Predictors of violence, antisocial behaviour and relational aggression in Australian adolescents: A longitudinal study

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EXECUTIVE SUMMARY

Background

Antisocial behaviour is relatively prevalent and is a serious social and public health issue, associated with a range of costs across all levels of the community. The development of antisocial behaviour (including violence and relational aggression) has been widely investigated, although much of the research has been conducted overseas, particularly in the United States of America (USA). This research has provided a diverse empirical and theoretical understanding of the development of antisocial behaviour. This knowledge has then influenced ways of preventing and intervening early. One theoretical framework that offers clear practical utility is the developmental pathways approach, commonly adopted in the USA and increasingly used in the Australian context (e.g., in crime prevention and mental health settings). Given that this approach is now utilised in Australia, it is crucial to ascertain whether the predictors of antisocial behaviour in Australia are comparable to the USA and consistent with the developmental pathways approach. Hence, by contrasting predictors of antisocial behaviour in an Australian sample against those from a comparable USA sample this study will add to understanding of the relevance of USA crime prevention science for Australia. A unique feature of this project is that it examines societal responses to antisocial behaviour (e.g., arrests, school suspensions) and their impact on subsequent antisocial behaviour.

Using an existing data set, the aims of this project are to:

a) examine the frequency of antisocial behaviour in Victoria, Australia relative to Washington State, USA;
b) identify individual, family and peer predictors of antisocial behaviour
c) write two papers for peer-reviewed journals on a) and b)
d) disseminate findings through conferences and other settings.

Method

The two waves of data analysed in this project were derived from the International Youth Development Study (IYDS), a large longitudinal cross-national study of 5769 Years 5, 7, and 9 school students in Victoria, Australia and Washington, USA. The sample is representative of students in each state. Within the classrooms sampled for inclusion, over 73% of students

participated. The first wave of data collection was completed in 2002, and the second in 2003. Ninety-nine percent of the samples in each state were retained to the completion of the 2003 follow-up.

In their school classrooms, students completed a self-report survey that assessed a range of risk and protective factors, as well as outcome measures including antisocial behaviour. This survey has established reliability and validity in the USA, and increasingly, in Australia. Measures of socioeconomic status were obtained through a brief interview with students' parents in 2002.

Results

Analyses addressing the first aim and reported in the first paper entitled *A comparison of rates of adolescent antisocial behaviour, school suspensions and arrests in Victoria, Australia relative to Washington State, USA*, showed that although the levels of antisocial behaviour are similar in the two states, the societal responses for these behaviours differ, with Washington State adopting more punitive consequences such as school suspensions and arrests. This paper raised the question of what the impact of these differing exposures to social controls may have on the development of antisocial behaviour; a question addressed in the second paper completed during this project.

The analyses for the second aim and reported in the second paper entitled *How similar are the predictors of adolescent antisocial behaviour in Australia and the United States?*, investigated whether exposure to punitive societal responses predicted subsequent antisocial behaviour, controlling for demographic characteristics and a range of individual/peer and family risk and protective factors. It was found that the experience of school suspension did increase the risk of antisocial behaviour one-year later, after controlling for other known risk factors. A similar effect was noted for arrests, but small numbers restricted this to a trend-level finding. These effects held across states. Preliminary findings were presented at the *Crime in Australia: International Connections* conference in November 2004.

Discussion/Recommendations

The findings of this study have important implications for future research and for policy development. These implications are detailed in the report and include:

a) further research is warranted to investigate the long-term impact of early experiences with societal responses such as school suspensions and arrests on the development of antisocial behaviour in Australia and overseas.
b) Another important future research question is - Are all students at risk for the negative impact of societal responses? Are particular subgroups more vulnerable?
c) Punitive approaches to antisocial behaviour with youth may be counter-productive emphasising the importance of developing societal responses that can keep antisocial students connected to school and minimising early contact with law enforcement authorities.

In summary, this project has achieved all of the objectives outlined in the grant proposal and will make an important contribution to the research literature through the innovative approach taken in the analyses around the influence of societal responses to antisocial behaviour.

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DETAILED REPORT OF PROJECT FINDINGS

Note the report that follows is a compilation of findings from two manuscripts currently being completed for scientific journal submission.

1. INTRODUCTION

This important project on a serious societal problem, antisocial behaviour, has four main objectives:

a) examine the frequency of antisocial behaviour in Victoria, Australia relative to Washington State, USA (phase 1 of the project);
b) identify individual, family and peer predictors of antisocial behaviour (phase 2 of the project)
c) write two papers for peer-reviewed journals on a) and b)
d) disseminate findings through conferences and other settings.

Each of these objectives has been achieved. The results of this project were presented at the *Crime in Australia: International Connections* conference in November 2004. Further, two papers based on the findings in this study have been drafted and will be submitted to peer-reviewed journals in early 2005. The results of this project are therefore being disseminated as planned in the grant proposal.

This report will first outline the background literature relevant to the two phases of the project. The method used to collect data for the existing data set used in this project is described. The results and discussion of findings for each phase of the project is then presented. The report ends with a summary of the implications of list of recommendations for future research.

1.1 Antisocial behaviour

Antisocial behaviour includes violence and covert forms of aggression such as relational aggression. Antisocial behaviour is both prevalent in Western societies and costly to the community, impacting on individuals (e.g., physical damage to people and property, bullying, insecurity), as well as society at large (e.g., costs of interventions and incarceration, feelings of insecurity) (Hemphill, 1996). Antisocial behaviour is clearly a major public health (Herrenkohl et al., 2000; Smith-Khuri et al., 2004) and social issue. The incidence of these

problems peaks in mid-to-late adolescence (Baker, 1998; Bond et al., 2000; Rutter et al., 1998; Vassallo et al., 2002). Antisocial behaviour is associated with a range of problematic adult outcomes. For all adult psychiatric disorders, approximately 25% to 60% of cases had exhibited conduct disorder (clinically significant antisocial behaviour) and/or oppositional disorder earlier in life (Kim-Cohen et al., 2003). Individual differences in antisocial behaviour are stable over time (Crick, 1996; Farrington, 2002); individuals who show early problems may continue to engage in antisocial behaviour in the long-term. Typically, rates of antisocial behaviour are higher in males and socioeconomically disadvantaged communities (see Hemphill, 1996 for a review). An exception to this is that females engage in more relational aggression than males (Crick, 1996). There have been few well-designed studies investigating rates and predictors of antisocial behaviour in countries with different policies and cultures around these behaviours such as Australia and the USA. This study addresses this gap using a sample of adolescents in the states of Victoria in Australia and Washington in the USA.

1.2 Prevalence and frequency of antisocial behaviour and societal responses

Rates of incarceration, including juvenile detention, are substantially higher in the USA than in Australia. The Census of Juveniles in Residential Placement (2001) shows that 293 per 100,000 Washington State juveniles (490 per 100,000 males, 85 per 100,000 females) aged under 21 years were in detention (Sickmund, Sladky, & Kang, 2004). In Victoria in 2001, there were 12.7 per 100,000 juveniles aged 10-17 years (22 per 100,000 males, 3 per 100,000 females) in detention (Bareja & Charlton, 2003). Even allowing for the different age ranges reported in these figures, rates are higher in Washington. The present study used a cross-national comparative student survey to investigate whether the higher rates of incarceration in the USA relative to Australia are reflective of differences in levels of adolescent antisocial behaviour or in societal responses to such behaviour.

There have been few well-designed studies investigating rates of antisocial behaviour in countries with different policies and cultures around these behaviours such as Australia and the USA. For the current cross-national study, youth samples from Washington State and Victoria were chosen because they are similar on a number of important characteristics, but different on a few critical variables. Washington State and Victoria are considered progressive states, both have higher than national levels of educational participation, and in national terms are relatively prosperous. The two states have similar populations of 5 to 6 million people. Both also have sizeable numbers of foreign-born residents and residents who speak a language other than English at home. Demographics of the student population are also similar

in terms of ethnicity, gender (50% female), and the proportion living in urban centres is similar (Hibbert et al., 1996; OSPI, 2002). Industry mix is also remarkably comparable between the two states (Australian Bureau of Statistics, 2001; U.S. Census Bureau, 2000).

There is evidence to suggest that the rates of particular antisocial and violent behaviours may be higher in the USA than Australia. For example, the 1998 homicide rate for 10- to 29-year-old males was 2.2 per 100,000 in Australia compared with 17.9 per 100,000 in the USA (World Health Organisation, 2002). The youth homicide rates for females in each country were more comparable (1.0 per 100,000 in Australia, 3.7 per 100,000 in the USA). In a recent Victorian study, Vassallo et al. (2002) reported that 34% of 13- to 14-year-olds had been involved in physical fights, 7% had carried a weapon, 14% had skipped school, and 16% had stolen property. Using data from the USA Youth Risk Behavior Survey, Brener, Simon, Krug, and Lowry (1999) reported that in 1997, the percentage of Year 9 to Year 12 students who engaged in physical fighting was 37% and 18% had carried a weapon. In 1997, 6% of students carried a gun. Hence, according to these figures, the rates of physical fighting in Australia and the USA were similar but the rates of carrying a weapon were lower in Australia.

The apparent differences in rates of some specific types of antisocial behaviour may also reflect different societal responses to these behaviours. Societal responses to adolescent antisocial behaviour may be influenced by historical factors, social conditions, culture, law and policies. Social control theory postulates that rates of antisocial behaviour in youth differ according to the degree of social control over their behaviour (Eisner, 2002). In this study we examine rates of formal and informal societal responses in the states of Victoria, Australia and Washington, USA. It is difficult to directly compare the formal societal responses on antisocial behaviour in Victorian and Washington State due to the relatively limited availability of information in Victoria.

There appear to be differences in the Victorian and Washington State arrest rates. The juvenile arrest rates in Washington State reported by the Governor's Juvenile Justice Advisory Committee totalled 38,073 arrest for *10-17* year-olds in 2002, a rate of 53.8 per 1,000. In Victoria, there were a total of 24,927 "alleged offenders processed" (*10-16* year olds) in 2002-2003 (Statistical Services Division, Victoria Police, 2004). Given that the population characteristics of the two states is similar (Australian Bureau of Statistics, 2001; U.S. Census Bureau, 2000), this suggests higher rates in Washington State even though there may be some differences in how the figures were derived.

At the school level, obtaining figures from each state on suspensions and expulsions was difficult, especially in Victoria. In their study of Victorian adolescents, Vassallo et al. (2002) found that 5% of 13- to 14-year-olds, 7% of 15- to 16-year-olds, and 5% of 17- to 18-year-olds had been suspended or expelled from schools in Victoria. In the USA, a summary report across all public schools showed that in the 1999-2000 school year, 54% of schools took a "serious disciplinary action"; these actions were comprised of suspensions of 5 days or more (83%), expulsions (11%), and transfers to specialised schools (7%) (DeVoe et al., 2003). The policy context of schools in the two states seems to differ.

Previous research within the present project has shown that Washington and Victorian schools differ in the ways in which they handle substance use (behaviours closely related to antisocial behaviour), reflecting policy differences in the two countries (US has abstinence-focus, Australian has harm minimisation focus) (Beyers et al., in press). Given this finding, it is also likely that Victoria and Washington State differ in their policy responses to antisocial behaviour, violence and relational aggression, with Washington State using more punitive responses such as school suspension and arrests.

In addition to studying formal societal responses to antisocial behaviour, this study also examines informal societal responses such as students' perceptions of how likely it is that their antisocial behaviour would be detected by parents or police. These perceived informal responses are also likely to influence behaviour; if students believe they are likely to be caught engaging in antisocial behaviour, they may be less likely to do so.

In the first phase of this project we investigated the frequency of antisocial behaviour and societal responses to these behaviours (i.e., arrest, school suspension) by state, gender, and cohort, and whether state differences in antisocial behaviour and societal responses are found after controlling for sampling design and the clustering of students within schools, and adjusting for age, urbanicity, and socioeconomic status. Based on the existing literature, there were three main hypotheses. First, it was expected that the frequencies of overt antisocial behaviour would be higher in Washington State, males, and the older cohort. Second, it was anticipated that the frequency of covert behaviours (i.e., relational aggression) would be similar in the two states but more common in females than males. The third hypothesis was that Washington State would have higher frequencies of arrests and school suspensions than Victoria irrespective of cohort and gender.

1.3 Predictors of antisocial behaviour

Increasingly in Australia, crime and mental health prevention programs are adopting a "developmental pathways" approach (e.g., National Crime Prevention, 1999; National Mental Health Strategy, 1999). This model draws on life course development research, community epidemiology, and preventive intervention trials (Coie et al., 1993; Kellam & Rebok, 1992). *Risk factors* are prospective predictors that increase the likelihood that an individual or group will engage in adverse outcomes (Hawkins, Catalano & Miller, 1992; National Crime Prevention, 1999). *Protective factors* both directly decrease the likelihood of antisocial behaviour (Jessor, Turbin, & Costa, 1998; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995) and mediate or moderate the influence of risk factors (Cowen & Work, 1988; Garmezy, 1985; Rutter, 1985; Werner, 1989). Catalano and Hawkins (1996) postulated a model of the development of antisocial (and prosocial) behaviour, the Social Development Model. In this model, risk factors were organised according to their influence in different developmental settings including communities, families, schools, and peer groups, and within individuals. Community factors include legal and normative expectations for behaviour, extreme economic deprivation, transitions and mobility and high levels of neighbourhood disorganisation. In the family, family history of antisocial behaviour, poor family management practices, family conflict, and parental attitudes favourable towards antisocial behaviour predict the development of antisocial behaviour. Within the socialisation unit of the school, early and persistent problem behaviour, academic failure and low commitment to school were found to be predictive. Individual and peer factors include constitutional factors (e.g., sensation seeking and lack of impulse control, Rutter, 1987; Bry, McKeon & Pandina, 1982), alienation and rebelliousness, attitudes favourable towards antisocial behaviour, association with antisocial peers, and early involvement in problem behaviour. Further, Catalano and Hawkins (1996) also organised what was known of protective factors arguing that they fell into three basic categories (Rutter, 1987; Werner & Smith, 1992). These consisted of attachment/bonding, opportunities for prosocial involvement, and recognition for prosocial involvement. In the second phase of this project, the proximal influences (i.e., individual and family factors) on the development of antisocial behaviour are investigated because these are likely to be important within the age group studied.

An important criticism of the application of the developmental pathways approach to prevention in Australia is that the approach makes extensive use of data from the United States and therefore its relevance to the Australian context is largely unknown. To date, only a few Australian studies of the development of antisocial behaviour have been conducted.

These studies have found similar predictors to North American studies (Bor et al., 2004; Vassallo et al., 2002). This project is unique in also examining the influence of societal responses to antisocial behaviour on subsequent antisocial behaviour, controlling for risk and protective factors and demographic characteristics.

The questions addressed in the second phase of this project are: 1) What time 1 individual and family level risk and protective factors are predictive of antisocial behaviour measured 12 months later? 2) Do societal responses to antisocial behaviour influence later antisocial behaviour, controlling for other factors? It is hypothesised that the risk and protective factors predictive of antisocial behaviour will include antisocial behaviour at time 1, attention problems, impulsivity, having been suspended from school, having been arrested, poor family management, family conflict, student and parental attitudes favourable to antisocial behaviour and drug use. According to the Social Development Model, having opportunities to and receiving recognition for, engaging in prosocial activities at home will be protective against the development of antisocial behaviour. Other likely protective factors include being female, religiosity, emotion control, belief in the moral order, and attachment to mother and father.

2. METHOD OF THE IYDS

2.1 Participants

Student recruitment was achieved using active parental consent procedures. Parents were asked to consent for their child to participate in the longitudinal study and to their own participation in a short telephone interview in the first wave of data collection. Classes in Washington State yielded a total of 3,856 eligible students, of whom 2,885 (74.8%) consented to and participated in the survey. In Victoria, 3,926 students were eligible for consent and survey administration, of whom 2,884 (73.5%) consented and participated. In both states higher participation rates were achieved in the older year levels (range = 76% to 78%), while parents of the youngest panel members were equally less likely to consent for their fifth graders to take part in both states (69%). Reasons for non-participation in Washington State included non-return of consent forms (11%) and refusal (14%). Reasons for non-participation in Victoria included failure to return the consent form (5%) and refusal (21%).

In each state, the youngest cohort (Year 5) was comprised almost entirely of 10- and 11-year-olds, the middle cohort (Year 7) of 12- and 13-year-olds, and the oldest cohort (Year 9) of 14- and 15-year-olds (see Table 2.1). Males and females are equally represented in the total sample and in each cohort.

Table 2.1: Student sample characteristics for each cohort in 2002

	Year 5		Year 7		Year 9		Total Sample	
	WA	**VIC**	**WA**	**VIC**	**WA**	**VIC**	**WA**	**VIC**
*Mean Age**	11.1	11.0	13.1	12.9	15.1	14.9	13.1	13.0
(SD)	(0.4)	(0.4)	(0.4)	(0.4)	(0.5)	(0.4)	(1.7)	(1.6)
Range	9.6–12.7	9.8-12.4	12.0–16.6	11.8-14.5	13.4–17.2	13.8-16.5	9.6–17.2	9.8-16.5
Female	51%	52%	51%	51%	50%	52%	50%	52%
*% Attending schools in***								
Rural areas	64%	56%	53%	51%	69%	57%	24%	28%
Lrg/small towns	15%	9%	16%	22%	12%	23%	14%	18%
Urban areas	22%	36%	31%	27%	19%	21%	62%	55%
N (students)	943	927	961	984	981	973	2885	2884
*MumEducation****								
< Secondary	10%	41%	11%	39%	7%	44%	9%	41%
>= Secondary	90%	59%	89%	61%	93%	56%	61%	34%
N (parents)	894	862	884	913	906	896	2684	2671

Note. * *t*-tests of state differences in age by each year level were all significant ($p < .01$).

**Chi-square tests of state differences in urbanicity by each year level were all significant ($p < .01$).

***Chi-square tests of state differences in mothers' education by each year level were all significant ($p < .001$).

2.2 Procedure

Surveys for the first wave of data collection were administered in 2002, and for the second in 2003, by study staff from the Social Development Research Group (Washington State sample) and the Centre for Adolescent Health (Victorian sample). Staff from both states was trained in a single protocol to minimise differences that may be introduced by variations in data collection procedures. The survey included instructions on how to answer the questions and assurances of confidentiality that were presented prior to administration by study staff. Surveys were group-administered in classrooms during a 50-60 minute period; students absent from school on the day of the survey were administered surveys later under the supervision of trained school personnel or in a small percentage of cases (less than 3%), over the telephone by study staff. To ensure accurate responses from Year 5 students, a second staff member was present to read aloud each survey question to the entire class. The other staff member was then available to help individual students. Upon survey completion, students in Washington State received $10. Students in Victoria received a small pocket calculator upon return of their consent forms to their teacher regardless of participation. The retention rate of participants at the second wave was 99% in each state.

2.3 Measures

2.3.1 Antisocial behaviour

The measures of antisocial behaviour and societal responses were generally drawn from the *Communities that Care* survey (Arthur et al. 2002; Glasser et al. in press; Pollard, Hawkins, & Arthur 1999) unless otherwise indicated. The items administered to each cohort were selected for their developmental appropriateness. For Year 5 students, items asked students whether they had *ever* engaged in the behaviours listed, and unless otherwise noted, response options were on a 4-point scale, *No, never (1); Yes, but not in the last year (2); Yes, 1-2 times in the last year (3);* and *Yes, 3 or more times in the last year (4).* In contrast, Years 7 and 9 students were asked whether they had engaged in antisocial behaviour in the past year, so the response options were on an 8-point scale, ranging from *Never* (1) to *40 or more times* (8). For all measures of antisocial behaviour and societal responses, items were recoded as dichotomous variables; never/none = 0, all other responses = 1.

Antisocial behaviour was measured in the Year 5 survey by 3 items asking whether the student had *ever* carried a weapon, stolen something worth more than $5 (US)/$10 (Australian), and attacked someone with the idea of seriously hurting them. The Year 7 and 9 student survey asked how many times in the *past year* a student had carried a weapon, stolen

something worth more than $5 (US)/$10 (Australian), attacked someone with the idea of seriously hurting them, sold illegal drugs, stolen or tried to steal a motor vehicle such as a car or motorcycle, been drunk or high at school, carried a handgun, and taken a handgun to school. All three cohorts of students were also asked how many whole days during the last four weeks they had missed school because they skipped or wagged school, with response options ranging from *None* to *11 or more*.

Covert antisocial behaviour (or relational aggression) was operationalised with two items in all 3 cohorts, asking had students *ever* (Year 5)/*in the past year* (Year 7 and 9 students) gotten back at another student by not letting them be in their group of friends, and had they *ever* told lies or started rumours about other students to make other kids not like them (Crick, 1995).

Physical violence: For the Year 5 students, physical violence was measured using one item, "Have you ever beat up someone so badly that they probably needed to see a doctor or nurse?" Year 7 and 9 students were asked the same question as Year 5 students but in reference to past year, as well as how often they had threatened someone with a weapon in the past year. Both items derive from Seattle Social Development Project (SSDP) Aggressive Delinquency scale.

Societal responses: Formal societal responses to problematic behaviour were measured in the Year 5 survey through 2 items asking students if they had *ever* been suspended from school and if they had *ever* been arrested. *Formal societal responses* for the Year 7 and 9 students were measured by the same items but in the context of how many times in the past year the social control had occurred. *Informal societal responses* were measured for all cohorts by items asking students if they would be caught by their parents if they carried a weapon and skipped school without their parents' permission, and whether if a kid carried a weapon in their neighbourhood, s/he would be caught by the police. These three items were rated on a 4-point scale from "definitely yes" to and "definitely no".

Aggregate measure of antisocial behaviour: Antisocial behaviour items were scored as present (students engaged in the behaviours one or more times in the past year) or absent (students never engaged in the behaviours listed) to form a dichotomous measure of antisocial behaviour. Using the dichotomous measure of antisocial behaviour, a score of 2 or more was required to be classified as engaging in antisocial behaviour in the past year. This criterion corresponded to the top 15% and top 17% of students at times 1 and 2, respectively.

2.3.2 Risk and protective factors

Individual risk factors reported in this paper include: favourable attitudes to antisocial behaviour (e.g., think it is acceptable to steal or fight); favourable attitudes to drug use (e.g., think it is acceptable to use alcohol or drugs); and impulsivity (e.g., rush into things or act without thinking); attention problems (e.g., easily distracted).

Family level risk factors include poor family management (e.g., poor monitoring by parents); family conflict (e.g., presence in the family of arguments, yelling, and insults); family history of antisocial behaviour (e.g., familial adults in trouble with police); parent attitudes favourable to drug use (e.g., parents condone use of cigarettes or alcohol); and parent attitudes favourable to antisocial behaviour (e.g., parents condone stealing). All items are rated on a 4-point scale from *definitely no* to *definitely yes*. Internal consistency, measured using Cronbach's alpha was acceptable (time 1 range 0.55-0.85).

Individual level protective factors are: religiosity (frequency of attending religious services or activities); belief in the moral order (e.g., it is sometimes okay to cheat at school); and emotion control (e.g., control temper when people are angry with student).

Family level protective factors: attachment to mother (e.g., student feels close to mother); attachment to father; opportunities for prosocial involvement (e.g., parents ask student for input into family decisions); and recognition for prosocial involvement (e.g., frequency parents notice when student is doing a good job and let him/her know about it). The internal consistency of these scales was 0.67-0.76 at time 1.

2.3.3 Socioeconomic status (SES)

SES was operationalised as the highest level of education achieved by the female parent/guardian, as reported in a telephone interview with the parent/guardian. The fourteen response options ranged from *Less than Year 7* to *Postgraduate University degree* and included TAFE certificate or apprenticeship. These data were collapsed into 2 groups: i) completed secondary school (AUS: year 12, TAFE certificate/apprenticeship, some university, US: GED, high school, some trade/business school, AA degree, some college) or less; and, ii) completed post secondary education (AUS: 3 or 4 year university degree, postgraduate degree, US: college graduate, postgraduate degree). Significant differences in maternal education distinguish the two states (see Table 2.1). Mothers or female guardians in Washington State are almost 2 times more likely to have completed secondary school than mothers in Victoria. However, similar proportions of mothers reported completing post-secondary education in each state.

2.3.4 Urbanicity

A variable assessing urbanicity in each state was created using information about the location of schools included in the study. Students who attended schools in an area with a population of less than 2,500 were coded as "*rural*"; students attending schools in towns that had a population greater than 2,500 and less than 25.000 but who did not live in an urban or urban fringe area were coded as "*large or small town*"; and students who attended school in the metropolitan area were coded as "*urban*". Across the whole sample, the distributions for urbanicity were similar in each state, however there were differences within cohort. At the Year 5 level, more Victorian students attended urban schools than Washington students; conversely fewer Victorian students attended schools in large/small towns and rural areas. Similar patterns of urbanicity were found in Year 7, although more Victorian students attended schools in large/small towns and fewer attended rural schools than their Washington counterparts. At Year 9, the patterns were similar, but stronger, than those for Year 7.

3. RESULTS AND DISCUSSION FOR PHASE 1

There were two main stages in the statistical analyses in this paper. First, chi-square analyses were conducted to investigate the association between state and each specific outcome measure (i.e., individual items for antisocial behaviour and societal responses scored as present or absent), separately by gender and cohort. Previous IYDS analyses (McMorris et al., in preparation) have shown that there are few differences between weighted and unweighted prevalence estimates for these variables, hence the chi-square analyses were not unadjusted for the sampling design nor were they adjusted for clustering within schools. For all chi-square analyses, Fisher's exact test were used for analyses with any cell containing a zero or where 20% or greater of the cells had values below 5.

In the second stage of the analyses, separate multi-variate logistic regression analyses were conducted for each outcome measure (i.e., antisocial behaviour or societal response item) and for each cohort to investigate the effect of state, controlling for sampling design, clustering within schools, gender, age, SES, and urbanicity. To increase power and given that Years 7 and 9 students were asked received the same survey questions, a combined data set was used for these students.

Each stage of the analyses was completed by first including all participants and then repeating the analyses excluding dishonest students. The number of dishonest students (students who reported that they had ever or in the past 30 days used a fake drug and who reported that they had not been honest on the survey) was low (16 in Year 5, 16 in Year 7 and 7 in Year 9). The results for both analyses were very similar so results for the entire sample are presented here.

3.1 Frequency of specific antisocial behaviours and social controls in each state

To explore on which specific antisocial behaviours and societal responses the two states differed, the first series of analyses investigated the association between state and each of the outcome measures (antisocial behaviour and societal responses) separately for each gender and cohort. The results at Year 5 show that Victorian males were more likely on one or two occasions to have engaged in excluding another student from their group of friends to get back at them than Washington males. Year 5 Victorian males also reported attacking someone with the idea of seriously hurting them more often than Washington males. There were no differences between Victorian and Washington females on any of the EBP measures. There were several differences for males in terms of actual and perceived consequences. Washington males were more likely to have been suspended from school than their Victorian

counterparts, with 7% of Washington males having been suspended 3 or more times compared with 1% of Victorian males. Further, more Washington than Victorian males reported that they would be caught by their parents if they skipped school or carried a weapon and they also thought that they were more likely to be caught by police if they carried a weapon. However, there were no state differences for females.

For Year 7 students, Washington males and females reported carrying a hand gun and selling drugs more times than their Victorian counterparts, although the differences for females were small. Washington females (10%) were more likely to have spread rumours about their peers than Victorian females (6%). The number of times Washington females carried a weapon and attacked someone in an attempt to seriously hurt them was higher than Victorian females. Amongst males, Washington students had engaged in more stealing behaviour, and had been suspended and arrested more often than Victorians.

At the Year 9 level, Victorian males and females reported engaging in excluding others from their group of friends to get back at them more than Washington students. Surprisingly, Victorian males also reported spreading rumours about other students so that they were disliked more times than Washington males (3 or more times 15% versus 8%). Victorian students (males and females) had more often threatened someone with a weapon than their counterparts in Washington. As was found for honest Year 7 females, Washington females in Year 9 had beaten someone so badly they needed medical attention more times than Victorian Year 9 females. Carrying a hand gun was more common amongst Year 9 Washington males than Victorian males, and they were also more likely to have been drunk at school (3 or more times 6% in Washington and 3% in Victoria). Victorian females reported wagging school on one or more occasions more (17%) than their Washington counterparts (11%). There were few differences at the Year 9 level in actual consequences, although interestingly, Victorian females reported being suspended from school more times than Washington females. Washington students (males and females) were more likely to expect that they would be caught by their parents if they skipped school than Victorian students. Washington females were also more likely to think that they would be caught by their parents if they carried a weapon than Victorian females. Consistent with the Year 5 results, Year 9 Victorian females had been bullied more times than Washington Year 9 females.

In summary, there were some state differences noted in the frequency of both behaviours and societal responses. These differences tended to vary by cohort; for example, there were no state differences on EBPs at the Year 5 level for females but there were in Years 7 and 9. In general, there were more state differences for males than females. An

important point to note is that most of the statistically significant differences, particularly for rare outcomes, did not represent large differences in the frequencies observed.

3.2 Adjusted multi-variate associations between state and outcome measures

This set of analyses investigated associations between state and the specific measures of antisocial behaviour and societal responses, adjusting for sampling design, clustering of students in the schools, age, gender, SES, and urbanicity. In general, the effect of state was consistent with the results of the chi-square analyses above. At the Year 5 level, being a student in Washington State was protective against attacking someone else, and excluding peers from a group (relational aggression) and almost doubled the risk of wagging school. There were consistent state differences in social controls. Washington students were at 8 times greater risk of having been suspended from school than Victorian students, and they perceived a higher risk of being caught by their parents or police for engaging in antisocial behaviour.

The data for Year 7 and 9 students were combined. The results of these logistic regression analyses showed that students in Washington State were at greater risk of stealing and carrying a handgun, and were less likely to spread rumours about peers than Victorian students. Washington students were also twice as likely to have been suspended from school in the past year than their Victorian counterparts, and to perceive a higher risk of being caught by their parents for wagging school.

This project is one of few cross national behavioural studies and the first to compare the frequency of antisocial behaviour and the societal responses to these behaviours in Victoria, Australia and Washington State, USA. These two states were selected based on their general similarities at the population level and their stated differences in policies around crime and substance use. The results of this study have revealed relatively few (and if so, small) differences in the frequency of antisocial behaviour in the two states, however some differences in the societal responses to these behaviours, particularly the use of punitive approaches, which were found to be more frequent in Washington State. These differences remained when potential confounders were controlled.

Consistent with previous studies (e.g., Eisner, 2002; Smith-Khuri et al., 2004), relatively few cross-national differences in the frequency of antisocial behaviour were found. The finding of general similarities in the frequency of antisocial behaviour between the two states surveyed in the present study raises potentially important questions relevant to the development of these behaviours. It is possible that the emergence of adolescent antisocial

behaviour shows little cross-national variation after controlling for demographic, social differences and societal responses to adolescent behaviour. To date cross-national research is not extensive and there have been few well-conducted studies. In this environment it is not possible to reach firm conclusions as to the level of cross-national variation in adolescent behaviour. However, the research conducted to date leads us to present the hypothesis that some base level of antisocial behaviour may be a phase in healthy adolescent development expected to occur in all societies.

The present study found evidence of some differences in the societal responses to adolescent antisocial behaviours with greater student-reported use of some aspects of social controls in Washington State. There were higher rates of school suspensions and arrests in Washington State, although given the low frequency of these events the differences were generally small. The limited data available in the literature for comparison suggests that youth in the USA are more likely to suffer harsh consequences for antisocial behaviour, consistent with the present findings. Differences in the societal responses reported by adolescents in the present study appear consistent with the differences in policy between the two states. The Victorian school system aims to keep youth connected to school and therefore enforces suspensions and expulsions as a last resort (Directorate of School Education, 1994), whereas in Washington State through the Gun-Free Schools Act (1994) students may be expelled for at least one year for bringing firearms and reportedly other weapons to school (Casella, 2003).

The current study has demonstrated that compared to Victoria adolescents in Washington State report more severe societal responses, despite similar levels of antisocial behaviour. One of the question emerging from the present study is whether over time the experience of being suspended from school, or arrested is likely to lead to further antisocial behaviour. For example, is school suspension associated with more or less problematic behaviour in older adolescence in each of the two states? Given the high association between poor academic achievement and antisocial behaviour (see Hemphill, 1996 for a review), ensuring students with antisocial behaviour remain connected to school is crucial; this is unlikely to be achieved through school expulsions and suspensions. Given the present study has incorporated longitudinal follow-up it will be possible in future waves to investigate the way that these early consequences impact on future antisocial behaviour.

4. RESULTS AND DISCUSSION FOR PHASE 2

The research questions in phase two on the predictors of antisocial behaviour were analysed using logistic regression analyses that controlled for the clustering of students within schools. Unadjusted, univariate logistic regression analyses examined the association between each predictor variable and time 2 antisocial behaviour. The analyses then proceeded to test a series of models. First, separate logistic regression analyses were conducted to investigate the predictive utility of the following clusters of variables: 1. Demographic variables (gender, age); 2) individual and family risk and protective factors, including time 1 antisocial behaviour; 3) time 1 school suspension and arrest; and 4) state. Second, demographic characteristics and individual and family risk and protective factors were included together in a multi-variate logistic regression analysis. The third stage of the analyses included demographic variables, individual risk and protective factors, time 1 school suspension, and time 1 arrest. Separate from this series of logistic regression analyses, the interaction between state and each predictor was examined to detect state differences in the predictive strength of independent variables.

4.1 Predictors of antisocial behaviour

The results of unadjusted, univariate logistic regression analyses showed that all predictors were significantly associated with time 2 antisocial behaviour. Engaging in time 1 antisocial behaviour increased more than 13 times the risk of engaging in antisocial behaviour at 12-month follow-up, and explained 18% of the variance in time 2 antisocial behaviour. Favourable attitudes to drugs and to antisocial behaviour increased the risk of antisocial behaviour more than ten times. Having been arrested at time 1 increased the risk of time 2 antisocial behaviour almost eight-fold and time 1 suspension from school raised the risk more than 5 times. Other factors that increased the risk of antisocial behaviour approximately five-fold were attention problems, impulsivity, parental favourable attitudes to antisocial behaviour, and family conflict. The strongest protective factor was belief in the moral order, which reduced the risk of antisocial behaviour by four-fifths.

The results of the first model tested the predictive utility of the following clusters of variables: 1) Demographic variables (gender, age); 2) individual and family risk and protective factors, including time 1 antisocial behaviour; 3) time 1 school suspension and arrest; and 4) state. Within these clusters, the following variables were important. First, both demographic characteristics, being female and age, were associated with antisocial behaviour at time 2; being female was a protective factor and age increased the risk of antisocial

behaviour. Amongst the individual risk and protective factors, time 1 antisocial behaviour remained a strong predictor of time 2 antisocial behaviour, although the odds ratio reduced by half from the unadjusted analyses. Favourable attitudes to drugs also increased the risk of antisocial behaviour, whereas belief in the moral order and emotional control were protective factors. At the family level, poor family management, family conflict and parental attitudes favourable to the use of drugs and to antisocial behaviour increased the risk of time 2 antisocial behaviour by 1.5-2 times. Attachment to mother reduced the risk of antisocial behaviour at 12 month follow-up. Both consequences, time 1 school suspension and arrest increased the risk of time 2 antisocial behaviour more than 4 times, although their effects were reduced relative to the unadjusted analyses.

The results of model 2, when all individual and family level risk and protective factors were added to demographic characteristics in the model showed that being female remained a significant predictor. Time 1 antisocial behaviour increased the odds of engaging in antisocial behaviour 12 months later more than 6 times (slightly less than in the first model). Student favourable attitudes to drugs also increased the risk of time 2 antisocial behaviour. Belief in the moral order and emotion control remained protective. At the family level, poor family management, family conflict, and attachment to mother continued to be associated with time 2 antisocial behaviour (parental attitudes favourable to antisocial behaviour was marginally significant).

In the final model, being female, time 1 antisocial behaviour, student favourable attitudes to antisocial behaviour, belief in the moral order and emotion control continued to be significantly associated with time 2 antisocial behaviour. At the family level, only poor family management was associated with time 2 antisocial behaviour, following the addition of time 1 school suspension and arrest. Time 1 school suspension almost doubled the risk of time 2 antisocial behaviour. The strength of the association between time 1 and time 2 antisocial behaviour was reduced by the inclusion of time school suspension and arrest in the model. In this final model, 26% of the variance in time 2 antisocial behaviour was explained.

In separate analyses, the interaction between state and each of the variables included in the above models was tested in a series of logistic regression analyses. These analyses showed that only one interaction was marginally significant at $p < .05$, with an odds ratio of 1.3 (1.0-1.6). The predictors of time 2 antisocial behaviour were therefore similar in each state.

5. DISCUSSION

In the second phase of the study, the risk and protective factors predictive of antisocial behaviour were examined, as well as the effect of societal responses to antisocial behaviour on subsequent behaviour when other risk and protective factors were controlled. The pattern of results suggests that the use school suspension to deal with problematic behaviour may direct students towards rather than away from further antisocial behaviour. Further, this project identified several modifiable predictors of antisocial behaviour, including earlier antisocial behaviour, student attitudes favourable to drugs, belief in the moral order, emotion control, family management, family conflict, and attachment to mother.

An important finding in this study is that the experience of school suspension increased the risk of subsequent antisocial behaviour in both states, even after controlling for demographic characteristics and individual and family risk factors. These findings suggest that, rather than deterring antisocial behaviour, school suspension may exacerbate antisocial behaviour. The reasons for this are unclear. Perhaps students who experience suspension rebel by engaging in more antisocial behaviour or it is possible that suspending students from school may disconnect them from a positive social environment and increase their exposure to other risk factors (e.g., failure to complete schooling) for antisocial behaviour (Casella, 2003). If the latter is the case, the implication is that schools need to consider alternative ways of dealing with misbehaviour (e.g., time out within the school) when it occurs, and to adopt proactive approaches for dealing with these students.

The individual and family risk factors identified in this study as predictive of antisocial behaviour in this study are consistent with those of previous studies (Catalano & Hawkins, 1996; Hemphill, 1996; Patterson, DeBaryshe, & Ramsey, 1989) that have shown characteristics of both the individual and family are important. Earlier-occurring antisocial behaviour was predictive of the same behaviour 12 months later, emphasising the importance of intervening early when signs of antisocial behaviour develop. Student favourable attitudes towards drugs increased the risk of time 2 antisocial behaviour. Taking steps to modify student attitudes towards drugs and related behaviours may also reduce subsequent antisocial behaviour. This study also found that poor family management and family conflict increased the risk of antisocial behaviour; underlining the importance of supporting families of adolescents to monitor their children, set clear family rules, and manage family conflict.

Importantly, this study also identified several factors that reduce the likelihood of developing antisocial behaviour, including student's belief in the moral order and the student's ability to control his or her emotions in difficult situations. These findings suggest

clear targets for efforts to foster attitudes and skills in adolescents to minimise the likelihood of antisocial behaviour.

The amount of variance explained in this study was moderate (26%), suggesting that there is a range of other factors that are also important in the development of antisocial behaviour. These are likely to include peer, school and community factors. The International Youth Development Study has measures of these factors and future analyses will explore their impact on the development of antisocial behaviour.

5.1 Limitations of the project

Some limitations of the current study should be noted. The study uses student self-report data (with the exception of the measure of mothers' education). The use of self-report measures in studies of adolescents is widely accepted as the most reliable source of data for behaviour problems such as antisocial behaviour (Huizinga & Elliott, 1986; Jolliffe et al., 2003). The method of data collection used here was therefore appropriate.

The generalisability of the results in this study is limited to the states and year levels examined here, however the sample is representative of these states and can therefore be applied with confidence to those groups.

5.2 Strengths of the project

The data utilised in this project has a number of strengths. First, the study is one of the first to ensure that the two sites have used matched recruitment and survey procedures, as well as the same data management practices. These are important to ensure that any state differences cannot be attributed to the design and methods of the study. Further, the study achieved good response rates for participation in the research, includes approximately equal numbers of males and females in each state and has achieved a good size sample across three different cohorts spanning 10-14 years of age. In doing so, the study can add to the growing literature on antisocial behaviour in females relative to males. An additional strength of this study is that it includes both overt (e.g., beating up someone) and covert (e.g., spreading rumours about another student so s/he is disliked by other students) measures of Antisocial behaviour. This is particularly important in studies of males and females because there may be differences in the sorts of antisocial behaviour in which each gender engage.

5.3 Summary and implications of findings

In summary, the results of this study have important implications for practice and policy. Self-reported school suspension and arrests were higher in Washington State than Victoria but in both states, school suspension increased the risk of subsequent antisocial behaviour. Although the findings require replication, it seems that early exposure to punitive consequences such as school suspension may increase, rather than decrease, the risk of antisocial behaviour. Alternative ways for schools to deal with problematic behaviour (e.g., time out) may be needed. Consistent with existing studies, individual and family characteristics were important in the development of antisocial behaviour. First, antisocial behaviour occurring at time 1 was a strong predictor of engaging in antisocial behaviour 12 months later. Intervening with these behaviours before they become entrenched is crucial. Individual characteristics of the student were important predictors of subsequent antisocial behaviour. Modifying adolescent favourable attitudes towards drugs and fostering the development of positive attitudes (i.e., belief in the importance of being honest), as well as assisting students to control their emotions in challenging situations are possible targets for intervention. The findings here also support the need for assisting families to monitor their children and set clear family rules. Further, fostering attachment to parents, particularly mothers, may reduce the likelihood of engaging in antisocial behaviour.

5.4 Recommendations for further research

The findings of this study have important implications for future research. First, further research is warranted to investigate the long-term impact of early experience of societal responses such as school suspensions and arrests on the development of antisocial behaviour in Australia and overseas. Second, another important future research question is: Are all students at risk for the negative impact of societal responses? Are particular subgroups more vulnerable? Finally, the results of this project suggest that punitive approaches to antisocial behaviour with youth may be counter-productive emphasising the importance of keeping students connected to school and minimising early contact with law enforcement authorities.

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