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CHAPTER 3

Offending and victimization over two-year follow-up in subgroups of childhood arrestees

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Submitted

Abstract

Not only are childhood onset offenders at high risk of becoming serious persistent offenders, they are also at high risk of becoming victimized themselves (Loeber & Farrington, 2001a). Further, studies in the general population suggest that a combined perpetrator-victim group can be distinguished from a perpetrator-only and a victim-only group on individual and family risk factors. The present study, therefore, investigated the co-occurrence of offending and victimization among first-time arrestees and the predictive value of previously found clusters of dynamic risk factors of offending. Childhood first-time arrestees ($n=308$; mean age 10.3, SD 1.45) were clustered into three groups based on dynamic risk factors of offending in the individual, peer, school and family domains: a *pervasive high problem*, an *externalizing intermediate problem*, and a *low problem group*. Police records and self-report data on re-offending and victimization of these children were collected over a two-year follow-up period. Compared to the *low problem group*, the prevalence of re-offending was higher in both the *externalizing intermediate problem* and the *pervasive high problem* groups. The *pervasive high problem* group was most likely to display co-occurring future antisocial behavior and victimization. These findings emphasize that attention should be paid to victimization in addition to future antisocial behavior, especially if internalizing and family problems are present. Further, the differences in re-offending and victimization between subgroups of childhood onset offenders stress the need for specific interventions tailored to the risk profile of a child.

Introduction

Various studies have noted a strong association between juvenile delinquency and victimization (e.g. Lauritsen et al., 1992; Cuevas et al., 2007; Zaykowski & Gunter, 2012). Childhood onset offenders, and in particular those with a police arrest before the age of twelve are at particular high risk of persistence in offending and as such may also be at heightened risk to become victimized themselves (e.g. Snyder, 2001; Loeber & Farrington, 2001a; Kazemian & Farrington, 2005). Persistent offending and victimization are, in turn, both related to poor mental health and general functioning (e.g. Nansel et al., 2004). Co-occurrence of perpetration and victimization has been reported repeatedly for several expressions of antisocial behavior in the general population, such as officially reported delinquency, self-reported antisocial behavior and bullying (Stewart et al., 2002; Kingree et al., 2003; Nansel et al., 2003). However, few studies have focused on the co-occurrence of both persistence in antisocial behavior and victimization within high risk subgroups such as childhood onset offenders. Although at high risk, not all children who display childhood delinquency will persist and/or become victimized (van Domburgh et al., 2009b). Early detection of those children most at risk of persistent offending and victimization is essential for early intervention purposes. Previous findings stress the relevance of specific combinations, or profiles, of risk factors as opposed to single risk factors in the early recognition of at risk children (Geluk et al., 2013). The current study, therefore, investigates the co-occurrence of offending and victimization among first-time arrestees and the predictive value of previously found risk profiles for these adverse outcomes.

Theories on co-occurrence

Theories on the co-occurrence of antisocial behavior and victimization have been formulated in the criminological, bullying and trauma literature. In the criminological literature co-occurrence of victimization and delinquency is mainly attributed to risky lifestyle/routine activity theories (Riley, 1987; Lauritsen et al., 1992). These theories state that adolescents who engage in high risk behavior are more vulnerable to experiencing victimization due to deviant lifestyles and greater exposure to dangerous situations. These criminological theories have mainly focused on victimization in adolescence and adulthood as a function of lifestyle, while not all victimization is likely to stem from lifestyle, e.g. sexual abuse or bullying at school. Fagan, Piper and Cheng (1987) in their paper on co-occurrence mention an addi-

tional theory, namely that the same personal characteristics may give rise both to offending and to victimization. For example, most offending involves taking big risks, and risky behavior can also lead to victimization. Similarly, aggression underlies many kinds of offending, but may also provoke attacks. In discussing their own findings, the authors proposed an integration of social control and social learning theories. According to this theory, weak social bonds and peer delinquency lead both to offending and to victimization.

Theories from the traumatic stress literature suggest that there may be alternative pathways to the co-occurrence of antisocial behavior and victimization (Cuevas et al., 2007). The coping theory stresses that victimization may lead to increased risk of antisocial behavior and delinquency as a way of coping with the negative affect associated with the victimization (Lazarus, 1993; Baker et al., 2004). In an elaboration of this theory, general strain theory posits that aggression and delinquency are not only ways of coping with negative life events and adverse relationships but additionally are methods to prevent further victimization. Although these theories focus on the co-occurrence of child maltreatment and sexual abuse with delinquency, it can be hypothesized that victimization from bullying or violence outside the home may also lead to these antisocial coping mechanisms.

Although theories on early onset offending do not specifically focus on victimization, in their studies of childhood onset as compared to adolescent onset offenders, they point out the risk of social rejection within the childhood onset group, which may put them at risk of becoming victimized by bullies (Moffitt, 1993; Patterson et al., 1998; Moffitt et al., 2002). Moffitt (1993) asserts that an early onset of persistent antisocial behavior results from a combination of neuropsychological difficulties and inadequate parent-child interaction. In later elaborations of the model, Moffitt et al. (2002) distinguished early onset high level chronics from low level chronics. While both groups show persistent delinquent involvement, severity and frequency are at different levels. Isolating pathologies such as depression are expected to differentiate the groups, with the low level group bearing the most problems. Patterson and colleagues (1998) point at disruptive family processes as a major cause of early onset offending. Such processes may lead to childhood antisocial behavior and shape peer interaction patterns in late childhood and adolescence. Disruptive peer processes and engagement with antisocial peers are hypothesized to increasingly lead to both chronic offending and rejection by prosocial peers. In line with these theories, it could be hypothe-

sized that those early onset offenders who display individual risk factors, peer problems and disruptive family characteristics are at highest risk of both persistent offending and social rejection.

Studies on co-occurrence

Although several studies have stressed the high correlation between antisocial behavior/delinquency and victimization (Cuevas et al., 2007; Smith & Ecob, 2007; Begle et al., 2011; Vaske et al., 2012), few studies have focused on the causal mechanisms proposed in the theories described above. Further, by focusing on co-occurrence, few studies have focused on differences in risk factors between youth who are primarily antisocial and youth who have also been victimized (Cuevas et al., 2007; Matjasko et al., 2010). Cuevas and colleagues (2007) stated that adolescents in the perpetrator-victim group reported higher levels of adolescent anger, depression, anxiety and exposure to chronic stressors compared to the youth in the perpetrators-only group. Matjasko et al. (2010) reported that adolescents in disadvantaged neighborhoods who were short-tempered and had low verbal ability and peers who used substances were at highest risk to become perpetrator-victims. Further, several studies focused on shared risk factors to explain the high correlation between delinquency and victimization. These shared risk factors have been found in social adversity, weak social bonds, risky lifestyle, shared genetic influences, and personality characteristics (Smith & Ecob, 2007; Begle et al., 2011; Vaske et al., 2012). However, none of the studies on delinquency as an expression of antisocial behavior focused on co-occurrence during childhood, or on at risk samples such as first-time arrestees.

One field of study that has focused more extensively on the prevalence and characteristics of co-occurring antisocial behavior and victimization is the bullying literature. Bullying can be regarded as a specific form of antisocial behavior (Baldry & Farrington, 2000). The literature on bullying distinguishes three groups: a group of so called bully-victims, who both bully others and are victimized themselves, a group of bullies, and a group of victims. The bully-victims are characterized as a group of children with dysregulated emotional patterns, who are irritable, easily angered, and seem to provoke others (Olweus, 1997; Olweus, 2000; Schwartz et al., 2001). The bullies display instrumental aggression and appear to deter or avoid any assaults or victimizations (Dodge et al., 1990; Olweus, 2000). Victims are generally reported to have anxious and depressive traits, while bully-victims are reported to share personality traits with bullies rather than with victims and are

characterized by family difficulties (Bowers et al., 1994; Mynard & Joseph, 1997; Cuevas et al., 2007; Luukkonen et al., 2010). Others found high levels of both internalizing and externalizing problems in bully-victims, whereas bullies had lower levels of these symptoms and victims had intermediate levels of mainly internalizing symptoms (Kaltiala-Heino et al., 2000; Ivarsson et al., 2005). So far, it has not been tested if these findings can be generalized to other expressions of antisocial behavior, nor if they apply in specific high risk subgroups such as childhood onset offenders. However, based on previous findings it could be hypothesized that childhood onset offenders who mainly display externalizing problems are more likely to display persistent antisocial behavior only, while those who additionally display internalizing problems and family difficulties are more likely to become victimized as well.

Risk factors in childhood onset offenders

Childhood onset offenders are a heterogeneous group in which single identified risk factors have only little predictive value (van Domburgh et al., 2009b). So far, few studies have focused on specific combinations or clusters of risk factors within this high risk population. Identifying risk profiles and studying their links to differences in future detrimental outcomes might improve prediction and effective intervention. In a previous study on childhood first-time arrestees, three relatively stable subgroups based on dynamic, or malleable, characteristics generally related to offending were found: a *low problem group* with few problems, an *externalizing intermediate problem group* with various externalizing problems at the individual, peer and school levels, but few problems in the family domain, and a *pervasive high problem group* with both externalizing and internalizing risk factors in the individual domain combined with risk factors in the peer, school and family domains (Geluk et al., 2013). Given the reported differences in bully-victims as compared to bullies-only in the internalizing and family domains, these subgroups may also differ in their risks for co-occurrence of antisocial behavior and victimization. So far, the clinical value of these clusters, regarding differences in future persistence of antisocial behavior and victimization and their co-occurrence has not been studied.

The aim of the current paper is three-fold: first to investigate longitudinal prevalence of and correlation between subsequent officially registered and self-reported antisocial behavior and victimization in a group of childhood first-time arrestees over a two-year follow-up period. Second, to study the predictive value

of the three distinct profiles of dynamic risk factors as identified by Geluk et al. (2013) for future antisocial behavior/delinquency and victimization separately. Finally, to study the predictive value of these three dynamic risk profiles for co-occurrence of future antisocial behavior and victimization. In line with findings in the bullying literature, the *pervasive high problem group* is hypothesized to be most likely to show co-occurrence of future antisocial behavior and victimization, the *externalizing intermediate problem group* is hypothesized to mainly persist in antisocial behavior, while the *low problem group* is expected to desist from antisocial behavior and not become victimized.

Methods

Participants and procedures

Participants were 308 children arrested by the police prior to the age of twelve² because of a first-time offence in the period from 2003 to 2005. Participants were selected from local police registration systems from three police districts in The Netherlands to assure sufficient variability in socio-economic status (SES) and levels of urbanization of the neighborhoods the children resided in. Offending was defined as behavior that can be prosecuted if displayed by someone aged twelve years or older, i.e. the age of criminal responsibility under Dutch law, excluding status offences. Excluded were children not legally admitted to the Netherlands, as their insecure residence status would complicate follow-up; children who offended on the order of their parents; or children for whom participation might interfere with ongoing police procedures. Eligible children and their parents who gave consent to the police to forward their contact details to the research team were contacted by members of the research team, either by telephone or by home visit. They were given extensive oral and written information about the aims and procedures of the study.

Out of 422 potential participants and their parents who were contacted by the research team, 27.0% (n=114) did not participate in the study. Non-participants did not differ from participants on age or seriousness of first arrest. Seriousness of first arrest was determined according to the Seriousness of Early Police Registration (SEPR), a Dutch revision of the General Level of Seriousness

² In this study children are called arrestees, although not all children were taken to the police station because they were reprimanded on the spot (van Domburgh et al., 2009b). As twelve years is the age of criminal responsibility under Dutch law, these children cannot be prosecuted.

Classification (Loeber, Farrington, Stouthamer-Loeber, & White, 2008). The SEPR distinguishes five levels of seriousness of offences: 1 - minor delinquency at home, minor verbal aggression, and rule breaking; 2 - minor delinquency outside the home, e.g. shoplifting and minor vandalism; 3 - moderate delinquency, e.g. fighting without bodily harm, vandalism and theft; 4 - serious delinquency, e.g. breaking and entering, serious arson and vehicle theft; 5 - very serious delinquency, e.g. sex offences, aggravated assault, and robbery. When involving behaviors of multiple levels of seriousness, offence seriousness was determined by the behavior with the highest SEPR classification. Inter-rater reliability of the SEPR was high (ICC=0.84 in a two way mixed effect model with absolute agreement; van Domburgh et al., 2009b). However, compared to participants, non-participants were more often female than male (21.1% versus 12.7%; $\chi^2(1)=4.554, p=0.033$), of non-Dutch origin (65.8% versus 51.0%; $\chi^2(1)=7.174, p=0.007$) and more often lived in neighborhoods with low SES (68.4% versus 52.6%; $\chi^2(1)=8.494, p=0.004$).

Participants were followed up yearly for two years after first arrest. At each assessment, interviews and questionnaires were administered to the participants and their parents by trained interviewers. Assessments took place at participants' homes. To enable simultaneous interviewing of parents and children, although apart from each other whenever possible, interviews were conducted and questionnaires were administered by two interviewers. All instruments were administered during one visit. On average, assessments took two hours to complete. One year after the final assessment, local police records were gathered over a period of three years following first arrest. Of the baseline sample 86.4% ($n=266$) was male and 54.4% ($n=167$) was of non-Dutch origin, with either they themselves or (one of) their parents being born in a country other than the Netherlands (Heeten & Verweij, 1993). Mean age was 10.7 ($SD=1.5$ years at baseline and mean time between baseline and follow-up assessment was 2.2 ($SD=0.4$) years. Seriousness of first arrest was level 1 for 22.8% ($n=70$), level 2 for 30.9% ($n=95$), level 3 for 40.4% ($n=124$), level 4 for 4.2% ($n=13$) and level 5 for 1.6% ($n=5$) of the participants. Of all participants, 23.9% ($n=73$) were registered for mischief/ rule breaking, 24.8% ($n=76$) for theft, 10.1% ($n=31$) for violence and 41.2% ($n=126$) for property damage. Participants who completed all assessments ($n=235$) did not differ from participants who dropped out during follow-up on age, sex, ethnicity and socioeconomic status (SES) of their neighborhoods. Seriousness of first arrest was slightly higher for participants who completed the study compared to participants

who dropped out ($\chi^2(4)=10.463, p=0.033$). Because of potential problems with comprehensibility of the questionnaires, data from self-report questionnaires from children younger than eight years or having a verbal IQ below four ($n=35, n=17, n=14$ at the consecutive assessments, respectively) were excluded from the dataset. Participants' verbal IQ was measured using the vocabulary subtest of the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974).

All participating children and parents gave written informed consent. Children received a small present at every assessment while parents received a 20 euro gift voucher once during follow-up. This study was approved by the Medical Ethical Committee of the VU University Medical Center and the Dutch Ministry of Justice.

Re-offending and victimization

When considering future antisocial behavior and victimization, most studies focus on either self-reported data or official records. For antisocial behavior and offending, some have also combined official and self-report data into a single antisocial/delinquency measure (Loeber et al., 1998). However, it is known that the overlap between self-reported and officially registered behavior is not particularly high (Junger-Tas & Marshall, 1999; Krohn et al., 2010). Not all behaviors get noticed by the police and respondents may not always be willing to disclose their behavior. This holds for both antisocial behavior and victimization, so that presenting self-report and official data in the same paper can provide more insight.

Official re-offending and victimization. Official re-offending and victimization were both defined as any new registration for offending or victimization by the police after the first arrest. This also included information on offending behavior in which the specific role of the subject was less clear (e.g. as a member of a group that displayed offending behavior), and registrations of reports by third parties (e.g. school reports on violent thefts that were dealt with by the school).

Self-reported delinquency. The Observed Antisocial Behavior Questionnaire (OAB: Vragenlijst Waargenomen AntiSociaal gedrag; Slot et al., 1998) is based on the Self-Report of Antisocial Behavior (Loeber et al., 1989) and reports antisocial behavior over the previous six months (baseline) and over the previous 12 months (follow-up assessments). Items covered stealing, property damage, arson, hitting and fighting, rule breaking, and fare dodging. The child self-report and parent report versions at follow-up were used to create a combined antisocial measurement. An item was considered present if the child and/or the parent considered it present. The OAB does not include an item on bullying. A composite

score was, therefore, created by adding an extra item on bullying to the combined assessment of self-report delinquency. This item on bullying was scored present if a score was obtained in the highest quintile of the distribution on the bullying scale of the Social and Health Assessment (Weisberg et al., 1991; Schwab-Stone et al., 1995; Schwab-Stone et al., 1999). The bullying scale consists of nine items scored on a four-point Likert scale (“never” to “very often”).

Self-reported victimization. Self-reported victimization was operationalized as having been bullied. It is based on the bully victim scale that was constructed by rephrasing the original bullying scale of the Social and Health Assessment from actor (‘have you ..’) to victim (‘have others you’) (Weisberg et al., 1991; Schwab-Stone et al., 1995; Schwab-Stone et al., 1999). The victim of bullying scale consists of nine items scored on a four-point Likert scale (range 0-27). The Cronbach’s alpha was .81.

Subgroup membership

The subgroups found in an earlier study (Geluk et al., 2013) were used. These subgroups were formed using latent class analysis (LCA; performed with Latent Gold Version 4.5, Vermunt & Magidson, 2005). Classes were based on individual, peer, school and family characteristics. For a more detailed description on the variables included in the LCA, including psychometric properties of the used instruments and dichotomization, see Geluk et al. (2013). The individual characteristics were: emotional problems, behavioral problems and hyperactivity/impulsivity as measured by the parent and child versions of the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997; van Widenfelt et al., 2003). Reactive and proactive aggression were measured using the Reactive-Proactive Questionnaire (RPQ, Raine et al., 2006). Children’s substance use and status offences were determined using the Observed Antisocial Behavior Questionnaire (OAB, Slot et al., 1998), a Dutch revision of the Self-Report Antisocial Behavior Scale (Loeber et al., 1989). The Social and Health Assessment (Weisberg et al., 1991; Schwab-Stone et al., 1995; Schwab-Stone et al., 1999) was used to determine children’s sensation seeking behavior.

Peer characteristics were peer relationship problems as measured with the SDQ, presence of antisocial friends as determined using the relevant scale of the SAHA and the participant’s affiliation with antisocial peers which was obtained from teachers using the inventory of risk factors for the development of problem behavior in children (Orobio de Castro, 1999). Information on the participant’s

school achievement was also obtained from the inventory of risk factors for the development of problem behavior in children.

Family characteristics consisted of parental supervision and inconsistent parenting as measured by the SAHA. Four questions concerning psychological or psychiatric problems, alcohol abuse and drug use difficulties of parents were used to measure parental mental health problems. These problems were regarded present if either one or both of the parents scored on at least one of these four questions or above the clinical cut-off of the Symptom Checklist SCL-90, measuring mental health problems (Derogatis et al., 1973; Arrindel & Ettema, 1986). Information on parenting stress was obtained with the short version of the Nijmeegse Ouderlijke Stress Index (NOSIK, de Brock et al., 1992), a Dutch revision of the Parenting Stress Index (PSI, Abidin, 1983).

Three groups could be distinguished: A *low problem group* (n=130), an *externalizing intermediate problem group* (n=120) and a *pervasive high problem group* (n=58). See Table 3.1 for a description of the main characteristics. Subgroups did not differ on sex, age, ethnicity, SES or IQ.

Statistical Analyses

Analyses were performed in SPSS 19.0 in three steps. First, descriptives and correlations of official and self-reported offending and victimization were run. For self-reported antisocial behavior and victimization, means and correlations were reported per measurement (T0, T1 and T2). For all correlations, Spearman's Rho was used as most of the variables could not be assumed to be distributed normally. Official re-offending and victimization measurements were dichotomized due to the skewed distribution. Second, the association between cluster membership and the dependent measurements of re-offending and victimization was analyzed. Generalized estimating equations (GEE) were used to investigate the association of self-reported antisocial behavior and victimization at T0, T1 and T2. This procedure is suitable for analyzing irregularly spaced longitudinal data and makes use of all available data of participants (Zeger & Liang, 1986), also in case of incomplete follow-up. Dependence of repeated measurements within one person is accounted for by using an exchangeable working correlation structure. Due to the Poisson distribution and overdispersion of the data, negative binomial GEE were used. Logistic regression was used to study the association between cluster membership and delinquency and victimization as registered by the police.

Table 3.1 Subgroup characteristics per cluster subgroup

	Total n=308	Low n=130	Externalizing intermediate n=120	Pervasive high n=58
Cluster size proportions		40.2%	39.4%	20.4%
Baseline correlates	Prevalence (%)	Conditional probabilities		
Individual				
Emotional problems ^a	21.3	.12	.11	.61
Behavioral problems ^a	32.1	.02	.37	.82
Hyperactivity/impulsivity ^a	33.9	.10	.38	.74
Proactive aggression ^b	21.2	.00	.31	.43
Reactive aggression ^b	36.5	.05	.52	.66
Substance use ^c	15.7	.06	.19	.28
Sensation seeking ^d	25.5	.12	.32	.39
Authority conflicts ^c	7.5	.02	.06	.20
Poor school achievement ^e	47.5	.28	.61	.59
<i>Mean probability individual</i>		.09	.32	.52
Peers				
Peer relationship problems ^a	23.8	.11	.17	.61
Antisocial friends ^d	28.8	.15	.33	.48
Antisocial peers ^e	33.0	.15	.45	.47
<i>Mean probability peers</i>		.14	.32	.52
Family				
Inconsistent parenting ^d	18.7	.14	.13	.39
Poor parental supervision ^d	16.0	.18	.12	.19
Parental mental health problems ^f	34.3	.20	.32	.67
Parenting stress ^g	25.2	.01	.16	.90
<i>Mean probability family</i>		.13	.18	.53

^a *Strengths and Difficulties Questionnaire child and parent versions (SDQ, Goodman, 1997; van Widenerfelt et al., 2003)*; ^b *Reactive-Proactive Questionnaire (RPQ, Raine et al., 2006)*; ^c *Observed Antisocial Behavior Questionnaire (OAB, Slot et al., 1998), a Dutch revision of the Self-Report Antisocial Behavior Scale (Loeber et al., 1989)*; ^d *The Social and Health Assessment (Weisberg et al., 1991; Schwab-Stone et al., 1995; Schwab-Stone et al., 1999)*; ^e *Teacher version of the inventory of risk factors for the development of problem behavior in children (Orobio de Castro, 1999)*; ^f *Symptom Checklist SCL-90 + four additional questions (Derogatis et al., 1973; Arrindel & Ettema, 1986)*; ^g *short version of the Nijmeegse Ouderlijke Stress Index (NOSIK, de Brock et al., 1992), a Dutch revision of the Parenting Stress Index (PSI, Abidin, 1983).*

Finally, the relationship between cluster membership and combined offending/antisocial behavior and victimization was examined. Offending/antisocial behavior and victimization were combined into four groups for the self-report and registered data separately: a combined offender-victim group, an offender-only group, a victim-only group and a group low on both offending and victimization. In the registered data, the victim only group consisted of only two children and was therefore excluded from further analyses. For the self-reported measures, offending/antisocial behavior and victimization were considered present for the top quintile (20%) of the victim and antisocial behavior distribution. Subsequently, multinomial regressions were run to study the relationship with cluster membership and categories based on the self-report and registered data respectively. In the self-report data, multinomial regression was run per measurement (T0, T1 and T2). P values $<.05$ were considered statistically significant in all analyses; p values $<.10$ are reported as trends.

Results

Descriptives

During follow-up, almost half of the childhood onset offenders (46.8%) were re-registered by the police for at least one new offence. The number of re-arrests ranged from zero to 28, with a median of 2 offences among those who were re-arrested. Self-reported antisocial behavior was also rather common with an average of over four antisocial acts per person per year: T0 mean 4.05 (*SD* 3.58), T1 mean 4.13 (*SD* 4.30), and T2 mean 4.44 (*SD* 4.62).

Regarding victimization, 8.4% of the children were registered by the police as victims, with four children having two registrations. Self-reported victimization scores were skewed to the left: T0 mean total score was 3.63 (*SD* 3.22), T1 mean total score 2.78 (*SD* 2.61), T2 mean total score 2.98 (*SD* 3.37). As this questionnaire consists of nine questions ranging from 0 (never) to 4 (often), these total means come down to an average score between 0 (never) and 1 (sometimes), which means children report few experiences of being bullied.

Correlations between officially registered and self-reported antisocial behavior and victimization are reported in Table 3.2. Re-offending as registered by the police correlated with self-reported antisocial behavior at T0, T1 and T2. Further, registered re-offending correlated with registered victimization, but not with self-reported victimization. Self-reported antisocial behavior was related to both regis-

tered and self-reported victimization. Registered and self-reported victimization did not correlate.

Table 3.2 Correlations between delinquency and victimization in childhood first time arrestees

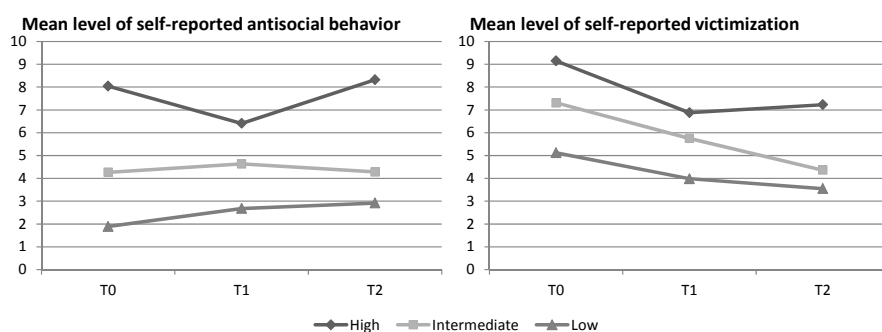
Spearman's Rho	Registered	Self-report					
	Victim	Antisocial behavior			Victim		
		T0	T1	T2	T0	T1	T2
Registered							
Re-offending	.184**	.169**	.275**	.224**	-.007	.068	.081
Victim		.143*	.207**	.194**	.010	.086	.081
Self-report							
Antisocial T0			.503***	.503***	.189**	.200**	.183*
Antisocial T1				.574**	.093	.185**	.179*
Antisocial T2					.081	.043	.189**
Victim T0						.564**	.377**
Victim T1							.502**
Victim T2							

* $p < .10$, ** $p < .05$, *** $p < .01$

Delinquency and victimization by cluster membership

First, the predictive value of cluster membership for future official and self-reported antisocial behavior and victimization was studied separately. The *pervasive high problem group* consisted of 20.4% of the sample and accounted for 36.0% of the subsequent officially registered offences during the two-year follow up period. The *externalizing intermediate problem group* consisted of 39.4% of the sample and accounted for 42.8% of the subsequent registered offences. The *low problem group*, 40.2% of the sample, accounted for 18.1% of the number of registered offences. Cluster membership was predictive of both officially registered and self-reported antisocial behavior (see Table 3.3). The *pervasive high problem group* only differed in officially registered offending from the *low problem group* at the trend level (50% vs 36.9%, OR 1.7). No differences in official offending were found between the *pervasive high problem* and *externalizing intermediate problem group*. Compared to the *low problem group*, children in the *externalizing interme-*

diate problem group were more likely to re-offend according to the police (36.9 % vs 55.8 %, OR 2.2). Regarding self-reported antisocial behavior (see Figure 3.1a for a graphic display of means per measurement), the *externalizing intermediate problem* (IRR 1.74) and *pervasive high problem* (IRR 2.97) groups reported higher levels of antisocial behavior over time compared to the *low problem group*. Further, children in the *pervasive high problem group* reported more antisocial behavior over time compared to the *externalizing intermediate problem group* (IRR 1.71).



Figures 3.1a and 3.1b Graphic display of mean levels of self-reported antisocial behavior (left) and victimization (right) per subgroup over two-year follow-up

Turning to victimization (see Table 3.3), compared to the *low problem group*, the prevalence of official victimization was higher in the *pervasive high problem group* (5.4% vs 15.5%, OR 3.23). No differences in officially registered victimization were found between the *externalizing intermediate problem group* (8.3%) and the two other groups. Compared to the *low problem group*, both the *externalizing intermediate problem* and the *pervasive high problem* groups reported higher levels of self-reported victimization over time (IRR 1.10 and IRR 1.21; see Figure 3.1b for a graphic display of means per measurement). Further, children in the *pervasive high problem group* showed higher levels of self-reported victimization compared to the children in the *externalizing intermediate problem group* (IRR 1.10).

Table 3.3 Logistic regression of cluster membership on registered re-offending and victimization, and GEE regression on self-report antisocial behavior and victimization over two-year follow-up

	Registered re-offending			Registered victim		
	n	OR (95% CI)	p	n	OR (95% CI)	p
Low (ref)	130			130		
Externalizing intermediate	120	2.16 (1.30-3.58)	.003	120	1.60 (.588-4.34)	.358
Pervasive high	58	1.71 (.914-3.20)	.094	58	3.23 (1.14-9.15)	.027
<i>Ext vs pervasive</i>		1.26 (.674-2.37)	.465		.495 (.189-1.29)	.152
	Self-report antisocial			Self-report victim		
	n	IRR (95% CI)	p	n	IRR (95% CI)	p
Low (ref)	130			130		
Externalizing intermediate	120	1.74 (1.42-2.13)	<.001	120	1.10 (1.04-1.15)	<.001
Pervasive high	58	2.97 (2.38-3.72)	<.001	58	1.21 (1.14-1.29)	<.001
<i>Ext vs pervasive</i>		1.71 (1.40-2.08)	<.001		1.10 (1.03-1.18)	<.001

Cluster membership predicting combined offending/victimization over time

Finally, subgroup differences in co-occurrence of antisocial behavior and victimization were studied. Results are presented in Table 3.4. Regarding officially registered co-occurrence, children in the *externalizing intermediate problem group* were more likely to become official offenders-only compared to children in the *low problem group* (33.6% vs 48.7%, OR 2.8). In contrast, children in the *pervasive high problem group* were more likely to be registered as re-offender/victim compared to children in the *low problem group* (3.9 % vs 10.9 %, OR 2.1).

The predictive value of subgroup membership on co-occurrence in self-reported antisocial behavior and victimization was studied per measurement. Due to the high number of children from the *low problem group* in the no-antisocial/victim group at T0, no regression model could be run for self-reported combined data at T0. Therefore, multinomial regression analyses will only be presented for T1 and T2. The no-antisocial/victim category was taken as a reference category. At T1, compared to the *low problem group*, the *externalizing intermediate problem group* was more likely to display antisocial behavior-only (OR 4.8) and at the trend level to be victimized-only (OR 2.2). Compared to the *low problem*

group, the *pervasive high problem group* was more likely to display antisocial behavior-only (OR 6.8), be victimized-only (OR 3.2), and be both antisocial and victimized (OR 9.5) at T1. Differences between the *externalizing intermediate problem* and *pervasive high problem* groups were only found at the trend level with the latter being more likely to be both antisocial and victimized (OR 3.3).

At T2 no differences were found between the *low problem group* and the *externalizing intermediate problem group*. Compared to the *low problem group* and with no antisocial behavior or victimization as the reference group, children in the *pervasive high problem group* were more likely to display antisocial behavior-only (OR 10.4), to be victimized-only (OR 3.7) and to be both antisocial and victimized (OR 22.4). However, the confidence interval of the latter was rather large indicating the exact OR is unstable. Compared to the *externalizing intermediate problem group*, the *pervasive high problem group* was also more likely to display antisocial behavior-only (OR 5.8), to be both antisocial and victimized (OR 6.8) and at the trend level to be victimized-only (OR 2.6).

Discussion

This paper first aimed to investigate the longitudinal prevalence of and correlation between officially registered and self-reported antisocial behavior and victimization; and second to study the predictive value of three distinct profiles of dynamic risk factors for future antisocial behavior/delinquency and victimization, both separately and jointly. The prevalence of antisocial behavior was rather common both as registered by the police and according to self-report, confirming the generally reported high risk of early onset offenders persisting in antisocial behavior. In contrast, victimization particularly as registered by the police was relatively rare. However, in line with findings in the general population, antisocial behavior and victimization correlated with each other over time. This stresses the need not only to focus on the prevention of future re-offending but also to regard the offenders as potential future victims in need of protection. Regarding the second aim, clusters of dynamic risk factors proved predictive of future risk of antisocial behavior and victimization. Regardless of the type of measurement used, children in the *low problem group* displayed low levels of future antisocial behavior and victimization. Children marked by intermediate levels of mainly externalizing behavior (the *externalizing intermediate problem group*) were mainly at risk to display antisocial behavior only, particularly as registered by the police.

Table 3.4 Association between cluster membership and co-occurrence of offending and victimization as registered by the police and reported by childhood arrestees

Antisocial/victim		Registered	
		n=306 (%)	OR (95% CI)
No-antisocial/victim (ref)	Low (ref)		
	Externalizing intermediate		
	Pervasive high		
Antisocial only	Low (ref)	33.6	
	Externalizing intermediate	48.7	2.8 (1.0-13.1)**
	Pervasive high	41.8	3.7 (0.88-8.7)*
	<i>Ext vs pervasive</i>		
Antisocial/victim	Low (ref)	3.9	
	Externalizing intermediate	7.6	1.7 (0.84-3.2)
	Pervasive high	10.9	2.1 (1.2-3.5)***
	<i>Ext vs pervasive</i>		
Victim only	Low (ref)	-	
	Externalizing intermediate		
	Pervasive high		
	<i>Ext vs pervasive</i>		

* $p < .10$ ** $p < .05$, *** $p < .01$

Note. No regression model was run for self-reported combined data at T0 due to the high number of children from the low problem group in the no-offender/victim group at T0.

Finally, children who displayed high levels of internalizing, externalizing, peer and family problems (the *pervasive high problem group*) were most likely to show both antisocial behavior and victimization. As such, this study confirms the findings in the bullying literature stating that co-occurrence of antisocial behavior and victimization is more prevalent among those who display internalizing, peer and family difficulties in addition to their antisocial behavior.

Police and self-reported data each provided unique information since the correlations of both types of data were low for antisocial behavior and even absent for victimization. Several mechanisms are likely to play a part in the relative low correlation of police versus self-reported antisocial behavior. First, not all antisocial behavior can be considered delinquent and is not registered as such by the police. Second, not all delinquent behavior comes to the attention of the police.

Table 3.4 Continued

Self-report				
T0 (n=256) (%)	T1 (n=220) (%)	T2 (n=206) (%)	T1 OR (95% CI)	T2 OR (95% CI)
87.5	80.2	72.7		
56.4	56.3	61.3		
29.4	43.2	26.3		
-	6.3	9.1		
19.8	21.3	13.8	4.8 (1.8-13.2)***	1.8 (1.3-18.6)
31.4	22.7	34.2	6.8 (2.2-20.9)***	10.4 (3.4-31.4)***
			1.4 (0.54-3.6)	5.8 (2.0-16.7)***
-	3.1	2.3		
5.0	6.3	6.3	2.9 (0.65-12.5)	3.3 (0.61-17.5)
23.5	15.9	18.4	9.5 (2.2-40.0)***	22.4 (4.1-123.6)***
			3.3 (0.93-11.8)*	6.8 (1.8-26.3)***
12.5	10.4	15.9		
	16.3	18.8	2.2 (0.90-5.5)*	1.4 (0.62-3.2)
	18.2	21.1	3.2 (1.1-9.3)**	3.7 (1.2-10.9)**
			1.5 (0.52-4.1)	2.6 (0.87-7.8)*

* $p < .10$ ** $p < .05$, *** $p < .01$

This may particularly be the case when the behavior is displayed within the home or school. Finally, some children and parents may deny and underreport antisocial behavior despite its having been registered by the police. Turning to victimization, the lack of correlation between police reported victimization and self-reports of being bullied may indicate these different types of victimization do not generally co-occur. It could be hypothesized that the forms of victimization as registered by the police refers to victimization from street crime or domestic violence, while victimization of bullying is more related to social rejection. The types of victimization as registered by the police may refer to the mechanism of co-occurrence described in the routine activity and risky lifestyle theories (Riley, 1987; Lauritsen et al., 1992), while peer rejection may be a reflection of social exclusion as described by Moffitt et al. (2002) and Patterson (1998). However, the lack of

correlation in the victimization measurements may also be partly explained by the low prevalence of both measurements resulting in limited power. These relative low levels of victimization, in contrast to earlier findings, are partly due to the definitions of victimization used. In contrast to some other studies (Weaver et al., 2008; Chauhan & Reppucci, 2009), we did not include *witnessing* of violence in the police reported victimization measure. Regarding our self-report measure of victimization, we used a very specific measure, namely being bullied, while other reports often used broader measurements of victimization including several types of victimization. Overall, these findings indicate that different individuals display different types of antisocial behavior and experience different types of victimization.

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In line with the previous notion, different dynamic risk profiles predicted different types of future antisocial behavior. The *externalizing intermediate problem* profile mainly predicted future police registrations while the *pervasive high problem* profile mainly predicted self-reported antisocial behavior. Several mechanisms could partly explain this finding. First, as the dynamic risk factors used to form subgroups are based on parent and self-report information, those who report many problems, may also be most inclined to report more antisocial behavior. Further, children who besides externalizing behavior, also display internalizing, peer and family problems may display more interpersonal forms of antisocial behavior which may be less likely to come to the attention of the police. On the other hand, the externalizing group may be marked more by property delinquency such as theft and vandalism which is more likely to be noticed by the police as it occurs on the street. Further, it could be hypothesized that children in the *pervasive high problem group* are more likely to be detected as being in need of help by youth services. As a result their antisocial behavior may be labeled differently and less often be reported to the police and more to these services. However, the current results underscore the need to focus not only on those presenting a wide range of problems but also on those who mainly express intermediate level externalizing behavior as both are at risk of different types of antisocial behavior.

While children in the *pervasive high problem group* were at risk of both types of victimization, children in the *externalizing intermediate problem group* were only at risk of self-reported victimization. This risk of peer rejection among the *externalizing intermediate problem group* is in line with Patterson's theory (1998) which states that peer rejection among young offenders is a result of displayed

externalizing behavior. Further, children who mainly report externalizing behavior problems may be more inclined to interpret behavior by others as hostile and as such perceive behavior more often as rejection or bullying (Crick & Dodge, 1996). These findings stress the need to focus not only on prevention of future re-offending but also on protection against victimization of children who express externalizing behavior problems.

In line with findings from the bullying literature (Olweus, 1997; Olweus, 2000; Schwartz et al., 2001), children who report internalizing and family difficulties in addition to externalizing problems were at highest risk for co-occurring antisocial behavior and victimization. This indicates that findings from a specific form of antisocial behavior, bullying, can at least to some extent be generalized to antisocial behavior in general and specifically to offending. However, subgroup differences were not stable over time. Differences between the *low problem* and *externalizing intermediate problem group* diminished over time, while differences between the *pervasive high problem group* and the other two groups became more pronounced. This may be a reflection of the general phenomenon that at the first measurement in time, problem levels in research populations tend to be elevated compared to later measurements (Duan et al., 2007). As such the *externalizing intermediate problem group* may partly consist of children who cause this general effect while the children in the *pervasive high problem group* may consist more of children who are genuinely at risk. Further, as children age and reach puberty those in the *low problem group* may also start to display some age appropriate problem behaviors causing them to move towards the intermediate group (Moffitt, 1993).

Limitations

There were several limitations to our study that need to be considered when interpreting the reported findings. First, although our sample of childhood first-time arrestees is unique in its kind, the subgroup numbers were still relatively small providing limited power particularly given the low prevalence rates of police registrations of victimization. Second, we were not able to differentiate between different types of victimization as reported by the police, while our data on self-reported victimization was limited to bullying. Studying different types of victimization, e.g. victimization of bullying, sexual abuse, violence on the street and domestic violence may provide more insight. The same holds for differentiation in type of antisocial and offending behavior. Third, we did not differentiate between

girls and boys. Finally, our clusters were merely based on correlates of offending that can be considered risk factors. No correlates of offending acting in a promotive or protective way were used in this study. Inclusion of such correlates in future studies will enable a more detailed interpretation of the clusters and provide us with potentially effective treatment ingredients.

Conclusions and Directions for Future Research

Concluding, these results indicate that the clusters have clinical value as they are predictive of differences in future antisocial behavior and victimization. As such, these results stress the importance of early screening in order to aim interventions at those most in need and to avoid over-treatment and stigmatization of those not at risk. Further, these results underscore the need not only to focus on risk for future re-offending but also to pay attention to future victimization. These results also provide information on the possible match of type and intensity of treatment to the risk profile of the child and family. Given the broad spectrum and high level of problems reported in the child, the family, school and the social environment, the *pervasive high problem group* is likely to benefit most from an intensive intervention aimed at these different domains. The *externalizing intermediate problem group* seems more suited to less intensive interventions aimed specifically at externalizing behavior problems.

In order to better understand the links between victimization and antisocial behavior and to further tailor interventions to those most in need future research should take into account different types of antisocial behavior and victimization, differentiate between girls and boys and include protective as well as risk factors.