference to the potential perpetrator was 'a man', 'a woman' or 'another person'). The questionnaire distinguishes between three coercive strategies: verbal pressure, physical force, and inability to resist due to alcohol or drugs consumption. For example it was asked: "Has a man ever made (or tried to make) you have sexual contact with him against your will by threatening to use force or by harming you?" For each situation, the respondent had to fill in who was involved (a current or former partner, a friend or acquaintance, or a stranger), what exactly happened (sexual touch, attempted intercourse, completed intercourse, and other sexual acts), and how often it happened (once or repeatedly). In addition to these three coercive contexts, it was asked whether sexual victimization ever occurred by somebody who made abuse of his or her authoritative position (with again the distinction what sexual acts exactly occurred and whether this occurred once or repeatedly). Thus with the inclusion of *abuse of authority*, four coercive strategies were distinguished.

A majority of 73.4% ($n = 152$) reported no victimization, 14.5% ($n = 30$) reported one type of victimization, and 12.1% ($n = 25$) reported two or more types of

victimization. The most frequent type of coercion that was reported among the 55 respondents who experienced victimization, was the use or threat of physical force (reported by 33 respondents), followed by verbal pressure ($n = 29$), exploitation of the inability to resist due to intoxication ($n = 19$), and the abuse of a position of authority ($n = 7$). For the goal of the present study, two new variables were constructed. One was a binary variable for sexual victimization referring to having experienced a situation of sexual aggression ($n = 55$) versus not having experienced such a situation ($n = 152$). The second variable was a categorical variable with three categories: not experienced sexual aggression ($n = 152$), experienced sexual aggression under the use or threat of physical force ($n = 33$), and experienced sexual aggression but without the use or threat of physical force ($n = 22$).

SEXUAL EXPOSURE. Sexual exposure was measured based on three types of sexual behavior which are related to the exposure to potential perpetrators: the age at the first experience of intercourse, the total number of sex partners, and the proportion of casual sex partners (outside a relationship context). With regard to the age at the first experience of intercourse it was explicitly mentioned that this referred to the first *voluntary* intercourse. Age at the first experience of intercourse and total number of sex partners were measured as numeric variables by means of an open answering method. Because the dataset is rather small it was crucial to assess possible outliers so that these would not distort the results. For the age at the first experience of intercourse the data were well distributed, with a range of 13 to 22, a mean of 16.65, a median of 17 and a mode of 16 ($SD = 1.75$). With regard to the total number of sex partners the values were less well distributed, with a range of 1 to 21, a mean of 3.48, a median of 2 and a mode of 1 ($SD = 3.67$). Further inspection showed that only until a number of five sex partners the frequency with which it was reported was more than five (and only 16% or 29 respondents reported over 5 sex partners). Therefore these values bigger than five were recoded to value 6, so that the original ordering was kept intact but without allowing that extreme values would define the results. As such, the newly adjusted range for the total number of sex partners was 1 to 6 ($M = 2.80$, $SD = 1.76$). The proportion of sex partners in- and outside a relationship context was measured on a five-point Likert scale, going from *only casual partners* (score 1), to *mainly casual partners* (score 2), *just as many casual partners as partners in a relationship context* (score 3), *mainly partners in a relationship context* (score 4), and *only partners in a relationship context* (score 5) ($M = 3.62$, $SD = 1.18$).

For the goal of this study it is important to investigate the effect of the exposure to potentially high risk situations through sexual behavior in general rather than the effect of individual types of sexual behavior. Therefore a variable 'sexual exposure' was constructed based on these three indicators of sexual exposure. Each of the three sexual behavior variables correlated significantly with each other, with the age

at the first experience of intercourse correlating negatively with the total number of sex partners ($r(205) = -.291, p < .001$) and positively with the proportion of sex partners in a relationship ($r(205) = .184, p < .01$); and the total number of sex partners correlating negatively with the proportion of sex partners in a relationship context ($r(205) = -.567, p < .001$). A factor analysis based on these three variables retained one factor, with a total variance of 57.46% explained. The respective factor loadings of the variables was .555 for the age at the first experience of intercourse, -.864 for total number of sex partners, and .818 for the proportion of sex partners in a relationship context. Thus the higher the score on the constructed variable *sexual exposure*, the less sexual exposure in fact took place. To avoid confusion, the variable was reversed (by multiplying by '-1') so that a higher value on the sexual exposure variable referred to more sexual exposure.

PERSONAL VULNERABILITIES. Three types of personal vulnerabilities were included in this study: sexual assertiveness, self-esteem, and the experience of violence in the family. *Sexual assertiveness.* Use was made of the refusal subscale of the validated *sexual assertiveness scale* as developed by Morokoff et al. (1997). This subscale consists of five items such as "I refuse to let my partner touch my genitals if I don't want that, even if my partner insists", which are answered on a five-point Likert scale, going from *never* (score 1) to *always* (score 5). The variable sexual assertiveness refers to the accumulated mean of the scores on these items and ranged from 1.2 to 5 ($M = 3.79, SD = 0.98$).

Self-esteem was measured by the validated self-esteem scale developed by Rosenberg (1965). This scale consists of 10 items such as "I am able to do things as well as most other people", which are answered on a four-point Likert scale going from *strongly agree* (score 1) to *strongly disagree* (score 4) with no neutral middle point. The variable self-esteem refers to the accumulated mean of the scores on these items and ranged from 1.1 to 4 ($M = 2.76, SD = 0.58$).

The experience of *violence in the family* was measured by four variables: having witnessed verbal violence between the parents; having witnessed physical violence or aggression between the parents; being victimized of verbal violence by one of the parents; and being victimized of physical violence or aggression by one of the parents. Each of the questions was measured on a five-point Likert scale, going from *never* (score 1) to *very often* (score 5). The variable violence in the family refers to the accumulated mean of the scores on these four variables and ranged from 1 to 5 ($M = 2.15, SD = 0.86$).

6.2.4 Design

First, the data were explored by calculating the univariate measures of the study variables according to whether or not the respondent experienced sexual

victimization in adolescence, including independent samples t-tests. Also bivariate correlations between the study variables are discussed.

Second, the relative importance of sexual exposure and personal vulnerabilities in explaining sexual victimization was tested by a binary logistic regression analysis with the dichotomous variable 'sexual victimization' as the dependent variable. Because sexual exposure might vary according to age (with the older respondents having had more sexual experiences), age was included as a control variable. The constructed sexual exposure variable, and the three personal vulnerability variables were subsequently entered as independent variables.

Third, the interplay between personal vulnerabilities and sexual exposure with regard to sexual victimization, was tested by performing separate group-specific analyses (because of the rather small sample size no interaction effects were tested). Therefore, the respondents were divided into two equal groups for each of the study variables, with one group consisting of the approximately 50% lowest scores and one group consisting of the approximately 50% highest scores. Thus in total four new variables were constructed: low versus high sexual exposure ($n = 101$ versus $n = 106$ respectively), low versus high sexual assertiveness ($n = 98$ versus $n = 109$ respectively), low versus high self-esteem ($n = 118$ versus $n = 89$ respectively), and low versus high experience of violence in the family ($n = 118$ versus $n = 89$ respectively). The effects of the three personal vulnerability factors on sexual victimization were tested separately for respondents from the low and the high sexual exposure group, by a binary logistic regression analysis under the control of age. Likewise, the effect of sexual exposure on sexual victimization was tested separately for respondents who scored in the lower either upper half of sexual assertiveness, self-esteem, and experience of violence in the family.

Finally, to test whether the risk factors differed according to the coercive strategy that was used, one-way ANOVA tests were applied. Therefore the categorical victimization variable was used distinguishing respondents who did not experience sexual victimization in adolescence, from those who experienced sexual victimization whereby physical force was used/threatened to be used, and those who experienced sexual victimization without the use/threat of physical force. Post-hoc Bonferroni tests were included to clarify which groups of respondents exactly differed from each other.

6.3 RESULTS

6.3.1 Univariate and bivariate measures

Table 6.1 shows the univariate sample characteristics according to whether or not the respondent was victimized by sexual aggression in adolescence. The t-test results show that both groups did not differ in age, but most of the study variables did differ significantly. Respondents who had been victimized in adolescence reported a younger age at the first experience of intercourse, a lower proportion of sex partners in a relationship context (thus more casual sex partners), more sexual exposure as measured by the constructed sexual exposure variable, a lower sexual assertiveness, lower self-esteem and more experience of violence in the family as compared to those respondents who had not been victimized. While respondents who had been victimized reported a higher number of sex partners, this difference was not significant, which was against the expectations.

Table 6.1 Univariate sample characteristics according to victimization status

	Not victimized (<i>n</i> = 152)		Victimized (<i>n</i> = 55)		<i>t</i> -test
	M	SD	M	SD	
Age	21.20	2.45	21.25	3.25	-0.119
Age at first intercourse	16.84	1.77	16.13	1.62	2.603*
Total number of sex partners	2.68	1.69	3.13	1.92	-1.610
Proportion of sex partners in relationship	4.10	1.08	3.62	1.18	2.751**
Sexual exposure variable	-0.12	0.97	0.34	1.02	2.971**
Sexual assertiveness	3.91	0.94	3.46	1.02	2.965**
Self-esteem	2.85	0.53	2.52	0.64	3.698***
Violence in the family	2.03	0.77	2.46	1.00	-2.873**

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Sexual victimization correlated in the expected direction with each of the study variables, again with the exception of the total number of sex partners which did not correlate significantly. The strongest correlation was found for self-esteem ($r(205) = -.250$, $p < .001$), followed by the experience of violence in the family ($r(205) = .221$, $p < .01$), sexual assertiveness ($r(205) = -.203$, $p < .01$) and sexual exposure ($r(205) = .203$, $p < .01$). Significant correlations were also found among the personal

vulnerability variables, suggesting that some respondents had an increased accumulated vulnerability. The constructed sexual exposure variable did not correlate with any of the personal vulnerability variables.

6.3.2 Effects of sexual exposure and personal vulnerabilities

Table 6.2 shows the results for the binary logistic regression analysis. After the inclusion of age as a control variable, adding the constructed sexual exposure variable significantly improved the model. The engagement in more sexual exposure behavior increased the odds of being victimized in adolescence. Adding the personal vulnerability variables to the model strongly improved it and more than doubled its total explained variance. Thereby, a lower self-esteem and the experience of violence in the family both increased the likelihood that sexual victimization occurred, whereas sexual assertiveness did not have an effect. Furthermore adding these personal vulnerability variables did not alter the effect of the sexual exposure variable which remained about the same.

Table 6.2 Logistic regression analysis including sexual exposure behavior and personal vulnerabilities

	Victimization of sexual aggression		
	Model 1 Exp(B) (95% CI)	Model 2 Exp(B) (95% CI)	Model 3 Exp(B) (95% CI)
(n = 207)			
Age	1.008 (0.898-1.132)	1.002 (0.892-1.126)	1.069 (0.943-1.211)
Sexual exposure		1.591** (1.158-2.186)	1.586** (1.119-2.247)
Sexual assertiveness			0.742 (0.512-1.074)
Self-esteem			0.455* (0.235-0.879)
Violence in the family			1.571* (1.058-2.332)
<i>Chi-square</i>	<i>0.19</i>	<i>8.516**</i>	<i>22.097***</i>
<i>Nagelkerke R²</i>	<i>.00</i>	<i>.059*</i>	<i>.201***</i>

CI = Confidence Interval

*p<0.05. **p<0.01. ***p<0.001.

6.3.3 Interplay between sexual exposure and personal vulnerabilities

The interplay between sexual exposure and personal vulnerability was suggested in two ways. A first possibility was that sexual exposure behavior only increases the

risk for sexual victimization among those who are also increased vulnerable when it comes to personal vulnerabilities. This was tested by measuring the effect of sexual exposure on sexual victimization according to whether the respondent scored low versus high on sexual assertiveness, self-esteem and violence in the family respectively. Table 6.3 shows the results of these analyses. The results show the opposite of what was expected, at least with regard to sexual assertiveness and the experience of violence in the family. For those two personal vulnerability factors, sexual exposure behavior was only predictive for sexual victimization when being less vulnerable (thus when scoring in the upper half of sexual assertiveness and in the lower half of violence in the family). With regard to self-esteem, the effect of sexual exposure was the same for respondents who scored in the lower as well as the upper half.

Table 6.3 The effect of sexual exposure on sexual victimization according to personal vulnerabilities

	Age-controlled odds for effect of sexual exposure on victimization	
	Exp(B)	95% CI
Sexual assertiveness groups:		
Low	1.391	0.891-2.171
High	1.862*	1.149-3.016
Self-esteem groups:		
Low	1.613*	1.073-2.426
High	1.799*	1.018-3.179
Violence in the family groups:		
Low	2.588**	1.506-4.447
High	1.066	0.691-1.644

CI = Confidence Interval

* p<0.05; ** p<0.01; *** p<0.001

Figure 6.1 visualizes the effect of sexual exposure on sexual victimization according to sexual assertiveness. It shows that at each level of sexual exposure, respondents being lower in sexual assertiveness were at a higher risk for sexual victimization as compared to those who scored higher on sexual assertiveness. However, the effect of sexual exposure was stronger among those who scored in the upper half of sexual assertiveness while the trend line is less sharp among those who scored in the lower

half, resulting in an insignificant effect. For self-esteem comparable trend lines were found and therefore the visualization is not included.

Figure 6.1 The effect of sexual exposure on sexual victimization according to sexual assertiveness

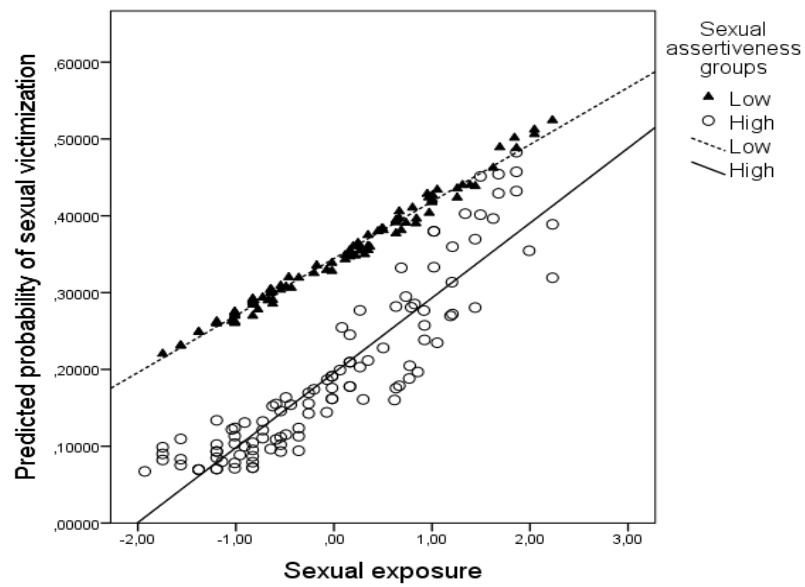
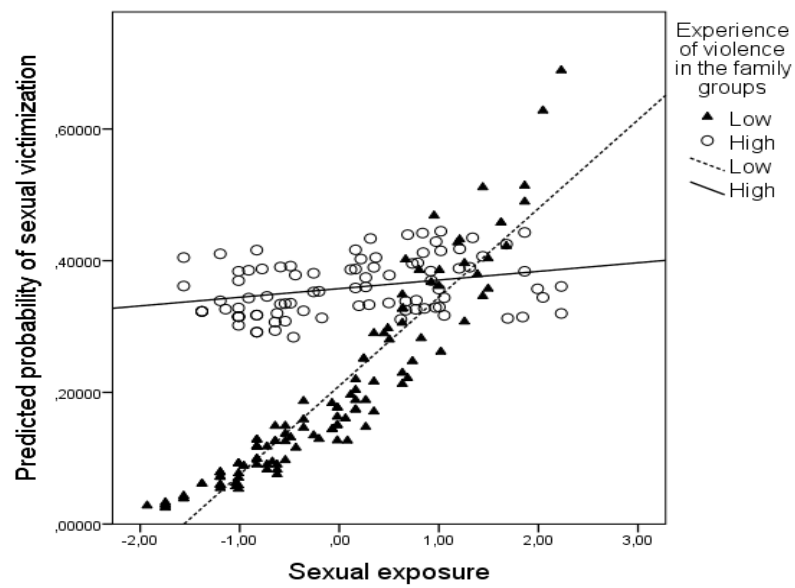


Figure 6.2 The effect of sexual exposure on sexual victimization according to the experience of violence in the family



With regard to the experience of violence in the family, however, clearly different trend lines occurred. Figure 6.2 shows that those respondents who experienced violence in the family were at increased risk for sexual victimization and this without any additive effect of the sexual exposure behavior engaged in.

Secondly it was suggested that personal vulnerabilities will only have an effect on sexual victimization in the context of increased sexual exposure behavior. This was tested by calculating the respective effects of each personal vulnerability factor on sexual victimization according to whether the respondent scored in the lower either upper half of the sexual exposure variable. The results are presented in table 6.4 and show that sexual assertiveness and the experience of violence in the family only predicted sexual victimization among those respondents who scored in the lower half of the sexual exposure variable, which was against the expectations.

Table 6.4 The effect of personal vulnerabilities on sexual victimization according to sexual exposure

	Age-controlled odds for effect of personal vulnerabilities on sexual victimization	
	Exp(B)	95% CI
Group 1: Low sexual exposure		
Sexual assertiveness	0.433**	0.231-0.812
Self-esteem	0.282**	0.133-0.596
Violence in the family	2.258**	1.325-3.848
Group 2: High sexual exposure		
Sexual assertiveness	0.785	0.535-1.152
Self-esteem	0.665*	0.452-0.978
Violence in the family	1.306	0.875-1.949

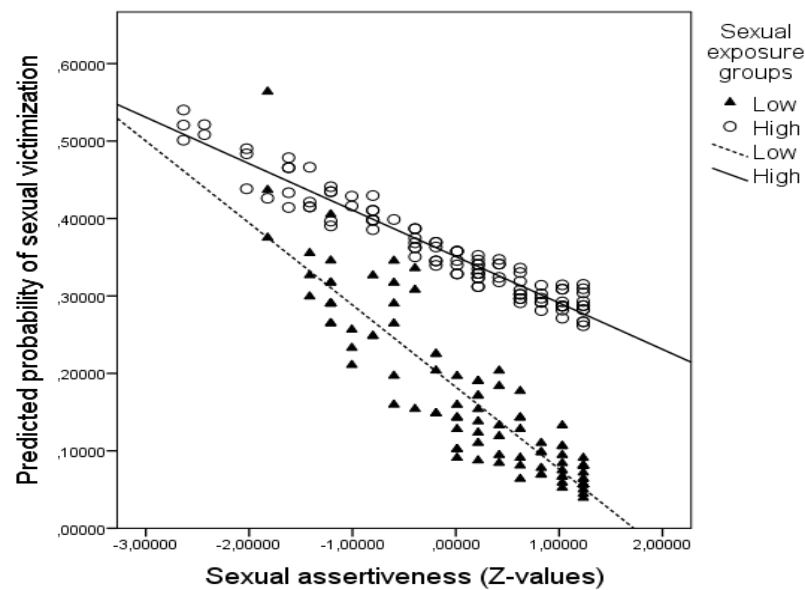
CI = Confidence Interval

* $p < 0.05$. ** $p < 0.01$.

The effect of self-esteem was significant for both groups of respondents but the effect was stronger for those who scored in the lower half of the sexual exposure variable. A visualization of the results (figure 6.3) learned that the lower the respondent's sexual assertiveness the more chance that victimization occurred, and this for both respondents who scored in the upper and lower half of sexual exposure. However, this trend line is less sharp among those who scored in the

upper half of sexual exposure, resulting in an insignificant effect. The figure also clearly shows that at each score of the sexual assertiveness scale, respondents belonging to the high sexual exposure group were more likely to be victimized as compared to respondents belonging to the low sexual exposure group. Similar trend lines were found for the effects of self-esteem and the experience of violence in the family and are therefore not included.

Figure 6.3 The effect of sexual assertiveness on sexual victimization according to sexual exposure



6.3.4 Coercive strategy

A final issue that was addressed was whether the risk factors for victimization differ according to the coercive strategy that was used by the perpetrator, with a focus on the distinction between the use or threat of physical force versus no such use or threat. Table 6.5 shows the mean values on each of the risk factors for respondents who were not sexually victimized in adolescence, respondents who were victimized under the use or threat of physical force, and respondents who were victimized but without the use or threat of physical force respectively. One way ANOVA test results indicate that each of the risk factors differed significantly between the three groups of respondents. Post-hoc Bonferroni tests showed that respondents who had been the victim of sexual aggression without the use or threat of physical force, had a significantly lower self-esteem and lower sexual assertiveness as compared to the respondents who had not been victimized. Respondents who had been the victim of sexual aggression under the use or threat of physical force engaged in more sexual

exposure behavior and experienced more violence in the family as compared to respondents who had not been the victim of sexual aggression.

Table 6.5 Mean values of risk factors according to type of victimization and F-values for ANOVA tests

	Never victim (1) (n = 152)	Victim – Physical force (2) (n = 33)	Victim – No physical force (3) (n = 22)	<i>F-value</i>
Age	21.20	21.27	21.23	0.011
Sexual exposure	-0.122(2)	0.392(1)	0.254	4.527*
Sexual assertiveness	3.91(3)	3.59	3.26(1)	5.155**
Self-esteem	2.85(3)	2.59	2.42(1)	7.444**
Violence in the family	2.03(2)	2.55(1)	2.33	5.691**

*p<0.05. **p<0.01.

6.4 DISCUSSION

The strong association between the sexual behavior engaged in and the experience of sexual victimization has been understood from a routine activity/lifestyle framework which focuses on the contexts in which “increased opportunities for victimization” occur. It was suggested that such framework overlooks the importance of personal vulnerabilities and that in addition the importance of different risk factors may depend on the coercive strategy that was used. The aim of this study was to address these issues by testing for the relative importance of and interplay between sexual exposure behavior and personal vulnerabilities in explaining sexual victimization, and by testing whether these risk factors differed according to whether or not physical force was used as a coercive strategy. The study thereby focused on women in adolescence and young adulthood, aged 16 to 26.

The results confirmed the established conception that increased sexual exposure behavior predicts sexual victimization, but personal vulnerabilities explained by far more of the variance in sexual victimization. Contrary to the expectations based on the literature, this only applied to self-esteem and the experience of violence in the family but not to sexual assertiveness. Furthermore, the effects of sexual exposure and personal vulnerabilities appeared to be additive to each other rather than that they interacted with each other. Sexual exposure behavior and personal vulnerabilities also seemed to compensate for each other in the sense that personal

vulnerabilities had a stronger effect on sexual victimization among those who engaged less in sexual exposure behavior, and vice versa, sexual exposure had a stronger effect among those who scored better on the personal vulnerability factors. Furthermore it was found that the experience of violence in the family was a particularly straightforward predictor for sexual victimization in adolescence. For this risk factor, there was no additive effect of sexual exposure and thus respondents who experienced violence in the family ran a highly elevated risk for sexual victimization regardless of the sexual exposure behavior they did or did not engage in. Respondents who experienced violence in the family also ran a higher risk for physically coerced sexual victimization. The use of physical force as a coercive strategy was also associated with increased sexual exposure behavior while non-physically coerced sexual victimization was linked to a lower self-esteem and a lower sexual assertiveness. This is in line with former research suggesting that when physical force is used, there are less opportunities for regaining control over the situation through interpersonal skills (Testa & Dermen, 1999; Walker et al., 2011; Messman-Moore et al., 2008).

6.4.1 Limitations

Some limitations regarding the measurement of the study variables need to be taken into account when interpreting the results. First, increased sexual exposure in terms of starting early with sexual intercourse, having many partners, and this outside a relationship context, was defined as an indicator of increased exposure to potential perpetrators of sexual aggression. However, research shows that sexual aggression in adolescence might be more common in steady relationships (Gover et al., 2008) in which case having a relationship is a more risky routine activity with regard to sexual aggression as compared to having a higher number of different sex partners. This could explain why no differences were found in the total number of sex partners between respondents who had and who had not been sexually victimized in adolescence. Second, sexual victimization was measured in a rather broad way and only differentiation was made according to whether or not physical force or the threat of it was used as a coercive strategy. However, far more variation in sexual victimization exists which was not accounted for in this research but which are important regarding the distal and proximal explaining risk factors. For example, etiological differences are found between singular and repeated victimization (Fisher et al., 2010), between repeated victimization within the same relationship context versus repeated victimization with different partners (Gagné et al., 2005) and between substance-related versus non-substance-related victimization (Walsh et al., 2013; Testa & Livingston, 2009).

As for the methodological limitations, first, it was not possible to include socio-economic status and ethnic background because of the low diversity in the sample to

that regard and the results discussed here are only applicable to native Belgian, middle class girls in late adolescence and young adulthood. A review by Vézina and Hébert (2007) on the risk factors for dating violence showed inconsistent results with regard to the importance of these socio-demographic factors. From a routine activities approach, it is suggested that the variation in victimization rates along socio-demographic lines is mediated by differences in routine activities across these same lines (Miethe, Stafford, & Long, 1987). Secondly, the sexual orientation of the respondent neither the gender of the perpetrator were taken into account due to the small sample. This is a clear limitation to the research as it is known that adolescents who engage with both same sex and opposite sex partners are more vulnerable for sexual victimization (Pathela & Schillinger, 2010). Finally, given the adverse effects of sexual victimization on mental health and well-being (Exner-Cortens et al., 2013), it may be expected that self-esteem is not only a predictor but also a consequence of sexual victimization. Also a reciprocal relationship between sexual assertiveness and sexual victimization has been established in longitudinal research (Livingston, Testa, & VanZile-Tamsen, 2007). Thus the effects that were found in this study are likely to be bidirectional.

6.4.2 Implications and recommendations for further research

The results of this research learn that sexual exposure behavior and personal vulnerabilities are independent groups of risk factors for sexual victimization and thus prevention efforts should be directed at diminishing the risks in both fields. It should also be taken into account, however, that experiencing intimate relationships is a normal developmental task of adolescence (Tolman & McClelland, 2011) and having one's boundaries crossed – as well as crossing other people's boundaries – might not be entirely preventable in this developmental stage. Therefore, prevention efforts could focus on teaching the skills for distinguishing safe from potentially harmful situations without discouraging all sorts of dating behavior.

In line with the limitations mentioned above, future research could pay more specific attention to the diversity of sexual victimization in terms of for example repetition, type of coercion used, and relationship to the perpetrator. On a broader note, more attention should go to how factors on the personal and broader socio-cultural level converge in the specific contexts in which sexual victimization takes place. A mere focus on the setting in which sexual victimization takes place can not only be problematic from a theoretical point of view; it might also stimulate the endorsement of false social beliefs regarding sexual victimization. It is suggested that the focus on associated behaviors might unwillingly stimulate a “blame the victim” interpretation and reproduce the idea that sexual victimization happens to “a certain type of bad girls” (Grauerholz, 2000). These are widespread perpetuating cultural beliefs associated with *just world beliefs* in which “people get what they

deserve” (Lerner, 1980) and with *rape myths* referring to “prejudicial, stereotyped, or false beliefs about rape, rape victims, and rapists” (Burt, 1980, p. 217). Such beliefs lay at least part of the responsibility for sexual aggression with the (mostly female) victim as they are seen as active agents in creating the right circumstances for the sexual aggression to occur. Therefore, more efforts in future research for a more complete inclusion of explaining factors on the different levels of the social ecology which leads to sexual victimization would be welcome.

Finally, more efforts should be made to better understand the nature of the relationship between sexual exposure and sexual victimization, in addition to the hypothesized ‘increased proximity to potential perpetrators’. For example, it is found that a substantial proportion of the sexual behavior engaged in in adolescence is consensual yet unwanted (Impett & Peplau, 2002) and adolescent girls who are not able to refuse such unwanted sexual contacts are at increased risk for sexual victimization (Walker, 1997). It is likely that sexual encounters which are consensual but yet unwanted give more easily rise to a situation of coercion. Future research should therefore include more qualitative characteristics of the sexual behavior engaged in by adolescents rather than a mere focus on sexual exposure measures such as age at the first intercourse and number of sex partners.

6.4.3 Conclusions

Respondents who engaged more in sexual exposure behavior had a higher chance of being sexually victimized in adolescence. However, personal vulnerabilities broadly related to interpersonal effectiveness and an ontogenetic predictor for interpersonal effectiveness, were relatively more important for explaining sexual victimization. The effects of sexual exposure and personal vulnerabilities appeared additive to each other rather than interactional, and a compensation effect between both types of risk factors was suggested. Furthermore the results suggested that sexual victimization should be differentiated according to the coercive strategy that was used.

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Chapter 7

Discussion

Problem behavior is a widely researched topic, especially when it occurs in adolescence and emerging adulthood. Morbidity and mortality rates increase in this stage of the lifespan as well as crime rates and rates of physical and sexual victimization. This has inspired many academics from different disciplinary research fields to undertake studies into the causes of all sorts of problem behavior. Thereby research in the disciplines of biology and psychology focuses on *developmental vulnerabilities* which makes the engagement in internalizing and externalizing problem behavior more likely. Identity formation and increased social orientation, increased affect-driven judgment and decision-making, sharp rising hormonal levels and neurological reorganization are commonly researched aspects of the developmental period connecting childhood with adulthood. Such research offers knowledge on what motivates young people to engage in behaviors that may be harmful and do not seem “rational”. This knowledge in its turn has great value for the design of effective prevention programs. However, critical voices point out that a focus on such developmental vulnerabilities and specificities misrepresents an entire group merely based on their age. The representation of problem behavior in adolescence is suggested to be inflated and stereotyped, comparable to a “moral panic” (Sharland, 2006; Arnett, 2007). Furthermore, by constructing adolescents as being controlled by hormones and emotions, it is implied that they are dangerously out of control and therefore adult control is logical and necessary (Lesko, 1996).

In addition to a too generalized representation of adolescence as an inherently vulnerable period, it is not always clear or objectively motivated why certain behaviors should be regarded as a problem. Especially when it comes to sexual behavior and substance use, the link with actual harm may become very weak. Defining a wide array of behaviors as “problematic” also ignores the developmental gains young people get from experimenting with new behaviors, including behaviors with potentially harmful outcomes. Learning how to assess and deal with risks is an important developmental task (Boyer, 2006) and the experience with novel and potentially risky behaviors can offer developmental gains in terms of learning to control behavior (Romer, Duckworth, Sznitman, & Park, 2010). Furthermore, as adolescents become more orientated towards peers and become more sensation seeking, certain behaviors that are potentially risky may also become more rewarding. As such, risk-taking in itself may have potential outcomes that are emotionally and socially valuable (Boyer, 2006). This implies that a more nuanced approach towards problem behavior, which positively values normal

experimentation behavior of young people, is imperative (Michaud, 2006). This also implies that the distinction between what is normal and abnormal, and between what is an acceptable and unacceptable risk needs to be critically evaluated (Sharland, 2006). This is a difficult and delicate task. Too much “normalizing” means that young people who are in need of support would become overlooked, while too much “problematizing” means that young people are restrained from or punished for *acting their age*.

The academic researcher plays an important role in the construction – and problematization – of adolescence and adolescent behavior. The researcher can steer what is studied as problem behavior, how problem behavior is studied, and what type of conclusions and implications are derived from the results of such studies. Likewise, research can inform the search for the right balance between normalization and problematization. Therefore this dissertation set as its objective to contribute to answering the question: “*is adolescence necessarily a vulnerable period and is problem behavior always that problematic?*” By means of four empirical studies the dissertation offered new insights which can help answering this question.

A first focus went to a better understanding of the role of hormones on problem behavior. In as far as young people are seen as being steered by their hormones, it is important to know to what extent hormonal levels are in fact related to problem behavior outcomes. Biological factors seem to have some sort of predicate over sociological factors in that if something has a *biological cause* it also is *natural* and *beyond the control* of the individual him- or herself (Lesko, 1996). Nevertheless, the importance of biological factors can only be understood when taking into account personality characteristics as well as the social context in which the behavior takes place. Thus, understanding the relationship between hormones and behavior requires a biopsychosocial approach. The first study contributed to this understanding and showed that the link between androgenic hormones – which massively increase in adolescence – and problem behavior – in terms of substance use, aggressive- and non-aggressive antisocial behavior – is only minimal. Furthermore, this link was dependent on characteristics of personal motivations and the peer group. Specifically, in the context of a deviant peer group and a high personal tendency for reward seeking, hormonal effects on antisocial behavior were found. The study illustrated the importance of interdisciplinary research in order to come to a clear understanding of the relative importance of and interplay between explanatory factors from different disciplinary fields. Some of the behavioral alterations associated with adolescence may be related to *puberty* in terms of the sharp increase in sex hormones, but clearly socio-emotional changes and contextual factors need to be taken into account as well. Importantly, the study showed that young people are not *out of control by their nature*.

A second focus went to a better understanding of how different types of problem behavior relate to one another when it comes to underlying psychosocial strain and as such which types of problem behavior may require more urgent intervention. Thereby the focus went to a specific type of internalizing problem behavior, non-suicidal self-injury, which is highly problematized in the psychological/psychiatric research literature and commonly understood in terms of psychopathology. Other research, however, suggests that non-suicidal self-injury is not necessarily an expression of underlying psychopathology (Bracken-Minor, McDevitt-Murphy, & Parra, 2012) and that instead it may also result from factors such as peer affiliation and sensation seeking (Nock & Prinstein, 2004; Klonsky, 2007). More knowledge about this type of problem behavior is therefore needed, especially about the characteristics of the behavior in a non-clinical community sample. The second study investigated this issue and found that there are good reasons to assume that non-suicidal self-injury is a sign of more severe underlying distress as compared to other types of problem behavior, and this was especially true for girls. Young people who self-harmed also reported suicide ideation more than seven times more often as compared to young people who did not self-harm. These findings suggest that non-suicidal self-injury should be considered as a serious sign for intervention and that overproblematization is not an issue when it comes to this behavior. Depressed moods and suicide ideation were also associated with more and elevated levels of experienced strain as compared to externalizing problem behavior. Externalizing problem behavior and especially substance use were rather common among young people.

A third focus went to a better understanding of sexual risk-taking as sexual behavior in young people is highly problematized in the research literature. Concerns about sexual activity starting increasingly early in western societies, the spread of STD's, HIV, teenage pregnancy and sexual violence among young people have led to the funding of large numbers of research on sexual behavior among young people. Given that becoming sexually active is also a normative task of adolescence (Tolman & McClelland, 2011) it is necessary to better understand why and when certain aspects of sexual activity imposes a risk for the health and wellbeing of young people. The third study (chapter 5) showed that it is not meaningful to regard young people who start early with sexual intercourse as one homogeneous group of sexual risk takers. While for some the early experience with intercourse was a negative experience, it clearly was not so for all young people starting early. It is important that this side of the story is heard as well, and that the image on early sexual activity is not only constructed by adults who define what is risky based on statistical regularities. The experience of an early first intercourse could also be problematic, however. For some of the young people with such an experience, their sexual development was "shocked" and they waited years before engaging in more sexual activity. The differences in experience could be linked to differences in preparation

and the preceding sexual trajectory they experienced. The fourth study (chapter 6) focused on the extent in which the engagement in much sexual activity, in terms of starting early but also having many sex partners and this outside the context of a relationship, increased the risk for sexual victimization. Thereby it was found that such sexual behavior only partially increased the risk for sexual victimization. Personal resources related to self-efficacy and growing up in an adverse family context were equally important or even more important as compared to the sexual behavior engaged in. This shows that the focus on young people's sexual behavior does not entirely serve its goal of protecting them from harm.

7.1 THEORETICAL IMPLICATIONS

The findings of this dissertation have implications regarding the theoretical frameworks that can be applied for understanding problem behavior in young people. From a sociological perspective, the engagement in problem behavior is mainly understood in terms of a response to experienced strain (Agnew, 1992), resulting from a lack of social bonding (Hirschi, 1969/1994), or resulting from social learning (Akers, 1998). Problem behavior theory (Jessor & Jessor, 1977; Jessor, 1991) offers a psychosocial framework which integrates elements of these sociological frameworks with personal-level factors such as biological predispositions and personality characteristics. Problem behavior theory conceptualizes problem behavior as a symptom of general unconventionality which results from the interplay between risk- and protective factors in five different fields: the personal system, the perceived environment system, the behavioral system, the social environment system, and the biological/genetic system. In addition, it offers a framework for understanding why different types of problem behavior tend to co-occur rather than that they occur as singular behaviors. The engagement in problem behavior is in itself understood as a risk factor for the engagement in more problem behavior (due to the social ecology in which problem behavior takes place) and in addition different types of problem behavior are hypothesized to result from the same general tendency for engaging in unconventional behavior. Considering the broad range of risk- and protective factors that are included in problem behavior theory, and the broad range of behavioral outcomes it explains, it offers good opportunities for understanding problem behavior in young people. Based on the results of this dissertation some theoretical implications are formulated.

Firstly, the biopsychosocial interactions that were found in relation to problem behavior outcomes, indicated that a model which includes the biological system is certainly a more complete model than one that does not include this system. As such, the expansion of the original problem behavior theory model with the

inclusion of the biological/genetic system can be supported. Understanding the interplay between genes, hormones, and the environment is still only in its infancy and much work needs to be done to better understand how nature and nurture together affect behavior (Crosnoe & Kirkpatrick Johnson, 2011). It implies a further appreciation for the knowledge that is gathered in different disciplines, and sociology offers the perfect platform for such integration. At the same time, a multidisciplinary approach can prevent that the biological predicate can dictate the way in which an entire demographic group is represented.

Secondly, the results of the dissertation imply that some behaviors that are commonly labeled as problem behavior may in fact be very common (as was the case for substance use in the second study) or not unequivocally problematic (as was the case for an early commencement with sexual activity in the third study). Therefore it is not useful to explain those behaviors by theoretical models of deviance or problem behavior. Given the increased social orientation and increased importance of peers in this stage of the lifespan, social learning is applicable as this theory focuses on learned behavior through interactions with the immediate environment and this theory explains deviant as well as non-deviant behavior. The behavior young people engage in can also be understood as part of their *habitus*, a concept used by Pierre Bourdieu to refer to dispositions, values, and propensities to think, feel and act in determinant ways, linked with one's lifestyle and expectations of particular social groups (Bourdieu, 1984). Concretely, growing up in a certain social context implies that certain values and dispositions for behavior are internalized. This also implies that the engagement in some behaviors such as early sexual activity makes more sense (is "normal") in one social context while it makes less sense (is "deviant") in another social context. It should be noted that the habitus of the researcher and the policy maker, almost per definition highly educated individuals, is likely to be very distinct from the habitus of those young people whose behaviors are labeled as problematic. This is also related to structural power divisions which give more opportunities to some people in society for defining what counts as deviant and what not (Adler & Adler, 2006).

Thirdly, the results raise questions regarding the meaningful integration of different types of problem behavior in one and the same theoretical model. It is difficult to view early first intercourse, for example, as an expression of unconventionality as suggested by problem behavior theory. The study on the early experience of first intercourse (chapter 5) showed that this was mainly related to relationship characteristics and wanting to experience intimacy with one's partner (when experiencing the first intercourse positively) and with being unprepared, being curious and being pressured (when experiencing the first intercourse negatively). Also the second study (chapter 4) showed that internalizing problem behavior, and in particular non-suicidal self-injury, is different from externalizing problem

behavior in that it is more related to suicide ideation and increased levels of strain. Nevertheless, the best predictor for non-suicidal self-injury was the engagement in externalizing problem behavior. It was thereby suggested that the experience of strain might incite a cascade of problematic behaviors whereby young people may progressively engage in more serious types of problem behavior when the former is not satisfactory anymore. This is also supported by other research suggesting that young people who self-harm but who have no attempted suicide are exposed to less risk factors and more protective factors as those who self-harm and who in addition also have attempted suicide (Brausch & Gutierrez, 2010). In the light of installing a good balance between normalization and problematization of behavior, a theoretical model is needed which does not only include different behavioral outcomes but which also looks at the underlying levels of distress, the motivations for engaging in those behaviors, and the functions the behaviors have for the young person (for example expressing strain, conforming to peer group norms, or satisfying personal goals of excitement and social status).

7.2 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

A first clear limitation of the dissertation is that it only focused on a limited number of problem behaviors and thus it did not grasp the wide range of behaviors that are studied as problem behavior in the academic research literature. Furthermore, the variations that exist in particular problem behaviors were insufficiently revealed. Studies show for example, that the timing of onset and the intensity with which one engages in certain problem behaviors, can be important tools for assessing to what extent the behavior is actually problematic in the longer run (Moffitt, Caspan, Harrington & Milne, 2002; Odgers et al., 2008; Sullivan, Childs, & O'Connell, 2010). A first recommendation for future research is thus to keep looking for such nuances that exist so that it will become possible for health policy and prevention efforts to focus on those behaviors that are in fact in need of prevention.

Secondly, the dissertation failed to pay sufficient attention to the role of gender and other personal-level characteristics in relation to problem behavior and its etiology. This does not imply that those factors are considered unimportant. Gender plays a crucial role in the types of strain people are exposed to and the types of behavior one will engage in (Pearlin, 1989). This was also indicated in the second study (chapter 4), which showed that girls reported a lower body image and engaged more in self-harm behavior as compared to boys. Gender is the most studied fixed personal characteristic in relation to strain outcomes. Females are found to rather internalize emotions while males rather externalize (Kaess et al., 2011; Lansford, Malone, Stevens, Dodge, Bates, & Pettit, 2006; Angold, Erkanli, Silberg, Eaves, &

Costello, 2002). This could be explained by a variety of factors, including biological factors as well as socio-cultural gender roles and socialization. The low number of respondents who engaged in non-suicidal self-injury did not allow for studying gender-specific processes that lead to the engagement in the behavior. Also in the other studies, the gender differences in the processes that lead to problem behavior were overlooked due to a lack of statistical opportunities. For example, the effects of hormones on behavior are likely to be different for girls than for boys as the rise in pubertal sex hormones is a lot higher among males. In males testosterone production surges on average 10-fold against two- or three-fold in females (Booth, Granger, Mazur, & Kivlighan, 2006). However, females are more difficult to include in the research of hormonal effects because of artificial perturbations that exist when women use hormonal contraception and due to the menstrual cycle that needs to be taken into account accurately. Future research should aim to look for ways to equally include females in large scale research on the hormonal effects on behavior.

Also with regard to the results on sexual behavior, gender differences were insufficiently revealed. Gendered scripts for sexual behavior, which suggest that boys should solicit for sex and girls should try to refuse sex (Holland, Ramazanoglu, Sharpe, & Thomson, 2000), imply that the engagement in early sexual activity will have different consequences for females as compared to males. The study on early first intercourse did not include a sufficient amount of male respondents so that no conclusions could be drawn regarding such gender difference. With regard to sexual victimization it is plausible that the risk factors are gender-specific, or that there is a gender difference in the type of victimization male and females are more vulnerable for. Differences in body composition may mean that boys are less vulnerable for physically coerced sexual victimization but that instead verbal pressure becomes more important.

Apart from gender, also other personal-level factors related to problem behavior could not be sufficiently taken into account in this dissertation because of limitations regarding the length of the questionnaires that were used. Research shows that some people have a personal tendency for engaging in internalizing problem behavior while other people have a stronger tendency for engaging in externalizing problem behavior. This has led to the suggested existence of a higher-order internalizing/externalizing personality structure (Hopwood & Moser, 2011). The tendency for engaging in internalizing either externalizing problem behavior has been related to different cognitive emotion regulation strategies (or different types of dealing with distress), with internalizing problem behavior related to self-blame and rumination and externalizing behavior rather related to an avoidance coping strategy (Garnefski, Kraaij, & van Etten, 2005). Further research could look for ways to better include such fixed and variable personal-level characteristics which affect who will engage in what type of behavior.

Thirdly, the dissertation made use of cross-sectional data which puts obvious limitations to defining relationships of causality. Based on theoretical assumptions and review of the literature, the found relationships were interpreted at best. However, different results could have been found with a longitudinal design. As such, hormones do not only have activating effects on behavior but can also be reactive to behavioral outcomes. Thus increased hormonal levels may be predictive for behavioral outcomes but behavioral outcomes may also affect increases in hormonal levels (Archer, 2006). Likewise, the engagement in problem behavior may not only be a response to strain but may also be a new source of strain, if for example the behavior elicits family conflict. With regard to non-suicidal self-injury, the research literature focuses on attitudes towards one's body as a predictive factor (Muehlenkamp & Brausch, 2012; Duggan, Toste, & Heath, 2013), but engagement in self-harm may in its turn increase negative feelings towards one's body. Also the predictors for sexual victimization may be a result of the victimization itself, whereby the experience of sexual victimization may lower wellbeing and future sexual assertiveness (Livingston, Testa, & VanZile-Tamsen, 2007; Exner-Cortens, Eckenrode, & Rothman, 2013).

Perhaps a more important consequence and limitation of using cross-sectional data is that it does not allow to study *development*. Given the topic of the dissertation this is obviously a very important issue, and a review of the literature by Boyer (2006) suggests that this lack of a true developmental perspective is characteristic for much of the research on adolescent problem behavior. For a thorough assessment of problem behavior in adolescence and emerging adulthood it is important that the significance of the behavior in the broader developmental trajectory is taken into account. It was argued that a distinction between *experimental* and *chronic* problem behavior is needed but such distinction could not be made in this dissertation. Also, it was not possible to study how the etiological risk factors evolve across time. From a developmental perspective, it is suggested that the effect of hormones are larger in the beginning of adolescence as compared to the end of adolescence. This is based on findings among rodents showing that large hormonal perturbations have more chances to elicit reactions as compared to slow progressive changes (Sato, Schulz, Sisk, & Wood, 2008). Also the importance of other predictive factors for the engagement in problem behavior could vary according to age. For example a low body image or sensitivity to peer pressure may be more important for younger adolescents as compared to the older ones; and due to a lack of experience, the engagement in much sexual exposure behavior might be more risky in terms of victimization for younger adolescents as compared to older adolescents. Longitudinal research is needed to better understand how the effect of such risk factors evolves across adolescence towards adulthood.

Fourth, more in-depth research is needed on the different functions and meanings that different types of problem behavior have for young people themselves. This requires different research tools and methods which allow for a more in-depth exploration. The qualitative part of the dissertation showed that it is important that young people themselves can define what is problematic and what is not. More research is needed which moves beyond simplified categories and which takes into account the variation that exists in a particular behavior.

Finally, there is a need for more knowledge on how institutional structures of society differentially affect young people who do and who do not engage in what is defined as problem behavior. For example, research suggest that the engagement in problem behavior negatively affects academic careers. However, maybe the question could be posed how the education system deals with young people who engage in problem behavior and how this in its turn affects academic careers. It is consistently found that boys perform worse in schools than girls (Van Houtte, 2004), even though boys and girls have equal intellectual capacities. It is possible that the increased tendency of boys to externalize puts more strain on their academic career as compared to girls. Research found bidirectional effects between disruptive behavior and grade retention (Pagani, Tremblay, Vitaro, Boulerice, & McDuff, 2001). As phrased by Curra (2011): "An error occurs when observers attribute the cause for some happening to individual character instead of to the context in which it occurs. Cause and blame are not identical, but decisions about blame and responsibility always have direct implications for who and what is deviant".

7.3 GENERAL CONCLUSION

Research suggests that adolescence is marked by significant biological and socio-emotional changes which makes young people more prone for engaging in problem behavior, and much research has been devoted to understanding *who* engages in *what* problem behavior and *why*. The goal of this dissertation was to contribute in a significant way to this understanding of problem behavior in young people. Therefore, the question was raised "*is adolescence necessarily a vulnerable period and is problem behavior always that problematic?*". By means of four empirical studies, the dissertation contributed to answering this question. The dissertation showed that it is not useful to regard young people in general as developmentally vulnerable because much depends on personal characteristics and the social context in which the behavior takes place. Furthermore, especially with regard to sexual behavior, much variation goes behind these behaviors and it needs to be taken into account that what is problematic for one young person may not be so for another young person. It was suggested that young people's behavior should not be needlessly problematized but that more attention should go to the contexts in which

the behavior takes place, as well as personal strengths and vulnerabilities of the young person. However, too much “normalization” is also not desirable when problem behavior is a sign of underlying distress and when specialized support becomes warranted. Suggestions were made for future research in order to come to a further complete understanding of adolescence and the behavior of young people more in general.

This dissertation concludes with an illustration of the importance and timeliness of coming to a better understanding of problem behavior in young people. The representation of young people as disturbing the social order and needing external control is widely accepted. In the UK, a so-called *antisocial behavior agenda* is suggested to be a symptom of an “institutionalized mistrust of youth”, and leaving young people with the impression “that all youths are problematic regardless of their actual behavior” (Jamieson, 2012, p. 456). Also in Flanders, recent policy changes have made it increasingly easy to sanction young people for engaging in socially disturbing behavior, through so-called ‘GAS boetes’ (‘Gemeentelijke Administratieve Sanctie’ or ‘Communal Administrative Sanctions’ which can be administered by the municipality for minor offences). From the perspective of labeling and subcultures, increased sanctioning may have adverse outcomes, leading to more deviant behavior and resentful feelings towards conventional society by those who are sanctioned.

In addition to social order concerns, problem behavior also raises concerns of potential harm. However, in as far as young people will feel the urge to experiment with new behaviors, it could also be considered as logical that some of them will encounter adverse experiences. Research suggest that prevention messages which emphasize potential risks may have adverse outcomes because it is very likely that the risks will not effectively occur and this in its turn creates a downward shift in risk perception (Albert & Steinberg, 2011). Young people’s resilience to deal with bad experiences should also not be underestimated. From a positive youth development perspective, the strengthening of those personal capabilities is a central aim rather than focusing on the potential harmful outcomes of certain behaviors. Specifically, these programs focus on the promotion of bonding, resilience, spirituality, social skills, moral competence, self-efficacy, belief in the future, prosocial norms and other general orientations towards life (Guilamo-Ramos, Litardo, & Jaccard, 2005). In the light of these societal developments and insights from youth functioning, it is highly important that research informs policy making on problem behavior in all its respects.

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Appendix 1. Abstracts of the empirical studies

Study 1. The effects of androgenic hormones on problem behavior among adolescent boys and moderating psychosocial factors

This study investigates the effects of testosterone and androstenedione on three types of adolescent problem behavior (PB): substance use, aggressive PB and non-aggressive PB. The question is addressed whether androgenic hormones interact with androgen sensitivity and with psychosocial characteristics in relation to these problem behavior outcomes. Sensitivity to reward and inhibition, and PB posed by peers were included as psychosocial factors. A subsample from a representative population study was used, consisting of 311 male respondents aged 14 to 25 from whom a questionnaire and saliva samples for hormonal determinants were taken. The results suggest that androgenic hormones are more predictive of aggressive and non-aggressive PB among respondents with a high sensitivity to reward and who have many peers engaged in PB respectively.

Keywords: problem behavior, substance use, antisocial behavior, adolescence, hormones, puberty

Study 2. Non-suicidal Self-injury in Adolescence: Association with other Problem Behavior and the Importance of Psychosocial Strain

Non-suicidal self-injury (NSSI) is linked to adolescence and it has been mainly researched using clinical population samples or in terms of the underlying psychopathology. The current study investigates NSSI in a representative community sample of adolescents (aged 14 to 25, N = 632) and offers unique insights into how NSSI relates to other types of problem behavior with regard to non-clinical etiological risk factors, and this in terms of psychosocial strain. The results show that NSSI is more prevalent among female respondents, is a typical comorbid problem behavior, and is especially associated with increased suicide ideation. Among female respondents, NSSI is associated with increased levels of psychosocial strain and with exposure to a greater number of individual sources of strain.

Keywords: non-suicidal self-injury, self-harm, problem behavior, adolescence, psychosocial strain

Study 3. The Emotional Experience of Early First Intercourse: A Multi-method Study

The experience of the first intercourse at an early age is a well-established sexual risk behavior as it is related to adverse physical and mental health outcomes. However, the diversity within the group of early starters as well as the actual processes that make early first-time intercourse (potentially) more harmful remain understudied. The goal of this research is to understand the mechanisms which make an early experience of the first intercourse either more or less emotionally harmful. Therefore, a combination of quantitative and qualitative data are used. The quantitative data stem from a population survey (age 14 to 35; N = 705); the qualitative data were gathered by in-depth interviews among 24 young people (age 16 to 18) with an early first-time intercourse (at age 14 or younger). Quantitative analyses show that the age at first-time intercourse is positively related to the feeling of readiness, but for the male respondents only, it is also positively related to the general experience of the first intercourse. For female respondents, the age at the first intercourse is only related to the general experience of it in interaction with the age difference with the first partner. Qualitative analyses show that much variation goes behind these statistical regularities. Successful early starters can be differentiated from problematic early starters based on relationship characteristics, the preceding sexual trajectory and the preceding sexual decision making. Practical implications are described and recommendations for further research are made.

Keywords: first intercourse, sexuality, risk behavior, adolescence, sexual health, romantic relationships

Study 4. Sexual exposure, personal vulnerabilities and coercive strategy: Explaining sexual victimization among sexually active girls

Sexual exposure behavior and interpersonal vulnerabilities are two types of risk factors related to sexual victimization in adolescence. This study investigates the relative importance of and interplay between both types of risk factors with regard to sexual victimization among sexually active girls in adolescence/early adulthood ($N = 207$; age range 16 to 26 years). In addition it was studied whether these risk factors differed according to the coercive strategy that was used by the perpetrator. The results showed that 26.6% of the respondents reported sexual victimization in adolescence, with no difference according to current age. Increased sexual exposure predicted sexual victimization, but the cumulative effect of personal vulnerabilities (including sexual assertiveness, self-esteem and the experience of violence in the family) was stronger. The effects of sexual exposure and personal vulnerabilities respectively were additive to each other rather than interactional. Also differences were found in the risk factors according to whether or not physical coercion was used or threatened to be used by the perpetrator.

Keywords: sexual victimization, adolescence, sexual behavior, sexual vulnerability, sexual coercion

Appendix 2. Scales from the Sexpert research – Flemish versions

Schaal 1. Middelengebruik, agressief- en niet-agressief antisociaal gedrag

Veel jongeren doen wel eens dingen die eigenlijk niet mogen. Wij zouden graag willen weten of jij ook wel eens zo iets hebt gedaan. Gelieve aan te duiden of jij de onderstaande dingen in de afgelopen 6 maanden wel eens hebt gedaan?

1. Hasj of marihuana gebruikt	1	2	3	4	5
2. Hard drugs gebruikt (heroïne, cocaïne, LSD, speed of iets dergelijks)	1	2	3	4	5
3. Meer dan 5 alcoholische drankjes na elkaar gedronken	1	2	3	4	5
4. Sigaretten gerookt	1	2	3	4	5
5. Met opzet iets dat niet van jou was in brand gestoken (schuur, gebouw, vuilnisbak, etc)	1	2	3	4	5
6. Met opzet iets op straat kapot gemaakt (telefooncel, verkeersbord, een ruit, bomen)	1	2	3	4	5
7. Iets uit een winkel gepikt, van grote waarde	1	2	3	4	5
8. Ingebroken in een gebouw of een auto	1	2	3	4	5
9. Iets van iemand gestolen	1	2	3	4	5
10. Iemand verbaal beledigd	1	2	3	4	5
11. Iemand in elkaar geslagen	1	2	3	4	5
12. Iemand bedreigd in elkaar te slagen	1	2	3	4	5
13. Met een mes of ander wapen op zak rondgelopen	1	2	3	4	5
14. Iemand met een mes of ander wapen bedreigd	1	2	3	4	5
15. Betrokken geraakt bij een gevecht	1	2	3	4	5

1 = nee, nooit gedaan; 2 = 1 keer gedaan; 3 = 2 tot 3 keer gedaan; 4 = 4 tot 10 keer gedaan; 5 = meer dan 10 keer gedaan

Schaal 2. Mentale gezondheidsindex (MHI-5)

Deze vragen gaan over hoe je je voelt en hoe het met je ging in de afgelopen 4 weken. Kan je bij elke vraag het antwoord geven dat het best benadert hoe je je voelde?

1. Voelde je je er zenuwachtig?	1	2	3	4	5	6
2. Voelde je je kalm en rustig?	1	2	3	4	5	6
3. Zat je zo erg in de put dat niets je kon opvrolijken?	1	2	3	4	5	6
4. Voelde je je neerslachtig en somber?	1	2	3	4	5	6
5. Voelde je je gelukkig?	1	2	3	4	5	6

1 = nooit; 2 = zelden; 3 = soms; 4 = vaak; 5 = meestal; 6 = voortdurend

Schaal 3. Gevoeligheid voor groepsdruk

Wanneer je denkt aan je vrienden en vriendinnen, hoe vaak doen zich de volgende situaties dan voor?

1. Mijn vrienden kunnen me zowat tot alles overhalen.	1	2	3	4	5
2. Ik geef gemakkelijk toe aan de groepsdruk van mijn vrienden.	1	2	3	4	5
3. Als een groepje mensen me vraagt om iets te doen, vind ik het moeilijk om 'nee' te zeggen.	1	2	3	4	5
4. Ik heb regels verbroken omdat anderen daarop aandrongen of me daartoe aanzetten.	1	2	3	4	5
5. Ik heb gevaarlijke of dwaze dingen gedaan omdat anderen me uitdaagden.	1	2	3	4	5
6. Ik voel me onder druk gezet om dingen te doen die ik normaal niet zou doen.	1	2	3	4	5
7. Als mijn vrienden alcohol drinken, zou het moeilijk voor me zijn om een drankje te weerstaan.	1	2	3	4	5
8. Ik voel me onder druk gezet om seks te hebben, omdat veel mensen van mijn leeftijd al seks hebben gehad.	1	2	3	4	5
9. Ik voel me onder druk gezet om dronken te worden op feestjes.	1	2	3	4	5
10. Ik voel me onder druk gezet om drugs te nemen omdat anderen me daartoe uitdaagden of aanzetten.	1	2	3	4	5

1 = nooit; 2 = zelden; 3 = soms; 4 = vaak; 5 = altijd of bijna altijd

Schaal 4. Lichaamsbeeld

Met de volgende vragen willen we nagaan hoe jij je voelt over jouw uiterlijk. Gelieve elke vraag zorgvuldig te lezen en vervolgens aan te geven welk antwoord het gevoel dat je de voorbije week over jezelf had het best weergeeft.

1. Heb je je verlegen gevoeld over je uiterlijk?	1	2	3	4	5
2. Heb je je minder aantrekkelijk gevoeld?	1	2	3	4	5
3. Ben je ontevreden geweest met je uiterlijk wanneer je was aangekleed?	1	2	3	4	5
4. Heb je je minder mannelijk gevoeld? / Heb je je minder vrouwelijk gevoeld?	1	2	3	4	5
5. Vond je het moeilijk om jezelf naakt te zien?	1	2	3	4	5
6. Heb je je seksueel minder aantrekkelijk gevoeld?	1	2	3	4	5
7. Heb je mensen vermeden omwille van hoe je je voelde over je uiterlijk?	1	2	3	4	5
8. Heb je het gevoel gehad dat je lichaam minder in evenwicht was?	1	2	3	4	5
9. Heb je je ontevreden gevoeld met je lichaam?	1	2	3	4	5

1 = helemaal niet; 2 = eerder niet; 3 = noch niet, noch wel; 4 = eerder wel; 5 = helemaal wel

Schaal 5. Gevoeligheid voor inhibitie en activatie (pleasure seeking subschaal)

In de onderstaande vragenlijst ziet u een aantal stellingen staan waar u het mee eens of oneens kan zijn. Geef voor elke stelling aan in welke mate u het ermee eens of oneens bent. Beantwoord alle stellingen, sla er geen over. Per stelling is slechts één antwoord mogelijk.

1. Ik voel me bezorgd of overstuur als ik denk of weet dat iemand boos op mij is.	1	2	3	4
2. Ik doe vaak dingen in een vlaag van opwelling.	1	2	3	4
3. Ik voel me bezorgd als ik denk dat ik slecht heb gepresteerd.	1	2	3	4
4. Ik verlang naar spanning en sensatie.	1	2	3	4
5. Ik ervaar weinig angsten vergeleken met mijn vrienden.	1	2	3	4
6. Ik pieker wel eens over het maken van fouten.	1	2	3	4
7. Ik ben altijd bereid iets nieuws te proberen als ik denk dat het leuk zal zijn.	1	2	3	4
8. Ik raak enigszins gestrest als ik denk dat er iets vervelends staat te gebeuren.	1	2	3	4
9. Vaak doe ik dingen alleen voor de lol.	1	2	3	4
10. Ik voel zelden angst of zenuwen, zelfs als me iets vervelends staat te wachten.	1	2	3	4
11. Kritiek of uitbranders raken mij behoorlijk.	1	2	3	4

1 = helemaal oneens; 2 = eerder oneens; 3 = eerder eens; 4 = helemaal eens

Appendix 3. Topic list of the SAFE II research

1. Ice breaker:

We will start with a few questions about your life in general. Can you tell a little bit more about yourself?

- What does your family look like? (eg. With whom do you live? Both parents, brothers, sisters?)
- How important is school for you? (eg. What are your future expectations?)

[Summarize]

2. Intrinsic questions

Now we will talk about your sexual experiences. When I talk about 'the first time sex' I mean the first time that you had sexual intercourse, so including penetration.

Question 1. Can you tell a bit more about the person you had your first time with?

- Who was that?
 - Characteristics of that person (age)
 - Were you in a steady relationship with that person? How serious was it for you?
 - How was this relationship established? (eg. How did they meet each other?)
- What did this relationship look like?
 - In terms of support, understanding, communication, openness, ...
 - What were your expectations in this relationship, on relational aspects?
 - What were your expectations in this relationship, on sexual aspects?
- And how was that for you? How did you feel with that (the relationship)?
- How did your environment respond to this relationship?
 - Was the relationship accepted? (eg. By family, friends)
 - How did you deal with the reactions in your environment?

[Summarize]

Question 2. Now we will talk about your first time. Can you tell me more about that?

- How old were you?

- What made you do it?
 - Who took the initiative?
 - Was it completely wanted? You both wanted it just as much?
 - What were your main reasons to have sex at that moment?
 - Did you both have sex for the same reasons?
 - Did you feel pressure in any way to have sex?
 - Was it discussed on forehand?
 - How was the communication about it?
 - Were you able to express yourself well? Was you partner able to express him- or herself well?
 - Was there any non-verbal communication from which you could tell that your partner wanted / not wanted to have sex?
- In what situation did that first time take place?
 - Where were you? (safe, quiet place, privacy?)
 - Was it planned? Did you see it coming?
- Was there any contraception used?
 - Why / why not?
 - Did you know well how to protect yourself?
 - Was it easy to acquire contraception?
 - Were you afraid for pregnancy or STD infection?
- How did you experience that first time?
 - Did you enjoy physically?
 - Experience of physical pleasure, pain, ...
 - Did you think that your partner enjoyed? In a different way than you did?
 - Did you enjoy emotionally?
 - Experience of intimacy, ...
 - Did you feel like your partner enjoyed it emotionally? In a different way than you did?
- At that time, did you feel that you were ready for it?
 - When you look back to it now, do you feel differently?
 - Did you ever feel regret about it?
- At that time, did you feel the need for support or information concerning sexuality?
 - Eg. concerning health, how to protect oneself/ relationship competencies / How to express oneself? / Someone to talk to? / What could have helped you at that time?
- Before you had your first time sex with that person, what other sexual experiences did you already have? (kissing, touching under the clothes, ...)
 - How old were you when you had your first sexual experiences?
 - With whom you had these experiences?

- How fast did you move from less to more intimate behavior? Was it on your own pace?
- How did you feel with these first sexual experiences?
- Before you had your first time sex with (name person), what other sexual experiences did you have already with that person?
 - How fast did you progress through those different steps?
 - How important were those sexual acts in your relationship? How important was it for you and your partner?

[Summarize]

Question 3. After your first time, what other relational and sexual experiences have you had?

- How did your relationship with that person evolved after the first time?
 - Concerning sexuality?
 - Concerning relationship quality?
 - How long did the relationship continue after the first time?
 - In case the relationship has finished, how did you experience the break up?
- Did you have any other relationships after that first time?
 - What did these relationships look like? Were those important relationships for you?
 - How did you experience these other relationships? In terms of openness, closeness, feeling good in the relationship.
 - What have you learned from your relationships so far?
- How did you experience sex in these other relationships?
 - What were the reasons to have sex in these later relationships?
 - How was the communication in these later relationships?
 - Did you physically enjoy sex in these later relationships?
 - Did you emotionally enjoy sex in these later relationships?
 - Have your expectations towards sex changed over time?
 - Are you now better able to realize your expectations than before? (more self-efficacy)
 - Do you feel like you experience sex now in a different way compared to your First time? What has changed?
- At this moment, do you have any need for information, help or support concerning sex or relationships?

Appendix 4. Scales from the Y-SAV research

Scale 1. Sexual assertiveness

Please indicate what applies to you most:

1. I give in and kiss if my partner pressures me, even if I already said no.	1	2	3	4	5
2. I refuse to let my partner touch my genitals if I don't want that, even if my partner insists.	1	2	3	4	5
3. I have sex if my partner wants me to, even if I don't want to.	1	2	3	4	5
4. If I said no, I won't let my partner touch my genitals even if my partner pressures me.	1	2	3	4	5
5. I refuse to have sex if I don't want to, even if my partner insists	1	2	3	4	5

1 = never, 0% of the time; 2 = sometime, about 25% of the time; 3 = about 50% of the time; 4 = usually, about 75% of the time; 5 = always, 100% of the time

Scale 2. Self esteem

 Please indicate what applies to you most:

1. I feel that I am a person of worth, at least on an equal plane with others	1	2	3	4
2. I feel that I have a number of good qualities	1	2	3	4
3. All in all, I am inclined to feel that I am a failure.	1	2	3	4
4. I am able to do things as well as most other people	1	2	3	4
5. I feel I do not have much to be proud of.	1	2	3	4
6. I take a positive attitude toward myself.	1	2	3	4
7. On the whole, I am satisfied with myself.	1	2	3	4
8. I wish I could have more respect for myself.	1	2	3	4
9. I certainly feel useless at times.	1	2	3	4
10. At times I think I am no good at all.	1	2	3	4

 1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree

Summary

In western society, the period connecting childhood with adulthood is considered a vulnerable period deserving of special attention. For most young people this period passes relatively problem-free, but for a substantial proportion it is marked by an increase in behavioral and emotional problem behavior such as excessive substance use, sexual risk-taking, eating disorders, depression and suicidal behavior. Much academic research has been devoted to understanding why this developmental period is marked by an increase in such problem behavior. Research from the disciplines of biology and psychology has focused on revealing the *developmental vulnerabilities* which make the engagement in problem behavior more likely. Fundamental biological, socio-cognitive and emotional changes which prepare the adolescent for a successful transition into adulthood have also been related to an increased engagement in behaviors that do not appear "rational". From a sociological perspective, deviance is explained mainly in terms of a response to experienced strain, resulting from a lack of social bonding, and as learned behavior through interactions in the direct environment. Problem behavior theory in turn offers an integrative psychosocial framework which takes into account factors of social bonding, social strain, social learning but also personal characteristics and biological risk factors for the engagement in all sorts of problem behavior.

Some issues arise when reflecting on this body of research on problem behavior in young people, broadly referring to the overgeneralization of young people as being a vulnerable group and the *overproblematization* of normal experimentation behavior. This dissertation set as its objective to contribute to answering the question: "*is adolescence necessarily a vulnerable period and is problem behavior always that problematic?*" This was done by means of four empirical studies.

Firstly, the focus on developmental vulnerabilities is problematic when it leads to an overgeneralized representation of young people as a vulnerable group being steered by emotions and hormones. Such representation allows that young people themselves become excluded from the negotiation of what constitutes problem behavior. In the sense that they are defined as *irrational, emotional* and *hormonal*, it is not only implied that adults are *rational* but also that adults need to control young people. In order to better understand to what extent hormones affect problem behavior in young people, multidisciplinary research is needed which not only takes into account hormonal levels but also social context and personal characteristics. The lack of interdisciplinary research on the topic of problem behavior in young people is in fact at odds with the recognition that adolescence, and its associated behavioral changes, covers the entire spectrum of biological, socio-cognitive, and emotional changes taking place. The first study of the dissertation showed that the link between androgenic hormones – which massively increase in adolescence – and

problem behavior – in terms of substance use, aggressive- and non-aggressive antisocial behavior – was only minimal. Furthermore, this link was dependent on personal motivations and characteristics of the peer group. Specifically, in the context of a deviant peer group and a high personal tendency for reward seeking, hormonal effects on antisocial behavior were found. The study illustrated the importance of interdisciplinary research in order to come to a clear understanding of the relative importance of and interplay between explanatory factors from different disciplinary fields.

The second issue refers to the *overproblematization* of normal experimentation behavior in adolescence. Research on adolescent problem behavior is criticized for being normatively biased and too restrictive. The attachment of the deviant label to certain behaviors may also have adverse consequences and elicit further deviance. As adolescence is an intense period of identity-formation and social re-orientation, some experimentation with new behaviors, especially within the peer group, may have important social and emotional value. Furthermore, the experience with risky behaviors also has developmental gains in terms of learning how to detect and deal with risky situations. Therefore, finding a right balance between normalization and problematization becomes an important exercise. The second study focused on a specific type of internalizing problem behavior, which has been studied mainly in clinical samples in the field of psychology and psychiatry, namely non-suicidal self-injury. Clinical studies on the behavior suggest that it is a symptom of underlying psychopathology, while some research in population samples suggests that this is not necessarily the case and that it may also be a function of peer affiliation and sensation seeking. Given that non-suicidal self-injury peaks in adolescence and that most knowledge about the behavior stems from clinical samples, it is important to understand to what extent this behavior is “problematic” in non-clinical samples and warrants intervention. The second study showed that there are good reasons to assume that non-suicidal self-injury is a sign of more severe underlying distress as compared to other types of problem behavior, and this was especially true for girls. Young people who self-harmed also reported suicide ideation more than seven times more often when compared to young people who did not self-harm. These findings suggest that non-suicidal self-injury should be considered as a serious type of problem behavior and that overproblematization is not an issue when it comes to this behavior.

A typical research field in which much of the problematization has taken place, is in the field of sexual behavior that young people engage in. On the one hand, becoming sexually active in adolescence is normative, while on the other there are clear social norms regarding what type of sexual behavior is acceptable and what is not acceptable. Concerns about sexual activity starting increasingly early in western societies, the spread of STD's, HIV, teenage pregnancy and sexual violence among

young people have led to large numbers of research on sexual behavior among young people. More research is needed which can nuance the understanding of sexual behavior as a risk for the health and wellbeing of young people. The third study showed that it is not meaningful to regard young people who start early with sexual intercourse as one homogeneous group of sexual risk takers. While for some the early experience with intercourse was a negative one, it was clearly not the case for all young people starting early. It is important that this side of the story is heard as well, and that the image on early sexual activity is not only constructed by adults and researchers who define what is risky based on statistical regularities. The experience of an early first intercourse could also be problematic, however. For some of the young people with such an experience, their sexual development was “shocked” and they waited years before engaging in more sexual activity. The differences in experience could be linked to differences in preparation and the preceding sexual trajectory they experienced.

The fourth study focused on gaining a better understanding of when the engagement in sexual activity is more or less problematic. Thus the study focused on sexual exposure behavior in terms of starting early with sexual activity but also on having many sex partners outside of the context of a relationship. The study sought to determine to what extent such sexual exposure was a risk factor for the experience of sexual victimization. The results showed that sexual exposure behavior only partially increased the risk for sexual victimization. Personal resources related to self-efficacy and growing up in an adverse family context were found to be of equal or greater importance than the sexual behavior engaged in. The study showed that the focus on young people’s sexual behavior does not entirely serve its goal of protecting them from harm and that sexual behavior in itself is not necessarily a risk for sexual victimization.

Conclusively, the dissertation showed that the biological propensities for problem behavior in young people can be meaningfully understood from an interdisciplinary framework. It also illustrated that some behaviors are related to higher levels of strain and as such that these young people are likely to be in need of support. With regard to sexual behavior the dissertation aimed to come to a more nuanced understanding of what constitutes the risk in sexual risk-taking. The dissertation also discussed theoretical implications of the research findings and suggestions for further research on the topic were made.

Samenvatting

In het westen wordt de periode tussen de kindertijd en de volwassenheid als een bijzonder kwetsbare maar ook kneedbare periode gezien, dewelke bijzondere aandacht vereist. Voor de meeste jongeren verloopt deze levensfase probleemloos, maar voor een substantieel deel wordt deze fase gekenmerkt door een toename aan emotionele- en gedragsproblemen, zoals overmatig drankgebruik, seksueel risicogedrag, depressie, en zelfmoordneigingen. Heel wat academisch onderzoek werd besteed aan het begrijpen van wat deze periode nu net zo kwetsbaar maakt voor het stellen van zulk probleemgedrag. Onderzoek in de disciplines biologie en psychologie heeft zich voornamelijk gefocust op het blootleggen van *ontwikkelingsgerelateerde kwetsbaarheden* die de betrokkenheid in probleemgedrag doen toenemen. Fundamentele biologische, socio-cognitieve en emotionele veranderingen die de adolescent voorbereiden op een succesvolle transitie in de volwassenheid werden ook gerelateerd aan een verhoogde betrokkenheid bij gedrag dat op het eerste zicht niet "rationeel" is. Vanuit een sociologisch perspectief wordt deviantie voornamelijk verklaard als zijnde een gevolg van een gebrek aan een sociale band met de maatschappij, een reactie op de ervaring van stress, of als geleerd gedrag vanuit interacties met de directe sociale omgeving. *Probleemgedragtheorie* biedt op zijn beurt een integraal psychosociaal theoretisch kader aan waarbinnen factoren van de sociale band, sociale stress, sociaal leren, maar ook persoonlijkheidskenmerken en biologische risicofactoren voor probleemgedrag worden opgenomen.

Bij reflectie over de immense hoeveelheid aan onderzoek met betrekking tot probleemgedrag bij jongeren, dringen er zich een aantal kwesties op. Deze verwijzen naar het "overgeneraliseren" van jongeren als zijnde een kwetsbare groep en het "overproblematiseren" van het gedrag dat jongeren stellen. De doelstelling van deze dissertatie bestond eruit om bij te dragen aan het beantwoorden van de vraag: *"is de adolescentie noodzakelijk een kwetsbare periode en is probleemgedrag altijd problematisch?"* Dit gebeurde aan de hand van vier empirische studies.

Ten eerste, de focus op ontwikkelings specifieke kwetsbaarheden is problematisch indien dit leidt tot een overgeneralisering van jongeren als zijnde een kwetsbare groep die gestuurd wordt door hormonen en emoties. Zulke representatie staat toe dat jongeren worden uitgesloten van de onderhandeling over wat geldt als problematisch en wat niet. In de zin dat zij gedefinieerd worden als *irrationeel*, *emotioneel* en *hormoongedreven* wordt niet enkel geïnsinueerd dat volwassen wel *rationeel* zijn maar ook dat volwassenen controle moeten uitvoeren over jongeren. Om beter te begrijpen in welke mate hormonen probleemgedrag bij jongeren sturen, is er nood aan multidisciplinair onderzoek waarbij niet enkel hormonale factoren maar ook de sociale context en persoonlijke kenmerken in rekening worden

genomen. Het gebrek aan interdisciplinair onderzoek rond het onderwerp van probleemgedrag bij jongeren staat in feite haaks op de erkenning dat de adolescentie verwijst naar het volledige spectrum aan biologische, socio-cognitieve, en emotionele veranderingen die tijdens deze fase plaatsvinden. De eerste studie van de dissertatie toonde aan dat de link tussen androgene hormonen – die exponentieel toenemen tijdens de adolescentie – en probleemgedrag – in termen van middelengebruik, agressief- en niet-agressief antisociaal gedrag – slechts minimaal was. Bovendien was deze link afhankelijk van persoonlijke motivaties voor gedrag en kenmerken van de vriendengroep. Meer specifiek, in de context van een deviante vriendengroep en een hoge persoonlijke neiging voor het opzoeken van beloning, werden er hormonale effecten op antisociaal gedrag vastgesteld. De studie toont het belang aan van interdisciplinair onderzoek zodat het relatieve belang van en de wisselwerking tussen verschillende types van verklarende factoren kan worden begrepen.

Een tweede kwestie verwijst naar de overproblematisering van normaal experimenteergedrag bij jongeren. Zo wordt er gesteld dat onderzoek rond probleemgedrag normatief vertekend en te restrictief is. Het toewijzen van het *deviantie* label aan bepaalde gedragingen kan ook nadelige gevolgen hebben en verdere deviantie uitlokken. De adolescentie is een periode van intense identiteitsontwikkeling en sociale heroriëntatie waarbij het experimenteren met nieuwe gedragingen, vooral binnen de vriendengroep, belangrijke sociale en emotionele waarde kan hebben. Bovendien houdt de ervaring met risicovol gedrag ook ontwikkelingsvoordelen in, in termen van het leren detecteren en omgaan met risicovolle situaties. Daarom is het belangrijk dat er een goede balans kan gevonden worden tussen de “normalisering” en “problematisering” van gedrag bij jongeren. De tweede studie focuste op een specifiek type van internaliserend probleemgedrag, welk voornamelijk bestudeerd wordt in klinische samples in het onderzoeksveld van de psychologie en psychiatrie, namelijk niet-suïcidale zelfverwonding. Klinische studies interpreteren het gedrag in termen van een onderliggende psychopathologie, terwijl sommige grootschalige populatiestudies aangeven dat dit niet noodzakelijk het geval is. Eerder dan psychopathologie zou niet-suïcidale zelfverwonding ook gerelateerd zijn aan het zoeken van sensatie en groepsaffiliatie. Gegeven dat niet-suïcidale zelfverwonding piekt tijdens de adolescentie en dat de meeste kennis over het gedrag gebaseerd is op klinische samples, is het belangrijk om na te gaan in welke mate het gedrag problematisch is in niet-klinische samples en interventie vereist. De tweede studie toonde aan dat er goede redenen zijn om aan te nemen dat niet-suïcidale zelfverwonding een teken is van een hogere mate van onderliggende stress in vergelijking met andere vormen van probleemgedrag, en dit was voornamelijk zo voor meisjes. Jongeren die zichzelf verwonden rapporteerden ook meer dan zeven keer meer zelfmoordgedachten in vergelijking met jongeren die zichzelf niet verwonden. Deze bevindingen suggereren dat niet-

suïcidale zelfverwonding een ernstige vorm van probleemgedrag is, ook bij jongeren in een niet-klinische context, en dat teveel “normalisering” in dit geval schadelijker kan zijn dan “problematisering”.

Een typisch onderzoeksveld waarbinnen heel wat problematisering is gebeurd, is in het veld van seksueel risicogedrag bij jongeren. Aan de ene kant is het normatief dat jongeren seksuele ervaringen opdoen maar aan de andere kant zijn er strikte sociale normen rond de context en voorwaarden waarbinnen deze seksuele gedragingen zich dienen af te spelen. Bezorgdheden over almaar sneller startende jongeren, de verspreiding van SOAs en HIV, tienerzwangerschappen en seksueel geweld hebben geleid tot heel wat onderzoek over het seksuele gedrag van jongeren. De derde studie toonde aan dat het niet betekenisvol is om alle jongeren die vroeg starten met seks te beschouwen als één homogene groep van seksuele risiconemers. Terwijl voor sommigen de ervaring van seks op jonge leeftijd een negatieve ervaring was, was dit duidelijk niet het geval voor alle jonge starters. Het is belangrijk dat deze kant van het verhaal ook gehoord wordt en dat het beeld over seks op jonge leeftijd niet enkel bepaald wordt door volwassenen en onderzoekers die zich baseren op statistische regelmatigheden. De ervaring van geslachtsgemeenschap op jonge leeftijd kon echter ook problematisch zijn. Voor sommigen met zo'n ervaring werd de seksuele ontwikkeling “geshockeerd” en duurde het ook jaren vooraleer zij opnieuw seksuele ervaringen hadden. Het verschil in beleving kon ook worden gerelateerd aan verschillen in voorbereiding en kenmerken van het voorafgaandelijke seksuele traject.

De vierde studie focuste op het beter begrijpen van de omstandigheden waaronder seksuele ervaringen meer of minder problematisch kunnen zijn. De focus ging daarbij naar *seksueel blootstellingsgedrag* in de zin van het starten met seks op jonge leeftijd en het hebben van veel verschillende partners en dit buiten de context van een vaste relatie. De studie trachtte na te gaan in welke mate zulk seksueel blootstellingsgedrag een risico inhoudt voor de ervaring van seksueel grensoverschrijdend gedrag. De resultaten toonden aan dat seksueel blootstellingsgedrag slechts gedeeltelijk gerelateerd was aan het risico op de ervaring van seksuele grensoverschrijding. Persoonlijke kenmerken gerelateerd aan effectiviteit en het opgroeien in een gewelddadige gezinscontext waren even belangrijk of zelfs belangrijker dan het seksuele gedrag dat gesteld werd. De studie toonde aan dat de focus op het seksuele gedrag van jongeren niet noodzakelijk het doel dient om jongeren te beschermen en dat seksueel gedrag op zichzelf niet noodzakelijk een risico inhoudt voor seksuele grensoverschrijding.

Concluderend, de dissertatie toonde aan dat een biologische onderbouw voor probleemgedrag bij jongeren op een betekenisvolle wijze kan geïnterpreteerd worden vanuit een interdisciplinair kader. De dissertatie illustreerde ook dat sommige gedragingen sterker samenhangen met de ervaring van stress en aldus dat

deze jongeren meer nood hebben aan steun. Met het oog op seksueel gedrag bij jongeren werd getracht om tot een duidelijker en meer genuanceerd beeld te komen van wat risicovol is. De dissertatie bespreekt ook de theoretische implicaties van deze bevindingen en suggesties voor verder onderzoek.