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Aggression and the Development of Delinquent Behaviour in Children

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Understanding of the origins of adolescent antisocial behaviour is important for two reasons. First, crime is a source of concern and cost to many communities throughout the world as well as Australia. Second, clear identification of the pathways to crime lead to the possibility of early prevention programs. This essay, based on a large longitudinal study of Queensland children, reports that the best predictor of aggression at age 14 is aggression at age five. It suggests that effective early intervention programs can be among the most productive crime prevention strategies.

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There is a large amount of evidence indicating that crime is a source of concern to the community (ABS 1995). As well, international research has shown that juvenile crime has increased (Rutter, Giller & Hagell 1998). One of the key findings from a substantial body of criminological research is that persistent delinquent acts in adolescence emerge as the outcome of a predictable developmental trajectory of behaviour problems beginning in childhood (Farrington 1994; Robins 1966). One feature of this continuum from childhood to adolescence is the presence of stable aggressive behaviours.

Key findings from a number of studies have underlined this stability of aggressive behaviours.

- There is evidence of continuity between aggressive, non-compliant behaviours measured between one and three years of age and externalising behaviour problems at five years of age (Keenan et al. 1998).
- Adult ratings of problem behaviours in young children are remarkably stable for both representative and selected samples (Campbell 1995). This finding holds both over short-term follow-ups of one to two years (Richman, Stevenson & Graham 1982) and over longer-term follow-ups of three to seven years (Campbell & Ewing 1990; Richman, Stevenson & Graham 1982).
- Eighty-six per cent of children with conduct and oppositional defiant behaviours at age seven also exhibited these behaviours at age 15 (Moffitt 1993).
- A substantial degree of stability exists in male aggression over time and the stability is similar to that of intelligence test results (Olweus 1979).

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In summary, an impressive number of longitudinal studies have arrived at similar conclusions, especially for males. If aggressive behaviour problems develop in the preschool years, a significant proportion of the children (as high as 50 per cent) will continue to experience similar problems in middle childhood and into adolescence (Campbell 1995). A substantial number of these adolescents will engage in antisocial behaviour. Evidence has been lacking from within Australia that aggressive preschool children experience similar continuities. This study seeks to redress our lack of knowledge in this area.

Mater University Study of Pregnancy

The Mater University Study of Pregnancy (MUSP) is a unique Australian data set. It has prospectively collected data on mothers' and children's health from the period of antenatal care to when the children were in early adolescence. As well, the MUSP has examined continuities in social, family and mental health status over time. Finally, the large size of the cohort allows assessment of the relative importance of key predictors of adolescent antisocial behaviour. The data can be used to assess three issues relevant to antisocial behaviour in Australia.

First, as highlighted above, the MUSP can examine the relative importance of well known predictors, for example:

- individual child characteristics, such as gender and early aggression;
- marital stability; and
- poverty.

Second, the MUSP can assess the stability of a group of purely aggressive children (that is, groups that experience the same set of behaviours over time).

Third, the MUSP can measure the relationship between a stable

aggressive group and delinquent behaviours.

Overview

The MUSP began in 1981 (Keeping et al. 1989). Mothers were enrolled in the study as public patients at their first clinic visit. Of the 8,556 mothers invited to participate in the study, only 98 (one per cent) declined to participate.

Of the 8,458 women who agreed to participate, 7,600 gave birth to a live baby at the study hospital (women giving up their children for adoption and women who had multiple births were excluded). These 7,600 mothers were asked to complete a second questionnaire three to five days after the birth of their child. Miscarriages and moves to other regions were the main reasons for loss to follow-up. Some 7,241 participants (95 per cent) completed the second interview.

The mothers were approached six months later to provide details of their own health and wellbeing, and that of their baby. Information was also obtained on their pattern of child rearing. A total of 6,837 mothers (90 per cent of the birth cohort) completed the six-month follow-up.

When the child was five years of age, data was obtained on the mother and the child's health and behaviour. There was also a general paediatric assessment. A total of 5,345 children and 5,366 mothers were assessed. This comprised 70 per cent of the birth cohort.

At the 14-year follow-up both mothers and children were again interviewed and the child assessed. A total of 5,277 mothers and 5,262 children, comprising 69 per cent of the birth cohort, completed this follow-up.

Characteristics of the Sample

For the present study, cases for which an entire follow-up was missing at any phase of data

collection were deleted. This left approximately 3,792 complete cases for analysis. The mean age of the children in the sample was 13.9 years (SD=0.33), 47.4 per cent of whom were female. The majority of mothers in the sample (74.5%) were married and 69.6 per cent reported that, at the five-year follow-up, their present partner was the father of the study child.

Sample Attrition

There were significant differences between groups in the rate of loss to follow-up, and consequently those remaining in the sample. The mothers of children most likely to be lost to follow-up were those:

- with lower levels of education;
- living in poverty over the first five years of the study; and
- who were teenagers at their first clinic visit.

Indeed, the data are consistent in indicating that loss to follow-up appears to be a function of socioeconomic disadvantage. The impact of this on the present study is that the magnitude of the relationships between early predictors and aggressive/delinquent behaviour at age 14 is likely to be reduced. This means that the results of the present study are likely to be conservative.

Measures

A range of factors have been found to be important predictors of aggression and delinquency. In this study, three types of predictors are considered—characteristics of the child, maternal social capital, and marital stability. Child characteristics are measured using gender and aggression at age five. Forty-seven per cent of the adolescents were female and 53 per cent male. At the five-year follow-up, the mother completed a short form of the Child Behaviour Checklist (CBCL) (Achenbach & Edelbrock 1983). A dichotomous measure of

Table 1: Logistic regression predicting delinquency (CBCL) at age 14 (n=3,792 cases)

	Unadjusted odds ratios (CI)	Adjusted odds ratios (CI)#
Aggression at five years (reference category 'normal')	5.09 (3.87, 6.69)**	4.48 (3.39, 5.93)**
Males (reference category 'females')	2.17 (1.67, 2.82)**	2.10 (1.60, 2.74)**
Maternal education (reference category 'post high school')		
Completed high school	1.27 (0.91, 1.78)*	1.11 (0.85, 1.44)
Did not complete high school	1.72 (1.15, 2.58)*	0.84 (0.37, 1.89)
Poverty (reference category 'high income')		
Middle income	2.32 (1.40, 3.82)**	2.00 (1.20, 3.33)**
Consistent poverty	4.37 (2.18, 8.74)**	2.32 (1.08, 4.97)**
Children in household at five years (reference category 'study child only')		
Two to four	1.17 (0.91, 1.51)	1.12 (0.79, 1.58)
Five or more	0.79 (0.36, 1.74)	1.38 (0.91, 2.11)
Divorced/separated (reference category 'married/de facto')	2.48 (1.76, 3.52)**	2.10 (1.42, 3.10)**

** Significant at p<0.01 and * at p<0.05

CI = confidence interval

= Adjusted for all other variables in the table.

Table 2: Aggression at five and 14 years (row percentages)

	Aggressive (age 14)		Non-aggressive (age 14)		Total	
	%	(n)	%	(n)	%	(n)
Aggressive (age 5)	31.4	(125)	68.6	(273)	100	(398)
Non-aggressive (age 5)	6.3	(215)	93.7	(3,179)	100	(3,394)

Table 3: Aggression and delinquency at age 14 (row percentages)

	Delinquent (age 14)		Non-delinquent (age 14)		Total	
	%	(n)	%	(n)	%	(n)
Aggressive (age 14)	48.2	(164)	51.8	(176)	100	(340)
Non-aggressive (age 14)	3.5	(121)	96.5	(3,331)	100	(3,452)

aggression at age five was derived from a shortened form of the CBCL. Items responded to by the mother included:

- argues a lot;
- demands a lot of attention;
- destroys his/her own things;
- destroys others' things;
- is disobedient at home;
- gets into many fights;
- lies or is dishonest;
- screams a lot;
- has sudden changes in mood or feelings;
- is stubborn, sullen or irritable; and
- has temper tantrums or a hot temper.

A 10 per cent cut-off was used. Internal consistency of this measure was 0.83, as measured by Cronbach's alpha. The numbers defined as a case were 398.

Three measures were developed to measure maternal social capital. The first was maternal education. On entry to the study, the mothers were asked their highest level of educational attainment. Three groups were delineated—those doing tertiary studies (20%), those who had completed high school (64%) and those who did not complete high school (16%).

The second measure was family income, measured at both entry into the study and five years later. Three per cent of the sample was found to be consistently poor, 84 per cent as on middle income and 13 per cent being high-income families.

The final measure was the number of children in the household at age five. Thirty-nine per cent of families consisted of only the study child. Families with two to four children comprised 58 per cent of the sample, while families with five or more children accounted for the remaining three per cent.

Marital stability was measured by asking mothers their marital status at five years. The vast majority were found to be

either married or in de facto relationships (93%) while seven per cent were divorced or separated.

Three outcome measures were used in this study—maternal reports of adolescent aggression, delinquency, and adolescent contact with other services at age 14. Mothers completed a full version of the CBCL when the adolescent was 14 years of age. The CBCL was developed to measure the child’s competencies and behaviour problems from ages four to 18 (Achenbach 1991). Extensive studies have been conducted to assess the external validity, cross-cultural validity and reliability of the CBCL (see Achenbach 1991 for details of a series of validation studies). A dichotomous measure of aggression at age 14, incorporating the same scale described above, was used with a 10 per cent cut-off. Internal consistency of this measure was 0.85 measured by Cronbach’s alpha. The delinquency subscale of the CBCL at age 14, consisting of 13 items, was dichotomised at the 10 per cent level. The measure had an internal consistency of alpha=0.76 (Cronbach’s alpha). Measures of whether or not the child, by age 14, had been in contact with the police or juvenile aid, a guidance officer, Children’s Services or suspended from school in the past 12 months, were obtained from the mother’s questionnaire.

Data Analysis

A logistical regression was carried out, both unadjusted and adjusted, comparing the range of child characteristics and maternal social capital with maternal reports of delinquency at 14 as the outcome variable (see Table 1). While a number of the variables were significant (male gender, consistent poverty and maternal divorce), aggression at age five

Table 4: Predicting delinquency outcomes at age 14 from aggression at age five

	N	Odds ratio	Confidence intervals
Aggressive at age 14 (CBCL)	3,792	6.77**	(5.26, 8.71)
Delinquent at age 14 (CBCL)	3,792	5.09**	(3.87, 6.69)
Contact with guidance officer	3,726	2.48**	(1.99, 3.08)
Contact with Children’s Services	3,584	3.58**	(2.44, 5.27)
Contact with police/juvenile aid	3,634	1.93**	(1.40, 2.66)
Suspended from school	3,783	2.83**	(2.04, 3.92)

** Statistically significant at p<0.01

was the strongest predictor of adolescent delinquency. When the child characteristics and maternal social capital are controlled for, the likelihood of being delinquent at age 14 is increased by a factor of 4.48. This compares to an increased rate of delinquency of 2.1 for being male.

The relationship between childhood aggression and adolescent aggression/delinquency was investigated by first comparing the relationship between aggression in the preschool years with aggression in adolescence (Table 2).

Thirty-one per cent of those children who were classified aggressive at age five remained in the aggressive group at age 14. In comparison, their mothers rated only 6.3 per cent of those children who were not aggressive at age five as aggressive at age 14. Those children who were rated by their mothers as aggressive at age five were nearly five times more likely to be rated as aggressive by their mothers at age 14. The stability of aggressive behaviour in the whole sample was measured by the Pearson product-moment correlation coefficient between maternal-rated aggression at age five and maternal-rated aggression at age 14. This produced r=0.47. Despite the consistency of aggression over the five to 14-year period, it is worth noting that only a minority (125 out of 398) classified as aggressive

at age 14 had been aggressive at age five.

The association between maternal reports of adolescent aggressive and delinquent behaviour as measured on the subscales of the CBCL was considered (Table 3).

Table 3 shows that of those children with scores in the top 10 per cent of the aggression subscale of the CBCL at age 14, 48 per cent also scored in the top 10 per cent of the delinquency subscale of the CBCL. Of those who were not in the aggressive group, only 3.5 per cent were classified as delinquent. Aggressive adolescents were therefore more than 14 times more likely to be classified as delinquent than non-aggressive children.

In the final table (Table 4) we compared the likelihood of aggressive five-year-old children being reported at 14 as being involved in delinquent behaviour and as being in contact with a number of agencies.

The conclusions are clear. Aggression in the preschool years is a powerful predictor of:

- continuing adolescent aggressive behaviour;
- delinquent behaviour;
- contact with agencies known to deal with delinquents; and
- suspension from school.

Policy Implications

Juvenile crime is a source of concern and substantial cost to the Australian community. Repeat offenders who often have past history of sustained aggressive behaviour carry out a significant proportion of juvenile crime. An improved understanding of the early childhood origins of juvenile delinquency highlights the opportunities for prevention programs (National Crime Prevention 1999).

During the last decade there have emerged a number of important reviews of prevention or intervention programs for violence, crime and delinquency (National Crime Prevention 1999; Centre for the Study and Prevention of Violence 1998; Kazdin 1998; Rutter, Giller & Hagell 1998; Wasserman & Miller 1998; Sanders, Gooley & Nicholson 2000). Taken as a whole, this research suggests modest optimism in terms of an evidence-based response to childhood aggression and

adolescent antisocial behaviour. While aggression in the form of oppositional defiant and conduct disorders is common (and many children with aggressive behaviour problems do not develop delinquent characteristics), it is possible to better identify those at risk of developing antisocial lifestyles. Such a risk model combines the known family and social adversity factors with the aggressive behavioural profile of the young child (Campbell 1995). In terms of the preschool period, programs that emphasise parent management training have been identified as being especially effective (Sanders, Gooley & Nicholson 2000). The widespread availability of evidence-based parenting programs to at-risk families can be seen as a critical part of a broad crime prevention strategy.

Juvenile Crime in Australia

The international trends in juvenile crime have been summarised by Rutter, Giller and Hagell (1998). The main findings are:

- one-third of reported or detected crime is due to juveniles;
- most crime by young people involves the theft of property;
- violent crime has been on the rise, usually accounting for 10 per cent of criminal acts;
- young men are more likely to be detected committing crime than are females;
- self-report studies of offending behaviour suggest that female youth have higher levels of delinquent activity than is suggested by detection or arrest data; and
- over one-third of offenders report committing at least one violent crime.

Australian data on juvenile crime is difficult to interpret as States and Territories differ in their definition of the age of a juvenile as well as their crime-reporting systems (Mukherjee, Carcach & Higgins 1997). The Criminal Justice Commission of Queensland published a Major Issues paper on the subject of youth crime and justice in Queensland (CJC 1992). Key findings from this report were that:

- the rate of juvenile involvement in crime has increased over 20 years;
- most young people's crime is at the less serious end of the property crime continuum;
- a small number of reoffenders are responsible for much of the crime committed by juveniles; and
- most children who appear in court do not reoffend.

The cost of juvenile crime is considerable. Potas, Vining and Wilson (1990) estimated that the cost of crime committed by youths aged between seven and 18 years was \$1.5 billion per year, including \$610 million in direct costs and \$800 million borne by the criminal justice system. The cost of detaining juveniles was estimated at \$70 million per year.

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