Chapter 1

General introduction

1.1 Introduction

A solid body of criminological research has focused on the role that the family of origin plays in an individual’s development of criminal and antisocial behavior (e.g. Derzon, 2010; Farrington, 2011; Loeber & Stouthamer-Loeber, 1986). Studies have shown that family factors, such as parental supervision and strong attachment with the parent, can prevent children from engaging in criminal and antisocial behavior (e.g. Lösel & Bender, 2003). Yet, many family factors increase, instead of decrease, the likelihood that a child develops criminal and antisocial behavior. For example, a large family size, inadequate parenting practices (e.g. poor supervision, poor discipline, low parental involvement with the child), parental conflict and parental divorce or separation have been shown to predict criminal and antisocial behavior in children and adolescents. The strongest family factor that is usually found to predict offending, however, is the criminal or antisocial behavior of the parents (Farrington, 2011).

Although parental offending is a strong predictor for criminal development, little empirical evidence for intergenerational transmission of crime is, however, based on prospectively gathered data from multiple generations (Thornberry, 2005). Much of the empirical evidence for the relationship between parental offending and offspring offending is found in studies that use a retrospective study design. These studies often select respondents on the dependent variable (i.e. the child’s offending behavior) and measure what proportion of them have a criminal parent. In these studies it remains unknown what proportion of the non-offending children have criminal parents. Consequently, these studies are not suitable to measure the intergenerational transmission of crime. In addition, as these studies are not specifically designed to measure and explain the intergenerational transmission of crime, they provide little information on the mechanisms behind this transmission.

The fact that relatively few prospective studies focused specifically on the intergenerational transmission of crime is probably the consequence of the demanding data requirements that make conducting an adequate intergenerational study an expensive and longwinded effort. First, longitudinal data on the criminal
behavior of at least two consecutive generations is necessary. Second, a prospective study design is required in order to avoid selection on the dependent variable (i.e. the criminal behavior of children) and to ensure that both criminal and non-criminal parents are included in the data. Third, data on criminal behavior should be collected over an extended period in order to examine multiple generations into adulthood.

During the past decades a number of longitudinal multigenerational studies with a prospective study design have been conducted in order to explicitly study the intergenerational transmission of crime: the Cambridge Study in Delinquent Development (CSDD), the Criminal Career and Life course Study (CCLS), the Rochester Youth Development Study (RYDS), the Oregon Youth Study (OYS), the Ohio Life-Course Study (OLS) and the Transfive study. Most research from those studies, however, focused on crime in general. As crime in general includes a wide array of behaviors (e.g. fraud, burglary, assault, arson, driving under influence or drug offences) associated with different skills (e.g. physical strength, specific knowledge or social skills), motives (e.g. financial gain, retaliation, stimulation-seeking or addiction) and personality characteristics (e.g. intelligence, self-control, aggressiveness or fearlessness), different mechanisms may be responsible for the intergenerational transmission of different types of crime. Due to this focus on general crime it is possible that earlier evidence for intergenerational transmission of offending is partly based on intergenerational links between very different crime types (e.g. a father’s fraud and a son’s violent assault). This raises the question whether these intergenerational similarities in criminal behavior are actually the consequence of direct transmission of skills, motives, traits or attitudes or whether they are rather the result of confounding factors such as poverty or living in bad neighborhoods. Focusing on homogeneous subsets of crime is necessary to understand the intergenerational transmission of crime, since different crimes may be associated with particular skills, motives and personality characteristics. Moreover, the underlying mechanisms might be different for different types of crime. It is therefore important to study the intergenerational transmission of specific types of crime. The current study focuses on the relatively homogeneous subset of violent crimes and studies the intergenerational transmission of violent crimes.

An important reason to especially focus on the intergenerational transmission of violent crime is its long-term and often severe consequences for
victims. It is increasingly recognized that victimization of violent crime can have long-term physical, emotional, practical and financial consequences (Hoyle & Zedner, 2007; Miller, Cohen & Rossman, 1993). Violence can be traumatizing for victims and witnesses but could also negatively affect perpetrators’ lives. Since violent behavior is a widespread phenomena in our society – annually between 5 to 6 percent of Dutch citizens becomes a victim of (a) violent offense(s) (Huys, 2012) –violence has a large impact on society and is costly.

A second reason to focus on the intergenerational transmission of violent crime is that on theoretical grounds, on which will be elaborated in the next section, it is expected that the transmission of violent crimes across generations is stronger than the transmission of other crimes, and might be driven by different mechanisms. In order to reduce the harm caused by violence, it is important that interventions are directed to those who are most at risk to become violent offenders. Knowledge on the extent of the intergenerational transmission of violence and increased insight in its contribution to the etiology of violent behavior is necessary in order to be able to effectively intervene in negative family environments. Until now, only a few studies have focused specifically on the intergenerational transmission of violent crime (e.g. Besemer, 2012a; Frisell, Lichtenstein & Långström, 2011). Much is still unknown about the extent of intergenerational transmission of violent crime and its underlying mechanisms.

1.2 Theory

That antisocial, criminal and violent behavior is transmitted across generations can be derived from several criminological theories. These theories, however, differ in the manner in which they explain this intergenerational transmission. Farrington (2011; Farrington, Joliffe, Loeber, Stoutamer-Loeber & Kalb, 2001) distinguished six mechanisms that possibly explain why offending is transmitted from one generation to the other. These mechanisms are not mutually exclusive, and several theories use a combination of these mechanisms to explain the intergenerational transmission of crime (e.g. Thornberry’s (2005) intergenerational extension to the interactional theory of offending). It can be expected that some of these mechanisms might apply more strongly to the intergenerational transmission of violent crime than to the intergenerational transmission of non-violent crime. In this section, these six mechanisms are first
discussed, and then it is argued why some mechanisms might apply more strongly to the intergenerational transmission of violent crime.

1.2.1 The cycle of deprivation

The first two mechanisms, distinguished by Farrington (2011; Farrington et al., 2001), involve risk factors for criminal behavior. First, it is possible that intergenerational transmission is part of a larger cycle of deprivation. According to this first explanation, crime is not directly transmitted between generations, but instead there may be intergenerational continuities in exposure to risk factors for criminal behavior (e.g. poverty, disrupted families, teenage parenting, high school dropout unemployment, and living in deprived neighborhoods). As a consequence of this intergenerational transmission of risk factors for criminal behavior, both parent and child are at increased risk to become criminal. In support of this mechanism, several studies have found evidence for intergenerational transmission of risk factors for criminal development, such as poverty (e.g. Bird, 2007), divorce (e.g. Amato, 1996), poor parenting (e.g. Capaldi, Pears, Patterson & Owen, 2003) and teenage parenting (e.g. Kahn & Anderson, 1992).

1.2.2 Mediating risk factors

Second, the intergenerational transmission of crime might be mediated by risk factors for criminal development. According to this mechanism the intergenerational transmission of crime is the consequence of criminal parents exposing their children to risk factors for criminal behavior. For example, criminal parents tend to live and raise their children in bad neighborhoods, have children at younger ages and use inadequate child-rearing methods, which increases their children’s risk to become criminal (e.g. Farrington et al., 2001; Sampson & Laub, 1993; Smith & Farrington, 2004; West & Farrington, 1977). The difference between this mechanism and the first is illustrated in Figure 1.1.
1.2.3 Assortative mating

The third mechanism suggested by Farrington (2011) is assortative mating. This mechanism points to the finding that offenders tend to live with, and have children with, offenders of the opposite sex (e.g. Boutwell, Beaver & Barnes, 2012; Krueger, Moffitt, Caspi, Bleske & Silva, 1998; Rhule-Louie & McMahon, 2007). Children from such criminal couples are shown to be disproportionately antisocial (West & Farrington, 1997). Rowe and Farrington (1997) distinguish two processes that cause assortative mating. The first one is social homogamy, which suggests that criminal persons occupy similar social niches. They are more likely to meet each other because they live in the same neighborhoods and go to the same schools, clubs and pubs. The second process is phenotypic assortment which suggests that people observe each other’s personality traits and choose partners similar to themselves (Rowe & Farrington, 1997).
1.2.4 Social learning

The fourth mechanism relates to theories about social learning, which assume that criminal behavior and attitudes regarding crime, instead of being congenital, are learned from other persons. The idea that criminal behavior is learned was proffered since the early development of criminological theory. Tarde (1912) considered social imitation as pivotal to the origin of criminal behavior, in contrast to the individual characteristics prominent in Lombroso’s (1876) concept of the atavistic, born criminal. Tarde (1912) distinguished three laws of imitation which state that people imitate those with whom they have the closest contact, that inferior people imitate superior people and that newer fashions displace older ones. Sutherland’s differential association theory extended on this basic idea that criminal behavior, like any other type of behavior, has to be learned. According to this theory, individuals learn the techniques, motives, rationalizations and attitudes that are necessary to perform criminal behavior in intimate primary groups. Sutherland emphasizes the importance of communication processes: criminal behavior is not simply imitated, but is learned in interaction as definitions of legal codes as favorable or unfavorable are continually passed on. When definitions favorable to violations of the law exceed definitions unfavorable to violation of the law, the child will engage in criminal behavior (Sutherland & Cressey, 1966). Burgess and Akers (1966) reformulated Sutherland’s theory and included the idea of differential reinforcement, which refers to the consequence of people’s behavior. People behave in ways that they expect to bring some kind of gain and do not behave in ways that they expect to result in punishment. These gains and punishments can be both social (e.g. (dis)approval of peers) and nonsocial (e.g. getting high on or sick from drugs). The balance between positive and negative reinforcements determines whether people continue or discontinue with the behavior (Akers, 1998).

Support for a learning effect of crime was found by Van de Rakt and colleagues (2010) as children’s chance of convictions rises in the years in which their father committed crimes. Giordano (2010) also found support for social learning mechanisms, since the life-history narratives of children of highly criminal parents showed that they are often exposed to their parent’s violence and drug involvement. Direct transmission of crime also occurs when the child is provided with both definitions favorable to crime and skills to engage in crime during parent-child interactions (Giordano, 2010).
1.2.5 Genetic mechanisms

Fifth, the intergenerational transmission of offending might be the consequence of genetic mechanisms. According to this explanation, criminals have a genetic predisposition for criminal behavior which might be transmitted to their offspring. The influence of genetic factors on criminal behavior is often examined with twin and adoption studies. In twin studies, intragenerational patterns of criminal behavior are studied by comparing the concordance in offending rates between monozygotic twin pairs and dizygotic twin pairs. Assuming equal environment, a higher concordance between monozygotic twin pairs indicates an influence of genetic factors since monozygotic twin pairs share more genes than dizygotic twin pairs. In adoption studies, intergenerational patterns of criminal behavior are studied by comparing the criminal behavior of adopted children with the criminal behavior of their biological and their adoptive parents. If the adopted child’s criminal behavior is more similar to that of its biological parents than to that of its adoptive parents, this suggests an influence of genetic factors since the adopted child and its biological parents share genes but not environment.

In support of this mechanism, meta-analyses on dozens of adoption and twin studies concluded that genes explain between 40 (Rhee & Waldman, 2002) and 50 percent (Mason & Frick, 1994) of the variance in antisocial and criminal behavior. The methodologies and assumptions – such as the equal environment assumption – of twin studies are, however, criticized (e.g. Joseph, 2002) and it is questionable to what extent results of adoption studies are generalizable to non-adoptees. Moreover, it is important to gain more information on how genetic mechanisms interact with environmental factors.

1.2.6 Official bias

The sixth and last mechanism distinguished by Farrington (2011) suggests that an intergenerational transmission of crime exists due to official bias towards known criminal families. Since some criminal families are monitored more intensively by law enforcement agencies, the children of convicted parents are more likely to be arrested and convicted for the crimes they commit than children of non-convicted parents. Support for this mechanism was found by Besemer and colleagues (2013), as they showed that having a convicted parent increased the
risk of offspring convictions, even when the offspring’s level of self-reported offending was taken into account.

1.2.7 Application to the intergenerational transmission of violent crime

It is likely that some of these mechanisms explain the intergenerational transmission of violent crime better than the intergenerational transmission of non-violent crimes. First of all, social learning might play a more important role in the intergenerational transmission of violent crimes since children of violent parents are more likely to be exposed to the violent behavior of their parents than children whose parents commit other crimes. The child of a burglar, for example, will probably not witness its parent during a burglary, while children of violent parents are more likely to witness their parents’ violent behavior at home (e.g. domestic violence, child abuse). In support of this assumption, Bernasco (2010) showed that offenders who are convicted for an assault are more likely to commit this crime in their current area of residence than offenders convicted for residential burglary and theft from car and Fantuzzo and Fusco (2007) showed that children were present in about half of the cases of domestic violence. In addition, violent crimes may be a manifestation of an aggressive trait that can also be expressed by aggressive and violent behavior in everyday life. Second, the role of genetic influences might be larger for the intergenerational transmission of violent crimes than for other forms of criminality. Although violent offending itself is not directly genetically transmissible, personality traits associated with violence, like a low intelligence and low self-control (e.g. Denno, 1990; Farrington, 1998), are to a large extent heritable (e.g. Beaver, Wright, DeLisi & Vaughn, 2008; Devlin, Daniels & Roeder, 1997; Wright & Beaver, 2005) and can therefore increase the likelihood of the occurrence of violent behavior in consecutive generations. Finally, it might be possible that law enforcement bodies more intensively monitor violent families than non-violent criminal families, given the severe consequences of violence. Therefore, the official bias by law enforcement might be greater towards known violent families.

The empirical literature finds support for each of the six mechanisms. Yet, different studies each have their strengths and weaknesses, which make it hard to compare results across studies and to decide on the relative importance of
each of the theorized mechanisms underlying intergenerational transmission of crime (Farrington, 2011).

1.3 Previous research

Research on criminal and antisocial families has a long history. During the late 19th century and the early 20th century, Dugdale’s (1877) and Goddard’s (1912) studies on the Jukes family and the Kallikak family, respectively, were the first large-scale quantitative studies on this topic. This section first discusses these two classic studies and their methodological shortcomings. Next, it reviews more contemporary multigenerational studies with prospectively gathered data as well as population studies.

1.3.1 The Jukes and the Kallikaks

Richard Dugdale, an inspector for the New York Prison Association, started his research on the Jukes family (a pseudonym) when he visited Ulster County jail and discovered that six persons being held there turned out to be blood relations in some degree. Dugdale (1877) found that among 29 males who were immediate blood relations of these six detainees, seventeen persons were criminals and fifteen of them were convicted and had received a total of 71 years of prison sentence. In an attempt to discover the roots of their criminality, Dugdale traced their ancestors back seven generations to Max Keyser, a descendant of early Dutch settlers who was born between 1720 and 1740. Dugdale collected data on 709 persons, among which 540 individuals who were related by blood to the Jukes and 169 by marriage or cohabitation. These 709 individuals included 140 criminals and offenders, 60 habitual thieves, 50 prostitutes and 180 relief recipients. Moreover, seven persons were murdered by members of the Jukes family and 440 persons were infected with a venereal disease by 40 female Jukes. Estabrook (1916) published a follow-up study on the Jukes family in which 2,111 Jukes were added to the original 709 Jukes that were studied by Dugdale. Although Estabrook’s results showed that the Jukes engaged in less problem behavior over time, the Eugenics Record Office pronounced that the Jukes were
plagued by feeblemindedness\(^1\), indolence, licentiousness and dishonesty as they had ever been (Christianson, 2003).

Henry Goddard was a prominent American psychologist and the director of research at the New Jersey Home for the Education and Care of Feebleminded Children. His study on the Kallikak family (a pseudonym, composed of the Greeks words καλός (beauty) and κακός (bad)) started with Deborah Kallikak, a woman in this institution. Goddard (1912) traced Deborah Kallikak’s roots back five generations to her great-great-great-grandfather Martin Kallikak Sr. who was a respectable citizen from a good family and who joined one of the military companies that were formed at the beginning of the American Revolutionary War. During this battle, Martin Kallikak Sr. had a short-term romance with ‘the nameless feeble-minded barmaid’ of one of the taverns frequented by the military. After leaving the Revolutionary Army, Martin Kallikak Sr. married a respectable girl and started a family. The children and descendants born from this family became respectable citizens, prominent in every domain of social life: doctors, lawyers, judges, educators, traders and landholders. The feeble-minded barmaid, however, had been impregnated by Martin Kallikak Sr. and gave birth to their son, Martin Kallikak Junior. Although Martin Kallikak Sr. did not pay any attention to the feeble-minded girl nor their son, “society has had to pay the heavy price of all the evil he engendered” (Goddard, 1912, p.29): among the 480 descendants of Martin Kallikak Sr. and the feeble-minded girl Goddard (1912) found “paupers, criminals, prostitutes, drunkards, and examples of all forms of social pest with which modern society is burdened” (p.116).

These two classic studies showed that criminality and related problem behavior concentrated within families and were transmitted across generations. Dugdale was very cautious in his conclusions and claimed that his book did “not demonstrate the inheritance of criminality, pauperism or harlotry, but it does show that heredity with certain environmental conditions determines criminality, harlotry and pauperism” (Estabrook, 1916, p.2). These conclusions were, however, often ignored and Dugdale’s and Goddard’s work misrepresented as being solidly hereditary. Their work was also misused as evidence in favor of

\(^1\) At the end of the nineteenth century, mental deficiency was believed to consist out of distinct groups of ability, ranging from idiocy (the most severe deficiency) through imbecility to feeble-mindedness. ‘Feeble-mindedness’ was referred to as ‘the borderland of imbecility’ (Jackson, 1998; p.364)
eugenics. In the beginning of the twentieth century, the stories of the Jukes and the Kallikaks were used in the campaign for legalization of forced sterilization – one of Goddard’s suggestions to ‘solve the problem’ - in the United States (Lombardo, 2012).

Nowadays, the Dugdale’s and Goddard’s studies are heavily criticized for their data and design. A recently made available codebook of Estrabrook, for example, showed that Max, the oldest known ancestor of the Jukes family, was identified as Max Keyser. However, Dugdale nor Estabrook ever noted that several Keysers from later generations became lawyers, real estate brokers and other respected citizens in Ulster County (Christianson, 2003). Moreover, it is now pointed out that Dugdale had acknowledged that the Jukes were not a single clan but rather a composite of 42 families, complicating genetic explanations (Christianson, 2003). In addition, Goddard, or one of his colleagues, is being accused of altering the photographs of the members of the Kallikak family in his book. Elks (2005) argues that these pictures have been retouched in order to make darker, crazy looking eyes and more menacing faces. Finally, it is suggested that (prenatal) exposure to alcohol rather than heredity may have been responsible for the intergenerational problem behavior of the Kallikaks (Karp, Qazi, Moller, Angelo & Davis, 1995).

1.3.2 Prospective multigenerational studies

Research methods improved considerably during the 20th century and during the last decades several multigenerational studies with a prospective study design were started to study the intergenerational transmission of crime. In line with the early conclusions of Dugdale (1877) and Goddard (1912), these multigenerational studies show that crime runs in the family. These studies are summarized in Table 1.1 and their most important results are discussed in this section.

In the Cambridge Study in Delinquent Development (CSDD), 411 working-class boys from the inner-city area of South London, who were born around 1953, are followed prospectively from age 8 onwards. Self-reported measurements of delinquency were collected between the ages of 14 and 48. Reports of convictions were available for these boys, as well as for their full biological siblings and their parents. Empirical evidence for a concentration of crime within these families was found, as Farrington and colleagues (1996)
showed that 6 percent of the families was responsible for half of all convictions. Support for inter- and intragenerational transmission of offending was also found as convictions of one family member were strongly related to convictions for every other family member. This familial transmission was generally stronger for same-sex relationships than for opposite-sex relationships (Farrington et al., 1996; Rowe & Farrington, 1997). Not only the prevalence of crime is shown to be transmitted across the families from the CSDD, Besemer (2012b) showed that the frequency of parents’ and offspring offending was related as well. Besemer (2012a) further showed a specialized intergenerational transmission of violence among the CSDD families.

Between 2004 and 2007, the children of the 411 original men from the CSDD were added to the data as well. These children were born between 1970 and 1984. A study on this third generation showed that convictions were transmitted from the 411 original men to their children as well. Little evidence, however, was found for intergenerational transmission from grandparents to grandchildren. It should however be noted that the searches of the children in the third generation were problematic because of difficulties in ensuring that a person found was indeed the target child (Farrington, Coid & Murray, 2009).

In the Rochester Youth Development Study (RYDS) 1,000 7th and 8th graders were selected from public schools in Rochester (New York) in 1988. These subjects overrepresented high-risk youth in an urban community. The RYDS was extended by the Rochester Intergenerational Study (RIS), as all first born children of the original sample members aged 2 years or older were added to the dataset in 1999. Of the original participants, 186 mothers and 405 fathers had a child who was eligible to participate in the intergenerational study (Thornberry, Freeman-Gallant & Lovegrove, 2009). The original study participants were followed from age 14 until age 36, while their children were followed from age 2 until age 24. Self-report interviews were used, as well as reports from partners and police records. Results from the RYDS indicated that parental offending leads to early antisocial and externalizing behavior in offspring, both directly (Thornberry, Freeman-Gallant, Lizotte, Krohn & Smith, 2003) and indirectly, mediated by parents’ depressive symptoms (Thornberry et al., 2009), parenting stress and parenting behaviors (Thornberry, 2009).
The *Criminal Career and Life course Study* (CCLS) started with a sample of 5,656 individuals who were prosecuted in the Netherlands in 1977 (Blokland, 2005). Within this sample there were 3,015 men who had at least one child that had reached the age of 12 by 2005. These 3,015 men and their 6,921 children are included in the multigenerational sample of the CCLS, as well as 485 control men who were never convicted and their 1,066 children. Data on offending was measured by official conviction data and was available from age 12 onwards, until the end of data collection in 2005. Using the data of the CCLS, Van de Rakt, Nieuwbeerta and Apel (2009) found support for intergenerational transmission of crime from parents to children, as well as for intragenerational transmission of crime between siblings and between parents. Moreover, both the number of convictions and the developmental criminal trajectories of fathers and children were associated (Van de Rakt, Nieuwbeerta & de Graaf, 2008).

In the *Oregon Youth Study* (OYS) 206 male 4th grade students from schools in high-crime areas were prospectively followed. Information on internalizing and externalizing behaviors is available for these men, their partners, parents and children. For all generations, several sources and different follow-up periods were used to measure externalizing behaviors, including delinquency. Capaldi and colleagues (2003) showed that adolescent antisocial behavior was related to offspring temperamental risk for externalizing behavior at age 22 months. The Oregon Youth Study further provided empirical evidence for intergenerational transmission of externalizing behavior between three generations, although not all relationships between family member’s externalizing behavior were significant. Moreover, the youngest generations was only followed up to age 3 in this study (Kim, Capaldi, Pears, Kerr & Owen, 2009).

In the *Ohio Life-Course Study* (OLS) 127 girls from a state institution for delinquent girls in Ohio were followed over their life-course. During adult follow-up interviews their 158 biological children were interviewed as well. Evidence for intergenerational transmission of delinquency was provided in this study by qualitative in-depth interviews. In addition, a comparison of the self-reported levels of delinquency between the children of the OLS respondents and the children of a control group showed that the former group had a significantly higher mean level of delinquency than the latter group (Giordano, 2010).
Table 1.1 Overview of multigenerational studies with prospectively gathered data

<table>
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<th>Period</th>
<th>Research objects</th>
<th>Measurements of crime</th>
<th>Age range</th>
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<tr>
<td>England: Cambridge Study in Delinquent Development (CSDD)</td>
<td>1961-2006</td>
<td>Three generations: 411 boys, their 790 parents, 1,001 siblings and 563 children</td>
<td>Self-reports (only the 411 boys) and official reports (convictions)</td>
<td>Self-reports: 14-48</td>
</tr>
<tr>
<td>United States: Rochester Youth Development Study (RYDS)</td>
<td>1988-2010</td>
<td>Two generations: 196 high-risk girls and 405 high-risk boys, their partners and first born children.</td>
<td>Self-reports, partner’s reports and official reports</td>
<td>Parents: 14-36 Children: 2-24</td>
</tr>
<tr>
<td>The Netherlands: Criminal Career and Life course Study (CCLS)</td>
<td>1958-2002</td>
<td>Two generations: 3,015 fathers convicted in 1977 and their 6,921 children; 485 control fathers and their 1,066 children</td>
<td>Official reports (convictions)</td>
<td>From age 12 onwards</td>
</tr>
<tr>
<td>United States: Oregon Youth Study (OYS)</td>
<td>1983-2014</td>
<td>Three generations: 206 young men, their partners, parents and children</td>
<td>Self-reports, official reports (arrests), parent reports and observers’ ratings</td>
<td>Young men: 13-18 Children: from age 1 onwards</td>
</tr>
<tr>
<td>The Netherlands Transfive study</td>
<td>1870-2007</td>
<td>Five generations: 198 high-risk boys, their 367 parents, 621 children, 1,315 grandchildren, 1,982 great-grandchildren and all legal partners</td>
<td>Official reports (convictions)</td>
<td>From age 12 onwards</td>
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2 The CCLS fathers were all convicted in 1977, but official reports are also available on convictions before this year. In 2003 they were on average 56.9 years old (Van de Rakt, 2011), indicating that they were born, on average, in 1946. Since conviction data is available from age 12 onwards, their observation period starts, on average, in 1958.
Finally, in the Transfive study, which is used in the current dissertation, five consecutive generations are followed over their entire life-course, among which the youngest three generations are followed prospectively. Official conviction data is used to measure offending behavior. In the last section of this chapter, the study design of the Transfive study is further explained. Bijleveld and Wijkman (2009) found support of intergenerational transmission of offending across the five generations in this sample. The intergenerational transmission was generally stronger for more serious offenses.

1.3.3 Population studies

Most of the multigenerational studies summarized in Table 1.1 use a sample in which at least one generation was institutionalized or at high-risk for criminal development. It is therefore questionable to what extent the results from these studies can be generalized to the entire population. Another approach to examine the intergenerational transmission of crime, which avoids this problem of generalizability, is to study the offending behavior of an entire population of a country or a city. These population studies are summarized in Table 1.2 and their most important results are discussed below. At the end of this section the limitations of the existing multigenerational and population studies are discussed.

Besjes and van Gaalen (2008) studied the intergenerational transmission of crime by using the entire population of persons in the Netherlands who were between the age of 18 and 22 in 2005. For this population it was known whether they or their parents had been a suspect of a crime between 1996 and 2005. Having a father or a mother who was a suspect of a crime led to an increased risk for offspring of being a suspect of a crime themselves, although effect sizes decreased after controlling for family composition and the social-economic situation in the family.

Frisell, Lichtenstein and Långström (2011) investigated all convictions for violent crime in Sweden between 1973 and 2004. They found empirical evidence of transmission of violent crime between several family members, including parents, siblings, half-siblings, adopted siblings and children, grandparents, aunts, uncles, cousins and partners. The degree of transmission of violent crime was the largest among first-degree relatives and partners, and the smallest among adoptive relations.
Some studies investigated the intergenerational transmission of crime among an entire birth cohort of a single city. Junger and colleagues (2013) studied all 1,681 families that had a child born in 2006 in a medium-sized university city in the east of the Netherlands. They gathered data on arrests, between 1985 and 2007, of the older siblings, parents and grandparents of the child that was born in 2006. They found that arrests were heavily concentrated within the families and that arrests were transmitted from grandparents to parents, between partners and from mothers to the older siblings. Their conclusions are, however, limited since arrest data could only be found for one third of the grandparents, because only 8 percent of the older siblings reached the age of criminal responsibility (i.e. 12 years or older) and because information on arrests was only available from 15 of the 26 Dutch regional forces.

Finally, Hjalmarsson and Linquist (2012) used a sample from the Stockholm Birth Cohort Study, including all 15,117 individuals who were born in 1953 and who were living in the Stockholm metropolitan area in November 1963, to study the intergenerational transmission of crime. They found children to be at increased risk for having a criminal conviction when their fathers were ever convicted. The degree of intergenerational transmission of crime was higher than the transmission of poverty status, but lower than the transmission of high school and college completion. Controlling for measures of parental human capital and parental behaviors only partly explained the intergenerational transmission of crime.
<table>
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<tbody>
<tr>
<td>The Netherlands</td>
<td>1996-2005</td>
<td><strong>Two generations:</strong> All 939,600 individuals aged 18-22 in 2005 and their 1,822,000 parents</td>
<td>Suspects of crime</td>
<td><strong>Children:</strong> 18-22</td>
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<td><strong>Parents:</strong> Age in 1996-age when child is 17</td>
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<tr>
<td>Sweden</td>
<td>1973-2004</td>
<td><strong>Three generations:</strong> All 12,563,581 individuals living in Sweden at any time since 1961 and born in 1932 or later</td>
<td>Convictions for violent crime</td>
<td>From age 15 onwards</td>
</tr>
<tr>
<td>City in the east of The Netherlands</td>
<td>1985-2007</td>
<td><strong>Three generations:</strong> All 1,681 families that had a child born in this city in 2006. Including 3,211 parents, 2,181 grandparents and 73 elder siblings</td>
<td>Arrests</td>
<td>From age 12 onwards</td>
</tr>
<tr>
<td>Stockholm</td>
<td>1960-1984</td>
<td><strong>Two generations:</strong> All 15,117 individuals born in 1953 who were living in Stockholm in 1963 and their fathers</td>
<td>Juvenile delinquency records and criminal convictions</td>
<td><strong>Children:</strong> 7-31</td>
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<td><strong>Fathers:</strong> 13-age when child is 19</td>
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1.3.4 Limitations previous research

Although the studies summarized in Table 1.1 and Table 1.2 have made major improvements in the research on intergenerational transmission of crime since the studies of Dugdale (1877) and Goddard (1912), there are still some important limitations that need to be remedied to know the extent to which crime is transmitted across generations and the causal mechanisms underlying this process. First, the sample size of most of the multigenerational studies is relatively low, which decreases statistical power. Second, in most of these multigenerational studies only two generations are followed prospectively. As a consequence, these studies only examine transmission of crime between parents and their children, while the transmission between extended family members (e.g. grandparents, uncles, aunts, nephews and nieces) cannot be studied. Third, the follow-up periods of some multigenerational studies are relatively short and do not measure criminal behavior up into adulthood for all generations. Consequently, these studies only capture effects on adolescent offending. In line with Moffitt’s (1993) stability postulate that entails that childhood problematic behavior is a stronger predictor of adult than adolescent offending since compared to adults many juveniles – those with and without criminal parents - commit crimes, intergenerational transmission may be stronger for adult offending than adolescent offending. A longer follow-up period is especially necessary when studying the intergenerational transmission of violent offending, since the transmission of violence may be especially strong for types of violence that can only be displayed after a certain age (e.g. marital violence, child abuse). Fourth, the generalizability of the results of most multigenerational studies is limited since high-risk samples are often used.

Compared to the prospective multigenerational studies, the population studies have the advantage of much larger sample sizes – and consequently much statistical power – and have no issues with the generalizability of their results. However, there are also some disadvantages related to the use of the population studies. First, given the large sample size and the used sources, the measurement of in-depth variables, such as familial features and risk factors for criminal development, is not always possible. Moreover, the population studies in Table 1.2 only use information on offending during the limited period on which registry data is available (i.e. 1996-2005, 1973-2004, 1985-2007 and 1960-1984). Although the study of Frisell and colleagues (2011) has a follow-up period of
more than 30 years, this is still too short to measure the criminal behavior of family members from three consecutive generations over their whole life-course.

In this dissertation, data from the Transfive study is used to study the intergenerational transmission of violent crime. As shown in Table 1.1 and Table 1.2 the Transfive study is currently the only existing study that combines a large sample size with prospectively gathered data on the offending behavior of three consecutive generations over the whole life-course. An important limitation of the Transfive study, on the other hand, is that, like other studies based on register data, the data misses in-depth measurements on several relevant risk factors for criminal behavior.

1.4 The current study: aims and organization

1.4.1 Research questions

The intergenerational transmission of violent crime is studied in this dissertation using criminal records of a sample of individuals from three consecutive generations from the 198 families from the Dutch Transfive study. Despite the large sample size, long follow-up period and the high-risk character of the Transfive study, the number of violent women, as reflected in the official judicial documentation, is very low. Therefore women have been excluded from most analyses in this dissertation, and for the majority of the analyses the intergenerational transmission of violent crime is measured for men only. The use of three consecutive generations of men enables to study to what extent violent crime is transmitted from grandfather to father, from father to son and from grandfather to grandson. The degree of intergenerational transmission of violent crime will also be compared to the degree of intergenerational transmission of non-violent crime. As discussed above, some mechanisms behind the intergenerational transmission of crime may apply more strongly for violent crime than for non-violent crime. Therefore, it can be expected that the intergenerational transmission of violent crime is stronger than the intergenerational transmission of non-violent crime.

The possible underlying mechanisms behind the intergenerational transmission of violent crime are also studied in this dissertation. Although the data from the Transfive study has no measurements on various variables that would enable to explicitly test the underlying mechanisms, a more detailed
understanding of the possible mechanisms is obtained by studying the influence of several moderating factors, including: criminological (timing of the paternal crime), biological (offspring’s heart rate levels) and family (parental divorce) factors. This particularly provides more insight in the influence of genetic factors and social learning mechanisms on the intergenerational transmission of violence.

If the intergenerational transmission of violent crime could be completely accounted for by genetic factors, the boy’s likelihood to become a violent offender would be determined at birth. This likelihood would then not be influenced by events during their life. No moderating influence of the timing of the paternal violence would be expected in that case: whether the father was a violent offender before the birth of the son or during the youth of the son would not influence genetic relatedness and therefore not affect the degree of intergenerational transmission of crime. Moreover, whether the parents are divorced or married during the youth of the child would not have an influence either. A moderating effect of a biological – and partly genetically determined – risk factor for criminal development such as a low resting heart rate, however, can be expected if genetic factors are important to the intergenerational transmission of violent crime.

An influence of these moderating factors, on the other hand, is expected if social learning mechanisms play an important role in explaining the intergenerational transmission of violence. If the son is to learn violent behavior and positive attitudes towards violence from his father, it is necessary that exposure to the father’s violent behavior occurs. No intergenerational transmission of violence would therefore be expected if the father only commits violent crimes before the birth of the son. If the father (also) commits violent crimes during the youth of the son, exposure to this violence is possible and intergenerational transmission of violence is likely. Less strong intergenerational transmission of violent crime would be expected if the father commits crime during the adulthood of the son, given that exposure is then less likely since the son often does not live with his parents in the same household anymore. A moderating effect of parental divorce would also be expected if social learning mechanisms are at work. In case of parental divorce, children usually continue to live with their mother and exposure to the (violent) behavior of the father thus decreases. Therefore, a less strong intergenerational transmission of violence
would be expected for children with divorced parents compared to children with married parents.

In sum, the research question that is answered in this dissertation is twofold. First, it is examined to what extent violent crime is transmitted across generations. Second, it is examined which mechanisms best explain the intergenerational transmission of violent crime.

1.4.2 Contribution to existing literature

This dissertation aims to contribute to the existing literature on intergenerational transmission of crime and its underlying mechanisms in several ways. First of all, previous studies mainly focus on the intergenerational transmission of general crime. General crime, however, is a catch-all and might include very different types of crimes, associated with different skills, motives and personality traits. The focus of this dissertation is on the transmission of violent offending across generations. This focus on a specific subset of crime is more informative since the transmission of similar crimes - associated with similar skills, motives and personality traits - is examined, and because the underlying mechanisms behind one set of behavior is thus examined. Moreover, focusing on violent crime is highly relevant given the serious consequences of violence.

A second contribution is made by the use of data from the Transfive study, that has a study design that improves on other prospective multigenerational studies on several points. Data on sample members from three consecutive generations are used to analyze the intergenerational transmission of violent crime, while most of the other prospective multigenerational studies in Table 1.1 only include sample members from two consecutive generations. The use of three generations makes it possible to also study relationships between extended family members, such as grandparents, uncles, aunts, nephews and nieces. Consequently, it can be examined whether violence concentrates specifically within nuclear families or that broader violent tendencies exist in the larger extended families. Moreover, the inclusion of three consecutive generations makes it possible to examine whether the extent of intergenerational transmission of violent crime changes over different historical periods. Such period effects might provide some insights on the mechanisms behind the intergenerational transmission of violence. No period effects would be expected if this intergenerational transmission is the consequence of social learning or
genetic mechanisms, since the effects of these mechanisms may be assumed to be stable over time. If a period effect is found, on the other hand, this would indicate that societal factors (e.g. trends in sentencing or trends in social security expenditures) affect the odds that violence is transmitted from one generation to the other.

Moreover, most of the prospective multigenerational studies summarized in Table 1.1 have relatively low sample sizes. As a consequence, the statistical power of analyses using these datasets is limited. The size of the sample that is used in the current study is much larger, as the three generations include almost 4,000 sample members and more than 1,700 legal partners. Such a large sample is necessary because this dissertation focuses on violent crime, which is relatively rare even in high-risk samples. The use of this large sample ensures that enough violent men are included in order to be able to analyze the intergenerational transmission of violent crime. Unfortunately, for statistical reasons, the prevalence of violent women is, even in this large sample, low and women had to be excluded from most analyses.

Fourth, the follow-up periods of some of the multigenerational studies and the population studies are limited. Consequently, these studies can only measure effects of parental crime on offspring offending during childhood and early adulthood, while it remains unknown whether parental crime also leads to an increased likelihood of offending during the offspring’s adult years. In the current study, respondents are followed from birth until their age at the moment of data collection (December, 2007) or until death if this occurred prior to the end of data collection. Therefore, the Transfive study is the only multigenerational study that prospectively measured the offending behavior of sample members from three consecutive generations over the entire life-course, well into adulthood. The inclusion of measurements of offending behavior in adulthood is important given that adult (onset) offending is a much more common phenomenon than usually assumed (e.g. Van Koppen, 2013). Of all Dutch offenders with a conviction in 1997, 87 percent was an adult. Among those adult offenders, 35 percent was not convicted previously, while the remaining 65 percent were convicted first when they were, on average, 24.9 years old (Van Koppen, De Poot & Blokland, 2010). This illustrates that studies that only follow their respondents during childhood and adolescence miss out on a large proportion of all convictions over offenders' entire life-course.
A final contribution to the existing literature is made by examining whether the intergenerational transmission of (violent) crime is moderated by the timing of paternal crime, parental divorce or offspring’s resting heart rates. The moderating influence of these factors gives more insight in the possible mechanisms that are responsible for the existence of intergenerational transmission of violent crime. Moreover, they give an indication under which circumstances the intergenerational transmission of violent crime is strongest. From a policy perspective this is highly important, since it provides information on which children run the highest risk to continue their parents’ violent behavior and which children have relatively little risk to become a violent offender. Consequently, interventions can be directed primarily at those with the highest risk to become violent.

1.4.3 Organization of this dissertation

In order to answer the research questions, data from the Transfive study is used. The process of data collection, the sample and the measurements of this study are described in more detail in the second chapter. The offending behavior of three consecutive generations from the Transfive study is analyzed in the next four chapters.

In the third chapter, the focus is on the concentration and intergenerational transmission of crime within families. First, a comparison is made between the concentration of crime within the Dutch families from the Transfive study with the concentration of crime within American and British families. In addition, the concentration of violent crime within families is compared to that of non-violent crime within families. Second, the intergenerational transmission of violent crime from father to son and from grandfather to grandson is studied, and compared to the intergenerational transmission of non-violent crime. Third, the moderating influence of the timing of the father’s violent crime on the intergenerational transmission of violent crime is examined.

In the fourth chapter, the role of resting heart rates in the intergenerational transmission of violent and non-violent crime is studied. Besides the main effects of resting heart rates on violent and non-violent crime, this chapter examines to what extent intergenerational transmission of violent and non-violent crime can be explained by the intergenerational transmission of
resting heart rates or by mediation through offspring’s resting heart rates. The biosocial interaction between paternal (violent) crime and offspring’s resting heart rates is also examined.

The fifth chapter focuses on the influence of parental divorce on the intergenerational transmission of crime. First, it addresses the main effects of parental divorce and paternal crime on offspring offending. Second, it examines to what extent parental divorce moderates the intergenerational transmission of crime. This is done separately for fathers who commit violent and non-violent crime and for fathers who commit crimes at different moments over the life-course.

The sixth chapter focuses on the concentration of a particular kind of violent offending within families, namely sex offending. The concentration of hands-off sex offenses, child abuse and rape and sexual assault within Dutch and British families is examined. Possible explanations for this concentration are also examined, including transmission of sex offending between nuclear and extended family members, co-offending family members and incest-victims becoming sex offenders.

The seventh and final chapter contains the general discussion in which the most important findings of the previous chapters are summarized in light of the research questions stated in this introduction. Strengths and limitations of the current study are also discussed. The general discussion ends with an agenda for future research and a discussion of the practical implications of the findings of this dissertation.
References


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