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A Model for Seeding Success for Aboriginal Students

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Abstract

Despite efforts of educators and researchers to address issues of Australian Indigenous education, many Aboriginal Australians have remained disadvantaged. Australian education has largely continued to fail in providing Aboriginal Australians with educational outcomes and life opportunities comparable to their non-Aboriginal peers. Actions taken to address such issues are often based on certain assumptions which, though well intended, are often lacking of evidence of tangible results and sustainability. Ways to make a real difference to the present situation requires scientific and systematic investigations that can inform policy and practice on the basis of a sound theoretical model and evidence derived from rigorous testing with sound methodology. This paper presents a model for seeding success for Aboriginal students, which emphasizes an intertwinement of theory, research, and practice and suggests ways to improve the education of a long disadvantaged group.

To date, there has been little empirical research in Aboriginal Education, particularly in the schooling sector, which identifies strategies that may seed success in educational outcomes for Aboriginal students and act as a strong foundation for effective intervention. This lack of empirical research in the schooling sector has been acknowledged by Commonwealth commissioned national studies in Australia (Craven, 2006; Craven et al., 2005a; 2005b), leading Indigenous educators (e.g., Bin-Sallik, 2005; Hughes, 2004), the NSW Aboriginal Education Review (DET, 2005), and the Australian Council for Educational Research (ACER, Mellor & Corrigan, 2004). The dearth of empirical Aboriginal Education research is impeding progress in addressing the educational disadvantage that Aboriginal children suffer and also the development of new solutions for interventions aimed at enhancing the educational outcomes of Aboriginal students. Unfortunately, actions taken to address issues related to Indigenous education are often based on assumptions without any evidence of the positive effects and sustainability of the very intervention being utilized. As a result of this, the emphasis on this paper will be on an overview of some preliminary findings on the basis of which suggestions can be made to establish a model that may make a real difference through combining knowledge
obtained from theory, research, and practice. In doing so a foundation may be set to realize potential long-term improvements in the education of one of Australia’s most disadvantaged minority groups across nearly all socio-economic indicators (Australian Bureau of Statistics [ABS], 2006; Craven & Bodkin-Andrews, 2006; Department of Education, Science and Training [DEST], 2005).

In order to make a real difference, the first step is to identify which factor contributes most to tangible outcomes. Australian educational researchers advancing the effective schools tradition have now established clearly that teaching is a prime factor in promoting improvements in student outcomes (e.g., Hattie, 2003; Hill & Rowe, 1998; Rowe, 2003). This finding is supported by national and international educational research showing that teaching and school improvement can improve students’ academic learning outcomes. Building on evidence-based national and international research, it is clear that a central focus must be placed on the quality of pedagogy. This research has also identified the most promising aspects of quality teaching in terms of impact on educational outcomes (e.g., setting high expectations; setting tasks of high intellectual challenge) and these aspects of quality teaching have been synthesized into the NSW Quality Teaching Framework (NSW DET, 2003). However, the implications and impact of these and other strategies on Aboriginal students’ educational outcomes remain unknown. Such information is critical if teachers and schools are to be provided with effective practical strategies on which to base school and classroom practice to maximise Aboriginal students' potential and to effectively implement the quality teaching framework for them. For example, whilst reports and Aboriginal Education policy statements and organizations have emphasized the need to maximize psychological constructs (e.g., Aboriginal students’ identity and academic self-concepts, resilience, engagement, well-being, and general self-esteem) as both a driver for outcomes within the schooling system and as outcomes from school itself, lack of relevant research in Aboriginal Education means that education authorities and teachers have little basis on which to do so. It is therefore imperative to generate solutions for Aboriginal Education intervention grounded in theory and substantiated by sound empirical research to result in tangible outcomes.

There is an urgent need to test (a) which characteristics of quality teaching at the classroom level causally impact on Aboriginal students' engagement and educational outcomes; (b) what specific characteristics of schools impact positively on Aboriginal students’ educational outcomes; and (c) the salience of the views of Aboriginal Education organizations and the international research literature in relation to the central role of psycho-social constructs as important outcomes of schooling, and as mediating variables and drivers of Aboriginal students' life potential that directly influence and enhance other desirable educational outcomes. As such there is the need to establish a model that includes all the salient outcomes that have the potential to ‘break the cycle’ of underachievement by generating new solutions to inform the development of effective intervention at multiple levels, and to shape a better future for Aboriginal students by serving as an impetus for recognising the need to build capacity at school, classroom, and individual levels, and for providing schools with best available practice effective strategies for doing so. On the basis of a model combining theory, research and practice, systematic research may serve to underpin and inform the development of new, innovative, and effective interventions by beginning to identify potent strategies at school,
classroom, and individual levels that directly enhance specific educational outcomes for Aboriginal students.

**Importance of the Problem**

National reports and all Australian governments have for decades acknowledged that Aboriginal people are significantly educationally disadvantaged and participate less in education compared to the total population (e.g., Commonwealth of Australia; 2002; Kemp, 1999). Given that educational outcomes predicate success in life opportunities, this is of dire national concern (Commonwealth of Australia, 1997, p. 26) and fits clearly into a Designated National Research Priority. Historically “schools in general are not successful in recognising and meeting the needs of their Aboriginal students” (National Board of Employment, Education and Training (NBEET), 1995, p. ix).

Aboriginal Education is also plagued by a paucity of evidence-based research. For example, Bin-Sallik et al. (1994) in their seminal review of Aboriginal Education research noted that much of the literature they reviewed was descriptive (1994); in general "there is almost no empirical research" (p. 7); there is "a noticeable absence in the current literature, of analysis of how to get things done" (1994b, p. 19), and they found a very small number of references to the schooling sector. A decade later, Mellor and Corrigan (2004) in reviewing contemporary Aboriginal Education research also lamented the lack of empirical research noting that: “There is not, in Australia, a research tradition of quantitative measurement in the Indigenous education literature. To ignore such measurement only continues to do injustice to the gravity of the problem” (pp. 46-47). They also noted that the research methodology employed in current studies is limited by factors such as: small case studies; focusing on a small subset of the population (e.g., communities with a high Indigenous population); isolating Indigenous education research from the broader discourses in other disciplines such as psychology, sociology and health; and that the relation between cause and effect has been asserted rather than demonstrated by research.

This need for filling the gap in the literature and for knowledge and strategies to improve the current situation has led us to start a series of empirical studies. Our aim is therefore to contribute to addressing the need by elucidating specific facets of quality teaching, characteristics of effective schools, and psychological causal mechanisms that enhance educational outcomes, and in so doing, generate new solutions for driving effective intervention and make a substantial contribution to the evidence base for developing sound Aboriginal Education policies, practices, and educational programs in primary schools underpinned by evidence-based research and strong theoretical models.

**New Solutions**

Whereas there is evidence showing that Aboriginal students do not achieve the same educational outcomes as their peers and given the dearth of research, little is known about the actual drivers of Aboriginal students' educational outcomes. However examination of findings in the educational literature based on research with non-Aboriginal students offers potentially powerful insights on seeing the way forward. Hattie has synthesised over 500,000 studies of the effects of various influences on student achievement (see Hattie, 2003 for an overview) and found that almost all education strategies have a positive effect on achievement. However, Hattie advocates that what we should be
looking at are those attributes that have marked effects as opposed to minor effects. By synthesizing studies using Hierarchical Linear Modelling, Hattie (2003) has identified the key major sources of variance in achievement: home (5-10%), school (5-10%), peer 5-10%, attributes of students (50%), and teachers (30%). He also identified effect sizes for key influences and has found that the majority of these are at the teacher-level. Based on this rich research evidence, Hattie (2003) concluded that "It is what teachers know, do, and care about which is very powerful in this learning equation" (p. 2).

Similar to Hattie (2003), Rowe (2003) has emphasised the importance of teacher quality as a key determinant of schooling outcomes and advocates that there is a need to focus on ‘real’ effects from recent and emerging local and international research on educational effectiveness (e.g., Hill & Rowe, 1998). For example, the Victorian Quality Schools Project (see Hill & Rowe, 1998; Hill et al., 1996) examined variance in Australian student achievement data for Literacy and Numeracy taking into account the hierarchical nature of the data for 13,700 students in primary and secondary schools. It was found that variation at the class/teacher-level for Literacy for primary students was 45% and for Numeracy 55% whereas variation at the school level was small (8.6% primary literacy, 4.1% primary numeracy). In summing up the findings of next generation school effectiveness studies, Rowe (2003, p. 1) concluded that "the quality of teaching and learning provision are by far the most salient influences on students’ cognitive, affective, and behavioural outcomes of schooling – regardless of their gender or backgrounds". Rowe (2003, p. 22) has also lamented that there "is a growing uneasiness related to how little is known about teacher quality from the students’ own perspectives".

We would add to this that there is astoundingly little known about what Aboriginal students see as the qualities of effective teachers and the impact this has on educational outcomes. There is a need to critically validate the generalisability of these findings to Aboriginal students to tease out facets of quality teaching that are salient to Aboriginal students, elucidate their perspectives of teacher quality; and test the influence of specific facets of quality teaching on academic outcomes and the consequences of the findings for developing interventions for Aboriginal primary school students. In considering new solutions to the problem, it is also necessary to be aware of the saliency of effects at multiple effects. These levels include the community, the school, the teachers, and the students.

Hattie (2003) also identified student attributes as a strong influence on students' achievement accounting for 50% of variance in achievement outcomes. He identified the strongest effects were students’ prior cognitive ability, students' disposition to learn, and affective attributes of students. In other words, students’ psychological adaptive behaviours contribute to explaining their achievement. There is also a revolution sweeping psychology, one that emphasizes a positive psychology and focuses on how healthy, normal and exceptional individuals can get the most from life (e.g., Seligman & Csikszentmihalyi, 2000; Vallerand et al., 2003). Consistent with this emphasis, a positive self-concept is valued as a desirable outcome in many disciplines. Attesting to this pervasive significance of the self-construct and the outcomes that are mediated by it,

NSW Aboriginal Education Consultative Group Incorporated cannot think of a single problem plaguing Aboriginal children – alienation from school, high rates of absenteeism, non-enjoyment of school, significant under-achievement, reduced educational and career aspirations, youth depression and suicide, conceptions about employment prospects and inability to secure rewarding,
productive careers – that is not traceable, at least in part, to the failure of
education systems to maximize our children’s identity self-concepts as
Aboriginal people, proactively enhance our children’s academic self-concepts,
and ensure our children in general feel good about themselves. We feel that
maximizing Aboriginal children’s self-concepts is fundamental to enhancing
them as individuals and ensuring they reach their full potential (NSW AECG
as quoted in Craven & Tucker, 2003).

Hence, positive self-belief is valued as a variable that makes good things happen,
facilitating the realization of full human potential for Aboriginal students. Indeed, recent
Commonwealth cross-sectional research has suggested that a strong sense of self-concept
for Aboriginal children and young people is related to successful educational outcomes
(Craven et al., 2005; Purdie et al., 2000) and international work undertaken by the OECD
(2003) has concluded that self-concept needs to be seen alongside with school
achievement as an important outcome of schooling. Similarly, Marsh and Craven (1997; 2006; Craven, Marsh, & Burnett, 2003) claim
that enhancing self-concept is a vital goal in and of itself and that self-concept is an
important mediating variable that causally impacts on a variety of desirable outcomes
including academic achievement. Indeed, many (e.g., Sommer & Baumeister, 2002)
argue that there exists an extensive literature, spanning diverse disciplines and theoretical
perspectives, suggesting that high self-concept promotes goals, expectancies, coping
mechanisms, and behaviours that facilitate productive achievement and work experiences,
and impede mental health problems. Capitalizing on previous advances in theory and
empirical research, Marsh and Craven developed a reciprocal effects model (REM; also
see Marsh, Byrne, & Yeung, 1999; Marsh & Craven, 1997) whereby the causal relation
between academic self-concept and achievement is conceived as dynamic and reciprocal.
In reviewing the available international evidence (see Marsh & Craven, 2006), they found
that support for the REM is particularly strong in relation to academic self-concept and
school performance whereby increases in specific domains of self-concept lead to
increases in associated performance domains and other desirable outcomes and improved
performance leads to better self-concepts. These results clearly demonstrate the pervasive
significance of the self-concept construct, offer further support for the theory on which
this research is based, and affirm that enhancing self-concept has a causal influence on
achievement such that enhancing skills alone is not enough; people need also to hold
positive self-concepts of their abilities in specific areas. As yet this research has not been
extended to Aboriginal students. Therefore at the student level, we suggest that research
needs to test the validity of the REM for Aboriginal students, testing the impact of
multiple facets of academic self-concept on academic achievement and other educational
outcomes, testing the strength of this causal influence in comparison to other postulated
psycho-social drivers of life potential derived from the psychology of success, and
elucidating the implications of the findings for developing interventions for Aboriginal
primary school students to unlock potentially potent keys to seed educational success.

At the school level, the NSW DET Review of Aboriginal Education (2005) has
identified that effective schools have the potential to make an important contribution to
Aboriginal Education. Key characteristics of effective schools identified by the review
included: Aboriginal community/school partnerships; valuing of Aboriginal culture,
inclusion of Aboriginal perspectives across the curriculum, Aboriginal community
involvement, application of the anti-racism policy, and celebration of cultural events.
However, little is known as to the actual influence of such school characteristics on
Aboriginal children's educational outcomes. Hence research also needs to advance knowledge of the influence of specific school characteristics on primary Aboriginal students’ educational outcomes and identify the implications of the findings for strengthening schools in regard to Aboriginal Education. In sum, to provide relevant solutions to improve the current situation, there is a need to consider a multi-level model that can guide intervention and school improvement practices.

A Blend of Theory, Research, and Practice

In our research, we place a strong emphasis on the interplay of theory and practice and strong theoretical underpinnings and state-of-the-art methodological approaches. From a methodological perspective, causal modelling research is based almost exclusively on traditional samples from Western studies. Marsh, Byrne, and Yeung (1999) specifically identified the importance of research testing the generalisability of causal modelling research results with different cultural groups, but did not find any research that pursued this recommendation. We need to ensure that new research should make an important contribution to extend existing theory and research to Aboriginal populations and a unique contribution to Aboriginal Education by investigating empirically the impact of quality teaching, effective schools, and psycho-social drivers on literacy, numeracy, and other educational outcomes; and attempting to unravel the rich tapestry of relations these constructs share with important educational variables via both sophisticated quantitative and qualitative research methods. Furthermore, the success of such a research agenda depends not only on well-developed theory and substantive application, but also on innovative experimental design, methodological, statistical and psychometric techniques—the hallmarks of scientific rigour. In sum, a blend of sophisticated quantitative and rich qualitative methods, theoretical strength, and substantive application is critical to the success of our research program.

Our Recent Research

In our recent research on Aboriginal education, the overarching aims are to address the paucity of empirical Aboriginal education research in the schooling sector in general, and in the primary years in particular. We hope to offer important educational and social benefits for the most disadvantaged group in Australian society on all social indicators (Commonwealth of Australia, 2002). The purpose is to elucidate for Aboriginal students within the primary education system and for multiple stakeholder perspectives (students, teachers, principals) the causal impact on educational outcomes of:

(a) specific aspects of quality teaching, for example, feedback, instructional quality, setting challenging tasks (see Hattie, 2003; NSW DET, 2003) identified by international research and DET for non-Indigenous students, to extend this research to Aboriginal students, identify what aspects of quality teaching are salient for Aboriginal students and the extent to which they are experienced by students, and elucidate the implications of the NSW Quality Teaching Framework (NSW DET, 2003) for teaching Aboriginal students;

(b) characteristics of effective schools identified by the recent DET Aboriginal Education Review (DET, 2005) to strengthen schooling for Aboriginal students; and

(c) the strengthening of psycho-social drivers of life potential (e.g., positive cultural identity, academic self-concept, student learning strategies and resilience) to overcome various social stressors (e.g. peer discrimination, teacher discrimination, negative social
stereotypes and bullying) in order to identify specific facets of these constructs that result in tangible improvements in specific desirable educational outcomes for Aboriginal students (e.g., numeracy, literacy, attendance, schooling engagement, persistence, enjoyment of school, high achievable aspirations).

In essence, our research emphasizes a multi-level approach and addresses multiple variables including behavioural and psycho-social outcomes. Ideally, within any quantitative research methodology, an important feature must be an emphasis on the validity of measurements. The development and validation of new measures for young children in primary schools has become an important component of our research. In their review of developmentally appropriate psychological instruments for young children, Marsh, Debus, and Bornholt (2005, p. 156) noted that:

> The apparent failure of previous research with very young children apparently reflects problems with the development of appropriate multidimensional instruments and the reliance on weak or inappropriate statistical tools as well as issues that are idiosyncratic to this particular age group.

Regardless of this, Marsh et al. concluded that—based on research with older children—“the combination of more appropriate measurement tools, better methodology, and stronger statistical procedures will facilitate a resurgence of good quality measures and research with young children” (p. 156). We believe that the development of age and culturally appropriate measures is an important new contribution to research with young children as well as to Aboriginal primary students. Using a well validated instrument, we would be able to identify quality teaching, schooling, and psycho-social determinants of salience to Aboriginal primary children; explicate the differential influence of these constructs on educational outcomes; and account for a holistic approach at different levels. By combining theory, research and practice, we would be able to effectively apply strategies underpinned by research evidence and rigorously evaluate the effectiveness of interventions in the context of a strong multi-method research design.

**The Research Agenda**

Here, we will first explain our major goals, and then we will present a summary of the research studies we have conducted and some preliminary findings. Finally, a model will be offered for readers who are also looking to further the knowledge and research in the area of Indigenous education.

In our research, our hope is to obtain results that will provide research-identified solutions for developing innovative and effective educational interventions that will effectively pierce through the classroom door and making a real difference in the current lives and future aspirations and opportunities of Indigenous Australian students. More specifically, the investigations we have conducted have aimed to capitalise on, extend, and apply recent advances in education, educational psychology, and measurement research using sound multi-method research methodology to:

- undertake a rich and robust evidence-based longitudinal study in different representative types of school environments to elucidate by sophisticated empirical investigation the causal influence of quality teaching, characteristics of effective schools, and psycho-social constructs on literacy, numeracy, and other desirable educational outcomes in the context of a methodologically sound large-scale causal modelling research design to identify specific facets of these constructs that directly enhance educational outcomes for Aboriginal primary
students to provide new tangible solutions to inform innovative intervention;

- elucidate Aboriginal students' perceptions of the characteristics of quality teaching and effective schools, understand the rich tapestry of relations multidimensional facets of these constructs share with educational outcomes, and to ascertain whether these differ according to different types of school populations by undertaking qualitative research that will enrich understandings based on quantitative research methodology to further inform intervention;

- test the psychometric properties of all instrumentation in order to develop a suite of culturally appropriate and salient measures to: assist teachers to critically reflect upon and assess their pedagogy based on student evaluations; evaluate effective schooling practices to increase the capacity of teachers and schools in partnership with Aboriginal communities to address the educational needs of Aboriginal students; enable teachers and researchers to assess and target for the enhancement of multiple dimensions of Aboriginal students’ psycho-social profiles; and extend recent advances in educational psychology research based on non-Aboriginal students to inform theory, research, and early intervention for Aboriginal students;

- compare and contrast the factor structure of pedagogical, school characteristics, and psycho-social constructs and the pattern of relations between these constructs and other desirable educational outcomes for Aboriginal students in comparison to non-Aboriginal students longitudinally, in order to ascertain similarities and differences between Aboriginal students and non-Aboriginal students to identify potentially potent empirically demonstrated causal constructs of salience for interventions with Aboriginal students; and

- identify effective theoretical orientations, and culturally appropriate quantitative and qualitative research methodologies to utilize in Aboriginal Education studies in the schooling sector. This will make significant advances in educational theory and research that can provide new solutions for intervention with a view to expediting and seeding success in achieving equitable educational outcomes for Aboriginal students commensurate with their non-Aboriginal peers.

Summary of Preliminary Findings of Our Recent Research

Currently, there is a diverse array of present and proposed research and literature emanating from the Centre for Educational Research that has focused upon pertinent issues that may influence the educational outcomes of Indigenous students. Some of this research includes:

- Indigenous Student's Aspirations: Dreams, perceptions and realities (Craven et al., 2005). Within this large scale study involving 517 Indigenous and 1151 non-Indigenous high school students across three Australian states, strong evidence was found to support the need to account for multiple dimensions of Indigenous students’ self-concepts (see Craven & Marsh, 2004 for summary). Notably, a number of statistically significant and potentially critical differences between the self-concepts of Indigenous and non-Indigenous were identified. That is, when compared to non-Indigenous students, Indigenous students scored significantly higher on general, appearance, physical, and art self-concepts in
comparison to their non-Indigenous peers. However, Indigenous students’ self-concept scores were statistically **significantly lower** for math, school, verbal, honesty, emotional, opposite, and same sex relation self-concepts. Given recent research with non-Indigenous samples has demonstrated that academic self-concept shares a causal and reciprocal relation with academic achievement (Marsh & Craven, 1997, 2006), this finding highlights a point in dire need of effective intervention. Indeed, focusing on enhancing Indigenous students’ positive self-concepts was made even more salient when results emanating from this study found that Indigenous students’ more specific academic self-concepts (e.g. math, verbal, and general school self-concept) were significantly and meaningfully related to school outcomes such as enjoyment of school, aspirations to finish Year 12, and even lowered levels of absenteeism (Bodkin-Andrews, Craven & Marsh, 2005).

- *Koori a Will to Win: The Triumph of the Wonnarua* (Wilson-Miller, 2006): Within this project, respected Indigenous historian, James Wilson-Miller offered a unique and powerful new perspective on the history of Koori Australians, a recounting of a history that does not end at the first contact and conflicts between Indigenous Australians and the invading British Empire, but rather it is a historical perspective that is continually living through the struggles of the Wonnarua people of the Hunter Valley. Despite recounting the initial stages of the war between the Koori people and British subjects; the demeaning status Koori people were given under British Law; the continual and diverse array of overt and subtle racist lies, policies, behaviours and attitudes; the onslaught of European diseases of which the Wonnarua people and all Indigenous Australians had little or no resistance to; and the forced starvation that came as a result of reduced natural resources and foods as traditional hunting and gathering methods becoming increasing oppressed. Despite this onslaught on the very existence of the Wonnarua people, and the continued oppressive forces, Wilson-Miller writes of the triumphs of the Wonnarua people as they adapted to the overwhelming forces of the British invasion, and survived and remembered the true history of their people. A history that acknowledges rather than ignores the past, present and future injustices that the Wonnarua people may face, but will triumph over. In the words of Wilson-Miller (2006, p. 11) himself; “the truth telling of our history is a key to enhancing the soul and heart of our nation.”

- *Documentation and multi-method critical analysis of Ngarabal and Biripi Elders’ perspectives and experiences of Australian history* (Blacklock, 2006): In another continuing historical project, Fabri Blacklock writes from the perspective of what can only be considered as the most important and most accurate approach to Indigenous history, that being from the perspective of the Elders of the Ngarabal and Biripi peoples. Importantly, rather than focusing one particular method, Fabri Blacklock is utilizing a multi-method approach that will include the strategies of oral historical analysis, case studies and histiography techniques that will provide an essential and valuable link for providing valuable knowledge to the wider community, and the younger and coming generations of Ngarabal and Biripi peoples.

- *Benefits of HSC Aboriginal studies: Disentangling impact on Indigenous students*
(Wray, Craven & Munns, 2006): Within this study, Debbie Wray focused Higher School Certificate courses in Aboriginal Studies, and how such a course has been traditionally impacted upon by NSW educational policy, and also how the course itself may impact upon Indigenous and non-Indigenous students themselves. More specifically, Debbie Wray’s research has shown that despite the implementation of a number positive program initiatives (e.g. What Works?, Dare to Lead, and the Building Bridges Project), little progress is being made to reduce the inequities faced by Indigenous students. Many government reports though stress for the need to show a stronger implementation of Aboriginal studies in the curriculum as means making the later schooling years more encouraging for Indigenous students by essentially tying linking a stronger sense of identity to school itself. Indeed, Debbie Wray has found that Indigenous students undertaking the HSC Aboriginal studies course did so to increase their knowledge about their culture and to help pass such knowledge onto non-Indigenous students. Additionally it was found that Aboriginal studies enhanced Indigenous students’ sense of pride in their culture, made them feel safer at school, and increased their overall enjoyment of school (Wray, et al., 2006).

• New solutions for maximising secondary Indigenous students’ full potential: Identifying causal constructs (Bodkin-Andrews, Craven, & Marsh, 2004): Motivated by the findings of the Craven et al. (2005) research which demonstrated that Indigenous students set lower educational aspirations than non-Indigenous students within secondary school, this large scale study captured a large sample of Indigenous (n = 346) and non-Indigenous students (n = 1462) in an attempt to longitudinally identify psychological constructs that have a causal impact on Indigenous and non-Indigenous students’ educational aspirations and outcomes within the secondary schooling system. Indeed, detailed yet preliminary results have found that academic components of self-concept and academic motivation have powerful relations with various Indigenous students’ school outcomes (e.g. school enjoyment, school aspirations, standardized achievement), yet these relations are generally weaker when compared to non-Indigenous students (Bodkin-Andrews, Craven, & Yeung, 2007). Additionally it was found that not only did perceived racial discrimination substantially and significantly contribute to patterns of disengagement and disidentification from the schooling system for Indigenous students (Bodkin-Andrews & Craven, 2006; Bodkin-Andrews, Ha, & Craven, 2006), but discrimination also had the strongest overall relation (negative) with Indigenous students standardized achievement in spelling and mathematics tests, with this relation being 10 times more powerful than that of SES and General Self-esteem combined (Bodkin-Andrews, Craven, & Yeung, 2007).

• Maximising Aboriginal students’ potential: Roles of self-concept and motivation in making real difference to desirable educational outcomes (Craven, Martin, Munns & Ha, 2006; Munns, Martin & Craven, 2006): With the impact of psychological constructs being identified as important contributors to Indigenous students’ aspirations and performance within the secondary schooling system (Bodkin-Andrews et al., 2004; Craven et al., 2005), little research exists as to how these constructs may also impact upon younger Indigenous students within the
primary school setting. This research specifically aimed to address this issue by adapting and validating previously grounded psychological measures for Indigenous and non-Indigenous primary school students. Indeed, the preliminary results have been promising as multiple dimensions of self-concept and motivation have been found to be reliable and valid measures for these students, and have also been identified to be positively associated with desirable academic outcomes such as optimism, school enjoyment and performance in spelling and mathematics tasks (Craven, Martin, Munns & Ha, 2006; Martin, Craven & Munns, 2006). As highlighted within a report stemming from this project (Ha & Craven, 2007), the Indigenous primary students held slightly lower academia-related self-concepts (e.g. verbal, math, & general school), and slightly lower adaptive motivational tendencies (e.g. value of schooling, academic mastery, persistence) when compared to the non-Indigenous students.

In addition to the above mentioned projects, a recent grant application whose justification stemmed from the New Solutions results (Bodkin-Andrews, Craven, & Yeung, 2007) which highlight the enormous impact of perceived discrimination on Indigenous students’ academic performance within the secondary schooling system. Due to the findings of this research, this specific application is seeking to apply an effective intervention for reducing the negative impacts of stereotypes and racism on Indigenous high school students.

**BUBALAMAI BAWA GUMADA - Healing the Wounds of the Heart: A Research-Based Intervention Diminishing the Impact of Racism and Stereotype Threat**

With international literature recently identifying a phenomena known as stereotype threat as a significant stressor on some disadvantaged minority groups’ performance within the academic setting (Steele & Aronson, 1995), Indigenous education is arguably falling well behind international research in its failure to not only adequately address this issue, but also in its failure to utilize a multitude of strategies that are being found to negate the effects of stereotype threat. More specifically, stereotype threat is defined as:

Stereotype threat is an extra cognitive and/or emotional burden borne from stereotypes held against a particular group’s abilities. “This burden takes the form of performance disruptive apprehension, anxiety about the possibility of confirming a deeply negative racial inferiority... Importantly is not necessary that a student believe this burden... He or she need only be aware of the stereotype” (Aronson, Fried & Good, 2002, p. 114).

Ultimately, the burden of stereotype threat leaves an affected student with one of two options, to fight the stereotypes held against their cultural groups (potentially increasing the anxiety and apprehension felt), or alternatively to disengage from the very domain in which the stereotype exists. Recently though, international advances in research on efforts to reduce or negate stereotype thread have identified some promising points for intervention. Although a number of these strategies may be inappropriate to apply outside the strict experimental setting (e.g. testing in mono-cultural environments - Inzlicht & Ben-Zeev, 2000), research by the authors identified three potentially effective and efficient points of intervention:

- **Malleability of Intelligence** (Aronson, Fried & Good, 2002): It has been found that students (in this study, African American college students) who were taught that humans are capable of mastering new things at any time in their lives, and
then followed these lessons with written affirmation tasks such as writing a personal letter stressing malleability of intelligence showed a significant reduction in the effects of stereotype threat over the Grade Point Average.

- **Teaching about the Effects of Stereotype Threat** (Johns, Schmader & Martens (2005): In this very simple intervention, significant test performance benefits were achieved by informing students about stereotype threat prior to then performance task, and then notifying them that any feelings of anxiety or apprehension is a result of inaccurate stereotypes widely used within society, and are not reflective of the students’ ability to succeed in the test.

- **Affirmation of Self-Integrity** (Cohen, Garcia, Apfel & Master, 2006): Within this intervention, in-class writing assignments were given to students where they simply had to write about their three most important values (e.g. friends, being good at art etc), and why they were important to them. It was found that this simple affirmation task produced significantly positive effects on African American students’ end of year Grade Point Average.

With these points for intervention identified, the Bubalamai Bawa Gumada proposal will seek to create and implement a simple yet effective multifaceted, in-class intervention that will extend these strategies to formulate an interactive 10-week program that includes teaching Indigenous and non-Indigenous students about the incremental nature of intelligence, the inaccuracy (as well as misconceptions) and impact of stereotyping, high Indigenous achievers who defy cultural stereotypes (role models); how to rebut stereotype threat; and positive strategies for multiple stakeholders (teachers, peers, parents, community members) to assist in addressing racism and stereotype threat. This intervention will negate the effects of stereotype threat on Indigenous Australian students, build anti-racism strategies in the schooling context, and offer a refreshing key to diminish the achievement gap between Indigenous and non-Indigenous students’ school outcomes. What is more, because these strategies have been found to increase the performance outcomes of Caucasian participants (Aronson et al., 2002; Cohen et al., 2006), the intervention will benefit all students, and potentially also the social interactions within the whole school.

The final research emphasis to be covered within this paper is a recent large-scale project in collaboration with the NSW Department of Education and Training that has recently been approved by the Australian Research Council.

**Seeding Success and Research based Intervention for Aboriginal Students: Impact of quality teaching, effective schools, and psycho-social drivers on educational outcomes**

Utilizing a thorough multi-method approach, this project will target a sample of Indigenous and non-Indigenous primary school students for extensive quantitative and qualitative research inspired by the suggestions and findings of the NSW Quality Teaching Framework (NSW DET, 2003), and more extensive research by Rowe (2003) and Hattie (2003) who emphasised that:

It is what teachers know, do, and care about which is very powerful in this learning equation... Interventions at the structural, home, policy, or school level is like searching for your wallet which you lost in the bushes, under the lamppost because that is where there is light. The answer lies elsewhere – it lies in the person who gently closes the classroom door and performs the teaching act – the person who puts into place the end effects of so many policies, who interprets these policies, and who is alone with students during
Indeed, with the emphasis on quality teaching, the project will examine the causal relations between a number of effective schooling and quality teaching indicators in each class as well as teacher reports on the implementation of aspects of a quality teaching framework, and student, teacher, and Principals' ratings of the characteristics of effective schools, and student achievement (as assessed by standardised reading (TORCH) and mathematics (PAT Maths) tests). In addition to the quantitative approach that will adapt well founded scales such as the Student Evaluations of Educational Quality (SEEQ) Scale (Marsh, 1991), the Classroom Environment Scale (Lee, Lee, & Wong, 2003), PISA scales (PISA/OECD, 2004, e.g., educational quality scale, school environment); and the Quality of School Life questionnaire (Linnakylä, 1996), an in-depth and precise qualitative component will be implemented where qualified researchers will visit each school to undertake classroom observations and immerse themselves in the classroom culture. Additionally in-depth interviews will be undertaken with Indigenous children, their teachers, and school Principals to qualitatively identify perceptions of quality teachers, characteristics of effective schools, and the extent to which these constructs and psycho-social constructs influence educational outcomes for Aboriginal students.

With this comprehensive multi-method approach, valuable knowledge will be gained in: further enriching and validating the results by linking quantitative and qualitative findings of the study with important school outcomes, and mediators of such outcomes such as self-concept (SDQ-I, Marsh, 1990b), optimism (Schwarzer & Jerusalem, 1995); enjoyment of school (Craven, Marsh, and Print, 2000), resilience (Academic Resilience Scale, Marsh & Martin, 2006), depression (Child Depression Inventory - Short Form, Kovacs, 1985), and educational perceived discrimination (Bodkin-Andrews et al., 2005).

**Implications for Theory, Research, and Practice**

Hattie's work demonstrates we know what factors are most likely to influence achievement and importantly which one's have the greatest impact. We also know what the attributes are of expert teachers and what aspects of quality teaching effect achievement. Similarly, Rowe's work helps us to see the way in that quality teaching makes a difference. Whilst Hattie and Rowe's research has not been conducted specifically with Aboriginal Australians the findings have important implications for Aboriginal Education. Everyone involved in Aboriginal Education seems to presume that they know what will work and what has resulted is a plethora of recommendations that would be unrealistic and not cost effective to implement systemically. Rather than a scatter gun approach we advocate that we need to take the very best available theory, research, and practice and develop theoretical models that we test and revise or refute based on empirical evidence. In such models we need to focus our attention on what factors are likely to have the biggest impact on desirable educational outcomes. Hattie and Rowe's work shows us the way - we need to focus on the factors that have the most impact, and clearly teachers make the difference. We need to find out if the attributes of expert teachers identified by Hattie impact on Aboriginal students' achievement and focus our will and profession on developing these attributes to have the greatest impact beyond the classroom door. This also implies that a prime catalyst for change in Aboriginal Education is particular teachers within schools, not entire schools. Teachers can make the difference.
Large-scale studies such as that by Craven et al. (2005; see also Zubrick et al., 2005) studies also offer important insights. Indigenous children are unlikely to succeed if the drivers of educational success are not addressed. In addition, Craven and Bodkin-Andrews (2006) in their review of Indigenous mental health have emphasised that there is a dire need to capitalise on the psychology of success to strengthen Indigenous students' adaptive psychological functioning and wellbeing. Enhancing self-concept along with other psychological constructs that have been demonstrated to make a tangible difference (e.g., motivation, resilience) are potentially potent keys to intervention and fundamental to driving and seeding success.

Hattie's breakdown of percentages of achievement variance is a valuable starting point for designing a theoretical model for seeding success for Aboriginal students. Based on the research of Hattie and Rowe we can hypothesise that quality teaching is likely to have a tangible impact on academic achievement and other desirable educational outcomes such as school engagement and attendance. Which aspects of quality teaching have the largest impact on Aboriginal students' educational outcomes remains to be determined, however based on Hattie's meta-analysis (see table 1) with non-Indigenous samples we have the starting point to see the way. Clearly the strongest effects are for feedback, instructional quality, direct instruction, remediation, class environment, challenging goals, peer tutoring, mastery learning, homework, teacher style, questioning, advance organisers, simulation and games, and computer assisted instruction. In addition, we know that there are at least five overarching characteristics of expert teachers that embrace 16 attributes of expert teachers that also encompass the key sources of influence on academic outcomes related to teaching. Hence blending Hattie's research we can hypothesise that quality teaching is multidimensional in nature, may have 5 higher order factors representing 16 lower order attributes that incorporate key teaching sources of influence (see Figure 1).

Given Hattie has found that approximately 50% of the variance in achievement outcomes is explained at the individual level we cannot continue to fail to ignore the power of directly targeting for enhancement individual attributes that seed success in achievement outcomes. Given a body of evidence-based empirical research (see Marsh & Craven, 2006 for an overview) has demonstrated that self-concept shares a causal and reciprocal relation with achievement I hypothesise that enhancing self-concept will have a causal impact on Aboriginal students' achievement. Similarly other psychological constructs (e.g., motivation, resilience, perceived discrimination) are also hypothesized to be drivers of educational outcomes. Furthermore, given literacy is fundamental to education we also hypothesise that enhancing reading literacy will directly impact on educational outcomes.

Whether other influences such as schools, peers, and home make a considerable contribution to explaining variance in achievement outcomes for Aboriginal students remains to be determined. However, consistent with recommendations emanating from the New South Wales Department of Education Review of Aboriginal Education (2005) and Hattie's research (see Hattie, 2003 for an overview) it is hypothesised that these higher order factors will also contribute to academic achievement and other educational outcomes. For example school's can make a contribution to enhancing academic outcomes by clearly focusing policy and school activities on enhancing quality teaching and student attributes that emulate those of successful Aboriginal students. Aspects of
school influences that might facilitate such an aim may include: school climate, management policies, inclusive curriculum, and partnerships with parents of Aboriginal children and Aboriginal community members. Peers also seem to be an underutilised resource in the teaching and learning equation for Aboriginal students. Perhaps peer tutoring and peer role modelling as has been demonstrated in research with non-Aboriginal students could be effective tools for enhancing teaching and learning with Aboriginal students. Finally, whilst Hattie’s research shows that home contributes 5-10% of the variance in achievement outcomes we suspect the contribution of home influences for Aboriginal students can be a potent key to facilitate schooling success. As such it would seem useful to hypothesise that home environments characterised by high levels of expectation; support, encouragement, and parental involvement in engaged learning, having educational resources, and stability will contribute positively to explaining variance in Aboriginal students’ achievement outcomes.

Figure 2 is a representation of a proposed model for succeeding success that synthesises these elements. However much remains to be done to test a model that has largely been developed based upon research with non-Aboriginal populations. It remains to be elucidated what the actual contribution of each of the five higher order factors is to explaining variance in achievement outcomes for Aboriginal populations, yet the answer to such an investigation could readily identify where best to focus intervention. In the absence of a body of scholarly evidence-based research in the schooling sector for Aboriginal students we judge our best beginning point to be capitalising on advances in evidence-based international research and to focus our attention on enhancing quality teaching and the attributes of students to emulate those of successful Aboriginal students. It also needs to be determined what actual lower order factors are salient for Aboriginal students and how best to measure these empirically. There also seems to be no research that we are aware of that identifies Aboriginal students’ perceptions and evaluations of effective teaching. It also constantly puzzles us as to why education systems collect achievement data but often fail to collect data to elucidate the determinants thereof. Such data collection could expedite our search for what seeds success for Aboriginal students. As a leading Indigenous researcher has advocated

Scholarly research can make an important difference and identify much needed fresh insights on how to address critical educational issues of our time...there is indeed a dire need to establish a concerted national programme of Indigenous Education research to develop a body of scholarly literature that can really put to the test presumed successful strategies, identify causal mechanisms that make a difference, and generate new solutions that are demonstrated by research to result in tangible outcomes (Bin-Sallik, 2005, p. iv)

We trust that the theoretical model that we have put forward for seeding success can contribute to further developing scholarly literature that can make a difference to Aboriginal students’ educational outcomes.
Figure 1. A Multidimensional Structural Model of Quality Teaching Derived from Hattie's Research

Note. Possible lower order factors based on Hattie’s research (see Hattie, 2003 for an overview).
A1. Deep representations about teaching and learning (e.g., instructional quality, direct instruction, advance organisers).
A2. Problem-solving stance (e.g., questioning).
A3. Anticipate, plan, and improvise as required by the situation.
A4. Decision-making.
B5. Classroom climate for learning (e.g., challenging goals).
C8. Assessing progress and providing feedback (e.g., remediation).
C9. Developing and testing hypotheses about learning difficulties or instructional strategies.
C10. Automatic.
D11. High respect for students.
E13. Engage students in learning and develop in their students’ self-regulation, involvement in mastery learning, enhanced self-efficacy, and self-esteem as learners (e.g., simulation games, computer assisted instruction).
E14. Set appropriate challenging tasks and goals for students.
E15. Positive influences on students’ achievement.
Figure 2. A Possible Representation of a Model to Seed Success for Aboriginal Students

Note. Possible lower order factors: A - subject representation, B - guiding learning, C - Monitoring learning and providing feedback, D - Attending to affective attributes, E - Influencing student outcomes (see Hattie, 2003 for an overview); F - self-concept (see Marsh & Craven, 2006, for an overview); G - motivation, resilience, perceived discrimination; H - literacy; I - focus policy and activities on enhancing quality teaching and student attributes that emulate those of successful Aboriginal students; J - school climate/management, inclusive curriculum; K - partnerships with Indigenous communities; L - peer tutoring; M - peer role models; N - levels of expectation; M - support, encouragement, and parental involvement in engaged learning; N - educational resources; O - home stability.
References


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