

Family, motivational and behavioural links to Indigenous Australian adolescents' achievement.

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The role of parenting variables, including strictness/supervision and warmth and involvement, were examined in relation to school achievement and cognitive and behavioural characteristics among an urban sample of 112 Indigenous Australian adolescents. Structural equation modelling procedures tested the predictive role of parenting variables for mastery motivation, self-efficacy, behaviour problems and achievement outcomes while controlling for SES variables. Previous findings concerning the mediation role played by mastery motivation and by self-efficacy were replicated for urban Indigenous adolescents and synthesized into a unified model. Results support the role of self-efficacy in mediating parenting variables and mastery motivation upon academic outcomes. Parenting characterized by high levels of warmth, involvement and strictness/supervision was found to be significantly linked to higher achievement outcomes and lower levels of problem behaviours while the converse was indicated for parenting low in these dimensions. The study suggests that parenting variables protect against problem behaviours and promote academic resilience in urban Indigenous adolescents.

Introduction

A sample of urban, regional Indigenous Australian adolescents were selected for study because they are most likely of all urban Australian adolescents to drop out of school (McMillan & Marks, 2003; Batten & Russell, 1995). They are an understudied group, have the lowest Australian school retention rates and often live in circumstances characterized by low socioeconomic status which further exacerbates the risk of dropping out of school (McDonald, 2006). Retention rates, reporting total numbers of students who stay on at school from Year 8 through to Year 12, show that for 2004 the overall retention rate in Australia was 75.7% but for Indigenous students it was only 39.5% (AusStats, 2004).

Academic achievement, problem behaviour and socioeconomic status (SES)

The most consistent predictor for dropping out of school has been found to be low academic achievement (for example, Battin-Pearson, Newcomb, Abbott, Hill, Catalano & Hawkins, 2000; Bradley, 1992). "Not only are low achievers more likely to leave school early, they are among the first to do so" (McMillan & Marks, 2003, p.86). An examination of Indigenous students' literacy and numeracy compared to other Australian students shows that they consistently attain lower levels (Commission for children and young people, (Qld), 2004). Another factor that has been linked with dropping out of school and poor academic achievement is disruptive behaviour (Battin-Pearson et al., 2000, Hinshaw, 1992). Diverse studies have shown that disruptive behaviour constitutes a strong predictor of academic difficulties and, ultimately, premature departure from school (Alexander, Entwisle, & Horsey, 1997; Ensminger, Lamkin, & Jacobson, 1996; Rumberger, 1995; Vitaro, Larocque, Janosz, & Tremblay, 2001). The predictive link between disruptive behaviour and later school failure holds even when children's intellectual capabilities or family socioeconomic status are taken into account (Rumberger, 1995; Vitaro et al., 2001).

Disruptive behaviours can be grouped into two conceptual categories: (a) aggressiveness, antisocial behaviour, and opposition (i.e., the social aspect of disruptiveness), and (b) hyperactivity, inattention, and impulsivity (i.e., the cognitive aspect of disruptiveness). These

behaviours often lead to suspensions and, for repeat offenders, to expulsions. The link between disruptive behaviour problems and dropping out of school may thus be driven either by the cognitive or the social component of disruptive behaviours, or by both, in an additive or interactive mode (O'Neil, Welsh, Parke, Wang, & Strand, 1997; Vitaro et al., 2001; Woodward & Fergusson, 2000).

Disruptive behaviour and low academic achievement have both been repeatedly linked with lower socioeconomic (SES) contexts (e.g., Casanova, Cruz Garcia-Linares, de la Torre, & de la Villa Caprio, 2005; Jimerson, Egeland, Sroufe, & Carlson, 2000; Duncan, Brooks-Gunn, & Klebanov, 1994; McLoyd, 1998). Poverty has often been cited as a predictor of academic risk (e.g., Friedman & Chase-Landsdale, 2002, Duncan & Brooks-Gunn, 1997). Indigenous families in Australia represent some of the most disadvantaged in the country. For example, in 1996, 70% of the non-Indigenous Australian population owned or were purchasing their own home, compared with only 26% of Indigenous families, while three times as many (13%) urban Indigenous households lacked enough bedrooms to meet their needs, compared to other Australian households (Commission for children and young people, (Qld), 2004).

Not only does low SES directly predict academic failure and early dropout (Newcomb et al., 2002; Jimerson et al., 2000), the economic stress created by low SES disrupts effective socialization by parents, decreasing involved parenting, increasing negative and conflicted family interactions, and constraining parents' ability to provide cognitively stimulating home environments (Conger *et al.*, 1993; Eamon, 2002; Guo and Harris, 2000; Gutman and Eccles, 1999). Families of low SES show different patterns of parent-child interaction when compared to families of high SES (Chen & Berdan, 2006) and are more likely to be authoritarian than other families (McLoyd, 1990). Brody and Flor (1998) contended that the physical constraints and dangers that are sometimes associated with poverty lead parents of lower SES to be more authoritarian with their children in an effort to protect them from harm.

Physical danger may not be the only factor associated with poverty that has the potential to influence parenting. Jackson, Brooks-Gunn, Huang, and Glassman (2000) reported that financial strain increases the risk of depression, which in turn undermines the quality of parenting. Similarly, McLoyd (1990) argued that poverty increases the probability of parents' psychological distress, which in turn affects parenting behaviour. These findings were supported by longitudinal research showing that negative parent-adolescent relationships mediate the effects of financial strain upon adolescent academic achievement for both European and African American families (Gutman & Eccles, 1999). The extent to which this might apply to Australian Indigenous families has not been fully explored.

Many Indigenous children are exposed to other kinds of developmental risks in addition to poverty. Within the home, those risks include being born to teenage mothers, being reared in families speaking English as a second or third language and living in single-mother or extended family households. Evidence of stress upon Indigenous families may be indicated by the increases seen in foster care arrangements for Indigenous children with the national rate doubling between 1998 and 2003, showing Indigenous children placed in care rose from 2500 to 5000 (Spence, 2004). Outside the home risks include residing in disadvantaged neighborhoods characterized by low social support and high crime (Commission for children and young people, (Qld), 2004).

Parenting

Living in low SES settings predicts lower school success. Nevertheless, there are students who are resilient and succeed academically despite living in single-parent families with low incomes and, conversely, high SES homes do not guarantee successful academic trajectories for their children (Jacobs & Harvey 2005). Empirical work suggests that parenting is highly instrumental in either promoting healthy adjustment or behaviour problems in children.

Christenson, Hurley, Sheridan and Fenstermacher (1997) assert that variables related to parental attitudes and behaviour are more important than SES in predicting academic achievement. In regard to Australian Indigenous outcomes, parenting factors appear to play important roles. McInerney (1989) reported that Indigenous parents cited poor parenting, apathy at home, poor parental encouragement, bad home life and little parental understanding of the value of school as causes of Indigenous children's low school success and high drop-out rates. In later research, McInerney (1991) found that urban Indigenous adolescents were more influenced by parental factors in their decision to pursue their studies than non-Indigenous adolescents. Moreover, parental factors discriminated between those Indigenous students who stayed on at schools and those who dropped out. Supporting McInerney's claims, Day (1994) found that Aboriginal students' retention and academic success are closely related to the support and encouragement they receive from their families.

Parenting behaviours affect both the academic and psychosocial development of children (Eamon, 2005; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). Studies over several decades have shown that parenting characterized by high levels of parental warmth, involvement and monitoring and supervision, labelled authoritative parenting (Baumrind, 1971), is associated with positive psychological and academic competence of offspring whereas authoritarian parenting, involving high levels of monitoring and supervision but low levels of warmth and involvement, and neglectful parenting, low in all dimensions of parenting, are associated with negative outcomes in these domains (Maccoby & Martin, 1983; Steinberg, Mounts, Lamborn, & Dornbusch, 1991). Steinberg et al. (1994) provided evidence implicating neglectful parenting in adolescent delinquency, poor academic performance, and reduced orientation to school. Similarly, neglect has been shown to be an important contributor to school disciplinary difficulties, especially in the junior high school years (e.g., Eckenrode et al., 1993; Kendall-Tackett and Eckenrode, 1996).

Given that parenting exerts strong socializing influences upon children and adolescents it is reasonable to expect that parenting behaviour will influence their development of cognitive and social agency, in other words, their perceived self-efficacy. Both early and more recent research has validated this notion (Baumrind, 1971; Purdie, Carroll & Roche, 2004).

Self-efficacy

According to social cognitive theory, the development of self-efficacy is related to independent personal, environmental, and behavioural factors acting in concert (Bandura, 1986). Judgment of one's efficacy has been shown to exert a strong influence over development and adaptation by shaping goals and the level of motivation in both social and academic contexts. Research in Australia has demonstrated a strong path from parenting behaviours to both academic and non-academic self-efficacy in adolescents (Purdie, Carroll & Roche, 2004). The contribution of self-efficacy is verified in numerous experiments in which it has been shown to facilitate academic engagement and pursuits (Bandura & Locke, 2003). Adolescents who doubt their self efficacy are more likely to lower their academic goals, are more prone to feelings of futility and depression and are more likely to engage in antisocial and problem behaviours (Bandura, 1996).

The causal influence of self-efficacy upon academic performance has been repeatedly demonstrated in experimental studies showing that increases in self-efficacy were accompanied by increases in performance (e.g., Schunk, 1982a, 1982b, 1983a, 1983b, 1984a, 1984b, 1984c; Schunk & Swartz, 1993) even when general mental ability was controlled (Pajares & Kranzler, 1995). Self-efficacy is significantly correlated across school subject areas (Borg, 2001), is thought to be enhanced by a child's mastery experiences and has been found to be related to a mastery motivation (Pajares, 2002; Borg, 2001). Moreover, in 2005 Bouffard, Bouchard, Goulet, Denoncourt, and Couture showed that, in college students, self-efficacy mediates mastery motivation to achievement outcomes.

Mastery motivation

Mastery motivation orients the student toward learning and understanding, developing new skills, and a focus on self-improvement using self-referenced standards. Mastery motivation has generally been associated with a host of positive cognitive, affective, and behavioural outcomes (Pintrich, 2003). Several investigators and theorists have argued that parenting behaviours and parent-child relationships have a significant effect on children's mastery goal motivation (e.g., Baumrind, 1971; Deci & Ryan, 1985; Steinberg et al., 1994). Baumrind (1971) reported that when parents challenge their children to meet age-appropriate demands and support their efforts with warmth and nurture, their children have opportunities to succeed and to learn to cope with failure. These experiences may lead to the development of positive perceptions of control and mastery motivation. A path from parenting practices to children's perceptions of control and mastery motivation was established by Kelley, Brownell, and Campbell (2000) and later an association between parenting and mastery motivation was demonstrated in African American children (Turner & Johnson, 2003). Their research supports the contention that motivational patterns develop as a function of family variables and have the potential to influence academic success. In Australia McInerney, Hinkley, Dowson, and van Etten (1998) gathered evidence for the use of mastery goals by Indigenous students intent on academic success.

Aims of the study

1. To address the gap in empirical research pertaining to the relations between parenting, motivation, self-efficacy, disruptive behaviour and achievement outcomes of Australian Indigenous adolescents while controlling for SES variables.

Reviewing contemporary Indigenous research in Australia, Mellor and Corrigan (2004) stated that there is a dearth of empirical quantitative research within the Indigenous education literature. They noted that the research methodology employed in current studies is limited by its focus on small case studies derived from communities with a high Indigenous population, thus isolating Indigenous education research from the broader discourses of disciplines such as psychology, sociology and health. The urban Indigenous sample selected here was chosen because since 2001 most Indigenous people (74%) live in non-remote areas of Australia (i.e. in major cities, inner regional areas or outer regional areas) with only some (26%) still living in remote areas (ABS, 2005). Whilst adolescent competence has been found to be higher among youngsters raised in authoritative homes, leading researchers to hypothesize that authoritativeness contributes to the child's psychological development which in turn facilitates school success, authoritativeness is more prevalent in White households (Steinberg, Dornbusch & Brown, 1992). Indeed, recent studies indicate that parenting style is not similarly related to academic competence in all ethnic groups (Garg, Levin, Urajnic & Kauppi, 2005; Chao, 2001). The parenting style of Indigenous Australians has not been extensively examined, yet it warrants attention because Australian Indigenous children are over-represented in the child protection system. Rates of Indigenous children in substantiations are six times higher than the rates of other Australian children, while the rate of Indigenous children in out-of-home care is nine times higher than that of other children (Commission for children and young people, (Qld), 2004).

The parenting instrument used examines parenting style as perceived by the student. This was done because prior research showed adolescents' evaluations of maternal support and control to be more valid than mothers' self-reports when compared with ratings provided by observers (Gonzalez, Cauce & Mason, 1996). Other researchers report similar findings when ratings of parenting variables from parents and adolescents are compared (Purdie, Carroll & Roche, 2004; Leung, McBride-Chang & Lai, 2004; Petersmeyer, 1999). The instrument was

examined by an Indigenous academic for appropriateness of use with an urban Indigenous sample (L. Devow, personal communication, Nov 12th, 2005).

2. To test a model postulating that parenting is linked to academic achievement through its positive relations with mastery goals and self-efficacy and through its negative links with disruptive behaviour. Since self-efficacy has been shown to predict achievement, the postulated model tests the notion that parenting is linked to mastery motivation which is mediated via self-efficacy to higher achievement.

3. To control for the effect of SES variables (parental education, employment and family structure) on students' academic achievement. This approach is taken because research has shown children from single parent families are at higher risk for socioeconomic disadvantage, disrupted parenting practices, lower academic achievement and for the development of problem behaviours (Knutson, DeGarmo, & Reid, 2004; Astone, & McLanahan, 1991).

Method

Participants

The sample consisted of 112 Year 8 -10 students from three urban state high schools whose catchments include a lower socioeconomic area of a city in North Queensland, Australia. Parents were sent letters informing them of the study. Self-report questionnaires were administered during a 45 minute class period about two to four weeks after mid-year report cards were sent home. The returned surveys numbered 1127; 112 students identified themselves as Indigenous. Of the 112 students only 103 were used in the analyses because the remaining 9 surveys were missing some sections. The resulting sample represented 81% of the students enrolled in the school present on the day the data were collected. The principal researcher randomly checked 15% of the student responses for accuracy with the participating schools as students supplied their names on the questionnaire.

Instruments and Measures

1. Academic achievement: English and mathematics mid-year grades are recorded as grades following prior researchers' approach (Paulson, Marchant & Rothlisberg, 1998). The grades are coded Very limited (E) "0", Limited (D) "1", Sound (C) "2", High (B) "3" and Very high (A) "4".
2. Disruptive behaviour: Students reported the number of times they were suspended. These were coded: never (0), once/many times (1).
3. Socioeconomic and family structure variables: Paternal and maternal employment were coded as (0) for unemployed and (1) for employed. Paternal and maternal education coded (0) for education up to high school and (1) for graduate level and above for each parent.
4. Family structure: living with both biological parents coded (1) any other blended family combination coded (0) following previous researcher's rationale (e.g., Astone & McLanahan, 1991).
5. Parenting style: Adolescents' report of parenting was measured using a survey modified from the Parenting Style Questionnaire developed by Lamborn, Mounts,

Steinberg & Dornbusch (1991). The questionnaire measures the adolescents' perceptions of their parenting along the dimensions of warmth and involvement and strictness/supervision. The warmth and involvement scale measures the extent to which the adolescent perceives his or her parents *or carers* as loving, responsive and involved using 15 items, (5 items for father's warmth and 5 items for mother's warmth, sample item: If I have some kind of problem I can usually count on my father/male guardian to help me out, and 5 items for parental involvement, sample items: My parents spend time just talking with me; When you get a good grade at school how often do your parents/ carers praise you?). Responses for mother and father were added and the score divided by two for intact biological families or step-families, but for single parent families or other single guardian families the raw score for only one parent or carer was used. The strictness/supervision factor assessed perceived parental monitoring and supervision of the adolescent (9 items, sample item: "How much do your parents/caters try to know what you do with your free time?"). Due to the nontraditional family settings prevalent in society, students were instructed that items pertaining to their mother and father were to be completed in relation to the parent figures students considered filled such roles for them.

To establish the validity of the questionnaire using an Australian sample, the data obtained from the application of the survey was subjected to a confirmatory factor analysis (CFA) using AMOS 5.0 (Arbuckle, & Wothke, 1999). All estimates were based on the maximum likelihood method. As a result, the parenting style questionnaire was found to consist of three factors, strictness/supervision, involvement and warmth rather than two factors as originally posited by the developers of the instrument (Lamborn et al, 1991). The factor loadings for the individual items of the parenting scales show acceptable to good loading on the target factors. Results of CFA therefore permitted the use of the measuring instrument, however, because it was found to measure three parenting factors, parenting style typology was calculated based on the score on three rather than two factors proposed by the developers Lamborn et al (1991). Thus authoritative parenting was deemed to be experienced by a student when all three parenting dimensions were high, while neglectful parenting was defined by scores on the three parenting dimensions that were low, by trichotomising the sample on the three dimensions using the top third and bottom third of scores to define pure parenting styles, following the procedure of Lamborne et al., (1991). This treatment of the parenting scale ensures that only those students whose scores are situated in the extremes of the scale are considered to be representative of the parenting typologies. It is to be noted at all times that these typologies are not thought of as confirming an absolute, rigid parenting typology but rather a heuristic device to permit a comparison between students whose parental perceptions fall into opposite poles of a continuum. Model fit statistics for the parenting scale based on three factors are acceptable:

$\chi^2 / df = 3.96$, $p < .001$, $GFI = .944$, $CFI = .926$ and $RMSEA = .053$.

6. Mastery motivation and academic self-efficacy: The Patterns of Adaptive Learning (PALS) Questionnaire (Freeman, Nelson, Kaplan, Kumar, & Middleton, 2000) were employed in this study, as they have been employed and validated in Australian studies. In this study, 2 student sub scales from the PALS questionnaire were used, those measuring mastery goals, (4 items, sample item: It's important to me that I improve my skills this year) and those measuring academic self-efficacy (4 items, sample item: even if the work is hard, I can learn it). The rating was done on a five point Likert type scale. Items on this scale were anchored at 1 = "Not at all true," 3 = "Somewhat true," and 5 = "Very true." CFA using AMOS 5.0 yielded good fit indices for each of the PALS subscales; academic self-efficacy $\chi^2 / df = .367$, $p < .693$, $GFI = .996$, $CFI = 1.000$ and $RMSEA = .000$; mastery motivation $\chi^2 / df = 3.12$, $p < .044$, $GFI = .997$, $CFI = .997$ and $RMSEA = .045$. The mean scores reported in

table 1 and 2 were computed by adding the response on each item of the scale and then dividing by the number of items. Therefore a mastery mean of 3.0 for a student indicates that the student's average response for mastery items was represented by "somewhat true".

Results

The SPSS program was used to perform all statistical procedures; the structural equation path models (SEM) were developed using the AMOS 5.0 program (Arbuckle & Wothke, 1999). SEM helps to overcome the problems associated with the effects of measurement error and correlated measurement error on the outcome variable which attenuate the estimation of relationships between observed variables (Baron & Kenny, 1986; Kline, 1998; Maruyama, 1998). Multiple predictor variables can be simultaneously modelled and their relative contribution to the outcome variable estimated. This results in a more accurate weighting of influences for a particular outcome, not possible with association tests performed for each predictor variable. Moreover, SEM techniques developed over the last two decades permit the use of dichotomous categorical predictor variables in a model without the need to employ more complicated logistic regression models (Joreskog & Sorbom, 1984; Muthen, 1984). Where data is not continuous, as in the case with suspensions and parental employment, SEM provides a valuable analytical tool by permitting the use of dichotomous variables.

Assumptions of multivariate normality need not apply to the exogenous (measured) variables (Bollen, 1989, pp.126-28). However, lack of multivariate normality usually inflates the chi-square fit statistic such that the possibility of the model being rejected due to Type I error is increased (Kline, 1998). While causality is not confirmed by SEM techniques, since the data used here are not longitudinal, the models shows the relative contribution of each exogenous variable to the outcome variable.

Table 1 provides a summary of student characteristics by parenting style. Comparisons of adolescents from different parenting style groups show that in the neglectful parenting category adolescent achievement, self-efficacy and mastery motivation is lowest while suspensions are high. It must be noted that the number of students reporting authoritative, authoritarian and permissive parenting are very small and as such results within these categories need to be interpreted with caution. "Average" parenting indicates that the reported dimensions of parenting fall within the middle third of the distribution

Table 1 Adolescent achievement, suspensions, sociodemographic characteristics, mastery and self-efficacy by parenting style.

		Parenting style									
		"average"		authoritative		authoritarian		permissive		neglectful	
		Count/	%	Count/	%	Count/	%	Count/	%	Count/	%
		Mean		Mean		Mean		Mean		Mean	
achievement for maths and English		4.02		4.43		5.40		3.75		3.52	
self efficacy		3.57		4.10		3.12		3.95		3.02	
mastery		3.83		3.68		3.45		4.25		3.41	
suspension	never	44	68.8	7	100.0	5	100.0	2	50.0	14	60.9
	once/many times	20	31.3	0	0	0	0	2	50.0	9	39.1
father's employment	unemployed	19	29.7	0	0	2	40.0	2	50.0	9	39.1
	employed	45	70.3	7	100.0	3	60.0	2	50.0	14	60.9
mother's employment	unemployed	22	34.4	2	28.6	3	60.0	2	50.0	12	52.2
	employed	42	65.6	5	71.4	2	40.0	2	50.0	11	47.8
father's education	high school educated	54	84.4	7	100.0	5	100.0	4	100.0	23	100.0
	graduate	10	15.6	0	0	0	0	0	0	0	0
mother's education	high school educated	56	87.5	6	85.7	3	60.0	3	75.0	21	91.3
	graduate	8	12.5	1	14.3	2	40.0	1	25.0	2	8.7
family	blended	40	62.5	2	28.6	3	60.0	4	100.0	13	56.5
	intact	24	37.5	5	71.4	2	40.0	0	0	10	43.5
Total		64		7		5		4		23	

As the sample from each parenting style category was too small to detect statistically significant differences between groups, all subsequent path analyses employed the dimensions of parenting to construct a latent variable (indicated by an ellipse) using the whole sample of students ($n = 103$) to examine the links between parenting dimensions, moderating variables and outcome variables.

Correlations between parenting dimensions, mastery motivation, self-efficacy and achievement are reported in Table 2. As expected, mastery was highly correlated with self-efficacy which, in turn, was correlated with achievement. Of the three parenting dimensions tested, strictness/supervision was highly correlated to mastery, self-efficacy and achievement, while parental involvement was also correlated to self-efficacy and mastery. Parental warmth was most highly correlated to self-efficacy.

Table 2 Correlations, means (M) and standard deviations (SD) of model variables

	1	2	3	4	5	6	M	SD
1. mastery	1	.408**	.141	.303**	.641**	.341**	3.72	1.05
2. strictness/ supervision	.408**	1	.330**	.497**	.439**	.355**	.65	.12
3. warmth	.141	.330**	1	.371**	.372**	.244*	.41	.06
4. involvement	.303**	.497**	.371**	1	.440**	.131	.36	.08
5. self efficacy	.641**	.439**	.372**	.440**	1	.354**	3.48	.99
6. achievement	.341**	.355**	.244*	.131	.354**	1	3.9	1.8

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

Testing the model

The proposed model, a hybrid structural equation model, includes measurement (indicated by rectangles) and structural components (Kline, 1998). The model has four latent variables: perceived parenting, achievement, self-efficacy and mastery motivation. The latent variable achievement has two indicators, mathematics grades and English grades. Exogenous variables including the control variables of family structure, parental education and employment were allowed to co vary. All models were examined using the Amos 5.0 program. Because the chi square fit index is highly sensitive to sample size, overall model fit was also assessed by examining the Comparative Fit Index (CFI; Bentler, 1990) for which values of .90 or greater are considered adequate (Byrne, 2001) and the root-mean-square error of approximation (RMSEA). RMSEA allows the probability of obtaining the same results if a similar sample was taken from the population to be calculated. For example, a RMSEA of .027 would yield a probability of $(100 - 2.70) 97.3\%$. RMSEA values of $<.05$ - $<.10$ are considered adequate (Byrne, 2001).

Model analysis followed three steps. First, the postulated model (shown in Figure 1) was tested. The standardized path coefficients for this model are shown in Table 3. The proportion of variance (R^2) explained by the model for each endogenous variable are 55% for achievement, 16 % for suspensions, 66% for self-efficacy and 28% for mastery.

Figure 1 Theoretical model of associations between parenting, SES variables, suspensions, mastery, self-efficacy and achievement

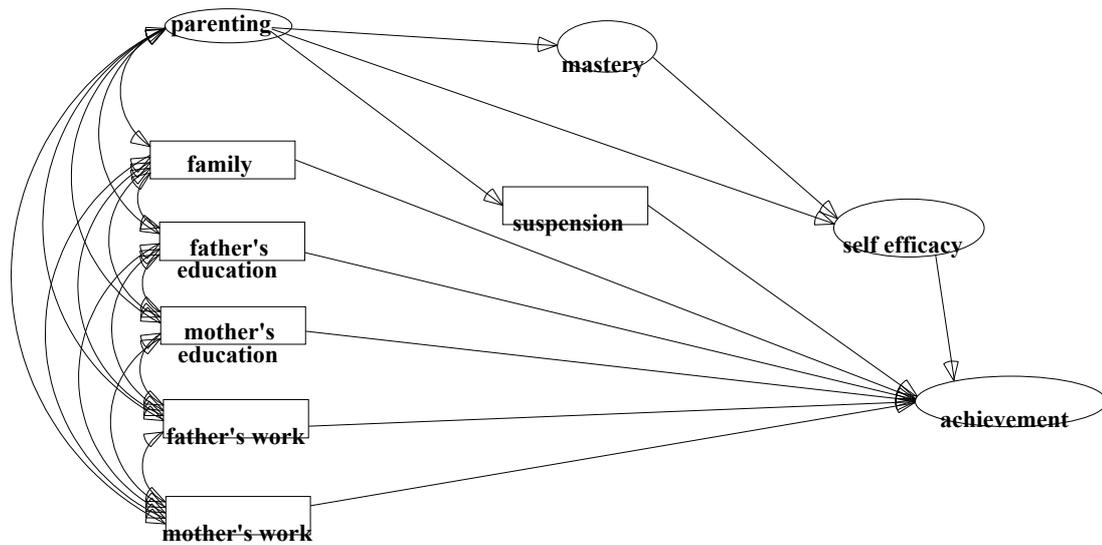


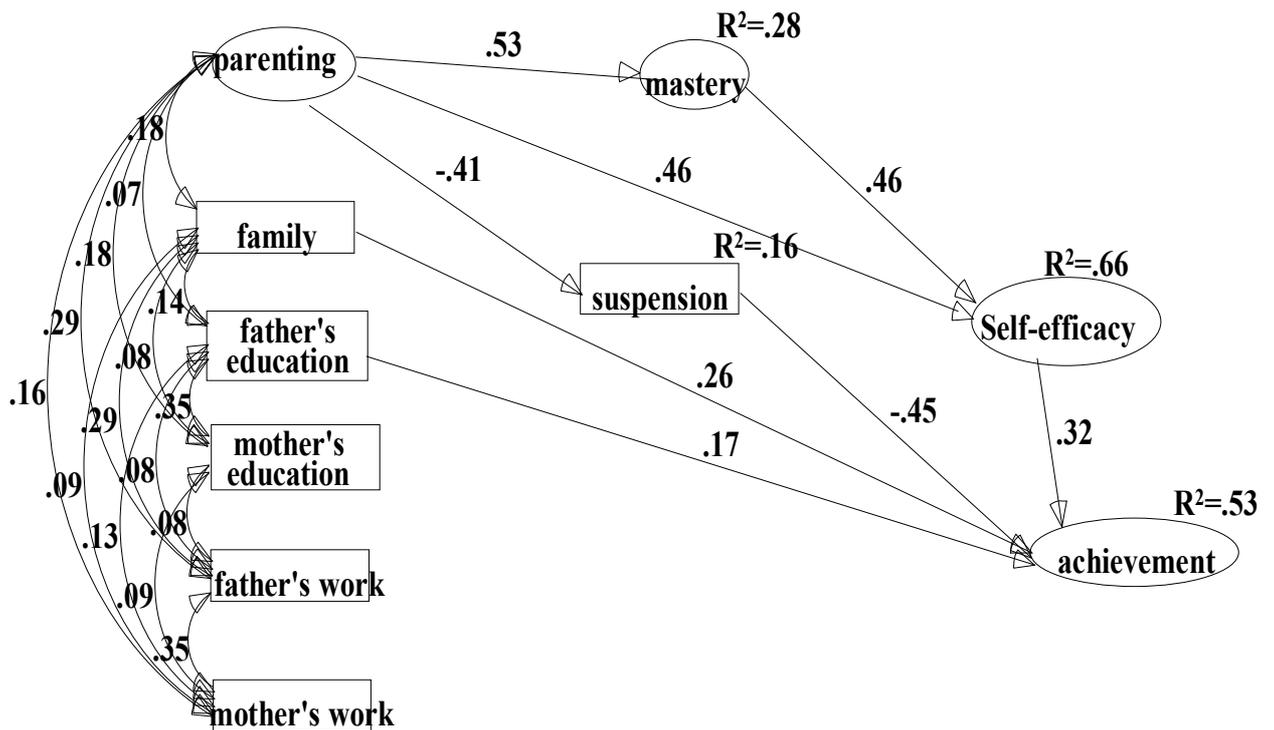
Table 3 Standardized β coefficients and probability for associations between exogenous and endogenous variables for theoretical model

	Model pathways	β	p
mastery	<--- parenting	.527	.001
self efficacy	<--- mastery	.467	.001
self efficacy	<--- parenting	.462	.001
achievement	<--- self efficacy	.303	.006
suspension	<--- parenting	-.405	.001
achievement	<--- family	.239	.015
achievement	<--- father's education	.148	.136
achievement	<--- mother's education	.099	.317
achievement	<--- father's work	.085	.409
achievement	<--- mother's work	-.043	.665
achievement	<--- suspension	-.435	.001

Second, the non-significant paths were dropped (based on two-tailed tests with alpha level set at .05) and the revised model was re-estimated (Pedhazur, 1997). The logic of dropping the paths is first that the model may be mis-specified if an unimportant path is included, and second the dropping of unimportant paths results in a more parsimonious model. This re-estimated model (shown in Figure 2) is called the trimmed model. The fit indices for the full theoretical model (i.e., Step 1) were: RMSEA = .039; CFI = .963, the p value for the model chi-square, $\chi^2(132) = 152.86$, was .103; and the χ^2/df ratio was 1.15.

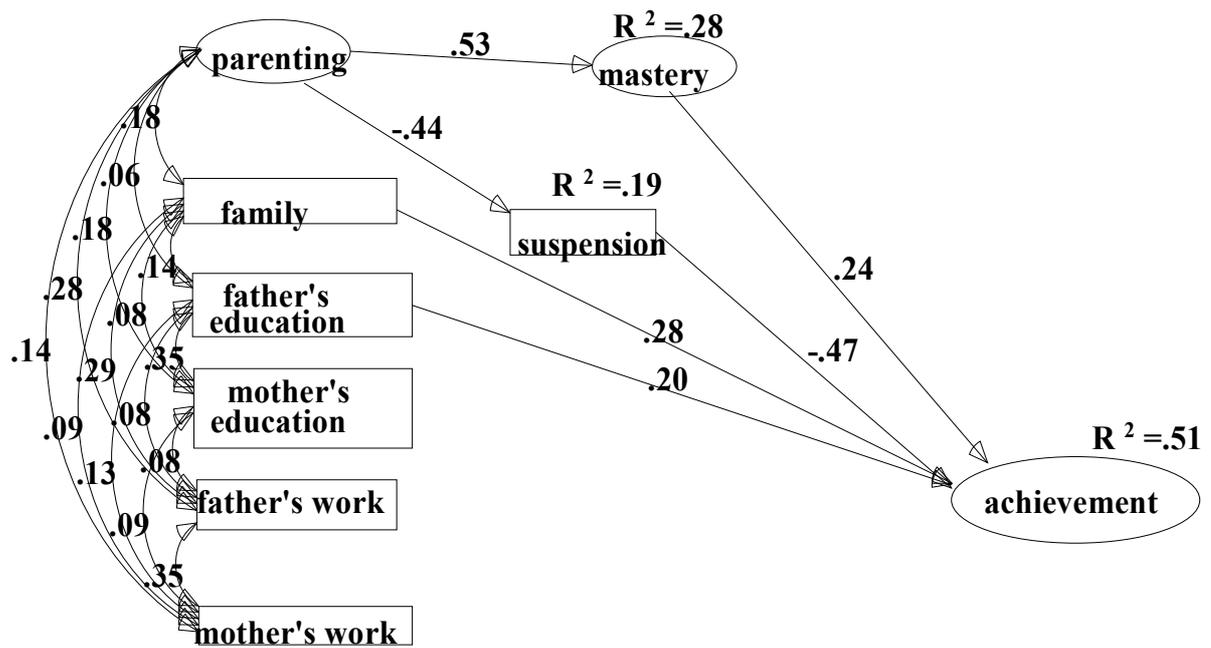
The trimmed model (i.e., the model that includes only statistically significant paths) is shown in Figure 2.

Figure 2 Trimmed theoretical model



The path between father's education and achievement has a p value of .066 and thus was retained in the model because the fit indices with this path retained were slightly better than when it was removed. The standardized path coefficients and the proportion of variance (R^2) explained for each endogenous variable are provided on the paths of the model. The goodness-of-fit indices for the trimmed model indicate that the fit between the model and the empirical data was good. The RMSEA index was equal to .038, the CFI = .965, the model chi-square statistic, $\chi^2(135) = 154.41$, $p = .121$, indicated an adequate fit because the p value was greater than .05 (i.e., we failed to reject the null hypothesis that the observed and estimated correlation matrices significantly differ). The χ^2/df ratio was equal to 1.14, which is adequate on the basis of Kline's (1998) rule of values of less than 3 being considered adequate. The Akaike Information Criterion (AIC) was used to compare the trimmed model with the original model because this statistic is preferred for comparing nonhierarchical models. The model with the lowest AIC is preferred (Kline, 1998). The AIC for the trimmed model was 264.41, while the AIC for the full theoretical model was 268.86. Third, two rival models were tested. One, omitting the mediating effects of self-efficacy, is shown in Figure 3. However, this model has worse fit indices than the previous models, that is, RMSEA = .060, CFI = .929, $\chi^2(75) = 102.531$, $p = .019$, $\chi^2/df = 1.36$ all showing a worse fit to the empirical data. A second alternative model, omitting the direct effects of parenting upon self-efficacy was also tested. Once again, the fit indices indicated that there was worse fit to the data ($\chi^2/df = 1.23$, $p = .033$, CFI = .943 and RMSEA = .048).

Figure 3 Rival model omitting self-efficacy mediation



Results suggest that the trimmed theoretical model (Figure 2) is most consistent with the empirical data. It illustrates that higher levels of the three dimensions of parenting, as might be found in authoritative homes, are positively and significantly linked to achievement. This appears to be accomplished indirectly via a positive link to mastery motivation and self-efficacy beliefs and a negative link with disruptive behaviour, with a standardized indirect effect estimate of .41. In the instance where there are low levels of the parenting dimensions, such as may be found in a neglectful context, the moderating link with disruptive behaviour is diminished and the positive association with mastery motivation and self-efficacy becomes less strong.

Discussion

The present study was concerned with perceived parental behaviours and their relations with achievement outcomes, mastery motivation, self-efficacy beliefs and disruptive behaviour in urban Indigenous Australian adolescents. Whilst it was not possible to test relations between the four parenting typologies and adolescent outcomes due to the small sample size, descriptive data revealed that adolescents perceiving a neglectful parenting style had the lowest achievement, lowest self-efficacy and lowest mastery motivation of all groups. By contrast those students who reported authoritarian parenting had the highest achievement of all groups, while those whose parenting was authoritative reported the next highest achievement. Additionally, both of these groups had the lowest levels of disruptive behaviour reflecting recent findings in the United States (Steinberg, Blatt-Eisengart & Cauffman, 2006). Authoritative parenting could not be linked with significantly enhanced adolescent outcomes for this Indigenous sample; nonetheless, the descriptive data indicates low levels of perceived parenting, such as those experienced within the neglectful category, do not provide the support needed for academic and behavioural resilience. Results are in line with McInerney's (1991) findings for urban Indigenous students.

In support of the descriptive data, an examination of the structural models demonstrates the significant negative associations between higher levels of strictness/supervision, involvement and warmth upon disruptive behaviour and their positive links with achievement outcomes, even after controlling for SES variables, as was previously found by Christenson et al., (1997) and Eamon (2005) for non-Indigenous students.

Whilst SES variables have been hypothesized to predict adolescent academic achievement, in this sample the links of SES factors, parental education and employment, did not reach significance with the exception of father's education ($p = .066$). An explanation may lie in the uniformly high levels of unemployment and low levels of education reported by this group of participants. Under the neglectful category, even higher percentages of parental unemployment and lower percentages of parental education respectively predict lower achievement and higher suspension. Perhaps these serve to illustrate parental stress caused by SES factors, leading to neglectful parenting perceptions.

By contrast, family structure was significantly linked to achievement validating prior findings (Astone & McLanahan, 1991). This is perhaps not surprising since parenting behaviours have been found to be strained in lower SES contexts (Jackson et al., 2000) and within an intact family there may be more emotional support facilitating more involvement, warmth and monitoring of adolescents. Moreover, as Indigenous children are reported to have a high rate of out of home care and single parent families have been found to have a higher rate of problem behaviours (Commission for children and young people, (Qld), 2004), results positively linking an intact family structure with achievement were anticipated (Knutson, DeGarmo, & Reid, 2004; Astone, & McLanahan, 1991). Notwithstanding these results, the positive associations between parenting behaviours and adolescent outcomes validate prior research (Baumrind, 1991) and provide a clear illustration that parenting approximating an authoritative type acts as a protective factor against problem behaviour and supports academic resilience across different family contexts, including single-parent and stepfamilies.

In regard to disruptive behaviour, negative relations observed between parenting and suspensions validate hypotheses about parental academic socialization strategies. Rule setting, warmth, cognitive stimulation and active involvement, which are associated with increased levels of the parenting dimensions, or authoritative parenting, have been found to protect adolescents from problem behaviour (Baumrind, 1991; Vitaro et al., 2005). Furthermore, this negative link gives credence to the idea that neglectful parenting is less likely to be implicated in a stimulating home environment that includes supervision of homework and involvement with school life. Fewer coping strategies in the face of academic difficulties, less perseverance and engagement with tasks and later learning deficits may be the net result of uninvolved parenting (Leiter & Johnsen, 1994).

Prior findings have been extended by this study, results confirming Turner and Johnson's (2003) conclusions that parenting is linked to academic achievement via mastery motivation and Purdie, Carroll and Roche's (2004) claims that parenting is linked to adolescents' self-efficacy beliefs. It is of interest that parenting was found to be linked indirectly to self-efficacy beliefs presumably, as Pajares (2002) suggests, through parental encouragement of experiences that enhance mastery motivation, such as skill building and interest in school related activities, and directly, possibly through praise and positive feedback on adolescents' academic efforts which in turn raises an adolescent's beliefs in their academic competence. The model accounted for 66% of variance in self-efficacy suggesting that pathways from parenting to self-efficacy are as strong for Indigenous students as non-Indigenous students and support academic resilience.

Limitations of the current study include the relatively small sample making conclusions about the four parenting typologies and their associations not possible. Only trends pertaining to

authoritative and neglectful parenting were noted. Another limitation may be the lack of information obtained from participating schools in regard to students who might have learning disabilities but were included in the sample. In addition, the use of a self-report questionnaire demands caution in interpretations with respect to parenting reports. The cross-sectional nature of the study cannot confirm whether parenting style precedes the outcomes assessed even with the use of SEM techniques. It is possible that adolescent characteristics elicit particular parenting responses which then reinforce student attributes. Studies of longitudinal design are needed to establish the direction of influence that might exist among these factors and the degree of reciprocity that might be present between adolescent characteristics and parental factors.

Cultural factors such as English as a second or third language may have confounded survey interpretations. School factors may also predispose Indigenous students to getting suspended because of cultural dissonance between school and home perspectives. McInerney (1989) reported that Indigenous parents have felt schools have not been sufficiently aware of nor catered for their children's needs and that racism has been a factor in this cultural dissonance. Differences between communication processes within an Indigenous extended family context and the impersonal, often formal communication systems present in large high schools might further prevent some Indigenous students from getting the attention they need because they feel intimidated. A spiral of underachievement, absenteeism and suspensions then results (Indigenous parent, personal communication, June 20th, 2007). School factors such as these might be inimical to Indigenous parents' value and support for school.

Confounding cultural factors may also affect the parenting practices of Indigenous families compared to other Australian families. As the present sample was derived from an urban context, this is considered to be less likely because there are less restricted cross-cultural links than might be expected if the sample were situated in a remote rural community. Nonetheless it has to be acknowledged that within collectivist Indigenous culture, family networks result in distinct responsibilities and obligations in relation to raising children, with particular emphases on the roles of grandparents, aunts and uncles (Ralph, 1997). That is not to say caring, instructive parenting cannot be enacted by various members of a family within Indigenous culture. Extended family practices approximating an authoritative style may be illustrated in the quote from Boori (Monty) Pryor (1998): "You get your strength by listening to your elders, your uncles and aunties, your mum and dad" (p.49). In short, Baumrind's (1991) assertion that authoritative parenting is possible across diverse family contexts is not contradicted. In depth, qualitative studies must be conducted to elaborate current findings and establish supportive mechanisms for families. Swan and Raphael (1995) recommend that to overcome the effects of inequities endured by Indigenous people since the arrival of the colonists and improve Indigenous students' educational attainment self-determination must be promoted in the younger generations. Among other things, this requires sensitive parenting and support.

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