

McGee, Tara Renae and Mazerolle, Paul (2003) Characteristics of adolescents who recover from early antisocial behaviour . *The Australian Sociological Association Conference*, Armidale, NSW, Australia

Title:

Characteristics of adolescents who recover from early antisocial behaviour

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Acknowledgment:

The Principal Investigators of the Mater University Study of Pregnancy and its Outcomes (MUSP), Jakob Najman, William Bor, Michael O'Callaghan and Gail Williams provided the data for this research.

Abstract

Early onset of antisocial behaviour is associated with an increased likelihood of chronic, persistent and violent offending across the life course. Despite this, many individuals who exhibit early onset do not persist, demonstrating recovery from early risk. This research examines the characteristics of those individuals who exhibit early risk and describes how these characteristics vary by gender. Moffitt's dual typology of life-course-persistent (LCP) and adolescence-limited (AL) antisocial behaviour is examined using data from the Mater-University Study of Pregnancy (MUSP). This prospective longitudinal study includes data on mother/child pairs spanning from pre-natal period to when the child was 14 years of age. Characteristics of these groups are examined in an attempt to understand the recovery of those who begin life on the LCP trajectory. Those who recover have: families with better communication; parents with fewer arrests; later onset of puberty; higher levels of cognitive functioning; lower levels of internalising and alienation; more close friends; and lower school and neighbourhood delinquency.

Individuals who exhibit an early onset of antisocial behaviour and recover during adolescence are the focus of this research. Risk factors and theoretical pathways for this early onset are identified in existing criminological literature and have respectable support (for a comprehensive review refer to: (Hawkins, Herrenkohl, Farrington, Brewer, Catalano, and Harachi 1998). Despite this, many individuals who exhibit an early onset of delinquency do not persist in offending over the life course, demonstrating recovery from early risk. In the context of Moffitt's (1993) dual typology of Life-course-persistent (LCP) and Adolescence-limited (AL) antisocial behaviour, this research attempts to identify which characteristics distinguish these resilient adolescents and whether these characteristics vary by gender.

This research embraces a developmental criminology approach (Le Blanc and Loeber 1998) and attempts to apply Moffitt's (1993) dual typology to help understand change, in particular, discontinuity in early offending 'trajectories' as well as examine possible gendered differences. Moffitt proposes that there is a group of five to ten per cent of individuals, the Life-course-persistent (hereinafter LCP) individuals, who are antisocial at every stage of the life course. Adolescence-limited (hereinafter AL) individuals exist in higher numbers and constitute the peak in the age-crime curve from the early teens to the early twenties. Recoveries and Abstainers are additional trajectories identified within the typology. The Abstainers, as the title suggests, never participate in antisocial or delinquent behaviour at any stage of the life course. The Recoveries are those individuals who, early in life, were on the LCP trajectory and then by the teen years have desisted from being the most antisocial individuals in the population or "have apparently spontaneously recovered" (Moffitt, Caspi, Dickson, Silva, and Stanton 1996: 402). Moffitt notes that these high-risk Recoveries need to be further researched to determine why they have outcomes that are less extreme than expected (Moffitt et al. 1996: 419).

Empirical research generally tends to support the typologies proposed in Moffitt's theory (Fergusson, Horwood, and Nagin 2000; Kratzer and Hodgins 1999; Mazerolle, Brame, Paternoster, Piquero, and Dean 2000; Moffitt and Caspi 2001), but there is debate as to the applicability of this theoretical perspective to females (Silverthorn and Frick 1999). While the majority of Moffitt's early empirical research is based on studies of boys, more recent research reports similar patterns between males and females in the AL and LCP typologies (Moffitt and Caspi 2001). The current research examines these gendered differences within the LCP and Recovery groups and for the first time, tests Moffitt's typology using Australian data: the Mater University Study of Pregnancy and its Outcomes (MUSP).

Based on expectations from Moffitt's typology we developed a number of research questions.

1. Are Moffitt's typologies replicated in the MUSP data?
2. What proportion of LCP group recover?
3. What characteristics distinguish the Recoveries?
4. Do these characteristics vary by gender?

Data and methods

Data for this study are drawn from the Mater-University Study of Pregnancy (MUSP) (Keeping, Najman, Morrison, Western, Andersen, and Williams 1989). 8458 (98.9%) women who attended the Mater Mothers' Hospital (public) for antenatal care from 1981–1984 participated in the study. This prospective longitudinal study has five waves of data on the mother and child: the first prenatal visit, 3–5 days after the birth of the study child, and when the child was 6 months, 5 years and 14 years old. Some variables of key theoretical interest to the current research were only included in a supplementary questionnaire completed by those who remained to be surveyed mid-way through the 14 year follow-up (n=3305 mother/child pairs). This research focuses on this sub-sample.

Replicating Moffitt's typologies requires the identification of those individuals who exhibited extreme antisocial behaviour in early childhood and adolescence. Early antisocial behaviour was based on maternal reports at age five, using the aggression sub-scale of Achenbach's Child Behaviour Checklist (Achenbach 1991b). In adolescence it was measured at age 14 using the externalising sub-scale (aggressive and delinquent behaviour) of the Youth Self Report (Achenbach 1991a). The sample was split using Moffitt's cut-point of one standard deviation above the mean. Individuals are designated to a trajectory based on the combination of their level of antisocial behaviour in early childhood and adolescence (see Table 1).

Table 1. Classification table for Moffitt's typology

	Antisocial behaviour	
	Early years (age 5)	Adolescence (age 14)
LCP	yes	yes
AL	no	yes
Recovery	yes	no
Abstainer	no	no
Unclassified	—	—

On the basis of these typological classifications we investigated a number of key theoretical characteristics. We divide them into two general categories: maternal and familial characteristics and child characteristics.

Maternal and familial characteristics

Items measuring maternal and familial characteristics are: life changes (Holmes and Rahe 1967); mothers' perceptions of pregnancy problems; whether the pregnancy was planned or wanted; dyadic adjustment (a measure of the mother and her partner's relationship) (Spanier 1976); The Conflict Tactic (CT) Scale (Straus 1979); Parent-adolescent communication (Barnes and Olsen 1982; Barnes and Olsen 1985); maternal and partner arrest; and maternal attitude to the law.

Child Characteristics

Items measuring child characteristics are: onset of puberty using the Tanner pictorial diagrams for self-report (Tanner 1962); measured intelligence using the Peabody (Dunn and Dunn 1981), WRAT (Wilkinson 1993) and Raven (de Lemos 1989a; de Lemos 1989b; Raven 1989); Internalising behaviour (anxiety, depression, withdrawn and somatic) (Achenbach 1991a); Alienation (Travis 1993); Number of close friends; and Peer delinquency (Furlong, Morrison, and Clontz 1996).

The scores on each of these measures were converted into z-scores to allow comparison among the different metrics. The sample was split by gender and the mean of each typological grouping was then calculated. The means of the male LCP and male Recoveries were compared for significant differences using a t-test and the process was repeated for the females.

Results

Table 2 presents the descriptive results of the groupings based on Moffitt's methodology (Moffitt et al. 1996). We found fewer individuals on the adolescent limited path but this may reflect the timing of measurement. Moffitt included measures at 15 and 18 years, whereas the current study only included measures of *early adolescent* antisocial behaviour at 14 years. We also found a lower proportion had 'recovered' from the LCP trajectory but again this may be due to the timing of the measurement.

Table 2 also presents the typology split by gender. As expected there are more male LCPs and the majority of antisocial females are on the AL path, although there are roughly the same proportions of males and females on the AL trajectory. It is also interesting to note that males and females appear to be recovering at approximately the same rates. Of those who exhibited early antisocial behaviour (the LCPs plus the Recoveries) 63% of males and 66% of females 'recovered'.

Table 2: Replication of Moffitt's typology using MUSP data split by gender.

	Males		Females		Total		Moffitt's Totals ¹	
	n	%	n	%	n	%	n	%
LCP	124	7.3	65	4.1	189	5.7	32	7.0
AL	236	13.8	203	12.8	439	13.3	108	23.6
Recovery	209	12.2	128	8.1	337	10.2	27	5.9
Abstainer	24	1.4	38	2.4	62	1.9	25	5.5
Unclassified	1117	65.3	1147	72.5	2264	68.9	265	58.0
Total	1710	100.0	1581	100.0	3291	100.0	457	100.0

1. Moffitt's sample included males only (Moffitt et al. 1996: 408).

Maternal and familial characteristics (refer to Table 3)

LCP children and, to a lesser extent, the Recoveries, come from adverse family settings. Prior to their birth male LCPs mothers in particular had significantly more life changes and perceived more problems with their pregnancy. The LCP females were much less planned for or wanted than other children in the sample. These early problems have implications for subsequent care and development of the child. This is an important finding to consider in the context of Moffitt's theory that proposes early biological and neurological problems, when magnified through deprived social environments, are the basis for much antisocial behaviour (Moffitt 1990a; Moffitt 1994: 18).

Compounding this early adversity is the quality of the relationship between the parents. The LCP males had significantly worse dyadic adjustment between their mother and her partner than the Recovery males. If the relationship between the mother and her partner is dysfunctional then this may also impact negatively on the parenting relationship. Significantly higher ratings on the Conflict Tactic scale for females in the LCP group suggests that violence in the home may be important in explaining the LCP trajectory of females. Family communication is also significantly worse in the homes of both the LCP males and females, indicating recovery may be also linked to better family communication.

Although there are no significant differences, the number of times the mother's partner had been arrested by the five year follow-up was higher for the LCPs than Recoveries. Furthermore, the mothers of both the male and female LCPs were also significantly more likely than the Recoveries to have a negative attitude to the law and authority.

Child characteristics (refer to Table 3)

Moffitt proposes a maturity gap develops with early physical maturity and causes a disjunction between biological maturity and social maturity (Moffitt 1994: 31). Both the male and female LCPs have an earlier onset of puberty than the Recoveries. Moffitt proposes that this maturity gap can be skipped through early initiation into adult roles or lack of opportunities to mimic antisocial behaviour (Moffitt 1994: 33).

Impaired cognitive functioning and slightly lower than average IQ scores have been found to be related to antisocial behaviour (Maguin and Loeber 1996; Moffitt 1990a; Moffitt 1990b). The Peabody picture vocabulary test, a measure of verbal IQ at 5 years, shows no significant differences between the LCPs and the Recoveries. Yet by 14 years, both the LCP males and LCP females scored significantly worse than the Recoveries on the WRAT (reading and word decoding) and Raven's progressive matrices (non-verbal reasoning). Recoveries' improved cognitive ability by 14 years may have assisted in their recovery from the LCP trajectory or alternatively their improved behaviour may have facilitated their cognitive development.

Similar to IQ, internalising behaviour at age five is almost identical between the LCPs and Recoveries. Yet by age 14 the Recoveries' mothers report significantly lower internalising for both males and females. The LCPs therefore not only have the highest antisocial behaviour, they also have the highest internalising behaviour. Alienation is another factor where distinct differences between the LCPs and Recoveries are evident. The reported levels of alienation of the LCP males and females are well above average and significantly higher than the Recoveries. This suggests that the Recoveries are better integrated into their social environment and perhaps more conformist than the LCPs.

The Recoveries' better integration into their social environment is reflected in the number of close friends. Notably, although the female LCPs report slightly higher levels of alienation than the LCP males they have many more close friends than the males, however the distinction remains that the Recoveries have more friends than the LCPs. While the number of close friends of the male Recoveries is low it is significantly higher than the LCPs. It is possible that the male LCPs may be 'loners' having alienated their peers with their extreme antisocial behaviour. Antisocial behaviour often occurs in and is influenced by the social context. Peer delinquency in the school and neighbourhood was significantly higher for both the males and females in the LCP group.

Table 3. Maternal, familial and child characteristics of the LCPs and Recoveries

	Male			Female		
	LCP	Recovery	T-value	LCP	Recovery	T-value
	Mean ^a (N)	Mean ^a (N)		Mean ^a (N)	Mean ^a (N)	
Maternal and familial characteristics						
Life changes (6 months prior to study)	0.451 (120)	0.087 (205)	2.786**	0.256 (64)	0.259 (127)	-0.020
Life changes (6 months prior to birth)	0.402 (120)	0.097 (205)	2.188*	0.310 (62)	0.173 (128)	0.824
Pregnancy planned / wanted	-0.020 (114)	0.076 (197)	-0.851	-0.263 (60)	0.033 (123)	-1.887
Mother report of problems during pregnancy	0.403 (119)	0.072 (205)	2.854**	0.169 (63)	0.298 (127)	-0.809
Dyadic adjustment (postnatal to 5 years)	-0.657 (100)	-0.170 (166)	-3.719**	-0.536 (44)	-0.437 (101)	-0.505
CT scale (violence in the home)	0.086 (100)	0.121 (183)	-0.282	0.492 (53)	0.083 (107)	2.139*
Openness in family communication	-0.768 (122)	-0.244 (209)	-4.511**	-0.898 (65)	-0.053 (128)	-4.958**
Mother's arrest	0.157 (123)	0.115 (206)	0.317	-0.045 (62)	0.007 (128)	-0.417
Mother's partner's arrest	0.356 (121)	0.050 (204)	1.814	0.435 (62)	0.006 (128)	1.920
Maternal attitude to the law/authority	0.323 (124)	0.011 (207)	2.253*	0.476 (65)	0.058 (127)	2.381*
Child characteristics						
Puberty	0.032 (87)	-0.193 (156)	1.591	0.387 (47)	0.162 (92)	1.395
Peabody - Picture Vocabulary Test (IQ)	-0.361 (88)	-0.257 (152)	-0.782	-0.239 (46)	-0.113 (93)	-0.739
Raven's Progressive Matrices Non-verbal reasoning (IQ)	-0.548 (87)	-0.246 (156)	-1.995*	-0.301 (47)	0.005 (94)	-1.949*
WRAT - Wide Range Achievement Test Reading and word decoding (IQ)	-0.533 (87)	-0.197 (155)	-2.254*	-0.378 (47)	0.111 (94)	-2.883**
Internalising behaviour CBCL 5	0.988 (124)	0.860 (209)	0.975	1.032 (65)	1.059 (128)	-0.164
Internalising behaviour CBCL 14	0.899 (124)	0.118 (209)	5.877**	1.091 (64)	0.428 (128)	3.795**
Alienation	0.565 (120)	-0.119 (206)	6.244**	0.737 (65)	-0.052 (127)	5.323**
Number of close friends	-0.531 (124)	-0.197 (208)	-2.421*	-0.088 (65)	0.161 (126)	-1.412
Delinquency of students at school	0.460 (122)	-0.112 (206)	5.025**	0.349 (65)	-0.171 (127)	3.636**
Delinquency of children in neighbourhood	0.585 (123)	0.002 (208)	5.278**	0.478 (65)	-0.303 (122)	5.076**

^a The means were calculated using the transformed z-scores to allow comparison between the varying metrics of the characteristics measured.

- A t-test for difference between LCP and Recovery males
- A t-test for difference between LCP and Recovery females

* $p < .05$

** $p < .01$

Discussion and conclusions

This paper was a test of Moffitt's typology of AL and LCP antisocial behaviour. We found slightly fewer LCPs and more Recoveries in the MUSP data. However, this may be the result of the timing at which measurements were taken. Overall we found that Moffitt's typology was replicated in the MUSP data. Of those who start out with early antisocial behaviour, two thirds recover by early adolescence with no marked gender differences in the rate of recovery.

The LCPs and Recoveries both exhibited early antisocial behaviour, so as might be expected, their characteristics in the early years were similar. When compared to sample means, the mothers of both groups of individuals reported more problems during pregnancy, more serious life events and lower dyadic adjustment. In addition, both the LCPs and Recoveries exhibited impaired cognitive functioning and a high rate of internalising behaviours at age five.

In general, differences across gender appear to be more reflective of differences in the degree of exposure to a particular risk factor as opposed to different mechanisms at work. Two notable gender differences are that the female LCPs were from less wanted and less planned pregnancies and their mothers and their respective partners had more violent relationships.

The two trajectories are distinguished by the Recoveries being in families that have better communication and the mothers' partners have fewer arrests. They have a later onset of puberty than the LCPs and exhibit higher levels of cognitive functioning and lower levels of internalising and alienation during adolescence. Lastly, the Recoveries have more close friends and lower school and neighbourhood delinquency.

A better understanding of *recovery* from early antisocial behaviour is important to those working to prevent antisocial outcomes. If we can predict why some children do not maintain early antisocial trajectories we can better target intervention and support strategies. This research has been the starting point for examining recovery from early antisocial behaviour using an Australian data set. Future research needs to move beyond mere description of the characteristics and develop models that predict recovery and also account for possible gender differences.

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