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Souverein, F.A.; Ward, C.L.; Visser, I.; Burton, P.

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# Serious, Violent Young Offenders in South Africa: Are They Life-Course Persistent Offenders?

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Fleur A. Souverein,<sup>1,2</sup> Catherine L. Ward,<sup>2</sup>  
Ingmar Visser,<sup>1</sup> and Patrick Burton<sup>3</sup>

## Abstract

Life-course persistent offending contributes greatly to violent offending in any country. South Africa has high rates of violence; this study investigated what proportion of young South African offenders might be identified as life-course persistent, and what risk factors identified this group. Offenders aged 12 to 25 years ( $N = 395$ ) were selected from eight different correctional facilities in four provinces of South Africa. Latent class analysis identified 164 offenders (41.5%) with distinctly earlier starts and more serious offending. These (probably life-course persistent) offenders were distinguished from others by male gender, violence at home, other victimization, familial crime, school performance, violence at school, and alcohol abuse and gang membership. Correctional services should be specifically targeted at this large subgroup of offenders to prevent recidivism. Primary prevention efforts should be targeted at preventing violence at home and school, at promoting school attachment, at substance abuse treatment, and at gang membership.

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<sup>1</sup>University of Amsterdam, The Netherlands

<sup>2</sup>University of Cape Town, South Africa

<sup>3</sup>Centre for Justice and Crime Prevention, Cape Town, South Africa

## Corresponding Author:

Fleur A. Souverein, Department of Psychology, Amsterdam University, Weesperplein 4, 1018 XA, Amsterdam, The Netherlands.

Email: fleursouverein@live.nl

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South Africa has a very high rate of violence. One index of this is the homicide rate: In 2012 to 2013, there were 31.1 murders, and 355.6 assaults with intent to commit grievous bodily harm, per 100,000 population (South African Police Service, 2013). By contrast, Germany had a homicide rate of only 0.7 per 100,000 in 2012 (Bundesministerium des Innern, 2013), and New Zealand a rate of 0.009 per 100,000 (New Zealand Police National Headquarters, 2013). In addition, of the 31,177 non-natural deaths recorded in South Africa in 2008, 31.5% (9,831) were as a result of violence (National Injury Mortality Surveillance System [NIMSS], 2010). Moreover, it seems that children are often caught in the cross fire and the rates of (severe) child injuries as a result of violence are extremely high (Fiegggen et al., 2004).

Clearly, violence prevention initiatives are urgently needed in South Africa. A particular concern should be offenders who are on what Moffitt (1993) described as a “life-course persistent” trajectory because, by definition, life-course persistent offenders will continue to offend throughout their life span unless their trajectories of offending are interrupted, committing serious violence offenses. Two concerns arise in terms of prevention and life-course persistent offending: First, efforts should be made to prevent young people from taking this course in the first place (primary prevention), and second, if young people are arrested, prevention efforts should focus on interrupting their criminal path so that their trajectories are not those of life-course persistent offenders (secondary prevention).

In the current study, we therefore explored two questions: First, “Is there a cohort of young South African offenders who may be identified as being on a life-course persistent trajectory?” Second, “Which risk factors identify this group (and therefore might be targets for prevention initiatives)?”

**Patterns of Offending in Life-Course Persistent Groups**

Moffitt’s (1993) typology of offending, which distinguishes adolescent-limited offenders from life-course persistent offenders, has been supported in repeated studies by a number of different countries (Moffitt, 2006). The adolescence-limited offender and life-course persistent offender are two qualitatively distinct types of offenders, each with a unique history, etiology, and

prognosis: adolescence-limited offenders and life-course persistent offenders. For the adolescence-limited offender, the causal factors are proximal and specific to the period of adolescent development. They engage in temporary and situational antisocial behavior during adolescence and they desist from crime as they mature out of adolescence. In contrast, for the life-course persistent offender, causal factors originate early in their lives and interact cumulatively with their environment across development, leading to stable and persistent antisocial behavior throughout the life span. Antisocial behavior in this regard constitutes all behavior that harms or lacks consideration for the well-being of others: biting and hitting at age 3, stealing and lying at age 10, drug dealing and car theft at age 16, armed robbery and rape at age 21, and fraud and domestic violence at age 30 (Moffitt, 1993).

Life-course persistent offenders have been shown, in those countries where the typology has been investigated, to constitute approximately 5% of the male population, but they commit the bulk of serious violent offenses in that country (Moffitt, 2006). Serious offenses are regarded as significant violations of the law that typically carry more than a 6-month punishment (Reuters, 2014).

An early onset of antisocial behavior, combined with continued, serious offending, are hallmarks of life-course persistent offending (Moffitt, Caspi, Harrington, & Milne, 2002), and this has been demonstrated in a number of cohorts of offenders. In the California Youth Authority Study, which followed 4,000 inmates into their 30s, significantly more offenders with an early onset continued offending past ages 21, 25, and 31 (Ge, Donellan, & Wenk, 2001). Similarly, in a Philadelphia, United States, birth cohort, young people who had their first contact with police between ages 7 and 12 subsequently averaged more serious crimes than those who were first in contact with police between ages 13 and 16 (Wolfgang, Figlio, & Sellin, 1972). And when the Dunedin, New Zealand, cohort (in which the typology was first identified) reached age 18, the life-course persistent offenders were differentially associated with conviction for violent crimes (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996), and at age 26 this difference persisted (Moffitt et al., 2002). Furthermore, chronic delinquents are antisocial in more than one setting and display a higher variety of antisocial behaviors (Loeber, 1982). Children who show antisocial behavior in more than one setting are more likely to persist than those who show this behavior only in one setting (Schachar, Rutter, & Smith, 1981).

Life-course persistent antisocial behavior is thus distinguishable from adolescent-limited antisocial behavior through an early start to offending, antisocial behavior in multiple domains, and the commission of more serious and violent crimes than other offenders.

## **Risk Factors Influencing Life-Course Persistent Offending**

The troubled lives of life-course persistent offenders start with biological risk factors that predispose them to antisocial behavior (Moffitt, 1990b; Moffitt & Henry, 1991; Raine, 2002). Neuropsychological deficits, as indicated by observables such as inattention, hyperactivity, and under-controlled temperament, are necessary (but not sufficient) for the development of life-course persistent antisocial behavior (Aguilar, Sroufe, Egeland, & Carlson, 2000).

The likelihood of entry into, and persistence in, antisocial lifestyles is increased when these biological risk factors cumulatively interact with children's environments. Family environments that include harsh and inconsistent parenting, violence, single parenting, and family members involved in crime, and school environments, which make it difficult for young people to attach to school, both increase the risk of offending (Herrenkohl et al., 2000; Sampson & Laub, 1997). These person-environment interactions set in motion a downhill snowball of consequences that cut off options for change (Moffitt, 1993). Addiction to drugs or alcohol, school dropout, teen parenthood, injuries, truncated educational opportunities, and incarceration all constitute "snares" (Moffitt, 1993) that diminish the probability of breaking away from a criminal trajectory (Wilson & Herrnstein, 1985). Moreover, young people facing these risks are more likely to miss out on opportunities to learn a conventional prosocial behavioral repertoire as they lack resources to access other options. Problems at school, for example, place a limit on the variety of job skills that can be obtained and thereby cut off options to pursue legitimate employment (Maughan, Gray, & Rutter, 1985; Moffitt, 1990a).

As the number of risk factors increases, so does the likelihood of becoming a life-course persistent offender (Herrenkohl et al., 2000). As asserted by the Cumulative Risk Hypothesis, the greater the number of risk factors, the greater the deleterious effect on later developmental outcomes (Appleyard, Egeland, Van Dulmen, & Sroufe, 2005; Rutter, 1979; Sameroff, 2000). The higher the number of risks, particularly in early childhood, the greater the likelihood of behavior problems in adolescence (Appleyard et al., 2005).

For instance, in the Cambridge study of delinquent development, a vulnerability score was developed on the basis of 5 risk factors (low family income, convicted parent, large family size, low intelligence, and poor parental rearing behavior). The percentage of boys convicted for violence increased from 3% of those with none of these risk factors to 31% of those with four or five (Farrington, 1997). Similarly, in a Finnish study, Räsänen and colleagues (1999) found a 2-fold increase in violent offending at age 26 in the offspring of mothers who smoked during pregnancy. But prenatal nicotine exposure—a

risk factor for neuropsychological deficits linked with aggression—led to a 12-fold increase in recidivistic violence when combined with single household families and a 14-fold increase when combined with teenage pregnancy, unwanted pregnancy, single household families, and developmental motor lags (Räsänen et al., 1999).

## **Risk Factors for Life-Course Persistent Trajectories in South Africa**

Moffitt's typology has only been investigated in high-income countries, where contexts may present a different profile of risk from low- and middle-income countries (Moffitt, 2006). For instance, the typology was developed in New Zealand (Moffitt, 1993), a high-income country with a very low rate of offending (New Zealand Police National Headquarters, 2013) compared with South Africa's much higher rates (South African Police Service, 2013). Understanding offending, and the risk factors that drive it in countries such as South Africa, are therefore critical issues for primary prevention. It is equally important to identify whether serious, violent offending is widespread among offenders, or whether there is an identifiable subgroup more at risk of perpetrating such crimes across the life span, and who might therefore benefit from specifically targeted correctional services.

It seems that South African children are at high risk of exposure to environments considered aggressogenic (Herrenkohl et al., 2000; Sampson & Laub, 1997). In the family, for example, children are at high risk of being exposed to harsh and inconsistent parenting, violence in the home, single parenting, and criminality of family members. While no national data on parenting practices is yet available in South Africa, rates of child maltreatment (the extreme end of harsh and inconsistent parenting) are high (Richter & Dawes, 2008). In a national survey, 33% of parents admitted to beating their children (Dawes, Long, Alexander, & Ward, 2004). Moreover, in a nationally representative youth victimization survey, 21.8% of the children reported that they had witnessed aggressive disputes between family members, and 16% reported that someone in their family had been imprisoned (Leoschut & Burton, 2006). Furthermore, another nationally representative study found that only 40.1% of young people aged 12 to 22 years lived with both parents (Leoschut, 2009).

School is another important area for child socialization and can serve as a protective factor against offending. However, many South African schools are chaotic rather than ameliorating environments; teacher time is limited by many other functions, school management is often unable to fulfill its functions, the majority of students fail, and dropout rates are high (Ward, 2007).

Furthermore, despite the fact that it is illegal, corporal punishment is still used in many schools and the levels of violence and crime in schools are very high (Burton & Leoschut, 2013; McConnell, Mutongwizo, & Anderson, 2009). In South Africa, violence and crime are serious concerns in both primary and secondary schools, across school categories, and across gender, age, and race (Jeffhas & Artz, 2007).

It thus seems that current conditions in South Africa are replete with opportunities in social environments for young people to learn violent behavior, and deficient in opportunities for young people to learn prosocial behavior and achieve their goals. An important question in this context, therefore, is the extent to which these conditions lead to life-course persistent offending, and which risk factors are the most likely to be associated with this serious, violent, and persistent trajectory. Because these risk factors appear to occur at very high rates, higher than the rates at which they occur in the mostly high-income countries in which the typology has thus far been investigated (Moffitt, 2006), it may well be that life-course persistent offenders form a far larger group in South Africa than they do in other countries. Alternatively, it may be that these risk factors are unable to distinguish life-course persistent offenders from others, because so many young people experience these risks.

We took advantage of the Centre for Justice and Crime Prevention's young offender study to explore some preliminary questions related to the development of life-course persistent offending in South Africa: whether we can distinguish a serious, violent offender group that is at risk of life-course persistence, and which risk factors are associated with this group. These questions have important implications for both primary prevention and for services offered in prisons.

## **Method**

### *Sample*

This study uses data from the National Youth Offending and Resilience Study (Leoschut & Bonora, 2007), conducted by the Centre for Justice and Crime Prevention, a South African civil society organization that promotes evidence-based crime prevention. Offenders aged 12 to 25 years ( $N = 395$ ) were selected from eight different correctional facilities in four provinces of South Africa; the offender sample was stratified by urban and rural prison setting, and by offense type (violent or non-violent; Burton, Leoschut, & Bonora, 2009).

The ultimate sample of offenders was 94.7% male, and the majority (72%) were Black African; the remainder were colored (24.9%), White (1.8%), and Indian (1.3%) (Note that four race categories were identified by the Apartheid

regime in South Africa: Black African, White, Colored, and Indian/Asian; the sample is identified by these categories as they continue to have impact today on a range of outcomes and opportunities, including health and education; Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009.) The majority (53.7%) were aged between 19 and 21 years, with 23.6% aged 16 to 18 years, 21.7% aged 22 to 25 years, and only 1% aged 12 to 15 years. The crime for which most offenders were incarcerated was armed robbery, followed by housebreaking, rape, and murder. Table 1 describes the sample in terms of the variables investigated in this study.

### *Procedure*

The young offenders were interviewed by trained interviewers using structured questionnaires in a private setting. All interviews were conducted in the language in which the respondent felt most comfortable conversing. Respondents were assured of confidentiality and anonymity and informed consent was obtained from all respondents (Leoschut & Bonora, 2007).

### *Measures of Risk Factors*

We constructed measurements for the following risk factors from the questionnaire administered to the youth: violence and abuse at home (single, binary item), violence and abuse at school (single, binary item), victimization (8 items; Cronbach's  $\alpha = .95$ ), familial crime (single, binary item), support from caregivers (5 items; Cronbach's  $\alpha = .83$ ), and school motivation and performance (4 items; Cronbach's  $\alpha = .85$ ). Table 2 shows how the risk factors have been operationalized.

### *Snares*

In addition, we explored the role that ensnaring factors may play in the development of the life-course persistent offender. Teen parenthood, addiction to drugs or alcohol, gang membership, and time spent incarcerated can act as "snares": Snares prevent those who may, under other circumstances, have been adolescence-limited offenders from desisting from their criminal careers, so that in effect they become life-course persistent offenders (Moffitt, 1993). Using this data set, we were able to operationalize two of these snares, namely, alcohol abuse and gang membership.

Alcohol abuse was operationalized using the question, "Have you ever tried and failed to control, cut down or stop using alcohol?" We recoded the original response ("no never," "yes in the past 12 months," "yes but not in the past 12

**Table 1.** Sample Characteristics (N = 394).

	Percentage (n)		
Crime for which offender was incarcerated			
Armed robbery	30.9%	(122)	
Housebreaking	23.5%	(93)	
Rape	10.6%	(42)	
Murder	9.9%	(39)	
Theft	6.8%	(27)	
Assault	4.6%	(18)	
Attempted crimes	3.8%	(15)	
Car theft	3.5%	(14)	
Possession of illegal substances	3.0%	(12)	
Fraud	0.8%	(3)	
Other	2.3%	(9)	
Other categorical descriptive variables			
Offenders who experienced violence/abuse at home	25%	(98)	
Offenders who experienced violence/abuse at school	25.9%	(101)	
Offenders who had a family member who had gone to jail	41.8%	(165)	
Offenders with hyperactivity/attention deficits	30.3%	(70)	
Continuous Descriptive Variables			
	Range	M	SD
School performance and motivation	0-3	1.97	0.55
Victimization	0-6	1.50	1.32
Support from parents	0-5	1.95	1.47
Harsh parental discipline	0-2.2	1.65	0.42
Parental monitoring and control	0-3.2	2.3	0.65
Severity of offending	0-11	4.50	2.90
Age at which offender first did something that could have got them sent to prison	0-20	16.12	2.65

months”) into a binary response set: The responses “yes in the past 12 months” and “yes but not in the past 12 months” were both recoded as “yes” and “no never” was coded as “no.” Gang membership was measured with the question, “Can you tell me if you belong(ed) to a gang, or any other group of people that might be considered a gang, before your incarceration?” The response was binary and a positive response was used as an indicator for gang membership.

### Data Analyses

*Distinguishing life-course persistent from adolescence-limited offenders.* To identify the offenders in this sample who were most likely to be life-course persistent

**Table 2.** Risk Factors and the Corresponding Items.

Risk Factor	Item
Violence and abuse at home <sup>a</sup>	Has anybody threatened to hurt you, scare you, or harm you in any way, or actually hurt you when you have been at home?
Violence and abuse at school <sup>a</sup>	Did anybody threatened to hurt you, scare you, or harm you in any way, or actually hurt you when you were at school?
Familial crime <sup>a</sup>	Has anyone in your family have ever been in prison?
Victimization <sup>a</sup> ( $\alpha = .95$ )	Have you ever personally experienced assault? Have you ever personally experienced robbery? Have you ever personally experienced home burglary? Have you ever personally experienced theft of vehicle or bicycle? Have you ever personally experienced theft of personal property/crops/livestock? Have you ever personally experienced hijacking of a vehicle or bicycle? Have you ever personally experienced sexual assault/rape? Have you ever personally experienced deliberate damage to property?
Support from parents <sup>b</sup> ( $\alpha = .83$ )	During the course of your lifetime, have you spent a lot of time with your father? During the course of your lifetime, have you spent a lot of time with your mother? During the course of your lifetime, have you received financial support from your father? During the course of your lifetime, have you received financial support from your mother? During the course of your lifetime, have you received emotional support from your father?
School motivation/performance <sup>c</sup> ( $\alpha = .85$ )	At school, my marks were better than the marks of most of the other children in my class I tried hard to work at school It was/is important to me to get good marks at school I want(ed) very much to go to university or technikon when I left/leave my school

<sup>a</sup>Item response code; no = 0; yes = 1.

<sup>b</sup>Item response code; yes = 0; no = 1.

<sup>c</sup>Item response code; *strongly agree* = 1; *agree* = 2; *disagree* = 3; *strongly disagree* = 4.

offenders, we used three variables: two assessing age of onset and one assessing diversity of offending (a scale that included items on theft, weapon carrying, property damage, burglary, robbery, and fighting; Cronbach’s  $\alpha = .89$ ).

**Table 3.** Correlations Between Categories of Age of Onset and Severity of Offending.

	First Did Something That Could Get You Into Trouble With the Law?	First Did Something That Meant You Could Have Been Sent to Prison?	Severity of Offending
First did something that could get you into trouble with the law?	1.00		
First did something that meant you could have been sent to prison?	0.70	1.00	
Severity of offending	-0.49	-0.43	1.00

The two variables indicating the age of onset were responses to the questions “What age did you first do something that could have got you sent to prison?” to which a continuous response option was allowed; and “What age did you first do something that could have got you into trouble with the law?” where the response item was categorized into four categories: “9 and younger,” “10 to 15,” “16 to 18,” and “19 to 25.” Table 3 provides the correlations between these variables within the offender group; all correlations are significant with  $p < .001$ . As expected, severity was negatively correlated with age of onset; early starters commit more and more serious crimes.

We then used latent class modeling to try to distinguish those likely to be life-course persistent offenders from those likely to be adolescence-limited offenders. Latent class modeling constructs homogeneous latent groups on the basis of observed variables such that correlation between the observed variables is explained by the latent groups (McCutcheon, 1987). In criminology, latent class modeling has been used to identify different criminal careers (Bartolucci, Pennoni, & Brain, 2007) and to discriminate recidivists from one-time offenders (Bijleveld & Mooijaart, 2003).

Latent class models with two through four classes were fitted to these three variables together. The three-class model was the best-fitting and most parsimonious model, as determined by the Bayesian Information Criterion (BIC; Schwarz, 1978); lower BIC values indicate a better trade-off between goodness-of-fit and parsimony of the model. BIC values were 4,130, 4,043, and 4,048, respectively, for the two-, three-, and four-class models, and hence the three-class model was optimal. The main difference between the two-class and three-class model was that Classes 1 and 2 from the three-class model merged into a single class in the two-class model. Using

**Table 4.** Cross Classification Two-Class and Three-Class Model (*n* in Each Group).

	Class	Two-Class Model	
		1	2
Three-class model	1	81	1
	2	144	5
	3	0	164

Note. In both the two- and three-class models, there are 164 offenders classified into the most severe category.

posterior probabilities, offenders were assigned to classes in the two-, and three-class models respectively. Table 4 gives the cross-classification of class memberships between the two- and three-class models. As can be seen, everyone in Class 3 in the three-class model is in Class 2 in the two-class model. Hence, according to both the two- and three-class models, there is a homogeneous group of severe offenders containing 164 (41.5%) of the 395 offenders.

The unconditional probabilities and means for the three-class model are reported in Table 5. The unconditional probabilities are 0.204, 0.406, and 0.390; these are the a priori probabilities for the young offenders to belong to each of the three classes. The typical offender in Class 3 of the three-class model has a high probability (0.948) of committing his first crime (that could have put him in contact with the law) between the ages of 10 and 15 years. Typical Class 3 offenders committed their first crime that could have got them into prison at age 14, and they have a mean severity score of 6.48.

Based on this latent class analysis, we concluded that we had identified a homogeneous group of 164 offenders (41.5% of the sample) who all had an early age of onset and displayed severe antisocial behavior, and who were clearly distinguished from other offenders; we classified offenders in this group as likely to be life-course persistent offenders.

### *Risk Factor Analysis*

We had several questions we wished to test: First, "Which of the risk factors was associated with age of onset (the age at which the offenders first did something that could have sent to prison)?" Second, "Which of the risk factors was associated with severity of offending?" Third, "Which risk factors discriminated our class of likely life-course persistent offenders from the

**Table 5.** Class-Specific Parameters for the Three Classes of Offender.

Class of Offender	Probability for an Offender in This Class First Doing Something That Could Have Got Him or Her Into Trouble With the Law at a Certain Age				Age at Which First Imprisoned		Severity of Offending	
	Age 9	Age 11	Age 17	Age 22	M	SD	M	SD
1	.03	.03	.04	.90	20	1.32	2.04	1.97
2	.00	.01	.88	.00	17	1.14	3.84	2.63
3	.05	.95	.00	.00	14	2.36	6.48	2.16

other offenders?” Finally, “How were the snares of alcohol abuse and gang membership associated with age of onset, severity scores, and life-course persistent offending?”

We used linear regression to explore the relationship between the risk factors and the age of onset, and between risk factors and severity of antisocial behavior. We used logistic regression to explore the relationship between the risk factors and our binary measure for life-course persistent offending. Throughout these analyses, missing data were handled by listwise deletion.

## Results

The results of our regression analyses are summarized in Table 6.

### *Age of Onset*

The age of onset (age at which the young offender first did something that might have resulted in imprisonment) was significantly associated with violence and abuse at home: Violent home environments were associated with a lower age of onset.

### *Severity*

Severity of offending was significantly associated with victimization, familial crime, violence and abuse at home, school performance and motivation, and violence and abuse at school. Also, males had significantly higher severity scores.

### *Life-Course Persistent Offending*

Serious, violent offending with an early age of onset—offending we identified as likely to be life-course persistent—was significantly associated with violence and abuse at home, violence and abuse at school, and familial crime.

**Table 6.** Associations Between Risk Factors, and Age of Onset, Severity of Offending, and Life-Course Persistent Offending.

	Outcome Measures						
	Age of Onset		Severity		LCP Offenders		
	$\beta$	t(1)	$\beta$	t(6)	$\beta$	SE	Exp(B)
<b>Risk factors</b>							
Violence/abuse at home	-.27**	-4.62	.21**	4.41	1.16**	.65	3.56
Victimization	-.05	-0.80	.26**	5.52	0.12	.09	1.13
Familial crime	-.10	-1.77	.18**	3.92	0.53*	.24	1.70
Support from parents	.02	0.39	-.02	-0.32	-0.02	.08	0.98
School performance/ motivation	-.08	-1.44	.18**	3.76	0.41	.22	1.51
Violence/abuse at school	-.08	-1.33	.10*	2.04	0.61*	.27	1.84
Child's male gender	-.06	-1.13	.23**	5.04	1.27	.65	3.56
<b>Snares</b>							
Alcohol abuse	-.24	0.71	.10**	2.19	0.20	.28	1.22
Gang membership	-.20**	3.47	.34**	7.08	1.61**	.286	5.01

Note. LCP = life-course persistent.

\*\* $p < .01$ \* $p < .05$ .

**Snares**

Alcohol abuse was significantly associated with severity; offenders who had a problem with the use of alcohol had significantly higher severity scores. Moreover, gang membership yielded significant results in all models: The offenders who belonged to a gang had a significantly younger age of onset, a significantly higher severity score, and were more than 5 times more likely to be in our life-course persistent offender group.

**Discussion**

We had two aims with this study. First, we were curious as to whether we could identify a homogeneous group of offenders likely to be on a life-course persistent trajectory in South Africa, a group that would be significantly distinguished from other offenders by early onset and severe antisocial behavior. Second, we wished to identify risk factors associated, in South Africa, with offending that may be life-course persistent.

Using latent class modeling, we indeed identified a homogeneous group of offenders that was clearly discriminated from the other offenders by an early age of onset (before age 14) and severe antisocial behavior, and who

therefore may possibly be on a life-course persistent trajectory of offending. This group constituted 164 offenders (41.5% of the 395 offenders). This is a proportion markedly higher than the proportions identified in other studies. In a Dutch cohort study of offenders, for example, 7.3% of their sample was identified as those who were on a life-course persistent trajectory of offending (Blokland, Nagin, & Nieuwbeerta, 2005).

In terms of risk factors associated with life-course persistent offending, it seems that the family risk factors identified in other countries for offending may also play an important role in South Africa. Children reporting violence and abuse in their families had a significantly younger age of onset and displayed more violent and severe antisocial behavior. Results further showed that children coming from families in which one or more adults had been in prison showed more violent and severe antisocial behavior and they were almost twice as likely to be in the group we identified as possible life-course persistent offenders. Numerous studies consistently find the same differentiating familial risk factors for life-course persistent offending (Moffitt, 2006).

School factors were also found to be associated with membership in our life-course persistent group; poor performance and lack of motivation at school were associated with more severe antisocial behavior. Again, this is consonant with the literature on life-course persistent offending (Moffitt, 2006).

More strikingly, youth indicating that they had experienced violence and abuse at school displayed more violent and severe behavior and were almost twice as likely to fall into the serious, violent offending group. School violence is seldom investigated as a stand-alone risk factor; most often, violence in the family is included in risk factors studies and the school included for risk factors such as the child's performance and motivation—see, for instance, Dahlberg and Potter (2001), and Herrenkohl and colleagues (2000). Our models—in which we control for family violence when exploring school violence—suggest that it makes an important and independent contribution, over and above exposure to family violence.

Where school violence has been investigated, there are similar results to ours. For instance, in a study conducted in Los Angeles, school and community violence both contributed to the aggression of boys, but only school violence to the aggression of girls (O'Keefe, 1997)—findings that also highlight the importance of school violence as a risk factor separate from exposure to violence in other locations. Clearly, important information is lost in studies if exposure to violence is not disaggregated by location (for instance, if it is conflated into a "community violence" category). Given the small literature that does exist on school violence specifically, and our findings, future studies should investigate violence at school as a unique risk factor for offending.

In addition, if violence at school is independent of other risk factors in its association with offending, it suggests a very specific locale for preventive interventions.

Our results further showed that victimization is significantly associated with the severity of offending; being the victim of a crime led to more severe antisocial behavior, again in accord with the literature on offending (Sherman et al., 1998).

We further investigated the role of snares. Alcohol abuse was significantly associated with severity: Offenders who had problems with alcohol abuse had significantly higher severity scores. Gang involvement was more broadly associated with younger age of onset, a significantly higher severity score, and a 5 times greater likelihood of becoming a serious, violent offender. While children involved in gangs are both more likely to be victims and perpetrators of violent crime around the world, the extent to which gangs affect young male South Africans (Walsh & Mitchell, 2006) and are associated with crime in South Africa (Hough, 2000) raises cause for great concern. Some sense of the scale of the problem is provided by an estimate that in Cape Town alone (then a city of 2.9 million people; Statistics South Africa, 2001), by the late 1990s, there were 100,000 gang members (Standing, 2005).

### *Limitations*

Our study yielded interesting and important results; however, there are a few limitations to our study that need to be considered. First, this was not a representative sample of all offenders in South Africa, but a limited sample of young offenders. In addition, the bulk of our sample (94.7%) was male, and thus the findings regarding the association between male gender and life-course persistent offending should be treated with caution. Future studies should include a larger sample of female offenders and explore whether there is a difference in risk factors associated with offending by gender.

Nor are we able, in this study, to identify persistence in criminal behavior beyond the age of 25. We were not able to follow the offenders over the life course, and so we have in effect identified a group of serious, violent offenders who are likely to be (rather than certainly) on a life-course persistent trajectory. Nonetheless, that a very high proportion of young offenders in this sample was identified as early-onset, serious, violent offenders is cause for concern, as these are highly likely to be the young people who are on a life-course persistent trajectory of offending (Moffitt, 1993). Future studies should investigate whether this proportion is reflected in the full age range of offenders, both in South Africa and elsewhere, and should follow offenders over the full course of their lives. Estimating the proportion of possible life-course

persistent offenders is important particularly for the kinds of services that are provided by correctional services institutions, as this group is likely to need intensive services.

In addition, the best-fitting model in the latent class analysis identified three groups of offenders. We were most interested in the group with early onset of offending and the most serious scores, but future studies may also wish to identify whether the other two classes are perhaps adolescence-limited offenders and whether the two groups are distinguishable in terms of risk factors and the correctional services interventions they may require.

Given the quantity of literature identifying biological risk factors that predispose children to antisocial behavior (Moffitt, 1990b; Moffitt & Henry, 1991; Raine, 2002), future studies should also attempt to follow children from very early in the life course. This is particularly important in South Africa, where there is a great deal of research suggesting that the biological risk factors for life-course persistent antisocial behavior may be found at an elevated rate in South Africa. For instance, in terms of prenatal risks to fetal neurodevelopment, tobacco is widely used among South African women (Sitas et al., 2004) and the prevalence of Fetal Alcohol Syndrome is the highest recorded in the world with rates, in high-prevalence areas, 33 to 148 times higher than estimates for children in the United States (Viljoen et al., 2005). Furthermore, rates for stunting, an indicator of chronic malnutrition, are significantly higher than in European and North American countries (Labadarios, 2007). Each of these risk factors has been associated with aggression and/or hyperactivity (Höök, 2006; Liu & Raine, 2006). However, in this study we were unable to explore these risk factors as caregivers for the majority of our sample could not be traced. Future studies should certainly explore the prevalence and role of these early risk factors for life-course persistent offending.

Finally, this is a cross-sectional study, and prospective longitudinal designs are essential for identifying causal factors. Future longitudinal studies should seek to identify whether the risk factors we identified are in fact playing a causal role in serious, violent offending in South Africa (and other low- and middle-income countries with similar conditions, such as high levels of poverty and violence).

### *Implications*

Despite these limitations, the study demonstrates that, within a sample of young South African offenders, a large proportion can be identified as serious, violent offenders who are distinguishable from other offenders on the basis of their age of onset and severity of offending, and who fit a risk pattern for life-course persistent offending. This in and of itself is concerning,

because these offenders are likely to recidivate, which has important implications for correctional services. Effective treatments for such offenders have been identified and include cognitive and cognitive-behavioral psychotherapy, and treatments that take a multifocal approach (working simultaneously in different areas of offenders' lives; Garrido & Morales, 2007). These programs should be implemented in correctional facilities to prevent recidivism.

However, these interventions rely on highly skilled personnel, as they are typically the domain of at least a master's-level clinical psychologist. In low- and middle-income countries (such as South Africa), it is unlikely that there will be sufficient professionals capable of delivering these services to such a large number of offenders. For instance, at the end of 2011, the South African Department of Correctional Services reported that, of 162,162 inmates in their facilities, 31,678 were youth aged 14 to 25 years who had been sentenced (Department of Correctional Services, 2012); if 41.5% of these are likely to be life-course persistent offenders, there were then 13,146 young offenders in need of this kind of intensive treatment. Yet there were only 50 psychologists employed in South Africa's correctional services in 2011 (Department of Correctional Services, 2012). Alternative modes of delivery (perhaps by paraprofessionals working under the supervision of a professional) should urgently be identified and tested.

On a more hopeful note, however, our study identified key factors that appear to play a role in increasing risk for offending and which may therefore be targets for early preventive intervention. Longitudinal studies should explore whether these are in fact playing a causal role in this context, and intervention studies should explore whether offending could be prevented through intervening with these risk factors. In addition, future studies should explore other variables as potential moderators (for instance, children who receive warm, consistent parenting may be less likely to become aggressive even when victimized than those who receive harsh, inconsistent parenting; Gorman-Smith, Henry, & Tolan, 2010). This would also allow more accurate targeting of interventions.

Preventing child abuse should be a high priority for intervention studies. Parenting programs, such as home visiting programs and group parent training interventions, have been demonstrated to do so effectively (Barlow, Johnston, Kendrick, Polnay, & Stewart-Brown, 2006; Mikton & Butchart, 2009), and the possibility of making these widely and freely available should be explored. Prevention of intimate partner violence should also receive attention. Although the evidence base for programs to prevent intimate partner violence is not as strong as for child maltreatment, there are promising programs available (Feder & Sardinha, 2015; Heise, 2015).

Prevention of violence at schools is another key priority. Teacher training to provide alternatives to corporal punishment, such as the Incredible Years teacher programs assisting teachers to learn effective, non-violent forms of classroom management, should form a critical part of national crime and violence prevention initiatives (Webster-Stratton, Reid, & Stoolmiller, 2008). Wider school programs to prevent violence between students (Ttofi & Farrington, 2011; Vreeman & Carroll, 2007) must likewise form part of national approaches to crime prevention. In addition, support for children who are struggling academically should not be neglected: As a part of other, broader school programs, academic support has a role to play in promoting attachment to school and improving children's outcomes (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Gottfredson, 1986).

Our findings also suggest that young people who have recently been victimized are at risk of offending. Although the evidence base for interventions to reduce poor outcomes for those who have recently had a traumatic experience is not yet strong, there are promising models (Gray & Litz, 2005). These should be made widely available and be tested further for their effectiveness in reducing aggression and offending.

As alcohol abuse also played significant roles in the seriousness of young people's criminal behavior, this too needs attention as a possible part of a broad crime prevention strategy. Substance abuse treatment is not widely available in South Africa, particularly to young people of color (Myers, Louw, & Pasche, 2010). Efforts to expand treatment accessibility, as well as other efforts to reduce alcohol use and the flow of illegal drugs within the country are also essential elements of crime prevention (Parry & Dewing, 2006).

Addressing these risk factors should also reduce the likelihood of young people's joining gangs, as there is a great deal of overlap between the risk factors for delinquency in general and gang membership specifically (Herrenkohl et al., 2000). However, specific strategies both for limiting gang involvement and for limiting gang violence should also be implemented. These may include a range of programs intended to reduce the likelihood of young people's joining gangs, such as the Gang Resistance Education and Training program, a school-based gang-prevention curriculum with evidence of effectiveness (Esbensen et al., 2011), as well other approaches to assisting existing members to detach from gangs and reducing the violent activities of the gangs themselves (Cooper & Ward, 2012).

## **Conclusion**

Crime prevention initiatives in South Africa must, as matters of priority, attend to specific interventions targeting serious, violent young offenders

who are incarcerated. Good use of the opportunity presented by incarceration could reduce recidivism and prevent young offenders from taking the life-course persistent offending path. Primary prevention is also crucial, and our study suggests a number of points of intervention to reduce young people's chance of becoming offenders in the first place. Attention should be paid to reducing violence at home and at school, providing treatment to those who have recently been victimized, reducing access to alcohol and providing substance abuse treatment for young people who need it, and reducing both the numbers of young people who join gangs and gang violence itself. All of these are critical for improving outcomes for South African youth.

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### Authors Biographies

**Fleur A. Sovereign** is a PhD student at the University of Amsterdam. She holds an MSc degree in developmental psychology and social psychology. Her research focuses primarily on secure residential youth care, living climate inside correctional facilities, risk factors for delinquency and violence prevention.

**Catherine L. Ward** is an associate professor in the Department of Psychology at the University of Cape Town, South Africa. Her research interests are in violence prevention from the perspective of children's development.

**Ingmar Visser** is an assistant professor in the Department of Developmental Psychology at the University of Amsterdam. His research interests include dynamical models of learning and development, mostly hidden Markov Models. He has applied such models in implicit learning, categorization, and concept acquisition.

**Patrick Burton** is the executive director of the Centre for Justice and Crime Prevention (CJCP), a non-governmental organization engaged in the field of social justice and violence prevention, with a particular focus on children and youth. He holds a higher diploma in development planning and an MSc degree in development studies.