

Research Bank

Journal article

**Student and school factors associated with school suspension :
A multilevel analysis of students in Victoria, Australia and
Washington State, United States**

**Hemphill, Sheryl A., Plenty, Stephanie M., Herrenkohl, Todd I.,
Toumbourou, John W. and Catalano, Richard F.**

This is the accepted manuscript version. For the publisher's version please see:

Hemphill, S. A., Plenty, S. M., Herrenkohl, T. I., Toumbourou, J. W. and Catalano, R. F. (2014). Student and school factors associated with school suspension : A multilevel analysis of students in Victoria, Australia and Washington State, United States. *Children and Youth Services Review*, 36, pp. 187-194.

<https://doi.org/10.1016/j.childyouth.2013.11.022>

This work © 2014 is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International.

Published in final edited form as:

Child Youth Serv Rev. 2014 January 1; 36(1): 187–194. doi:10.1016/j.chilyouth.2013.11.022.

Student and school factors associated with school suspension: A multilevel analysis of students in Victoria, Australia and Washington State, United States

A. Hemphill Sheryl¹, M. Plenty Stephanie², Todd I. Herrenkohl³, John W. Toumbourou⁴, and Richard F. Catalano⁵

¹School of Psychology, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria, 3065, Australia & Centre for Adolescent Health, Department of Paediatrics, The University of Melbourne, Flemington Road, Parkville, Victoria, Australia, sheryl.hemphill@acu.edu.au

²School of Psychology, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria, 3065, Australia & Centre for Adolescent Health, Murdoch Childrens Research Institute, Department of Paediatrics, The University of Melbourne & Royal Children's Hospital, Flemington Road, Parkville, Victoria, Australia; stephanie.plenty@acu.edu.au

³DL Partnership, School of Social Work, University of Washington, Campus Box 354900, 4101 15th Avenue NE, Seattle, WA 98105-6299, USA & Social Development Research Group, School of Social Work, University of Washington, tih@u.washington.edu

⁴Professor and Chair in Health Psychology, Prevention Sciences, School of Psychology and Centre for Mental Health and Wellbeing Research, Deakin University, Geelong Waterfront Campus, Geelong, Victoria 3217, Australia & Centre for Adolescent Health, Murdoch Childrens Research Institute, Flemington Road, Parkville, Australia: john.toumbourou@deakin.edu.au

⁵Social Development Research Group, School of Social Work, University of Washington, 9725 3rd Avenue NE, Suite 401, Seattle, WA 98115, USA, catalano@u.washington.edu

Abstract

One of the common issues schools face is how best to handle challenging student behaviors such as violent behavior, antisocial behavior, bullying, school rule violations, and interrupting other students' learning. School suspension may be used to remove students engaging in challenging behaviors from the school for a period of time. However, the act of suspending students from school may worsen rather than improve their behavior. Research shows that suspensions predict a range of student outcomes, including crime, delinquency, and drug use. It is therefore crucial to understand the factors associated with the use of school suspension, particularly in sites with different policy approaches to problem behaviors. This paper draws on data from state-

© 2013 Elsevier Ltd. All rights reserved.

Address for correspondence: Professor Sheryl Hemphill, School of Psychology, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria, 3065, Australia T: +61 3 9953 3119; F: +61 9417 2734; sheryl.hemphill@acu.edu.au.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

representative samples of 3,129 Grade 7 and 9 students in Washington State, United States and Victoria, Australia sampled in 2002. Multilevel modeling examined student and school level factors associated with student-reported school suspension. Results showed that both student (being male, previous student antisocial and violent behavior, rebelliousness, academic failure) and school (socioeconomic status of the school, aggregate measures of low school commitment) level factors were associated with school suspension and that the factors related to suspension were similar in the two states. The implications of the findings for effective school behavior management policy are that, rather than focusing only on the student, *both* student and school level factors need to be addressed to reduce the rates of school suspension.

Keywords

school suspension; school exclusion; correlates; bi-national study; school level risk factors

1. Introduction

Most schools find it difficult to manage effectively challenging student behaviors including violence, antisocial behavior, bullying, talking back to the teacher, disruptive classroom behavior, and truancy. One management tool available is exclusion from school through the use of suspension. Expulsion from school is also used although is much less common than suspension (Skiba & Rausch, 2006a, 2006b). Research on the impact of school suspension has been growing, particularly in the United Kingdom (UK) and the United States (US) where it has been documented that the rates of school suspension are increasing (American Academy of Pediatrics Committee on School Health, 2003). School suspension has been associated with negative consequences for suspended students including a higher risk of academic failure and school dropout (Arcia, 2006; Moskowitz, Schaps, Condon, Malvin, & Martin, 1979), disengagement from school (Butler, Bond, Drew, Krelle, & Seal, 2005), and failure to graduate on time (Raffaele Mendez, 2003), as well as student alienation, alcohol and drug use, and future antisocial behavior (American Academy of Pediatrics Committee on School Health, 2003; Costenbader & Markson, 1998; Hemphill, Heerde, Herrenkohl, Toumbourou, & Catalano, 2011; Hemphill et al., 2009; Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006). Countries differ in their policies and approaches to handling challenging student behaviour at school; this inter-country variation provides a valuable opportunity to examine similarities and differences in the student and school factors related to school suspension. The present study used a cross-national comparative student sample from two states (Washington State, United States and Victoria, Australia) to investigate whether there were state differences in the student and school factors related to school suspension using multilevel modeling. These two states were selected because they are similar in terms of population size and student demographic characteristics (McMorris, Hemphill, Toumbourou, Catalano, & Patton, 2007) but have different policies concerning the management of challenging student behavior.

1.1 The policy context in Washington State and Victoria

Consistent with the US policy setting, Washington State schools adopt zero tolerance approaches to managing challenging student behavior such as violence and alcohol and

other drug use (Skiba & Rausch, 2006b). Such approaches seek to reduce challenging behaviors primarily through deterrence by purporting to send a clear message to students that certain behaviors will not be tolerated and will incur serious consequences. This 'get tough' approach to challenging student behavior may have intuitive appeal as a means of deterring offenders. At the time of the current study (2002), Victorian schools emphasized ensuring that disciplinary actions do not negatively impact on students' studies and *suspension* from school was not usually implemented unless other disciplinary measures had been unsuccessful (Directorate of School Education, 1994). The emphasis was on discipline rather than punishment. The code of conduct for students in Victoria set out ways of highlighting and promoting positive student behavior, as well as detailing discipline procedures (Directorate of School Education, 1994). Despite policy differences, rates of suspensions are only slightly higher in Grades 7 and 9 Washington State males (16%) than their Victorian counterparts (11%), whereas rates for girls are 6% in both states (Hemphill et al., 2006).

Conducting studies such as the current one within two states in different countries with different school policy contexts provides greater power due to increased variation in the main variables of interest. Comparative studies of these different states can help establish cross-national similarities or differences in the student and school factors associated with school suspension.

1.2 The impact of school suspension

Concern about the use of school suspension stems from research that shows it can have serious unintended negative consequences for the suspended student across a range of domains including educational outcomes and problem behaviors (American Academy of Pediatrics Committee on School Health, 2003; Arcia, 2006; Butler et al., 2005; Costenbader & Markson, 1998; Hemphill et al., 2011; Hemphill et al., 2009; Hemphill et al., 2006; Raffaele Mendez, 2003; Skiba & Rausch, 2006b). Suspension is not effective in reducing future office referrals for problem behavior (Moffitt, 1993), and increases the likelihood of future suspension (Raffaele Mendez, 2003). In two papers, it has been shown that school suspension increases the likelihood of the student engaging in antisocial and violent behavior 12 months later, even after controlling for a comprehensive range of established influences, including factors such as academic failure and low commitment to school (Hemphill et al., 2009; Hemphill et al., 2006). In another similar paper, school suspension increased the likelihood of tobacco use at 12-month follow-up for Grade 7 but not Grade 9 students, again controlling for a range of established risk and protective factors (Hemphill et al., 2011).

Studies have also shown that the negative impacts of school suspension affect not just those who are suspended, but also others within a school. For example, suspension is associated with student and teacher reports of feeling less safe at school and a less appealing school climate (Skiba & Rausch, 2006b). Detrimental effects on the families of suspended students have also been reported, including parents' feelings of powerlessness and anger as a result of being excluded from the decision making process which affects their child (McDonald & Thomas, 2003).

1.3 Student characteristics associated with suspension

It has been consistently found that students who receive school suspension are often already disadvantaged. Suspended students are more likely to belong to an ethnic minority or are of low socioeconomic status. The majority of suspended students are male (Hemphill et al., 2009; Hemphill et al., 2006; Skiba, Michael, Nardo, & Peterson, 2002; Skiba & Rausch, 2006a, 2006b; Vavrus & Cole, 2002). In the US, it has been shown repeatedly that students of African American or Hispanic background are over-represented in school suspension rates (Skiba et al., 2002; Skiba & Rausch, 2006a, 2006b; Vavrus & Cole, 2002). Studies have shown that these higher rates of suspension, particularly for African American students in the US, are not due to differences in student behavior (Skiba & Rausch, 2006a, 2006b).

In addition to these economic and demographic characteristics, there are a range of other characteristics of students associated with school suspension. These include clinical levels of problem behavior such as antisocial behavior (Morgan D'Atrio, Northrup, La Fleur, & Spera, 1996), academic failure (Arcia, 2006; Gottfredson, Gottfredson, & Hybl, 1993), less commitment to school (Costenbader & Markson, 1998), and rebelliousness (Gottfredson & Gottfredson, 1999). Given these demographic, economic, and student factors related to suspension are also linked to mobility (i.e., how regularly the student has changed schools and how regularly the family has moved residences), the authors of the current paper expected that mobility will be related to school suspension. School suspension is the most severe consequence available to schools to handle student behavior; therefore it is expected that student violent and antisocial behavior, as well as rebelliousness will be linked with suspension.

1.4 School characteristics associated with suspension

School factors are also associated with school suspension. Many of these factors are ones over which students have no control and may be strong influences on suspension. These include the overall school suspension rate, teacher attitudes such as thinking students are incompetent to solve their problems, administrative centralization of discipline (rather than distribution of authority across staff) and the school's inability to govern fairly, firmly and consistently (Wu, Pink, Crain, & Moles, 1982). As an example of the importance of teacher behavior, research in the US has shown that 25% of teachers are responsible for 66% of office referrals (Skiba, Peterson, & Williams, 1997), often a precursor to suspension. The overall level of commitment of members of the student population to the school is also likely to be related to suspension, with schools with many students not committed to school more likely to use suspension.

To address the lack of studies of associations between *both* student and school factors and school exclusion, Theriot, Craun and Dupper (2010) examined both student *and* school factors using multilevel modeling. They found that student level predictors were poverty, previous suspensions and severity of the last suspension incident, and that a school level predictor was the school's percentage of annual suspensions relative to the student population. However, the study by Theriot et al. (2010) included a limited selection of school level variables (i.e., a measure of poverty and measures of suspension).

1.5 The current study

An understanding of the relative impact of student and school level influences is crucial to guide the development of new school policy approaches that may include a judicious reduction in the use of school suspension to reduce negative effects on students. The authors are also not aware of any other studies that have measured in detail student risk factors including student problem behavior, rebelliousness, and academic failure. This paper will examine the relative impact of these student factors and school factors (school size, school type [private or public school], number of students on free lunch/educational maintenance allowance, and aggregate scores for schools on student reports of low school commitment and supportive relationships with teachers) in Victoria, Australia and Washington State, US using multilevel modeling. Here, ethnicity is not included in the analyses because it was measured differently in the two states. Aside from measurement of ethnicity, the same methods (study design, measures and procedures) were used in each state to survey state-wide representative samples of students in Grades 5, 7 and 9 (see (McMorris et al., 2007) for details). The current study has two research aims: 1) to examine the student and school level factors related to student-reported school suspension; and 2) to investigate whether the student and school factors associated with student-reported suspension differ in the two states. The two main hypotheses in the current paper are: 1) consistent with Theriot and colleagues (2010), both student and school level factors will be associated with student-reported school suspension; and 2) similar student and school factors will be associated with suspension in Washington State and Victoria despite the policy differences in the two states.

2. Method

2.1 Participants

Data for the current study are drawn from the International Youth Development Study (IYDS), a cross-national longitudinal study of adolescents recruited in Grades 5, 7 and 9 from Victoria, Australia and Washington State, US. The IYDS uses standardized methodologies for participant recruitment, survey administration and data management. Washington State and Victoria were chosen due to their similarities on a range of population demographic and economic characteristics (McMorris et al., 2007) but differ in school policies for dealing with youth problem behavior.

Within each state, public and private schools containing Grades 5, 7 or 9 were randomly selected using a probability proportionate to grade-level size sampling procedure (Kish, 1965). A total of 152 schools in Victoria and 153 schools in Washington State agreed to participate. Within each school selected, a class was randomly chosen from one of the grade levels included in the study. Across the three age cohorts (Grades 5, 7 and 9) 74.8% of eligible Washington State parents and students consented to participate and 73.5% of eligible Victorian parents and students consented to participate. In total 5,769 students were recruited into the study; 2,885 from Washington State and 2,884 from Victoria. More details about recruitment and participation rates are described in McMorris et al. (2007).

Data for this paper are drawn from 3,899 students originally recruited in Grades 7 (Victoria $n = 984$; Washington State $n = 961$) and 9 (Victoria $n = 973$; Washington State $n = 981$).

Grade 5 students are not included in the analyses because of the low prevalence of school suspensions within this group. In each state, the Grade 7 cohort was comprised mostly of 12 and 13 year olds, and the Grade 9 cohort of 14 and 15 year olds. Males and females were equally represented in each state and age group.

2.2 Procedure

Ethics approval was gained from the University of Washington Human Subjects Review Committee and the Royal Children's Hospital Ethics in Human Research Committee. Permission to conduct research in Victorian schools was obtained from the Department of Education and Training for government (public) schools and from the Catholic Education Office for some private schools, and then from principals. In Washington State permission to conduct research in schools was obtained from the school districts containing sampled schools and then from principals.

Parents provided written consent for their child to participate in the study and students provided assent to complete the survey. To ensure seasonal equivalence, surveys were administered from May to December 2002 in Victoria and February to June 2002 in Washington State by study staff. The staff members in both states were trained in a single protocol to minimize differences that may be introduced by variations in procedures. Students completed surveys during a 50- to 60-minute class period. Students absent on the day of testing completed the survey under the supervision of trained school personnel, or in a small percentage of cases (less than 3%), over the telephone with study staff. Students in Victoria received a small pocket calculator when they returned parental consent forms to their teacher. Upon survey completion students in Washington State received \$10.

Information about student SES was gained through a telephone interview with one parent/guardian of each student. In total, 97% of Washington State parents and 96% of Victorian parents completed these interviews. Information about school characteristics was provided by asking the principals or another school administrator to complete a School Administrator Survey. This questionnaire was posted to schools. In Washington State only, each respondent received a prepaid incentive of \$2 cash. In both states, 97% of school administrators returned a survey.

2.3 Measures

The self-report measures of school suspension, student risk and protective factors, and student behavior are drawn from the Communities That Care self-report youth survey (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005; Pollard, Hawkins, & Arthur, 1999). The survey has demonstrated good reliability and cross-sectional validity with large US samples of students in Grades 6-12 (Arthur et al., 2002; Glaser et al., 2005), and has been successfully adapted for use in Victorian schools (Bond, Thomas, Toumbourou, Patton, & Catalano, 2000).

School Suspension—Students reported how many times in the past 12 months they had been suspended from school, from *Never* to *40 or more times* on an eight-point scale. Due to the skewed distribution of the data, responses were recoded as present = 1 (student had

experienced school suspension) and absent = 0 (student had not experience school suspension).

2.3.1 Student Level Risk and Protective Factors

Antisocial Behavior: Students were asked how often they had engaged in five behaviors representing antisocial behavior over the past year. These items included how often they had: carried a weapon, stolen something worth more than \$5 (US) [\$10 in 2002 in Australia], sold illegal drugs, stolen or tried to steal a motor vehicle such as a car or motorcycle and been drunk or high at high school (Cronbach's alpha = .49). Response options ranged from *Never* to *40 or more times* on an eight-point scale.

Violent Behavior was measured by the mean of two items that asked how often in the past 12 months students had a) attacked someone with the idea of seriously hurting them and b) beat up someone so badly that they probably needed to see a doctor or nurse (Cronbach's alpha = .69). Response options ranged from *Never* to *40 or more times* on an eight-point rating scale.

Due to the skewed distribution of scores on antisocial behavior, responses were recoded as present = 1 (student reports any antisocial behavior present) and absent = 0 (student did not report any antisocial behaviors). Scores on the violent behavior variable were recoded in the same way also due to a skewed distribution of scores.

Low School Commitment included seven items that asked students how often they felt positive or negative towards school, as well as how important they felt school was and how many days they had wagged (Victoria) or skipped (Washington State) school during the last four weeks (Cronbach's alpha = .75). Response options generally ranged from *never* to *almost always* on a 5-point rating scale.

Academic Failure was measured using the mean of two items; one asking students what their grades/marks were like last year, putting all of their grades together (rated on a five-point scale from very good to very poor) and another item asking students whether their school grades are better than the grades of most students in their class (rated on a four-point scale from *definitely yes* to *definitely no*) (Cronbach's alpha = .70). Responses to the first item were rescaled so that scores ranged from one to four.

Rebelliousness: Students were asked if they tend to: do the opposite of what people tell them - just to get them mad, ignore rules that get in their way and like to see how much they can get away with (Cronbach's alpha = .77). Response options ranged from definitely no to definitely yes on a 4-point rating scale.

Transitions and Mobility: Students were asked whether they had changed homes and also schools in the past year. They were also asked how many times they had changed homes and schools (including changing from elementary to middle and middle to high school) since kindergarten (Cronbach's alpha = .61).

Demographic Factors: Student-reported demographic factors were age and gender. Indicators of family socio-demographics included family welfare status and parents' low educational attainment. For *Family Welfare Status*, Washington State parents were asked if anyone in their household received any government assistance such as food stamps, TANF (formerly AFDC), unemployment assistance or free or reduced price lunches. In this item, TANF refers to Temporary Assistance for Needy Families and AFDC refers to Aid to Families with Dependent Children. Victorian parents were asked if they or their partner had a health care concession card. For both states, these welfare benefits are provided by the government to assist low-income families. This variable was scored so that values of 1 = family on welfare, and values of 0 = family not on welfare. For *low parent education*, parents listed the mother and/or father's highest level of education as less than secondary, completed secondary or completed post secondary. The highest level of education reported was used as an indicator of caregiver education. Responses indicating less than secondary school were recoded as 1 and responses showing completion of secondary school or above were assigned a value of 0.

2.3.2 School Level Factors—These measures included the school type, school size and school SES as reported by school administrators. School type was categorized as either public or other (including independent, religious and alternative schools) and school size was the number of students enrolled at the school. School SES was measured differently in each state. For Washington State schools, school SES was measured by the proportion of students who received reduced-price or free school lunches. Children from families with incomes below 130% of the Federal poverty level are eligible for free lunches and families with incomes below 185% of the Federal poverty level are eligible for reduce price meals (U. S. Department of Agriculture, 2008). In Victoria, the measure of school SES was the proportion of students receiving an Educational Maintenance Allowance (EMA). This benefit is provided by the government to low-income families to assist with the costs associated with their children's education.

Also measured at the school level were aggregate classroom scores for students' mean ratings of low school commitment and supportive teacher relationships. *Low school commitment* was measured as described under student level factors above. *Supportive teacher relationships* asked students if their school has lots of chances: for students to help decide things like class activities and rules, for students to get involved in sports, clubs and other school activities outside of class, for students to talk with a teacher one-on-one, for the student to be part of class discussions or activities, and if teachers ask the student to work on special classroom projects (Cronbach's alpha = .56). Response options were on a four-point scale ranging from *definitely no* to *definitely yes*.

2.3.3 Student Honesty—Items were included to assess whether or not students answered the survey questions honestly to eliminate from the data set students with responses of questionable validity (Arthur et al., 2002); (Moskowitz et al., 1979). This approach was adopted because it was considered less obvious to students and in keeping with the overall content of the survey than including a lie scale. Students were categorized as dishonest if they reported any of the following: (a) that they were *not honest at all* when filling out the

survey; (b) that they had used a fake drug in their lifetime or in the past 30 days; or (c) that they had used illicit drugs on more than 120 occasions in the past 30 days. A single, dichotomous measure of honesty was calculated using these items.

2.3.4 Analysis—Few students (23) met the criteria for dishonesty. Results presented here include only students who were “honest”. The final sample included 3,129 students from 172 schools in Grades 7 (Victoria $n = 764$; Washington State $n = 817$) and 9 (Victoria $n = 706$; Washington State $n = 842$) who had complete data for all questions analyzed.

Data analyses were conducted in Stata/IC for Windows 11 (StataCorp, 2009). Firstly, unadjusted chi-square analyses were conducted to compare the rates of school suspension in the two states. Then mean scores on risk and protective factors in Washington State and Victoria were compared using independent samples t -tests for continuous measures and chi-square tests for categorical variables. A Bonferroni adjustment was used ($p < .005$) to reduce the likelihood of type I error when making multiple comparisons. Correlations between analyzed variables were checked to ensure there was not multi-collinearity, especially potentially worrisome for the individual and school level measures of low school commitment.

Next, a series of unadjusted logistic regression analyses were conducted to examine the associations between risk and protective factors at the individual and school level with school suspension. This was done using a robust cluster variance estimator for school membership. The intraclass correlation (ICC) for schools was significant (.18; 95CI: 0.12 – 0.26), suggesting the correlation for suspension was greater within schools than between schools. As a result, multilevel mixed-effects logistic regression was used for the final analysis.

The effect of interactions between gender and each of antisocial behavior, violent behavior and state were examined. To examine state differences in predictors of school suspension, interactions between state and all other predicting variables were also examined. Finally, to examine the influence of family socioeconomic status on suspensions risk and protective factors, interactions between family welfare status and low parent education with all other predictor variables were also examined. Each continuous risk factor was standardized, then all predictor variables (0,1) were multiplied by gender, state and welfare (coded 0 and 1). The multivariate logistic regression analyses described above were repeated using each of these interaction terms. The interaction terms failed to show statistically significant associations in the full model. Therefore, the multivariate models presented in this paper are those which demonstrate a more parsimonious model without interaction terms and the results of analyses for the combined Washington State-Victorian sample are reported.

3. Results

3.1 Rates of School Suspensions

Table 1 shows the proportion of students experiencing school suspension by state and gender. Overall, Washington State students reported slightly higher rates of school suspension than Victorian students. Examination of school suspension rates by gender

shows that Washington State males showed higher rates of suspension than Victorian males, whereas there were no state differences in rates of suspension for females.

3.2 Levels of Risk and Protective Factors in Victoria and Washington State

Table 2 shows the mean scores on risk and protective factors for each state. Compared to Victorian students, those in Washington State reported more transitions/mobility and more antisocial behavior. In relation to school level factors, a greater proportion of the Washington State schools sampled were public schools compared to the Victorian schools. There was no statistically significant difference between the states in the aggregate classroom measures of low school commitment and supportive teacher relationships.

3.3 Unadjusted Associations between Student and School Factors and School Suspension

The results of the unadjusted logistic regressions are shown in Table 3. At the bivariate level, all variables except state, age and school size were statistically significant predictors of school suspension. Of the student level factors, being male increased the likelihood of having experienced school suspension during the last 12 months, as did living in a family receiving welfare and parents' low education. Higher scores on antisocial behavior, violent behavior, transitions/mobility, low school commitment, rebelliousness, and academic failure also increased the likelihood of school suspension. For school level factors, attending a school with lower SES as well as attending a public school, a higher aggregate classroom score for low school commitment, and a lower aggregate classroom score for supportive teacher relationships were also associated with an increased likelihood of school suspension.

3.4 Adjusted Association of Student and School Factors with School Suspension

Next a series of multilevel mixed-effects logistic regression analyses were performed to examine the adjusted associations between school suspension and factors at the student and school level. The school membership variable was specified as a random effect.

As shown in Table 4, additional variables were controlled for in each model. Model 1 examined the effect of covariates including sex, state and age. Model 2 added the student level factors. Model 3 included the school level factors, as well as the covariates. Model 4 was a full model with all covariates, student and school level factors included in the analysis.

As shown in Model 2, most individual level factors remained statistically significantly associated with school suspension when included in the same model and controlling for age, gender and state. Model 3 shows that at the school level, low school SES and aggregate low school commitment were associated with suspension when school level factors were included in the same model, as well as the covariates. In Model 4, being male, as well as higher rates of antisocial behavior, violent behavior, rebelliousness and academic failure was associated with a greater likelihood of school suspension when controlling for school level factors. In this model, school SES and aggregate low school commitment were again the school level factors associated with a greater likelihood of suspension. When compared to the null model, model three reduced the most variance between the school clusters. The model with student level factors (Model 2) explained 34% of the variance between schools

$((0.74-0.49)/0.74)$, while the model with school level factors (Model 3) explained 73% $((0.74-0.20)/0.74)$.

4. Discussion

The current study is novel in two ways; first, examining a range of *both* school and student level factors related to school suspension using multilevel modeling in the one study, and second, investigating whether the same school and student level factors are related to suspension in two states with different school policies for challenging student behavior, Washington State, US and Victoria, Australia. Consistent with the first hypothesis, both student and school level factors were related to suspension. Student factors included being male, student antisocial and violent behavior, rebelliousness, and academic failure. At the school level, aggregate classroom scores on low school commitment, as well as school SES were related to school suspension. School SES itself explained over 35.5% of the variance when added to the model. Consistent with our second hypothesis, the analyses including interactions did not show differences in the student and school level factors related to school suspension in Washington State and Victoria, uniquely demonstrating comparability in the factors related to suspension in these two states despite different policies.

Most previous studies have examined the student factors associated with suspension separately from school factors and have not included such a comprehensive list of student and school factors to examine the relative importance of each in associations with suspension. To the authors' knowledge, only one other research project has analyzed both student and school factors in the one study using multilevel modeling (Theriot, Craun, & Dupper, 2010). Consistent with Theriot et al. (2010), both student and school level factors were related to school suspension in the current study. Even though the current study included a number of different student factors in the analyses, the student factors identified were consistent with previous research that examined fewer student factors at once. Being male was associated with an increased likelihood of being suspended (Hemphill et al., 2009; Hemphill et al., 2006; Skiba et al., 2002; Skiba & Rausch, 2006a, 2006b; Vavrus & Cole, 2002). In the current paper, student antisocial and violent behavior were associated with a greater likelihood of being suspended from school, consistent with previous research showing links between suspensions and a range of problem behaviors (American Academy of Pediatrics Committee on School Health, 2003; Butler et al., 2005; Hemphill et al., 2011; Hemphill et al., 2009; Hemphill et al., 2006; Morgan D'Atrio et al., 1996; Raffaele Mendez, 2003; Skiba & Rausch, 2006b). However, other studies have also shown that student behavior is not necessarily the strongest predictor of school suspension (Wu et al., 1982). The extent to which suspension is used for the most serious behavioral transgressions such as violent behavior remains an important question for future studies. Given the potential negative effects of school suspension on student outcomes (American Academy of Pediatrics Committee on School Health, 2003; Arcia, 2006; Butler et al., 2005; Costenbader & Markson, 1998; Hemphill et al., 2011; Hemphill et al., 2009; Hemphill et al., 2006; Raffaele Mendez, 2003; Skiba & Rausch, 2006b), it is important that the use of suspension is reserved for behaviors that may cause harm to other students, staff or the student him/herself.

Although multiple student factors were included in the analyses of the current paper, it is not surprising based on prior research that student rebelliousness was still associated with school suspension (Gottfredson & Gottfredson, 1999). Consistent with other studies, this paper showed that academic failure is associated with school suspension (Arcia, 2006; Gottfredson et al., 1993) even when other student and school factors were included. However, given the cross-sectional nature of the data analyzed in this paper, it is not possible to determine the temporal ordering of the association between suspension and academic failure (whether school suspension preceded academic failure or vice versa).

Reflecting the climate of the school, aggregate classroom measures of low school commitment were linked with school suspension. Consistent with expectations and prior research examining the features of schools (Wu et al., 1982), those characterized by low levels of student commitment had higher suspension rates. These findings underline the importance of promoting a positive atmosphere in schools to reduce the need to use school suspension in response to challenging student behaviors.

Rarely have the factors associated with school suspension been examined in two different countries, a unique feature of the current study. The results of this study showed that the associations between student and school level factors and school suspension were similar in the two states, Washington State and Victoria. This occurred despite the differences in policies for managing challenging student behaviors and suspension rates in the two states. The same methods of data collection and data management were used in both states to ensure results could not be explained by method differences. Even though the policy approaches and rates of suspension in the two states differ, finding similarities in the student and school factors related to suspension is consistent with the commonalities between the two states in terms of the demographic characteristics (McMorris et al., 2007) and also that both states are located in Western countries. In these two countries, the sorts of behaviors (e.g., violent behavior, antisocial behavior, misbehavior) leading to school suspension are generally similar (New South Wales Department of Education and Training, 2008; Rausch & Skiba, 2004), hence it is not surprising to find these same behaviors associated with student-reported suspension in this study. In general, cultural expectations are also similar in terms of which behaviors are considered problematic at school and in the community (e.g., behaviors that may lead to trouble with the law). Likewise, there are comparable challenges facing youth today in these two states such as the gap between biological and social maturity (Moffitt, 1993). Future exploration of the relative importance of student and school level factors in associations with school suspension in a range of countries with different policy contexts and different behavioral expectations of young people will contribute to our knowledge regarding whether the same factors predict cross culturally and in different policy context.

This study of student and school level factors associated with school suspension has a number of strengths. First, this study is one of the first to compare associations between student and school factors and school suspension in two different countries and to ensure that the two sites have used the same recruitment, survey, and follow-up procedures, as well as the same data management practices (McMorris et al., 2007). The use of identical procedures ensures that the results are less likely to be an artifact of the design and methods

of the study. Second, this study achieved good response rates for participation, it includes approximately equal numbers of male and female students in each state, and it has achieved a good sized sample across two different cohorts spanning 12 - 15 years of age. Third, the two states included in this study were chosen for their similarities on important socio-demographic characteristics and for their differences in policy around challenging student behaviors (McMorris et al., 2007).

Some limitations of the current study should also be noted. The measure of school suspension is self-reported. However, the rates found for Victorian students are similar to those in other states in Australia where official statistics are reported to the public (Queensland Department of Education, 2012). The measure of school suspension in this study did also not explicitly use the terms “external suspension” or “out-of-school suspension” but rather asked if students had been “suspended from school”. There is a small possibility that some students who responded affirmatively to this item may have received an “internal suspension” (students remain at school but are removed from class). The student and school factors related to internal versus external suspension may differ. However, subsequent qualitative interviews with a subset of students suspended from school revealed students did receive an external suspension. Later IYDS surveys of the Victorian Grade 5 student cohort do differentiate between internal and external suspension and will provide an opportunity to replicate these findings with this cohort. In addition, in the current study the antisocial behavior scale has a relatively low Cronbach’s alpha, a measure of the internal consistency of the scale. Future research could explore how to improve the measure of antisocial behavior for use in cross-national samples.

The current study may be criticized for relying on student self-reported data. However, the use of self-report measures in studies of pre-adolescents and adolescents is considered a reliable source of data for behavior problems such as antisocial behavior (Huizinga & Elliott, 1986; Jolliffe et al., 2003; Rutter & Giller, 1983) which may not be visible to adults.

The analyses reported here are cross-sectional hence it is not possible to make attributions of causality from these data. A stronger test of the links between student and school level variables and school suspension would be to replicate these findings using longitudinal data.

4.1 Conclusion

This current study builds on existing literature to show in the one project that both school and student level factors are linked to school suspension and that similar school and student factors are linked to suspension in two states with different policies for handling challenging student behavior. Further research is needed to compare factors related to suspension in countries with different school policies and expectations for student behavior. Importantly in this study, school level factors included aggregate classroom measures of low school commitment (reflective of school climate), as well as school SES. Student factors included being male, student antisocial and violent behavior, rebelliousness and academic failure. The results of this research underline the importance of addressing both student factors and school level factors to reduce the rate of school suspension (and the behaviors that lead to a student being suspended from school). Government policies that provide better resources

and more highly skilled teachers to disadvantaged schools may be crucial to improve educational outcomes.

Acknowledgments

The authors are grateful for the financial support of the National Institute on Drug Abuse (R01-DA012140-05) for the International Youth Development Study. The data analyses and writing of this paper is supported by funding from two Australian Research Council Discovery Projects (DPO663371 and DPO877359). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Drug Abuse or the National Institutes of Health. The funding sources did not have any involvement in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. The authors wish to express their appreciation and thanks to project staff and participants for their valuable contribution to the project.

References

- American Academy of Pediatrics Committee on School Health. Out-of-school suspension and expulsion. *Pediatrics*. 2003; 112:1206–1209. [PubMed: 14595070]
- Arcia E. Achievement and enrollment status of suspended students: Outcomes in a large, multicultural school district. *Education and Urban Society*. 2006; 38:359–369.
- Arthur MW, Hawkins JD, Pollard JA, Catalano RF, Baglioni AJ. Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The Communities that Care Youth Survey. *Evaluation Review*. 2002; 26:575–601. [PubMed: 12465571]
- Bond, L.; Thomas, L.; Toumbourou, J.; Patton, GC.; Catalano, R. Improving the lives of Young Victorians in Our Community: A survey of risk and protective factors. Centre for Adolescent Health. Report prepared for Community Care Division, Department of Human Services; Melbourne, Australia: 2000.
- Butler, H.; Bond, L.; Drew, S.; Krelle, A.; Seal, I. Doing It Differently: improving young people's engagement with school. Brotherhood of St Laurence; Melbourne, Australia: 2005.
- Costenbader V, Markson S. School suspension: A study with secondary school students. *Journal of School Psychology*. 1998; 36:59–82.
- Directorate of School Education. Guidelines for developing the student code of conduct. Directorate of School Education; Melbourne, Victoria: 1994.
- Glaser RR, Van Horn ML, Arthur MW, Hawkins JD, Catalano RF. Measurement properties of the Communities That Care Youth Survey across demographic groups. *Journal of Quantitative Criminology*. 2005; 21:73–102.
- Gottfredson DC, Gottfredson GD, Hybl LG. Managing adolescent behaviour a multiyear, multischool study. *American Education Research Journal*. 1993; 31(1):179–215.
- Gottfredson, GD.; Gottfredson, DC. Development and application of theoretical measures for evaluating drug and delinquency prevention programs: Technical manual for research editions of What About You (WAY). Gottfredson Associates; Ellicott City, MD: 1999.
- Hemphill SA, Heerde JA, Herrenkohl TI, Toumbourou JW, Catalano RF. The impact of school suspension on student tobacco use: A longitudinal study in Victoria, Australia and Washington State, United States. *Health Education and Behavior*. 2011 doi: 10.1177/1090198111406724.
- Hemphill SA, Smith R, Toumbourou JW, Herrenkohl TI, Catalano RC, McMorris BJ. Modifiable determinants of youth violence in Australia and the United States: A longitudinal study. *Australian and New Zealand Journal of Criminology*. 2009; 42:289–309. [PubMed: 20204170]
- Hemphill SA, Toumbourou JW, Herrenkohl TI, McMorris BJ, Catalano RF. The effect of school suspensions and arrests on subsequent adolescent antisocial behavior in Australia and the United States. *Journal of Adolescent Health*. 2006; 39:736–744. [PubMed: 17046511]
- Huizinga D, Elliott DS. Reassessing the reliability and validity of self-report delinquency measures. *Journal of Quantitative Criminology*. 1986; 2:293–327.
- Jolliffe D, Farrington DP, Hawkins JD, Catalano RF, Hill KG, Kosterman R. Predictive, concurrent, prospective and retrospective validity of self-reported delinquency. *Criminal Behaviour and Mental Health*. 2003; 13:179–197. [PubMed: 14654870]

- Kish, L. Survey sampling. John Wiley & Sons; New York: 1965.
- McDonald T, Thomas G. Parents' reflections on their children being excluded. *Emotional and Behavioral Difficulties*. 2003; 8:108–119.
- McMorris BJ, Hemphill SA, Toumbourou JW, Catalano RC, Patton GC. Prevalence of substance use and delinquent behavior in adolescents from Victoria, Australia and Washington, USA. *Health Education and Behavior*. 2007; 334:634–650. [PubMed: 16740513]
- Moffitt TE. Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Bulletin*. 1993; 100:674–701.
- Morgan D' Atrio C, Northrup J, La Fleur L, Spera S. Toward prescriptive alternatives to suspensions: A preliminary evaluation. *Behavioral Disorders*. 1996; 21:190–200.
- Moskowitz, JM.; Schaps, E.; Condon, JW.; Malvin, JH.; Martin, GR. The Napa Project— 01 Year Annual Drug Survey. Pacific Institute for Research and Evaluation; Napa, CA: 1979.
- New South Wales Department of Education and Training. Long suspension and expulsion summary 2008. New South Wales Department of Education and Training; Sydney, Australia: 2008.
- Pollard JA, Hawkins JD, Arthur MW. Risk and protection: Are both necessary to understand diverse behavioral outcomes? *Social Work Research*. 1999; 23:145–158.
- Queensland Department of Education, T. a. E. Reports and statistics Queensland State Schools: School disciplinary absences by region (Version 4). May 7.2012 2012. from <http://education.qld.gov.au/schools/statistics/pdf/sda-by-region.pdf>.
- Raffaele Mendez LM. Predictors of suspension and negative school outcomes: A longitudinal investigation. *New Directions for Youth Development*. 2003; 99:17–33. [PubMed: 14635432]
- Rausch, MK.; Skiba, RJ. Unplanned outcomes: Suspensions and expulsions in Indiana. Center for Evaluation and Education Policy; Bloomington, IN: 2004.
- Rutter, M.; Giller, H. Juvenile delinquency: Trends and perspectives. Penguin; Harmondsworth: 1983.
- Skiba RJ, Michael RS, Nardo AC, Peterson R. The color of discipline: Sources of racial and gender disproportionality in school punishment. *Urban Review*. 2002; 34:317–342.
- Skiba RJ, Peterson RL, Williams T. Office referrals and suspensions: Disciplinary intervention in middle schools. *Education and Treatment of Children*. 1997; 20:295–315.
- Skiba, RJ.; Rausch, MK. School disciplinary systems: Alternatives to suspension and expulsion. In: Bear, GG.; Minke, KM., editors. *Children's needs III: Development, prevention, and intervention*. National Association of School Psychologists; Bethesda, MD: 2006a. p. 87-102.
- Skiba, RJ.; Rausch, MK. Zero tolerance, suspension, and expulsion: Questions of equity and effectiveness. In: Evertson, CM.; Weinstein, CS., editors. *Handbook of classroom management: Research, practice, and contemporary issues*. Lawrence Erlbaum Associates; Mahwah, New Jersey: 2006b. p. 1063-1089.
- StataCorp. Stata Statistical Software, Release 11. StataCorp LP; College Station, TX: 2009.
- Theriot MT, Craun SW, Dupper DR. Multilevel evaluation of factors predicting school exclusion among middle and high school students. *Children and Youth Services Review*. 2010; 32:13–19.
- U. S. Department of Agriculture. Eligibility Manual for School Meals: Federal Policy for Determining and Verifying Eligibility. Washington, D. C.: 2008.
- Vavrus F, Cole K. "I didn't do nothin'": The discursive construction of school suspension. *The Urban Review*. 2002; 34:87–111.
- Wu SC, Pink WT, Crain RL, Moles O. Student suspension: A critical reappraisal. *The Urban Review*. 1982; 14:245–303.

Highlights

- Both student level *and* school level factors were related to school suspension
- Student factors were student behavior, rebelliousness, and academic failure
- School factors were school socioeconomic status and aggregate low school commitment
- The findings were similar in Victoria, Australia and Washington State, USA
- To reduce suspension rates, both student and school factors need to be targeted

Table 1

Percentage (%) of sample experiencing school suspension in Victoria and Washington State

	Male			Female		
	VIC (n = 83)	WA (n = 137)	χ^2	VIC (n = 43)	WA (n = 47)	χ^2
School suspension	11.87	16.42	6.32*	5.53	5.71	.01

Note. VIC = Victoria; WA = Washington State.

χ^2 = chi-square test comparing states within gender,

**
 $p < .01$

Table 2

Means and standard deviations and rates of risk and protective factors in Victoria and Washington State

	Victoria Mean (SD)	Washington State Mean (SD)
Student level factors		
Low school commitment	2.26 (.62)	2.24 (.59)
Academic failure	1.99 (.64)	2.04 (.71)
Rebelliousness	1.92 (.63)	1.86 (.63)
Transitions/mobility	1.97 (.63)	2.18 (.69)*
Welfare	28.75%	28.06%
Parents' low education	29.8%*	7.6%
Antisocial behavior	20.71%	25.59%*
Violent behavior	7.29%	7.97%
School level factors		
School type (public)	64.6% (.63)	91.11% (.29)*
Low school SES	27.11 (19.35)	33.93 (24.64)
School size	884.76 (352.76)	888.62 (503.55)
Low School Commitment	2.28 (.25)	2.24 (.23)
Supportive teacher relationships	2.98 (.17)	3.03 (.15)

* *Note.* $p < .005$ for between state comparison, Bonferroni adjustment.

Table 3

Unadjusted logistic regression analyses of associations between school suspension and student and school level variables

Student level factors	Odds ratio (95% CI)
Male	2.81 (2.15-3.66) ***
State (Washington State)	1.33 (.92-1.92)
Age	1.16 (.99-1.35)
Welfare	2.09 (1.61-2.72) ***
Parents' low education	1.67 (1.23-2.26) **
Antisocial behavior	5.94 (4.65-7.58) ***
Violent behavior	8.14 (6.08-10.88) ***
Transitions/mobility	1.42 (1.15-1.75) ***
Low school commitment	2.85 (2.35-3.46) ***
Rebelliousness	2.79 (2.28-3.42) ***
Academic failure	3.59 (3.01-4.21) ***
<u>School level factors</u>	
Low school SES	1.02 (1.02-1.03) ***
School type (public)	3.34 (1.94-5.77) ***
School size	1.00 (.99-1.00)
Low School Commitment	6.48 (2.78-15.13) ***
Supportive teacher relationships	0.10 (.04-.27) ***

* *Note.* $p < .05$;

** $p < .01$;

*** $p < .001$

Summary of multilevel mixed-effects logistic regression analyses for associations between school suspension and student and school level factors

Table 4

Covariates	Null	Model 1	Model 2	Model 3	Model 4
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Male	2.89 (2.21-3.80) ***	2.32 (1.72-3.13) ***	2.74 (2.10-3.58) ***	2.25 (1.67-3.02) ***	
<u>Student level factors</u>					
Welfare		1.50 (1.11-2.01) **		1.34 (1.00-1.80)	
Parents' low ed.		1.51 (1.05-2.17) *		1.29 (.90-1.84)	
Antisocial behavior		2.56 (1.89-3.46) ***		2.50 (1.85-3.38) ***	
Violent behavior		3.00 (2.08-4.32) ***		2.87 (2.00-4.12) ***	
Transitions/mobility		1.05 (.87-1.32)		1.04 (.85-1.28)	
Low school commitment		1.23 (.86-1.30)		1.20 (.92-1.55)	
Rebelliousness		1.57 (1.23-2.00) ***		1.48 (1.16-1.89) **	
Academic failure		2.31 (1.84-2.90) ***		2.30 (1.84-2.88) ***	
<u>School level factors</u>					
Low school SES			1.03 (1.02-1.04) ***	1.02 (1.01-1.03) ***	
School type (other)			1.40 (.81-2.43)	1.56 (.86-2.81)	
Low school commitment			7.31 (3.00-17.84) ***	2.88 (1.05-7.88) *	
Teacher supportive relationships			.51 (.15-1.80)	.58 (.15-2.30)	
σ^2 Between	.74	.74	.49	.20	.22
<i>df</i>	2	5	13	10	18
-2LL	-973.16	-936.53	-762.68	-896.73	-741.37
AIC	1950.32	1883.06	1551.36	1813.45	1518.74
BIC	1962.41	1913.3	1629.68	1873.93	1627.59

Note. OR = odds ratio; CI = confidence interval; σ^2 = population variance; *df* = degrees of freedom; -2LL = likelihood ratio; AIC = Akaike's information criterion; BIC = Bayesian information criterion.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

State, age, and school size were included in the analyses but are not presented in Table 4 because they showed consistently statistically non-significant associations with school suspension.