

Trends & issues

in crime and criminal justice



Australian Government
Australian Institute of Criminology

No. 410 February 2011

Foreword | *The present research is the first of its kind in Australia to simultaneously examine individual, family and neighbourhood predictors of adolescent antisocial behaviour. The study draws on two key data sources—Australian Bureau of Statistics census data and the Mater University Study of Pregnancy (MUSP). The MUSP is a prospective longitudinal study of mothers and their children in Brisbane, Australia; the current project draws on data from birth through to adolescence (age 14 years). The study found that less than one percent of variation in antisocial behaviour was attributable to the statistical local area (SLA). Subsequent models of both SLA-level variables (neighbourhood disadvantage, immigration concentration and residential mobility) and individual and familial variables, showed that the strongest predictors of adolescent antisocial behaviour are those which measure disruptions in parenting processes, poor school performance and early childhood aggression. The findings suggest that programs that aim to enhance parenting practices, including improving communication, supervision and monitoring of children, are important in reducing adolescent antisocial behaviour.*

Adam Tomison
Director

Antisocial behaviour: An examination of individual, family, and neighbourhood factors

Tara Renae McGee, Rebecca Wickes,
Jonathan Corcoran, William Bor and Jake Najman

Explanations of antisocial and criminal behaviour consider many individual, family and neighbourhood-level factors. Yet, in practice, research rarely models the inter-dependence of these factors on antisocial behaviour (ASB). This paper draws on the Mater University Study of Pregnancy (MUSP) and Australian Bureau of Statistics (ABS) census data. Utilising data from a prospective longitudinal study, the between-neighbourhood variation in incidences of ASB in adolescence is examined. In so doing, a more meaningful test of the magnitude of neighbourhood effects by controlling for empirically driven individual and familial predictors of ASB in infancy, early childhood and adolescence is provided.

Background

Developmental and life course research that examines offending behaviour usually explores its origins in early childhood. Given that violations and subsequent adjudication of codified laws are almost non-existent for children, it does not make conceptual sense to examine the offending of children. Therefore, researchers interested in the development of offending examine behaviours in childhood such as aggression, delinquency and a broad range of other antisocial behaviour. Behaviours defined as offending are part of this larger syndrome of ASB (Farrington 1991), which displays substantial stability over time (Piquero, Farrington & Blumstein 2003). It is this larger syndrome of ASB that is the focus of the current research.

In explaining the peak in the age-crime curve during adolescence, some theories focus on the antisocial potential or propensity of individuals (Farrington 2010; Lahey, Waldman & Burnett 1999), while others identify different 'types' of individuals, with specific groups of individuals engaging in ASB during adolescence (eg Moffitt 2006). There are also those that focus on opportunities to offend and/or social controls to prevent offending (eg Laub &

Sampson 2003). These studies have generated a broad range of individual, maternal and familial factors associated with ASB (see McGee et al. 2009).

Farrington (2005) notes that many developmental and life course theories consider the role of neighbourhoods and the influence they can have on ASB (Lahey, Waldman & Burnett 1999). Neighbourhoods characterised by disorganisation lack the necessary social controls for preventing ASB (Laub & Sampson 2003) and create opportunities for social mimicry of ASB (Moffitt 2006). Despite the recognised importance of neighbourhood contexts, there is little empirical research that explicitly incorporates the individual and familial-level factors usually examined by developmental psychologists and criminologists, with the broader neighbourhood-level variables.

Individual lives and family relationships play out in varying geographical and neighbourhood contexts and much research exists that demonstrates the relationship between the structural dimensions of neighbourhoods and poor outcomes for children and young people (Leventhal & Brooks-Gunn 2000). Across this literature, the most significant structural predictors of crime and delinquency are socioeconomic status, residential instability and the concentration of immigrant or minority residents.

Research also indicates that negative outcomes such as crime or child maltreatment are spatially clustered in particular places (Morenoff, Sampson & Raudenbush 2001; Weatherburn & Lind 1998). However, little research currently exists that considers the effects of place on ASB. One exception is a recent study conducted in the United Kingdom. The findings of Odgers and her colleagues (2009: 954) indicate that neighbourhood deprivation is strongly related to a 'more compromised developmental course of antisocial behaviour' in young children.

Aims of the research

This paper examines the dynamic relationship between individual and social factors and their relationship to ASB across the Statistical

Local Areas (SLA) located in the southeast Queensland region (SEQR). By incorporating spatial analytic modelling and visualisation techniques, the spatial distribution of ASB in SEQR is highlighted. The research is guided by two questions:

- is ASB concentrated in SLAs in the SEQR? and
- are there independent area effects on ASB when controlling for individual characteristics and family processes?

Data

Data for this study are drawn from the MUSP project and the 1996 ABS census data. Background information for the MUSP study as well as the demographic characteristics of participants are described elsewhere (Najman et al. 2005). There are 7,223 participants in the MUSP birth cohort. Only those participants completing all phases of the research (up to 14 years of age) and successfully geo-coded to an address in the SEQR were considered for this research (n=3,817). For a justification of the MUSP measures included in the present study, refer to McGee et al. (2009).

ABS census data from 1996 are incorporated to examine the relative importance of community-level attributes in predicting ASB at the age of 14 years. The 1996 census was collected at the middle of the MUSP 14 year follow-up, providing a good match to the 14 year data.

The MUSP participants resided in 259 SLAs in the SEQR at the time of the 14 year data collection. In 1996, there were 290 SLAs in the SEQR with an average population of 7,135 persons and a range of 126 and 66,135 persons.

There are known problems associated with using purpose-built spatial units as a proxy for neighbourhoods and caution is required when using SLAs to denote communities. The purpose of the spatial analysis is to ascertain broad spatial patterning and associations of ASB with neighbourhood measures of disadvantage rather than to predict individual scores. This recognises two issues in using aggregate spatial data. First is the modifiable areal unit problem

which is the effect of data aggregation into zonal units (for a more detailed explanation see Openshaw 1984a). Varying the zonation scheme (eg size and number of areal units) has been shown to dramatically influence any analysis performed on the aggregated data potentially resulting in ecological fallacies (Openshaw 1984b). The second issue is the ecological fallacy which is an error created by attributing aggregate characteristics of particular areas to individuals. For the present research, the SLA is considered an acceptable unit of analysis as it can be easily matched to administrative data.

Measurement of ASB

ASB is measured by the 30 item externalising subscale of the Youth Self Report (YSR; Achenbach 1991a). It includes behaviours such as setting fires, truancy, stealing, running away from home and hurting others. The YSR was completed by the study children during the 14 year follow-up. Higher scores on the scale represented higher levels of the behavioural syndrome (Cronbach's $\alpha=0.87$, $M=12.77$, $SD=7.42$).

Maternal/familial factors related to antisocial behaviour

There are a number of maternal/familial factors related to ABS. These include:

- *number of births*—the mother's number of previous births was extracted from hospital records;
- *maternal age*—the age of the mother at entry to the study was calculated by subtracting the date of the first antenatal visit from the mother's date of birth;
- *dyadic adjustment*—quality of the marital relationship was assessed using a version of the Dyadic Adjustment Scale (DAS; Spanier 1976). The items display good internal consistency (Cronbach's $\alpha=0.86$ at Phase I) and were included at each phase of the study. A high score indicates good adjustment. Mothers without a partner were coded as missing;
- *maternal alcohol consumption*—weekly alcohol consumption was measured by how often the mother drank alcohol and how much she drank at those times;

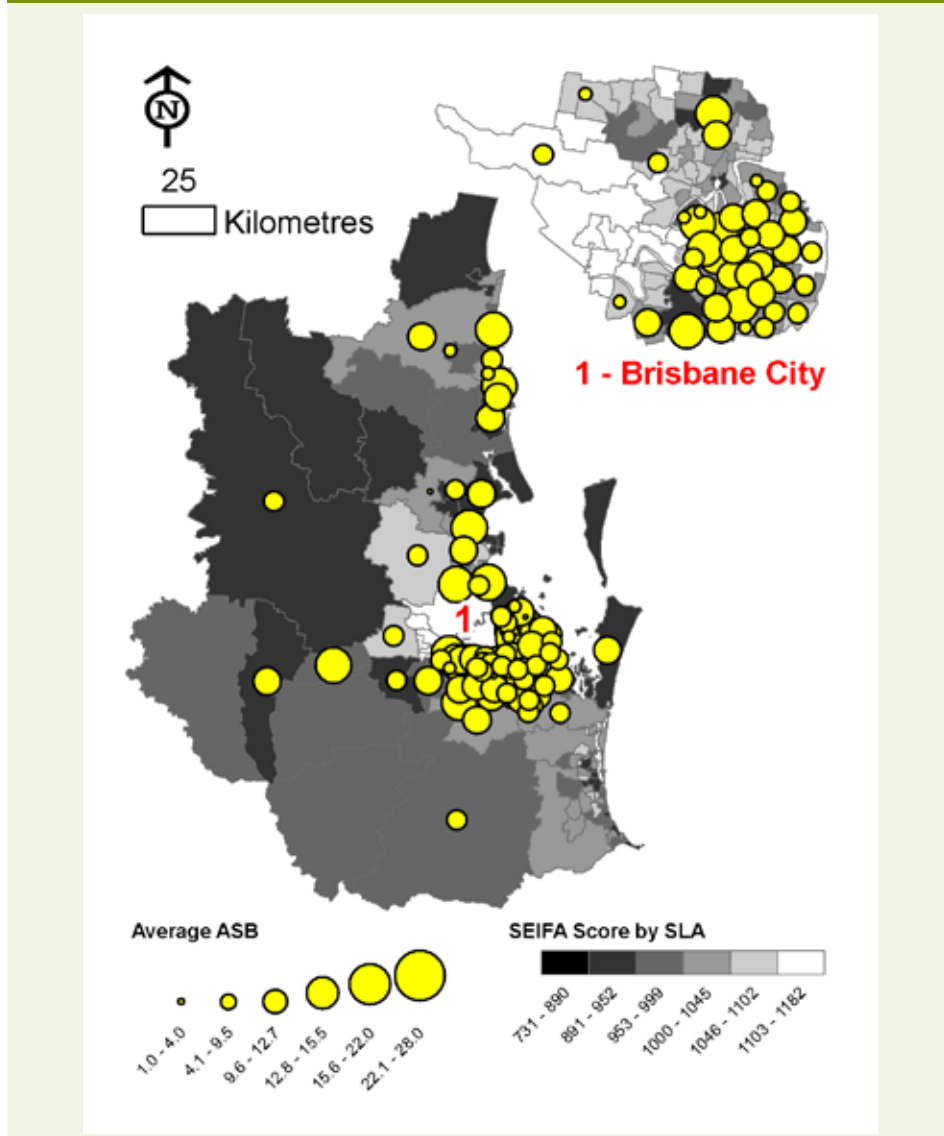
- *maternal smoking*—the MUSP study asked the mother her daily cigarette consumption;
- *parenting style*—the mother indicated the age at which she would let her child engage in a range of activities without the supervision of a parent. The item responses show a moderate level of internal consistency (Cronbach's $\alpha=0.60$). A lower score indicates a lower level of supervision;
- *years mother has been in present relationship*—the mother's report of the length of her current relationship;
- *number of times child has lived with someone other than mother*—the mother was asked to report the frequency with which the study child lived with someone other than her (as the main caregiver) for over three months; and
- *family communication*—the sub-scale of openness in family communication from the Parent-Adolescent Communication Scale (Barnes & Olsen 1982; Olsen et al. 1982) was used. Higher scores indicate higher levels of openness (Cronbach's $\alpha=0.85$).

Child factors related to antisocial behaviour

There are a number of child factors related to ASB. These include:

- *child aggression*—the aggression subscale of the Child Behavior Checklist (CBCL; Achenbach 1991b) was completed by the mother when the study child was five years of age. A higher score represents higher levels of aggression (Cronbach's $\alpha=0.83$);
- *school performance*—the child was asked to rate their overall school performance on a five point Likert scale;
- *neighbourhood disadvantage*—the SEIFA Disadvantage is a summary index of socioeconomic disadvantage. A lower SEIFA index value is indicative of a higher disadvantage in the SLA (ABS 2001);
- *immigration concentration*—the proportion of people per SLA from a non-English speaking background; and
- *residential mobility*—the proportion of persons per SLA living at a different address five years ago.

Figure 1 The average level of MUSP participants' self-reported antisocial behaviour overlaid on the distribution of relative disadvantage (SEIFA Disadvantage Index)



Analysis

MUSP participant addresses ($n=4,841$) were used to determine x and y coordinates and geo-coding was completed using the Google geo-coding engine. Any case that mapped to the suburb and below (address, street and intersection) was included in the final sample. This geo-coding process resulted in a 97.4 percent hit rate with 4,717 participants geo-coded to an Australian address. As this research was interested in the spatial patterning of ASB in the SEQR, only those participants with a valid address geo-coded to this region were retained for subsequent analyses ($n=3,817$).

To examine the spatial patterning of ASB in adolescence, the 3,817 geo-coded addresses were then combined with 1996 ABS census data. This allowed for the construction of thematic maps, providing

a visual exploration of ASB across the SLAs. As disadvantage is the strongest predictor of crime and victimisation in the neighbourhood effects literature (see Sampson, Morenoff & Gannon-Rowley 2002), the average ASB score on the SEIFA Index for each SLA in the SEQR was overlaid. Only those SLAs with 10 or more respondents (n for SLA=95) were included, leaving a MUSP sample size of 3,225. In Figure 1, larger dots indicate higher ASB and disadvantage is indicated by darker shading. As evidenced in these maps, there is no clear visual spatial relationship between SLA disadvantage and mean levels of ASB as the largest dots are not always in the most disadvantaged (darkly-shaded) areas.

The application of more advanced spatial analytical procedures such as kernel density estimation and nearest neighbour analysis

may reveal further insights into the spatial dynamics of ASB, however, this was beyond the scope of the current study. It should also be noted that not all SLAs have a measure of ASB, which leads to a number of non-contiguous spatial units. Therefore, a measure of global spatial autocorrelation is problematic and was not computed in this case.

The intra-class correlation (ICC) was then examined to ascertain if ASB is dependent upon place. The unconditional ICC was assessed using a mixed effects maximum likelihood model. Results indicated that the variation in ASB attributable to the SLA was less than one percent. High levels of ASB are therefore not concentrated in particular SLAs.

The final analysis tested the interdependent effects of individual, familial and SLA-level predictors of ASB in the SEQR. Drawing on the results from the ICC, the analyses continued with the assumption that ASB was not clustered in the SLAs. Ordinary least squares multiple regression was employed, treating the SLA as a fixed effect. In addition to the empirically determined individual, maternal and familial variables (see McGee et al. 2009), three SLA level variables were incorporated into the model—percent of non-English speaking

residents, percent of people who lived at a different address five years prior and a standardised SEIFA Disadvantage Index (see Table 1).

When key variables from all phases of data collection were included in the model, those representing adolescent factors were the most important, which is to be expected. However, there were enduring effects from earlier periods of the child's life that remained significant. Several early childhood variables significantly predicted ASB. The number of maternal births significantly predicted higher ASB ($t=2.854$, $p<.01$) and this may be due to parental resource dilution (Downey 2001).

Higher maternal alcohol consumption in infancy contributed to higher levels of ASB in adolescence ($t=2.579$, $p<.01$) which is in line with previous research examining parents' history of alcohol dependence and adolescent behaviour (Elkins et al. 2004). Family processes during infancy and early childhood were also important. Consistent with previous research on the impact of marital conflict on child behaviour (Rutter & Quinton 1984), poor dyadic adjustment at six months predicted higher ASB ($t=-3.506$, $p<.001$). Previous research has shown parental supervision provides control over access to antisocial peers and ASB (Pettit et al. 2001). Childhood aggression at age

five was again strongly predictive of ASB at 14 years of age ($t=5.975$, $p<.001$), demonstrating the continuity of ASB over time.

At age 14 years, poor school performance (as rated by the child) was strongly associated with higher ASB ($t=-11.249$, $p<.001$). Indeed, it was the strongest predictor of ASB, although it is noted that school performance may be a result of cumulative difficulties associated with early childhood aggression (Moffitt 2006).

Dysfunctional family functioning at 14 years strongly influenced the level of ASB reported. A poorer quality of relationship between the mother and her partner was significantly and negatively associated with ASB at 14 years ($t=-2.427$, $p<.05$). Young people residing in families with effective communication reported lower ASB ($t=-8.771$, $p<.001$). This is again related to parental supervision; when there is disclosure of activities by children to their parents, parents can more effectively monitor behaviour (Stattin & Kerr 2000).

Finally, maternal factors during adolescence were associated with ASB. Shorter relationship periods between the mother and her partner and maternal smoking during adolescence significantly predicted higher ASB ($t=-2.029$, $p<.05$; $t=4.917$, $p<.001$). The number of times the child lived with someone other than the mother was also positively related to ASB ($t=1.726$, $p<.10$). This is consistent with previous research (Christoffersen, Francis & Soothill 2003) and adds further evidence that the disruption of parenting is an important component in the development of ASB.

When examining the SLA effects, only the level of disadvantage came close to significance in predicting higher levels of ASB ($t=-1.911$, $p<.10$). This finding is in line with previous research which suggests that neighbourhood disadvantage is associated with both the severity and frequency of delinquent behaviour and externalising behaviour problems (see Leventhal & Brooks-Gunn 2000). However, of note from the present research is the magnitude of neighbourhood disadvantage when compared with individual propensities or

Table 1 Final model, multiple regression (n=3,162)

Variables	B	SE	β
Number of births	.052	.018	.058**
Maternal age at entry to study	-.012	.004	-.057**
Dyadic adjustment at six months	-.012	.004	-.064***
Maternal alcohol consumption at six months	.011	.004	.043**
Parental supervision at five years	-.007	.004	-.028
Child aggression at five years	.030	.005	.104***
School performance: Child report at 14 years	-.218	.019	-.191***
Maternal smoking at 14 years	.007	.002	.084***
Dyadic adjustment at 14 years	-.008	.003	-.043*
Years mother in present relationship	-.004	.002	-.036*
Number of times child has lived with someone else other than mother	.091	.052	.029
Openness in family communication	-.028	.003	-.152***
Percent non-English speaking people in SLA	-.003	.003	-.016
Percent of people living at a different address five years prior	.001	.003	.004
Neighbourhood disadvantage (z-score)	-.035	.018	-.034
Constant	6.416	.279	
R ²	.153		

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

familial processes. When examining the significant predictors of ASB in the MUSP sample, individual propensity, maternal factors and family processes were considerably more important than neighbourhood characteristics. While it is recognised that small area effects can have pronounced impacts on outcomes (Odgers et al. 2009), the present research suggests that disadvantage may exacerbate ASB, but its effects are secondary to other factors.

Discussion

This research contributes to the literature in two important ways. First, it provides support for the distinct individual and familial pathways to ASB. Maladaptive functioning of the child or factors that lead to disruption of the parenting process were the strongest predictors of ASB in adolescence. This is in line with the extant research which points to parent training as the key preventative strategy in the onset of ASB (see Farrington 2006). Second, it suggests a need to carefully reflect on the relative importance of neighbourhood effects for particular types of problems. Certainly, some neighbourhoods are more criminogenic than others and a community's level of socioeconomic disadvantage is strongly associated with crime, disorder and victimisation (see Morenoff, Sampson & Raudenbush 2001). However, the ecology of crime literature predominantly focuses on law-violating behaviour. Although the measure of ASB used in the present research asks respondents to report on offending behaviour, it also focuses on norm violations like lying or cheating. Viewed in this way, ASB might overlap with criminality, but it is a broader concept. This research suggests that ASB in adolescence is best predicted by deficits in family processes and structure, poor school performance and early childhood aggression and points to the important variation in individuals and families as opposed to neighbourhoods.

There are two alternative reasons why significant, direct effects of community characteristics on ASB were not found. First, this research focuses on ASB at 14 years of age. As Moffitt (2006) argues,

ASB during adolescence is quite normative and ubiquitous. It may be that the relationship between ASB and neighbourhood factors is stronger at other time points in the life course, for example, in early childhood (Odgers et al. 2009) and adulthood. Second, community factors, like disadvantage, might be indirectly related to ASB in adolescence through its impact on family processes. Weatherburn and Lind (2001, 1998) argue that a community's level of economic or social stress disrupts the parenting process. Future research needs to closely examine the ways in which neighbourhood contexts may facilitate or indeed hinder key family processes like parenting at different stages of the life course. This would elucidate the ways in which other processes, like parenting, are influenced by the neighbourhood context and how this might then impact upon the development and persistence of ASB in early childhood, adolescence and early adulthood.

Policy implications

This study points to the need to distinguish between, and respond differently to, ASB and crime. Neighbourhoods may differ from one another in levels of crime as suggested by a growing body of international ecological research. However, as is often the case in this literature, crime is measured by reported incidents of violence, homicide and burglary. These types of crimes have a particular spatial character, but that may not be the case for ASB. While ASB can cause a great deal of harm to others, incidences of ASB might not come to the attention of the police. Therefore, official administrative data will not provide an adequate representation of the level of adolescent problems in a given area. This is important for practitioners as community programs geared towards reducing crime in a given place may have little or no effect in reducing ASB.

Also, as this research indicates, one of the strongest predictors of adolescent ASB is childhood aggression. This is a robust finding in the literature with convincing evidence of the cumulative development of an early onset of ASB over time (Moffitt et al. 1996; Patterson, DeBaryshe & Ramsey 1989). While the current research has

focused on adolescent ASB, the findings still point to the importance of the prevention of the onset of ASB. Like other initiatives in Australia, for example *Pathways to Prevention* (Hamel 1999), and further afield (Olds, Sadler & Kitzman 2007), this research supports the need for prevention programs targeting at-risk children and families during early childhood and adolescence. Programs that enhance parenting practices which include improving communication, supervision and monitoring of children are important in reducing ASB.

Conclusion

The present research is the first of its kind in Australia to simultaneously examine individual, family and neighbourhood predictors of adolescent ASB. While there have been some explorations elsewhere (predominantly in the United States), no evidence of data as rich in nature as the MUSP collected in Australia was found. By utilising data from a prospective longitudinal study, a more meaningful analysis of between-neighbourhood variations in incidences of ASB that takes into consideration a complement of factors, both biological and social, has been provided. Findings generated by this research will assist in the development of policies that deal with young people and crime prevention, allowing for a more coordinated approach in dealing with ASB by targeting a more comprehensive range of indicators associated with its prevalence.

References

- Achenbach T M 1991a. *Integrative guide for the 1991 CBCL/4-18, YSR and TRF profiles*. Burlington, VT: University of Vermont Department of Psychiatry
- Achenbach TM 1991b. *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington, VT: University of Vermont Department of Psychiatry
- Australian Bureau of Statistics (ABS) 2001. *Information paper: Census of population and housing: Socio-economic indexes for areas*. cat. no. 2039.0. Canberra: ABS
- Barnes HL & Olsen DH 1982. Parent-adolescent communication scale, in Olsen DH (ed), *Family inventories: Inventories used in a national survey of families across the life cycle*. St Paul: University of Minnesota

McGee is a senior lecturer at Griffith University. Wickes is a lecturer, Corcoran is a senior lecturer and Najman is a professor at The University of Queensland. Bor is a child and adolescent psychiatrist at the Brisbane Mater Hospital.

General editor, *Trends & issues in crime and criminal justice* series:

Dr Adam M Tomison, Director,
Australian Institute of Criminology

Note: *Trends & issues in crime and criminal justice* papers are peer reviewed

For a complete list and the full text of the papers in the *Trends & issues in crime and criminal justice* series, visit the AIC website at: <http://www.aic.gov.au>

ISSN 0817-8542 (Print)
1836-2206 (Online)

© Australian Institute of Criminology 2011

GPO Box 2944
Canberra ACT 2601, Australia
Tel: 02 6260 9200
Fax: 02 6260 9299

Disclaimer: This research paper does not necessarily reflect the policy position of the Australian Government

CRC grant no. CRC 19/07-08

Christoffersen MN, Francis B & Soothill K 2003. An upbringing to violence? Identifying the likelihood of violent crime among the 1966 birth cohort in Denmark. *The Journal of Forensic Psychiatry & Psychology* 14(2): 367–381

Downey DB 2001. Number of siblings and intellectual development: The resource dilution explanation. *American Psychologist* 56(6/7): 497–504

Elkins IJ, McGue M, Malone S & Iacono WG 2004. The effect of parental alcohol and drug disorders on adolescent personality. *The American Journal of Psychiatry* 161(4): 670–676

Farrington DP 2010. Life-course and developmental theories in criminology, in McLaughlin E & Newburn T (eds), *The SAGE Handbook of criminological theory*. London: Sage

Farrington DP 2006. Building developmental and life-course theories of offending, in Cullen FT, Wright JP & Blevins KR (eds), in *Taking stock: The status of criminological theory*. New Brunswick, NJ: Transaction

Farrington DP (ed.) 2005. *Integrated developmental and life-course theories of offending*, vol. 14. Somerset, NJ: Transaction

Farrington DP 1991. Antisocial personality from childhood to adulthood. *The Psychologist* 4: 389–394

Hamel R et al. 1999. *Pathways to prevention: Developmental and early intervention approaches to crime in Australia*. Canberra: Australian Government Publishing Service

Lahey BB, Waldman ID & Burnett K 1999. The development of antisocial behaviour: An integrative causal model. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 40(5): 669–682

Laub JH & Sampson RJ 2003. *Shared beginnings, divergent lives: Delinquent boys to age 70*. Cambridge, MA: Harvard University Press

Leventhal T & Brooks-Gunn J 2000. The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin* 126: 309–337

McGee TR, Wickes RL, Bor W & Najman JM 2009. *Antisocial behaviour across neighbourhoods: Individuals and families in context*. Final report for grant 19/07–08 to the Criminology Research Council, Australian Institute of Criminology. Canberra: Criminology Research Council

Moffitt TE 2006. Life-course persistent versus adolescence-limited antisocial behavior, in Cicchetti D & Cohen DJ (eds), *Developmental psychopathology*, 2nd ed vol 3. New York: Wiley

Moffitt TE, Caspi A, Dickson N, Silva P & Stanton W 1996. Childhood-onset versus adolescent-onset antisocial conduct problems in males: Natural history from aged 3 to 18 years. *Development and Psychopathology* 8: 399–424

Morenoff J, Sampson RJ & Raudenbush S 2001. Neighborhood inequality, collective efficacy and the spatial dynamics of urban violence. *Criminology* 39: 517–560

Najman JM et al. 2005. Cohort profile: The Mater-University of Queensland study of pregnancy (MUSP). *International Journal of Epidemiology* 34: 992–997

Odgers CL et al. 2009. The protective effects of neighbourhood collective efficacy on British children growing up in deprivation: A developmental analysis. *Developmental Psychology* 45(4): 942–957

Olds D, Sadler L & Kitzman H 2007. Programs for parents of infants and toddlers: Recent evidence from randomized trials. *Journal of Child Psychology & Psychiatry* 48(3/4): 355–391

Olsen DH et al. 1982. *Family inventories: Inventories used in a national survey of families across the family life cycle*. Mt Lawley, WA: Drug and Alcohol Office, Government of Western Australia

Openshaw S 1984a. The modifiable areal unit problem. *Concepts and Techniques in Modern Geography* 38: 41

Openshaw S 1984b. Ecological fallacies and the analysis of areal census data. *Environment and Planning A* 16: 17–31

Patterson GR, DeBaryshe B & Ramsey E 1989. A developmental perspective on antisocial behaviour. *American Psychologist* 44: 329–335

Pettit GS, Laird R, Dodge KA, Bates JE & Criss MM 2001. Antecedents and behavior-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development* 72(2): 583–598

Piquero AR, Farrington DP & Blumstein A 2003. The criminal career paradigm. *Crime and Justice: A Review of the Research* 30: 359–506

Rutter M & Quinton D 1984. Parental psychiatric disorder: Effects on children. *Psychological Medicine* 14: 853–880

Sampson RJ, Morenoff JD & Gannon-Rowley T 2002. Assessing neighborhood effects: Social processes and new directions in research. *Annual Review of Sociology* 28: 443–478

Spanier GB 1976. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family* 38(1): 15–28

Stattin H & Kerr M 2000. Parental monitoring: A reinterpretation. *Child Development* 71(4): 1072–1085

Weatherburn D & Lind B 2001. *Delinquent prone communities*. Cambridge: Cambridge University Press

Weatherburn D & Lind B 1998. Poverty, parenting, peers and crime prone neighbourhoods. *Trends & Issues in Crime and Criminal Justice* no. 85. Canberra: Australian Institute of Criminology. <http://www.aic.gov.au/publications/current%20series/tandi/81-100/tandi085.aspx>