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PRE-PUB VERSION

**Aboriginal/Indigenous Students in High School:
Understanding their Motivation, Engagement, Academic Buoyancy, and Achievement**

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Aboriginal/Indigenous Students in High School:

Understanding their Motivation, Engagement, Academic Buoyancy, and Achievement

In the 1990s (Graham, 1994), and then in the following decade (Martin, 2006; McInerney, 2000b), researchers identified a need for an integrative motivation framework that can provide better direction for psycho-educational research and practice seeking to assist the educational outcomes of ethnic ‘minority’ groups. In the most recent of these efforts, Martin (2006) considered Graham’s proposed motivational psychology (for motivating African-American students) and applied them to the area of Australian Aboriginal/Indigenous¹ education. His was a conceptual review outlining the diverse factors relevant to Aboriginal motivation, engagement and achievement. Our chapter extends this conceptual review by presenting findings on Aboriginal high school students relevant to their motivation, engagement, academic buoyancy, and achievement. Hence, the chapter aims to complement prior conceptual work with empirical data. Specifically, accounting for the roles of demographics and socio-economics it seeks to better understand Aboriginal students’ motivation, engagement, academic buoyancy, and achievement. Following from this, we hope to provide differentiated guidance relevant to educational intervention for Aboriginal students.

Graham’s Motivational Psychology for African-American Students

Graham (1994) considered key elements of motivational psychology relevant to African-Americans. According to Graham, this motivational psychology should: (a) be explicitly connected to ‘self’; (b) involve a range of affective and cognitive predictors of behavior; (c) be sensitive to

¹ We recognise there is diversity within the Aboriginal/Indigenous community. Thus, although we use the term Aboriginal to refer to one group, we understand there is heterogeneity within the Aboriginal community (e.g., by region, socio-economic status, physical and mental health, family structure and circumstances, employment status, and educational background) that is important to consider when interpreting findings and concepts.

failure dynamics; (d) account for complex relations between social class and race; (e) accommodate child-rearing and socialization antecedents of achievement; and (f) contribute to understanding of principles of human behavior more broadly.

From an Aboriginal motivation perspective, Martin (2006) harnessed the Graham (1994) motivational psychology by exploring specific factors within each of Graham's central elements as deemed relevant to Aboriginal students, including self (e.g., positive Aboriginal identity, positive identity as a student, positive academic self-concept, academic buoyancy); cognitive and affective variables (e.g., academic achievement facilitators, academic motivation/engagement facilitators, attendance facilitators); socialization and child-rearing antecedents (e.g., the role of the family and the Aboriginal community); failure dynamics (e.g., fear of failure and 'shame'); significant others and their contexts (e.g., effective schools, the role of teachers, good relationships); pathways and transition (e.g., academic aspirations and intentions, non-linear motivation and achievement trajectories); contribution to a general understanding of human behavior (e.g., the values, attitudes, and approaches to school and schoolwork that are shared between Aboriginal and non-Aboriginal students); and the interplay of race and social class (e.g., socio-economic status).

The review by Martin (2006; see also Graham, 1994; Martin, 2003; McInerney, 1991, 1995, 2000b, 2008, 2012; Munns, 1998; Munns & Martin, 2013; Munns, Martin & Craven, 2003) suggested a need to empirically explore the roles of race, family, context, social class, individual demographics alongside key behavioral, cognitive, and affective factors traversing the major themes identified above. Addressing this empirical gap is the purpose of the present chapter. Specifically, controlling for demographics (age, gender, language background) and socio-economics (neighborhood socio-economic status, parent education, parent occupational status), we compare Aboriginal and non-Aboriginal students on adaptive motivation (self-efficacy, valuing school, mastery orientation, planning, task management, persistence), maladaptive motivation (anxiety, failure avoidance, uncertain control, self-handicapping, disengagement), additional engagement

measures (class participation, school enjoyment, positive intentions), academic buoyancy, and academic achievement (literacy and numeracy).

Analyses along these lines enable us to disentangle variance attributable to demographics, variance attributable to socio-economics, and variance attributable to Aboriginal and non-Aboriginal status. Particularly in the case of the latter source of variance against the former two sources, educational intervention would be a main implication – whereas in the case of socio-economic variance, for example, social and community-level intervention would be a major implication. In the review that follows, we consider each of the factors central to our empirical purpose.

Achievement, Transitions, and Aspirations

As Martin (2006) summarizes, Aboriginal students are less likely to attend school, have higher rates of daily absenteeism, and perform more poorly in reading, mathematical literacy, and scientific literacy. Retention rates for Year 10-12 Aboriginal students are significantly lower than for non-Aboriginal students and retention from year to year declines more sharply for Aboriginal students. In Year 12, substantially lower numbers of Aboriginal students achieve tertiary entrance qualifications (see Calma-Holt, 1996; Department of Education, Science and Training, 2002; Groome & Hamilton, 1995; House of Representative Standing Committee on Employment, Training and Education, 1997; Martin, 2006; Rigney, 1996). Our study therefore includes analyses of achievement (literacy and numeracy) that we can juxtapose with analyses of motivation, engagement, and academic buoyancy. We also include a measure of educational aspirations (viz. positive academic intentions) as one factor that addresses the issue of educational continuation, retention, and transition.

Motivation and Engagement

There can be conflict between the goals and values promoted by teachers and the goals and values held by Aboriginal students (Martin, 2006). This conflict can lead to disengagement and drop-out (Fogarty & White, 1994; Halse & Robinson, 1999). With regards to achievement goals, there are claims that non-Aboriginal students value mastery goals, future time orientation, competition, success and individuality, whereas Aboriginal students are more inclined to value harmony, present time orientation, anonymity, group orientations, and non-competitive environments (Fogarty & White, 1994; McInerney, 1991, 2000b). To fully explore these issues, analyses in our chapter examine mastery orientation, failure avoidance (performance avoidance goals), class participation, and positive academic intentions to test some of these contentions. A more recent approach to goals is that exploring personal best (PB) goals. PB goals are specific, competitively self-referenced goals towards which students strive. Research has found them to be significantly associated with adaptive academic outcomes ((Martin & Liem, 2010) and also appropriate for academically at-risk students (students with attention-deficit/hyperactivity disorder; Martin, 2012). PB goals, then, are also a focus for this study.

A valuing of education and an enjoyment of school also emerge as factors in the literature on Aboriginal student educational outcomes. According to McInerney (1991, 2012), significant facilitating conditions for achievement and engagement involve students liking school and perceived valuing of education. Similarly, Aboriginal educators have identified a number of factors affecting school attendance for Aboriginal students, including the need to keep school interesting and fun (see also Bourke, Rigby, & Burden, 2000). Our investigation, therefore, includes measures of school valuing and enjoyment of school.

Another important line of research into Aboriginal outcomes has centered on the issue of perceived competence. It has been suggested that Aboriginal students' educational outcomes can be progressed by positively identifying as a student and by students having a sense of efficacy in their academic capacity (Purdie, Tripcony, Boulton-Lewis, Fanshawe, & Gunstone, 2000).

Unfortunately, research has also identified relatively lower academic self-concept among Aboriginal students. For example, Craven and colleagues (2003) found Aboriginal students' verbal, mathematics, and general academic self-concept was significantly lower than non-Aboriginal students. According to Purdie et al. enhancing these students' perceived competence is vital to enhancing their academic outcomes. We seek to explore whether Aboriginal students are lower in academic self-efficacy after accounting for possible pre-existing differences on demographic and socio-economic indicators.

As indicated earlier, a major challenge in Aboriginal education concerns high attrition rates and the importance of successful transitions to post-school education. As Martin (2006) notes, it is important to know more about how and why Aboriginal young people make decisions about continuation of their studies – both through school and beyond. Similarly, more research is needed to investigate why transition can be difficult or unsuccessful (see Keys Young, 2000). Given all this, one factor important to explore concerns Aboriginal students' academic intentions. Do they differ significantly from the academic intentions of non-Aboriginal students? If they do, then this is another factor potentially contributing to their interrupted educational pathways and transitions. If they do not differ in intent and aspiration, then this points to other factors (e.g., other motivation factors, contextual factors etc.) that are interrupting their pathways and transitions. This chapter seeks to shed light on this important issue.

The motivation and engagement factors considered thus far have focused on adaptive constructs that are important to promote. However, it is also important to recognize there are maladaptive dimensions in motivation and engagement frameworks. Obviously, it is crucial to reduce or eliminate these maladaptive factors in Aboriginal students' academic lives. One line of relevant theory and research in Aboriginal education concerns fear of failure. Martin and Marsh (2003) have proposed a cascading model of failure-fearing that ultimately leads to disengagement. In the process, students may experience significant anxiety and low sense of control or agency.

According to Martin and Marsh (2003), initially, students may deal with their fear of failure through diligence and effort (these students are referred to as perfectionists and overstrivers). Following setback, students may respond to failure in more self-protective ways such as through defensive pessimism (setting unrealistically low expectations) or more counterproductive strategies in the form of self-handicapping (e.g., procrastination, withdrawing effort). Eventually, students come to accept failure and disengage from school. Taking into consideration these maladaptive dimensions of motivation, we seek to examine Aboriginal students' status with regards to anxiety, failure avoidance, uncertain control, self-handicapping and disengagement. Importantly, in examining these maladaptive factors, we take into account known disadvantages (e.g., socio-economic) so we can separate disadvantage due to non-academic factors from disadvantage due to academic factors.

Academic Buoyancy

Martin (2006) proposed that Aboriginal students would benefit from both motivation – and academic buoyancy. Without some capacity to deal with various types of academic challenge and adversity, even motivated students can begin to lose heart. Academic buoyancy is defined as students' ability to deal effectively with academic setbacks, school-related stress, and school-related pressure in the course of everyday school life (Martin & Marsh, 2006, 2008, 2009). In recent research, Martin (in press) found that academic buoyancy significantly predicted lower anxiety, fear of failure, and uncertain control. Being a relatively new construct, research is ongoing to more fully understand its effects. As yet, no research has been conducted into Aboriginal students' academic buoyancy and so the present chapter is an ideal opportunity to do so in the context of various motivation, engagement, and achievement factors.

Socio-economic and parent education factors

Alongside these motivation, engagement, buoyancy and achievement factors, it is also important to recognize the socio-economic and family factors that are relevant to Aboriginal students' educational pathways. According to Britton (2000), Aboriginal students' families tend not to have substantial involvement with school and may even be fearful of school. Particularly relevant to our investigation, Richer and colleagues (Richer, Godfrey, Partington, Harslett, & Harrison, 1998) point out that Aboriginal students are at a disadvantage in part as a function of family educational and economic disadvantage. Because Aboriginal parents/caregivers tend to have relatively lower levels of education and relatively fewer educational resources at home (Martin, 2006), they can lack the skills, confidence, and means to help their children with schoolwork. As a result of this and possibly negative experiences with school as children themselves, they may also lack the confidence to approach their child's teacher for assistance (Phillips, 1990). It is important to understand the role of these family education and socio-economic factors in affecting Aboriginal students' academic outcomes. We do so by accounting for neighborhood socio-economic status, parent education, and parent occupational status in analyses.

Empirical Purpose of the Present Chapter

Aboriginal students experience educational disadvantage relative to non-Aboriginal students. There are many personal, family and other contextual factors that impact and explain these outcomes. Beginning with Graham's (1994; see also Martin, 2006 and McInerney, 1991, 1995, 2000b, 2008, 2012) motivational psychology, we reviewed important areas related to self, cognition, affect, fear, failure, social class, and socialization. Following from this, we identified specific factors relevant to motivation, engagement, buoyancy, achievement, family, and socio-economic status that are important to consider in an integrative approach to understanding Aboriginal students' educational processes and outcomes.

Having identified this range of factors, we now turn to the empirical component of the chapter to examine these issues. Specifically, controlling for demographics (age, gender, language background) and socio-economics (neighborhood socio-economic status, parent education, parent occupational status), we compare Aboriginal and non-Aboriginal students on adaptive motivation (self-efficacy, valuing school, mastery orientation, planning, task management, persistence), maladaptive motivation (anxiety, failure avoidance, uncertain control, self-handicapping, disengagement), additional engagement measures (class participation, school enjoyment, positive intentions), academic buoyancy, and academic achievement (literacy and numeracy).

Interestingly, motivational research by McInerney and colleagues (McInerney, Hinkley, Dowson, & Van Etten, 1998) found surprisingly few differences in motivation between Aboriginal and non-Aboriginal students. Prior to that, McInerney (1995; see also McInerney, Fasoli, Stephenson, & Herbert, 2012) showed generality in motivation properties across Aboriginal and non-Aboriginal groups. Further, across four different cultural groups (Aboriginal-Australian, Lebanese-Australian, Anglo-Australian, and Asian-Australian), students' achievement goals were consistently shown to be predictors of intentions to pursue further education, affect for schooling, and school valuing (McInerney, 2008). Additionally, McInerney (2012; see also McInerney et al., 2012) found generality in multidimensional motivation for remote and very remote Aboriginal students. Will our work reflect congruencies along the lines of the extensive work by McInerney and others? It may be that our very wide range of academic outcomes and covariates may yield more differences than found in previous research.

Students in the Study

To explore the range of motivation, engagement, buoyancy and achievement factors we draw on data that integrates a number of projects conducted over the past decade. Because the Aboriginal community represents a relatively small percentage of the school population, to gain an adequate

sample size for analyses, it is useful to access a number of datasets to ensure an adequate Aboriginal sample size from which conclusions can be drawn. This integration led to a sample size of 985 Aboriginal students in Years 7 through to 12 (high school), 45% female and 55% male, mean age of 14 years ($SD = 1.5$ years).

To ensure that analyses were not biased due to the much higher number of non-Aboriginal students across the various datasets, a sub-sample of 985 non-Aboriginal students were randomly selected from Years 7 to 12, 49% female and 51% male, mean age 14 years ($SD = 1.6$ years). Although the non-Aboriginal sample was not markedly different from Aboriginal students on demographic factors (gender, age), they were significantly higher in socio-economic status of neighborhood, $t(1968) = 12.36, p < .001$, Cohen's $d = .56$, parent education, $t(1968) = 6.14, p < .001$, Cohen's $d = .28$, and parental occupational status, $t(1968) = 9.29, p < .001$, Cohen's $d = .42$.

Measures Used in the Study

Outcome Measures

The first set of outcome measures comprised all eleven factors from the Motivation and Engagement Scale – High School (MES-HS; Martin, 2010). The MES-HS assesses motivation and engagement (rated from 1 ‘Strongly Disagree’ to 7 ‘Strongly Agree’) through three adaptive cognitive dimensions: valuing school (e.g., Learning at school is important), mastery orientation (e.g., I feel very pleased with myself when I do well at school by working hard), and self-efficacy (e.g., If I try hard, I believe I can do my schoolwork well); three adaptive behavioral dimensions: persistence (e.g., If I don't give up, I believe I can do difficult schoolwork), task management (e.g., When I study, I usually try to find a place where I can study well), and planning (e.g., I try to plan things out before I start working on my homework or assignments); three maladaptive cognitive dimensions: anxiety (e.g., “When exams and assignments are coming up, I worry a lot”), failure avoidance (e.g., “Often the main reason I work at school is because I don't want to disappoint my parents”), and uncertain control (e.g., “I'm often unsure

how I can avoid doing poorly at school”); and two maladaptive behavioral dimensions: disengagement (e.g., I’ve pretty much given up being involved in things at school) and self-handicapping (e.g., I sometimes put assignments and study off until the last moment, so I have an excuse if I don’t do so well). Each factor is constituted by four items – hence, it is a 44-item instrument. The second set of measures comprised additional engagement factors each comprised of four items, including: positive academic intentions (e.g., I intend to complete school), school enjoyment (e.g., I enjoy being a student at this school), personal best goals (e.g., When I do my schoolwork I try to improve on how I’ve done before), academic buoyancy (e.g., I don’t let study stress get on top of me), and class participation (e.g., I participate when we discuss things in class). Items were rated from 1 (‘Strongly Disagree’) to 7 (‘Strongly Agree’).

All MES-HS and additional engagement factors have been previously demonstrated to be reliable, represent a sound factor structure, significantly related to external correlates, and invariant as a function of age, gender, ethnicity, and ability level (Liem & Martin, 2012; Martin, 2007, 2009; Martin, Colmar et al., 2010; Martin & Marsh, 2008). Our academic achievement measure is based on students’ results in annual nation-wide standardized assessment of literacy and numeracy (National Assessment Program in Literacy and Numeracy, NAPLAN) administered by the Australian Curriculum and Assessment and Reporting Authority (ACARA).

Demographic and Socio-economic Predictors

Data were also collected on Aboriginality, demographic (gender, age, language background), and socio-economic (neighborhood socio-economic status, parent education, parent occupational status) characteristics. Gender was coded 0 for female students and 1 for male students. Age was operationalized as a continuous variable. For language background, students were asked if they spoke English (0) or another language (1 – non-English speaking background, NESB) at home. For parent education and parent occupation indicators, participants were asked to report their father’s

(or male caregiver) and mother's (or female caregiver) educational and occupational status using a scale from Australian Bureau of Statistics categories. A single parent occupation factor and a single parent education factor were developed by finding the average of the mother and father educational scores (for parent education) and the average of mother and father occupational score (for parent occupation). Neighborhood socio-economic status (SES) was developed using coding of their neighborhood postcode by the Australian Bureau of Statistics, with higher scores reflecting higher neighborhood SES.

How We Analyzed the Data

To test for motivation, engagement, buoyancy and achievement among Aboriginal students, we conduct a series of hierarchical multiple linear regression analyses using SPSS for Windows (version 20). In Step 1, we entered Aboriginal/non-Aboriginal status, in Step 2 we added demographic factors (gender, age, NESB status), and Step 3 added socio-economic indicators (SES of neighborhood, parent education, parent occupational status). We were interested in the predictive role of Aboriginal/non-Aboriginal status at each step and to ascertain any possible changes in the effects of Aboriginal/non-Aboriginal status as demographic and socio-economic factors were entered. This helps disentangle effects due to Aboriginal/non-Aboriginal status and effects due to other factors – and, depending on the nature of these findings, has important implications for educational and other interventions.

Our Findings

In terms of motivation and engagement, after controlling for demographic and socio-economic indicators, the most dominant pattern is one of parity on positive academic factors whereas on negative factors Aboriginal students are significantly higher than non-Aboriginal students. Specifically, Aboriginal and non-Aboriginal students are broadly similar on valuing of

school, mastery orientation, planning, task management, persistence, academic buoyancy, personal best (PB) goals, positive intentions, and enjoyment of school (see Tables 1 and 2). Importantly, however, they score significantly higher on anxiety, failure avoidance, uncertain control, self-handicapping and disengagement (see Table 1). In terms of achievement, Aboriginal students score significantly lower in literacy and numeracy (Table 2). It therefore appears as though there is a motivational readiness to engage with school and schoolwork (see the general parity on adaptive factors in Tables 1 and 2), but in the presence of the wide-ranging pattern of maladaptive motivation and engagement, this readiness may be masked – perhaps leading to the significantly lower literacy and numeracy also observed in Table 2.

Importantly, the inclusion of socio-economic indicators led to lower negative effects for Aboriginal/non-Aboriginal status. In almost all cases the ‘negative’ effects for Aboriginal students dropped in notable ways to suggest that one part of their maladaptive motivation and lower achievement is a function of their lower socio-economic status. Specifically, in the case of the present data, their maladaptive motivation is a function of low SES neighborhood effects, lower parental education, and lower parental occupational status. There was not so much movement in motivation and engagement for Aboriginal students after entering the demographic factors (gender, age, non-English speaking background) and so we conclude that socio-economics are a major factor affecting the motivation, engagement and achievement of Aboriginal students. This is not to say that the demographic factors did not predict academic and non-academic outcomes. In fact, they did – for example, boys were lower in planning, task management, persistence, personal best goals and positive intentions; older students were higher in disengagement and lower in school enjoyment; and, non-English speaking background students were higher in planning, task management, persistence, personal best goals, and positive intentions. However, it seems these demographics were direct predictors of outcomes and did not substantially moderate the effects of Aboriginal status.

In seeking to understand the moderating role of socio-economic status, mechanisms relevant to low SES neighborhood effects possibly include peer affiliation that is not conducive to motivation and engagement, inadequate community infrastructure that might otherwise support academic development, relatively little access to educational and psychological support services, and generally low levels of employment that reduce incentives to achieve and attain academically. Mechanisms relevant to low parental educational and occupational levels possibly include modeling of educational and vocational attitudes and behaviors, the availability of jobs for parents that might serve as motivation to achieve academically, parents' own negative experiences with school and work, and parents' difficulties to directly assist their child academically (Hattie, 2009; Martin, 2006; Munns, 1998; Munns et al., 2008). Further in-depth research is needed to identify what psychological and other mechanisms are relevant to our findings regarding SES.

The dual impact of Aboriginal status and socio-economic status to increase maladaptive motivation and engagement has two major implications for intervention. First, the fact that much variance was not explained by socio-economic status indicates the importance of direct educational and related intervention for Aboriginal students. Thus, there are potential motivation and engagement gains to be made for Aboriginal students independent of socio-economic status. Second, the fact that socio-economic status reduces negative academic effects for Aboriginal students has broader implications for community and societal intervention – ranging from improving communities and their infrastructure and facilities through to employment and education for parents and caregivers. These are discussed more fully below.

Discussion

Relative to their non-Aboriginal peers, Aboriginal students experience significant educational disadvantage. Personal, family and other contextual factors impact and explain these outcomes (Graham, 1994; Martin, 2003, 2006; McInerney, 1991, 1995, 2000b, 2008; Munns, 1998; Munns et

al., 2003; Munns & Martin, 2013). In our review of Graham's (1994) motivational psychology and related literature, we identified specific factors relevant to motivation, engagement, buoyancy, achievement, family and socio-economic status that are important to consider in an integrative approach to understanding Aboriginal students' educational processes and outcomes. Hence, controlling for demographics and socio-economics, we compared Aboriginal and non-Aboriginal students on adaptive motivation, maladaptive motivation, additional engagement measures, academic buoyancy, and academic achievement. Consistent with much research by McInerney and others (McInerney, 1991, 1995, 2000b, 2008; McInerney et al., 1998, 2012), we found some parity between Aboriginal and non-Aboriginal students on numerous factors – primarily the adaptive motivation and engagement factors (valuing school, mastery orientation, planning, task management, persistence, academic buoyancy, personal best goals, positive intentions, school enjoyment).

However, when we assessed maladaptive motivation and engagement factors in analyses, a different pattern of findings emerged. These results showed the following factors significantly separated Aboriginal and non-Aboriginal students: anxiety, failure avoidance, uncertain control, self-handicapping, and disengagement. On three of the adaptive factors there were also differences, with Aboriginal students significantly lower in self-efficacy, class participation, literacy and numeracy. In addition, results showed socio-economic factors were relevant to variance in educational outcomes. Taken together, these findings hold direct implications for educational and other intervention – now discussed.

Motivation and Engagement Practice

As summarized above, the dominant pattern of findings was that Aboriginal students were significantly higher on all maladaptive dimensions of motivation and engagement. Specifically, on uncertain control, anxiety, failure avoidance, self-handicapping, and disengagement Aboriginal

students' self-appraisals were markedly higher. Fortunately, research shows that these factors are manipulable and thus amenable to successful intervention (Martin, 2005, 2008; McInerney, McInerney, & Marsh, 1997).

With regards to uncertain control, as Martin (2007) reports, when a student sees connections between effort (controllable) and academic outcomes, he/she is more likely to perceive greater control over his/her ability to attain success or to avoid failure. On the teacher side, control is developed through feedback to students that is timely, task-focused, improvement-oriented and consistent (Hattie, 2009). Thus, it is important for educators to administer task-based feedback, soon after task completion that makes it very clear how a student can improve (Craven, Marsh, & Debus, 1991; Martin, Marsh, & Debus, 2001; McInerney, 2000a). Reward and punishment is also another avenue for enhancing control. When teachers administer rewards (or punishment) directly contingent on what students do, students have a greater sense of what to do (or not to do) next time – in contrast, inconsistent reward contingencies can confuse students as to what they did to receive that reward and what to do (or not) next time (Thompson, 1994). In fact, control is relevant to disengagement. It can be through an ongoing sense of low control that students give up trying (Covington, 1992; Peterson, Maier, & Seligman, 1993).

In terms of failure avoidance, anxiety and self-handicapping, research and theory suggest a need to address an underlying fear of failure (Covington, 1992; Martin, 2007; Martin & Marsh, 2003). As Martin (2007) points out, there has been some good educational guidance suggested by researchers that is designed to reduce students' fear of failure. These include showing students that mistakes and poor performance provide important information about how to improve and can be important elements for future success (Covington, 1992; Martin & Marsh, 2003). Following from this, students should be encouraged to see that mistakes do not reflect a lack of worth (Covington, 1992). In terms of educational delivery, teachers are encouraged to promote students' belief that effort and effective strategy are likely to lead to improvement and do not imply a lack of

intelligence (Covington & Omelich, 1979). It may also be prudent to downplay the emphasis on competition in the classroom whilst promoting a climate of cooperation (Qin, Johnson, & Johnson, 1995) or personal best (PB) goals (Liem, Ginns, Martin, Stone & Herrett, 2012; Martin & Liem, 2011). In relation to the latter, PB goals have been found to advantage academically at-risk students (Martin, 2012) and so may be a useful focus for educational intervention with Aboriginal students. Similarly, students' views on success may be reshaped to be seen more in terms of personal progress than outperforming others (Covington, 1992).

In addition to disadvantage on maladaptive motivation and engagement factors, there were also two adaptive factors on which Aboriginal students were disadvantaged: self-efficacy and class participation. As summarized in Martin (2007), promoting students' self-efficacy can involve re-orienting teaching and instruction in order to maximize students' opportunities for and access to success. Theorists and researchers have provided extensive detail here, including: individualizing tasks and differentiated instruction (McInerney, 2000a; Petty, 2009; Schunk & Miller, 2002) and reducing students' automatic negative thinking about themselves and their perceived academic competence (Wigfield & Tonks, 2002). Developing students' skills in effective goal-setting (Locke & Latham, 2002) to enhance opportunities for success and provide a basis for academic self-efficacy is also important. Through these efforts, it is suggested that students will not only think more positively about themselves (self-efficacy), they will also have the confidence to participate in class (Martin, 2007) – one of the other two adaptive factors on which Aboriginal students struggled.

Other factors relevant to class participation may relate to Aboriginal students' identification with classroom norms, values, and resources – with a lack of identification leading to lower participation. If Aboriginal students' identity is affirmed in the classroom, there is greater opportunity to enhance their engagement (Groome & Hamilton, 1995). For example, the presence of Aboriginal mentors and Aboriginal teachers can instill pride in identity and reduce alienation in the classroom (Britton, 2000). Various cross-cultural strategies might also be useful, including

building Aboriginal perspectives into curriculum, drawing on expertise of Aboriginal community members, and using culturally-relevant resources (Halse & Robinson, 1999). According to Groome and Hamilton, “we were repeatedly told by older Aboriginal adolescents that they want education, they want to achieve and be successful, they have high aspirations but they cannot cope with the confrontational and alienating climate which they find in so many schools” (1995, p. 45). Together, these are some efforts that might prove useful in more positively positioning Aboriginality in the classroom and thus enhancing classroom participation by Aboriginal students (see also Martin, 2006).

Literacy and Numeracy Practice: The Role of Direct Instruction

Consistent with prior research (see Martin, 2006 for a review), Aboriginal students were markedly lower in achievement as assessed through standardized national literacy and numeracy testing. Whilst not going into specific details for each of literacy and numeracy (both are very large bodies of literature), we would like to raise the broader issue of academic skill development and the best way to develop academic skill. In a review of various instructional approaches, Liem and Martin (in press) assessed the relative achievement effects of direct instruction, enquiry-based learning, problem-based learning and the like. Their review pointed to the effectiveness of direct instruction and explicit instructional practices (e.g., deliberate practice, guided instruction, worked examples) in enhancing achievement. A variety of reviews, studies, and meta-analyses (e.g., Borman, Hewes, Overman, & Brown, 2003; Hattie, 2009) found that direct instruction evinces large effect sizes for academic achievement.

Liem and Martin (in press) then outlined various instructional implications of these findings. First, teachers should encourage students to see that academic tasks are achievable – similar to our recommendations for enhancing self-efficacy and academic participation. This can be done through explicitly stating the lesson goals, breaking tasks into smaller sub-tasks (‘chunking’; Martin, 2007),

and clearly communicating their optimism for the students. Second, there should be careful preparation, planning and sequencing of lessons. Third, to check for student understanding, there should be well-focused questions and teacher modeling of effective strategies. Fourth, students should be provided with opportunities to purposefully and deliberately practice relevant skills (e.g., using worked examples and consolidation in homework tasks). Fifth, students' mastery of content should be continually monitored and accompanied by immediate feedback. Finally, immediate remediation is required when important knowledge and skills have not been learnt. Taken together, these are direct and explicit instructional practices we deem important in the process of literacy and numeracy skill development that may be of vital assistance to Aboriginal students whose achievement is languishing.

Parent, Caregiver, and Family Factors

Parent (or caregiver) education, parent occupational status, and socio-economic status were factors that affected academic outcomes for Aboriginal students. Notably, these factors have also been found to reduce Aboriginal parents' capacity and confidence to help their child with schoolwork, their educational aspirations for their children, to stay in touch with the school, and to ask teachers for assistance (Fanshawe, 1976). Consistent with these findings, it has been proposed that meaningful educational involvement of Aboriginal parents would positively impact their child's academic outcomes (Richer et al., 1998). Although not necessarily easy to address, there has been quite wide-ranging advice as to how to achieve this end. For example, McIntyre and Clark (1976) point to the need to increase Aboriginal parents' aspirations for their children, to increase Aboriginal parents' knowledge of their child's academic progress and classroom participation, and to improve school-home communication and connection. For example, specific approaches to increase aspirations for school completion might involve showcasing many local examples of Aboriginal young people completing school, providing concrete examples of work and other

opportunities available upon completing school, and demystifying the academic and vocational subjects available in high school to better suit different student abilities and interests. Specific approaches to increase higher education aspirations for Aboriginal children might involve providing very clear advice and information about vocational and tertiary education entry processes and pathways, schemes available to their children to assist their entry into further education and training, and relevant support schemes to enhance progress through further education and training. There can also be an important place for genuine cooperation by Aboriginal parents on projects of substance in the classroom and in the school (Eckerman, 1985). Some have suggested involvement in resource development, curriculum, and the pedagogy itself (Harslett, Harrison, Godfrey, Partington, & Richer, 1999).

In relation to socio-economic factors, Groome and Hamilton (1995) found that schools successful in assisting Aboriginal students were more likely to recognize and address the fact that poverty may impact Aboriginal students' academic lives. Efforts that schools might consider include breakfast clubs, access to computers before and after classroom hours, provision of educational materials to the home, homework clubs, extended library hours for better access to resources, and opportunities to engage in co- and extra-curricular activity that may academically develop the Aboriginal child – or help them connect more positively to the school and its activities (Marsh & Kleitman, 2002). Clinton, Hattie, and Dixon's (2007) evaluation of the Flaxmere Project, which aimed to improve home-school links and educational outcomes in a New Zealand town with a large proportion of socially disadvantaged Maori and Pasifika families, provides in-depth discussion of an extended, multi-pronged school- and community-level intervention, and the challenges involved.

Conclusion

There are many factors that impact Aboriginal students' academic outcomes. Graham (1994; see also Martin, 2006; McInerney, 1991, 1995, 2000b, 2008, 2012) identified a need for integrative approaches to psycho-educational research and practice relevant to the learning and instruction of 'minority' students. This chapter extends these conceptual reviews by exploring Aboriginal students' motivation, engagement, academic buoyancy, and achievement. In so doing, it offers a complementary empirical approach to the conceptual work conducted to date. Findings provide important and timely guidance on educational and other interventions aimed at enhancing the educational outcomes of Aboriginal students. The fact there was much parity between Aboriginal and non-Aboriginal students on important adaptive academic factors suggest there is an empirical basis for educational optimism. Our task is to sustain these adaptive factors and to tackle some of the toxic and maladaptive motivation and engagement factors that may be masking Aboriginal students' academic potential.

References

- Borman, G.D., Hewes, G.M., Overman, L.T., & Brown, S. (2003). Comprehensive school reform and achievement: A meta-analysis. *Review of Educational Research*, 73, 125-230.
- Bourke, C.J., Rigby, K., & Burden, J. (2000). *Better practice in school attendance: Improving the school attendance of Indigenous students*. Canberra: AGPS.
- Britton, P. (2000). Improving the self-concept of Aboriginal students: A holistic approach. In R. Craven (Ed). *Aboriginal studies: Self-concept for a nation*. Sydney: SELF Research Centre.
- Calma-Holt, R. (1996). Real jobs for young indigenous Australians. In J. Spierings, Voorendt, J, & J. Spoehr (Eds). *Jobs for young Australians*. Selected papers of an international conference. Adelaide, SA.
- Clinton, J., Hattie, J., & Dixon, R. (2007). *Evaluation of the Flaxmere Project: When families learn the language of school*. Retrieved 24 October, 2012, from <http://www.educationcounts.govt.nz/publications/schooling/10001>
- Covington, M.V. (1992). *Making the grade: A self-worth perspective on motivation and school reform*. Cambridge: Cambridge University Press.
- Covington, M.V., & Omelich, C.L. (1979). Effort: The double-edged sword in school achievement. *Journal of Educational Psychology*, 71, 169-182.
- Craven, R. G., Marsh, H. W., & Debus, R. L. (1991). Effects of internally focused feedback and attributional feedback on the enhancement of academic self-concept. *Journal of Educational Psychology*, 83, 17-26.
- Craven, R., Tucker, A., Munns, G., Hinkley, J., Marsh, H.W., & Simpson, K. (2003). *Indigenous students' aspirations: Dreams, perceptions and realities*. Report to Department of Education, Science, and Training. Sydney: University of Western Sydney.
- Department of Education, Science, and Training (DEST) (2002). *The national report to parliament on Indigenous education and training, 2001*. Canberra: AGPS.
- Eckerman, A.K. (1985). Home-school relations: Some ideas. *Aboriginal Child at School*, 13, 11-41.
- Fanshawe, J.P. (1976). Possible characteristics of an effective teacher of adolescent Aboriginals. *Aboriginal Child at School*, 4, 3-23.
- Fogarty, G.J., & White, C. (1994). Differences between values of Australian Aboriginal and non-Aboriginal students. *Journal of Cross-Cultural Psychology*, 25, 394-408.
- Graham, S. (1994). Motivation in African-Americans. *Review of Educational Research*, 64, 55-117.
- Groome, H., & Hamilton, A. (1995). *Meeting the educational needs of Aboriginal adolescents*. Canberra: AGPS.

- Halse, C., & Robinson, M. (1999). Towards an appropriate pedagogy for Aboriginal children. In R. Craven (Ed). *Teaching Aboriginal Studies* (pp. 199-213). Sydney: Allen & Unwin.
- Harslett, M., Harrison, B., Godfrey, J., Partington, G., & Richer, K. (1999). Participation by Indigenous parents in school education. *Unicorn, 25*, 60-70.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London & New York: Routledge, Taylor & Francis Group.
- House of Representatives Standing Committee on Employment, Education and Training (1997). *Youth employment: A working solution*. Canberra: AGPS.
- Keys Young (2000). *Young people in transition*. Report to DETYA. Sydney: Keys Young.
- Liem, G.A., Ginns, P., Martin, A.J. Stone, B., & Herrett, M. (2012). Personal best goals and academic and social functioning: A longitudinal perspective. *Learning and Instruction, 22*, 222-230.
- Liem, G.A.D., & Martin, A.J. (in press). Direct instruction and academic achievement. In J. Hattie & E. Anderman (Eds.). *International Handbook of Student Achievement*. Oxford: Routledge.
- Liem, G.A., & Martin, A.J. (2012). The Motivation and Engagement Scale: Theoretical framework, psychometric properties, and applied yields. *Australian Psychologist, 47*, 3-13.
- Locke, E.A., & Latham, G.P. (2002). Building practically useful theory of goal setting and task motivation. *American Psychologist, 57*, 705-717.
- Marsh, H. W., & Kleitman, S. (2002). Extracurricular school activities: The good, the bad, and the nonlinear. *Harvard Educational Review, 72*, 464-514.
- Martin, A.J. (2003). The role of significant others in enhancing the educational outcomes and aspirations of Indigenous/Aboriginal students. *Aboriginal Studies Association Journal, 12*, 23-26.
- Martin, A.J. (2005). Exploring the effects of a youth enrichment program on academic motivation and engagement. *Social Psychology of Education, 8*, 179-206.
- Martin, A.J. (2006). A motivational psychology for the education of Indigenous students. *Australian Journal of Indigenous Education, 35*, 30-43.
- Martin, A.J. (2007). Examining a multidimensional model of student motivation and engagement using a construct validation approach. *British Journal of Educational Psychology, 77*, 413-440.

- Martin, A.J. (2008). Enhancing student motivation and engagement: The effects of a multidimensional intervention. *Contemporary Educational Psychology, 33*, 239-269.
- Martin, A.J. (2009). Motivation and engagement across the academic lifespan: A developmental construct validity study of elementary school, high school, and university/college students. *Educational and Psychological Measurement, 69*, 794-824.
- Martin, A.J. (2010). *The Motivation and Engagement Scale* (10th Edition). Sydney: Lifelong Achievement Group (www.lifelongachievement.com).
- Martin, A.J. (2012). The role of Personal Best (PB) goals in the achievement and behavioral engagement of students with ADHD and students without ADHD. *Contemporary Educational Psychology, 37*, 91-105.
- Martin, A.J. (in press). Academic buoyancy and academic resilience: Exploring 'everyday' and 'classic' resilience in the face of academic adversity. *School Psychology International*.
- Martin, A.J., Colmar, S.H., Davey, L.A., & Marsh, H.W. (2010). Longitudinal modeling of academic buoyancy and motivation: Do the '5Cs' hold up over time? *British Journal of Educational Psychology, 80*, 473-496.
- Martin, A.J., & Liem, G.A. (2010). Academic Personal Bests (PBs), engagement, and achievement: A cross-lagged panel analysis. *Learning and Individual Differences, 20*, 265-270.
- Martin, A.J. & Marsh, H.W. (2003). Fear of failure: Friend or foe? *Australian Psychologist, 38*, 31-38.
- Martin, A.J., & Marsh, H.W. (2006). Academic resilience and its psychological and educational correlates: A construct validity approach. *Psychology in the Schools, 43*, 267-282.
- Martin, A.J., & Marsh, H.W. (2008). Academic buoyancy: Towards an understanding of students' everyday academic resilience. *Journal of School Psychology, 46*, 53-83.
- Martin, A.J., & Marsh, H.W. (2009). Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates, and cognate constructs. *Oxford Review of Education, 35*, 353-370.
- Martin, A.J., Marsh, H.W., & Debus, R.L. (2001). Self-handicapping and defensive pessimism: Exploring a model of predictors and outcomes from a self-protection perspective. *Journal of Educational Psychology, 93*, 87-102.

- McInerney, D.M. (1991). Key determinants of motivation of non-traditional Aboriginal students in school settings: Recommendations for educational change. *Australian Journal of Education*, 35, 154-174.
- McInerney, D.M. (1995). Achievement motivation and Indigenous minorities: Can research be psychometric? *Cross-Cultural Research*, 29, 211-239.
- McInerney, D.M. (2000a). *Helping kids achieve their best*. Sydney: Allen and Unwin.
- McInerney, D.M. (2000b). Relationships between motivational goals, sense of self, self-concept and academic achievement for Aboriginal students. In R. Craven (Ed). *Aboriginal studies: Self-concept for a nation* (pp. 66-75). Sydney: SELF Research Centre.
- McInerney, D.M. (2008). Personal investment, culture and learning: Insights into school achievement across Anglo, Aboriginal, Asian and Lebanese students in Australia. *International Journal of Psychology*, 43, 870-879.
- McInerney, D.M. (2012). Conceptual and methodological challenges in multiple goal research among remote and very remote Indigenous Australian students. *Applied Psychology: An International Review*, 61, 634-668.
- McInerney, D. M., Fasoli, L., Stephenson, P., & Herbert, J. (2012). Building the future for remote Indigenous students in Australia. An examination of future goals, motivation, learning and achievement in cultural context. In J. N. Franco and A. E. Svensgaard (Eds.), *Handbook on Psychology of Motivation: New Research*. New York: NOVA Science Publishers.
- McInerney, D.M., Hinkley, J., Dowson, M., & Van Etten, S. (1998). Aboriginal, Anglo, and immigrant Australian students' motivational beliefs about personal academic success: Are there cultural differences? *Journal of Educational Psychology*, 90, 621-629.
- McInerney, V., McInerney, D.M., & Marsh, H.W. (1997). Effects of metacognitive strategy training within a cooperative group learning context on computer achievement and anxiety: An aptitude-treatment interaction study. *Journal of Educational Psychology*, 89, 686-695.
- McIntyre, L., Clark, R. (1976). The role of guidance and counselling for secondary education for urban Aboriginal students. *Aboriginal Child at School*, 4, 38-50.
- Munns, G. (1998). 'They just can't hack that': Aboriginal students, their teachers and responses to schools and classrooms. In G. Partington (Ed). *Perspectives on Aboriginal and Torres Strait Islander education* (pp. 171-187). Katoomba: Social Science Press.
- Munns, G., & Martin, A.J. (2013). Me, my classroom, my school: A mixed methods approach to the meE framework of motivation, engagement, and academic development. In G.A.D. Liem

- & A. Bernardo (Eds). *A cross-cultural perspective of key issues in educational psychology: A Festschrift for Dennis McInerney*. Charlotte, NC: Information Age Publishing.
- Munns, G., Martin, A.J., & Craven, R. (2008). To free the spirit? Motivation and engagement of Indigenous students. *Australian Journal of Indigenous Education*, 37, 98-107.
- Peterson, C., Maier, S.F., & Seligman, M.E.P. (1993). *Learned helplessness: A theory for the age of personal control*. New York: Oxford University Press.
- Petty, G. (2009). *Evidence-based teaching: A practical approach*. Cheltenham, UK: Nelson Thomas.
- Phillips, V. (1990). The Aboriginal and Islander student in the classroom. *Aboriginal Child at School*, 18, 36-46.
- Purdie, N., Tripcony, P., Boulton-Lewis, G., Fanshawe, J., & Gunstone, A. (2000). *Positive self-identity for Indigenous students and its relationship to school outcomes*. Canberra: AGPS.
- Qin, Z., Johnson, D.W., & Johnson, R.T. (1995). Cooperative versus competitive efforts and problem solving. *Review of Educational Research*, 65, 129-144.
- Richer, K., Godfrey, J., Partington, G., Harslett, M., & Harrison, B. (1998). *Attitudes of Aboriginal students to further education: An overview of a questionnaire survey*. Paper presented at Australian Association for Research in Education Annual Conference, Adelaide, Australia.
- Rigney, M. (1996). Employment pathways for indigenous Australians. In J. Spierings, Voorendt, J., & J. Spoehr (Eds). *Jobs for young Australians*. Selected papers of an international conference. Adelaide, SA.
- Schunk, D.H., & Miller, S.D. (2002). Self-efficacy and adolescents' motivation. In F. Pajares & T. Urda (Eds). *Academic motivation of adolescents*. Connecticut: Information Age Publishing.
- Thompson, T. (1994). Self-worth protection: Review and implications for the classroom. *Educational Review*, 46, 259-274.
- Wigfield, A., & Tonks, S. (2002). Adolescents' expectancies for success and achievement task values during middle and high school years. In F. Pajares & T. Urda (Eds). *Academic motivation of adolescents*. Connecticut: Information Age Publishing.

Table 1.

Hierarchical Regression Results for Motivation and Engagement

	Self- efficacy	Valuing School	Mastery Orient	Planning	Task Manage	Persist	Anxiety	Failure Avoid	Uncertain Control	Self- handicap	Disengage
Step 1: ABORIGINALITY											
Aboriginal (N/Y)	-.07	-.02	-.03	.10**	.07	.02	.11**	.20***	.16***	.21***	.18***
Step 2: Step 1 + DEMOGRAPHICS											
Aboriginal (N/Y)	-.09*	-.04	-.05	.04	.03	-.04	.10**	.18***	.15***	.20***	.17***
Step 3: Step 2 + SOCIO-ECONOMICS											
Aboriginal (N/Y)	-.08*	-.04	-.08	-.01	.01	-.04	.11**	.10*	.11**	.13***	.13**
FINAL MODEL (Step 3)											
Aboriginal (N/Y)	-.08*	-.04	-.08	-.01	.01	-.04	.11**	.10*	.11**	.13***	.13**
Gender (FM/M)	-.02	-.03	-.07	-.11**	-.12**	-.10**	-.19***	-.03	-.02	.04	.03
Age	.06	-.10**	.02	-.06	.01	-.01	.05	-.01	.02	.03	.10**
NESB (N/Y)	.07	.03	.03	.14***	.09*	.15***	-.02	.04	.01	.02	.03
SES (Postcode)	-.03	-.04	-.06	-.12**	-.07	-.04	.04	-.12**	-.03	-.05	.01
Parent Education	.09*	.03	-.01	.02	.03	.07	.02	-.06	-.07	-.13***	-.10**
Parent Occupation	-.04	.01	-.01	.02	-.01	.01	-.07*	-.09*	-.04	-.06	-.05
Multiple R	.12	.14*	.11	.23*	.18**	.18***	.23***	.27***	.19***	.27***	.24***

* $p < .05$, ** $p < .01$, *** $p < .001$

N=No, Y=Yes; NESB=non-English speaking background; SES=socio-economic status; FM=female, M=male

Table 2.

Hierarchical Regression Results for Achievement and Additional Engagement Factors

	Literacy & Numeracy	Academic Buoyancy	Personal Best Goals	Class Participation	Positive Intentions	School Enjoyment
Step 1: ABORIGINALITY						
Aboriginal (N/Y)	-.35***	.01	.07	-.05	-.08*	-.03
Step 2: Step 1 + DEMOGRAPHICS						
Aboriginal (N/Y)	-.35***	.01	.03	-.08*	-.11*	-.04
Step 3: Step 2 + SOCIO-ECONOMICS						
Aboriginal (N/Y)	-.20***	-.02	-.01	-.09*	-.07	-.05
FINAL MODEL (Step 3)						
Aboriginal (N/Y)	-.20***	-.02	-.01	-.09*	-.07	-.05
Gender (FM/M)	.01	.08*	-.08*	-.06	-.16***	-.06
Age	.05	-.01	-.06	-.04	.12**	-.08*
NESB (N/Y)	.03	.01	.09*	.07	.11**	.01
SES (Postcode)	.22***	-.07	-.10*	-.07	-.03	-.13**
Parent Education	.17***	-.01	.03	.05	.15***	.11**
Parent Occupation	.06	.04	-.04	.01	-.03	.02
Multiple R	.46***	.10	.17**	.12	.27***	.18**

* $p < .05$, ** $p < .01$, *** $p < .001$

N=No, Y=Yes; NESB=non-English speaking background; SES=socio-economic status; FM=female, M=male