

# Introduction

## Overview

This report encompasses the two final years of a four-year longitudinal investigation of the relationship between student achievement and motivation. The research investigates these relationships between motivation and achievement using NCEA results as a measure of achievement outcomes, as well as the effects of aspects of the NCEA system on motivation. Previous years' research findings are extended by following large student cohorts from each year and by adding two additional year cohorts from nationally representative secondary schools. A motivation and attributions screening measure was developed and validated, and student and parent focus group and individual interviews provide evidence regarding relationships between aspects of the NCEA and attitudes, motivation and subsequent achievement. This included their perspectives on the NCEA qualifications design changes implemented in 2007 as well as further changes underway (see Meyer, McClure, Walkey, McKenzie & Weir, 2006; Meyer, Weir, McClure, Walkey & McKenzie, 2007).

Longitudinal research linking student motivations and attributions to actual achievement is essential to investigate how school policies and classroom practices affect student behaviour and learning. Additionally, we investigate how time spent in out of school activities such as part-time work, childcare, sport and other activities is related to motivation and achievement.<sup>2</sup> This research builds on databases gathered in 2005-2006 and 2006-2007 to investigate these relationships with particular reference to the NCEA, student achievement across time, and student and parent attitudes regarding motivation orientations, study patterns, and NCEA design issues.

## Review of Recent Research on Motivation and Attributions

Educators and educational researchers have long been interested in the role of motivation. Nearly a century ago, Dewey (1913) wrote about the dynamics of how teachers and schools can “catch” student interest and must “hold” that interest and effort in order to promote meaningful learning. Connecting learning to skills that students need in order to meet current and future goals has also been shown to influence interest, effort, and understanding. Individual and situational factors influence heavily the extent to which children and adults pay attention, persist, learn more, seek additional opportunities to elaborate their understandings, and enjoy learning (Ainley, 1994; Apple, 2001; Hidi & Harackiewicz, 2000; Martin, 2006).

There are other influences as well. How teachers approach inquiry in the classroom, provide feedback, structure learning tasks, organise their classrooms, group students, and accommodate specific subject-related requirements have significant effects (Anderson, Hattie, & Hamilton, 2005; Church, Elliot, & Gable, 2001; Eccles, 2005; Eccles & Wigfield, 1995; Hattie & Timperley, 2007). Further,

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<sup>2</sup> An additional study to follow up students who had left school in previous years prior to Year 13 could not be completed during this phase due to lack of accurate contact information.

White (1959) and Deci (1975; 1992) describe how approaches that make learning materials more challenging and that empower students to make choices and exercise autonomy and self-determination can be especially critical to adolescents at secondary level.

### ***Attributions for success and failure***

Students' attributions for their own success and failure at school can have an impact on motivation and achievement (Weiner, 1985). If students see their failure as having been caused by something that is difficult or even impossible to change, such as the difficulty level of the test or one's ability, this attribution has a negative impact on motivation and achievement. By contrast, if they attribute their failure on an assessment to a lack of effort, this attribution is more likely to enhance the student's motivation to try harder on future tasks and is unlikely to lessen motivation. This pattern has also been demonstrated with New Zealand students (Fukui, 2006; Ng, McClure, Walkey & Hunt, 1995). In regard to the NCEA, students' attributions of their best marks in an English test or exam to ability or effort were correlated with better performance in the NCEA, whereas attributions of their worst mark to lack of ability were correlated with lower performance in the NCEA (Meyer, Weir, McClure, Walkey & McKenzie, 2007).

Students' attributions for their performance can be modified, and one practical implication of Weiner's theory and research is that when teachers see students struggling with new tasks, statements such as "*Keep trying, it's easy!*" are likely to affect students negatively rather than encouraging them. If they succeed on something the teacher said was "easy," the accomplishment has been devalued. If they fail, they are likely to infer that they lack the required ability because, after all, the teacher said this task was supposed to be easy. Thus, a more helpful thing to say would be: "*This is a difficult task, and you really have to work at it. Keep trying, and I'll check later to see if you need some help.*"

### ***Intrapersonal influences on motivation and achievement***

In addition to the influences of school, curricula, the teacher, and other contextual factors on student achievement, individual ability and attitudes play major roles in shaping achievement outcomes. Self-perceptions of ability and the individual's sense of self-efficacy have long been regarded as the cornerstones of motivation theory (Meece, Wigfield, & Eccles, 1990). How well students perform in school is a product of both opportunities presented in each learning situation as well as what the individual brings to the task.

Thus, academic engagement and performance is heavily influenced by student attitudes towards school and goals for the future. School alienation accompanied by avoidance of effort has a cumulative negative impact on outcomes (Nicholls, 1999; Nicholls, Cheung, Lauer, & Patashnick, 1989). Students who are not interested or who actively avoid opportunities to learn fall further and further behind their peer cohort in skills and understandings across the school years (Hidi & Harackiewicz, 2000; McCaslin, 2006).

In our previous research, we demonstrated strong positive relationships between student self-reports of different motivation orientations as expressed in their approach to school and to the NCEA (Meyer, McClure, Walkey, Weir, and McKenzie, 2009). Student self-ratings of *Doing My Best* and *Doing Just Enough*

were particularly strong positive and negative predictors, respectively, of how well students would perform on selected NCEA achievement outcomes in future years (Meyer et al., 2007; Hodis, Meyer, McClure, Weir, & Walkey, 2009). These motivational orientations are similar to the “motive to strive” and invested effort constructs of self-reported effort and concentration reported by Brookhart and Durkin (2003), McClelland (1961) and Salomon (1984). Our findings are consistent with the theory of planned behaviour (Ajzen, 2002) and the significant research in Australia being carried out by Martin (2007; Martin & Dowson, 2009).

These motivation orientations extend beyond generalities across multiple domains in being specific to particular performance questions related to school and to the NCEA (Meyer, Weir, McClure, Walkey & McKenzie, 2009). The constructs of *Doing My Best* and *Doing Just Enough* were subjected to further longitudinal investigation in this final phase of our research: we now report evidence that they are significant predictors of achievement three years into the future, over and above what can be predicted based on prior achievement alone.

Our findings suggest considerable utility in exploring interventions to shift motivation patterns in positive directions. Such strategies would be a complement to more traditional approaches modifying underachievement that focus solely on academic remediation. Shifting student motivations away from the more negative *Doing Just Enough* to the more positive *Doing My Best* orientation may require focused academic tasks and activities where students receive support to achieve positive outcomes through their own endeavours (O'Mara, Marsh, Craven & Debus, 2006). Related research on how teachers might best encourage learning and task performance also affirms the need for situation-specific messages and feedback to students, related to particular tasks (Hattie & Timperley, 2007; Wolf, Smith & Birnbaum, 1995). Intervention research focused directly on student motivations carried out in Australia demonstrates the potential of these approaches (Martin, 2008). Connecting motivations to specific tasks would contrast with traditional admonitions to young people, telling them simply to *do your best* without linking a vague generality such as this to specific tasks and approaches.

### ***Interpersonal influences on motivation and achievement***

While the two motivational patterns discussed above were highly predictive for students overall, we also found gender and ethnic group differences. Females were more likely to demonstrate the more positive motivational pattern of *Doing My Best* and less likely to report *Doing Just Enough* in comparison with males, who were more likely to express the motivation orientation *Doing Just Enough*. There were also gender differences on attribution factors, with girls more likely to attribute their best academic performance to effort and their worst academic performance to lack of ability and assessment task difficulty in comparison with boys.

We also found significant differences between students from different cultural groups. For Asian students, ratings on the *Doing Just Enough* orientation was a significant predictor of achievement a year later. Both the *Doing My Best* and *Doing Just Enough* orientations were significantly related to future achievement for New Zealand European and Asian students, and the *Doing Just Enough* orientation was related to achievement for all ethnic groups. As the effects were least strong for Māori and

Pacific students in earlier years, a major focus of our work in 2007-2008 was to explore other motivation dimensions that might be more revealing for these cultural groups.

We have argued that traditional motivation orientations including our own *Doing My Best* and *Doing Just Enough* reflect individualistic, more typically “Western” values and approaches. Social context is, of course, critical for theory in child development (Vygotsky, 1978), yet this theoretical framework is not yet reflected in much of the literature on motivation and achievement. The “social goals” dimension discussed in traditional learning theory is another example of a relatively neglected direction (Ames, 1992; Wentzel & Caldwell, 1997). Urdan and Maehr (1995) summarised these gaps in our understanding of student motivation and called for more empirical investigation of how social goals might influence motivation and achievement. Internationally, there are some examples of research to explore social motivation goals that might better reflect values in more collectivist cultures (Boekarts, de Koning, & Vedder, 2006; Hui & Triandis, 1986; Li, 2006).

Ongoing research in Aotearoa New Zealand reflects the importance of reflecting cultural capital, group belongingness, and positive social relationships in the classroom for promoting Māori learning and achievement (Bishop & Berryman, 2006; Bishop, Berryman, Cavanagh & Teddy, 2007). In New Zealand, the development and validation of culturally responsive practices that will enable Māori to meet their educational aspirations are important issues.

To address these issues, we revised the motivation screening measure to incorporate social and interpersonal motivation and attribution questions. In this report, we present 2007-2008 findings following the development of these additional subscales to measure student affiliations with their teachers and with their peers, friends and classmates. This was a major focus of our work in the final phase of the research.

### ***External influences on motivation and achievement***

In 2006, we found that a relatively high percentage of both Year 10 (approximately one-third) and Year 11 (over 40%) students reported that they were engaged in part-time work outside school (Meyer et al., 2007). In 2007 and 2008, we again asked students for information about their part-time work commitments but also asked them to indicate average weekly hours spent in other activities outside the school day as well—sport, caring for siblings and other children in the family, paid tutorials and other activities.

The literature on the impact of part-time work, child care responsibilities, and extracurricular activities on achievement reveals mixed findings. Empirical research on the influence of part-time work on achievement offers support (Cheng, 1995; Payne, 2003) and refutes (Marsh & Kleitman, 2005) what has been referred to as a “threshold model” whereby achievement varies based on the number of hours spent working outside school, for example. The threshold model generally asserts that part-time work would be related to positive achievement patterns up to a certain limit (e.g., 10 hours weekly), and once this threshold is exceeded achievement patterns become increasingly negative as the hours increase.

Conventional wisdom has proposed that engaging in extracurricular activities including part-time work contributes to children's development as character-building and may also assist in the development of time management skills (Holland & Andre, 1987). Organised extracurricular activities that are highly motivating to young people are generally regarded as a good use of out-of-school time in providing opportunities to learn new skills in settings outside school, contribute to the well-being of the community, enjoy membership in valued groups, deal with challenges, and establish new social networks and supports (Eccles, Barber, Stone, & Hunt, 2003). Furthermore, organised extracurricular activities can provide teens safe places to be during the significant portion of high-risk non-supervised waking hours outside school (Zaff, Moore, Papillo, & Williams, 2003).

Non-school pursuits could be detrimental to student achievement if they erode student commitment to school and schoolwork (Greenberger & Steinberg, 1986; Marsh, 1991, 1992; Warren, 2002). Interestingly, the relationship of school achievement and family child care outside school has not been well-researched. This type of nonschool activity could differ from extracurricular participation which is driven by student interest (e.g., sport) or the pursuit of financial benefits (e.g., work). There is evidence that different types of outside activities have different impact on achievement and for different students. Participation in sport appears unrelated to achievement for most students with one exception: students from low-income backgrounds or who previously were judged "at-risk" appear to benefit with higher achievement and lower drop out rates (Guest & Schneider, 2003; Mahoney & Cairns, 1997). Participation in organized extracurricular activities such as interest-related clubs (drama, band, language, etc) and school publications has been shown to be related to positive academic and social outcomes (Fredricks & Eccles, 2006).

In 2007, we found support for the positive impact of part-time work on achievement up to a threshold of up to 10 hours weekly: Year 11 NCEA achievement for students reporting work up to 10 hours weekly showed positive achievement in comparison to both those students working more hours weekly as well as those students not working at all (Meyer et al., 2007). We also found that school-related extracurricular activities up to 10 hours weekly were positively related to school achievement, whereas participation in caring for siblings and other children for the family was negatively related to achievement. Students in Years 10-11 in 2008 follow similar patterns, but the differences were not large. In general, our findings appear consistent with the international literature.

## **Context of the Research**

### ***Relationship of assessment and learning***

Internationally, the increased focus on educational standards and outcomes represents a shift in the purpose of assessment: Whereas historically educational assessment stratified achievement and sorted students into different groups for education and vocation, the purpose of assessment in a public education system shifts to one of enhancing learning and teaching towards meeting national needs for educated citizens. Finland, for example, provides an example of how major educational reforms including assessment practices have raised the achievement level of all students and resulted in a smaller gap between high and low achievers (Cavanagh, 2005). In New Zealand, the development and implementation of the

National Certificate of Educational Achievement (NCEA) introduced in 2002 represented a major shift in educational policy and practice affecting students, parents/whānau, teachers, and school communities. Perhaps because it was so very different from the previous system, ongoing discussions across the wider public also reflect various levels of understanding about the NCEA as a secondary qualification, how it works, and the role it plays in transitions to higher education and the workplace.

By introducing a secondary school leaving qualification—available at three levels—the NCEA was designed to advance the educational attainment of secondary graduates. It was also designed to focus more directly on measuring student achievement in relationship to learning outcomes (standards) that were largely subject-based but meant to relate to further study, employment and other personal goals. In comparison to a norm-referenced assessment system that graded students according to how well they performed against their cohort, the standards-based NCEA graded students against criterion performance or mastery of learning outcomes. In theory, the NCEA was seen to be better suited to supporting learning for all students, rather than those who were highest achieving and performing at the top. This “criterion-reference” for assessment outcomes is perhaps the defining feature of the NCEA, reflecting a commitment to learning by all students regardless of their programme of study or level of academic achievement.

### ***Influences of NCEA design aspects on motivation and achievement***

Other aspects of the NCEA were also intended to enhance learning and educational outcomes for students. Schools, teachers, and students could choose to focus on achievement standards that provided opportunities for different levels of achievement, including recognition for Merit and Excellence as well as Achieved. Unit standards could also be incorporated, whether newly designed or already available<sup>3</sup> (although these were not typically available with recognition for either achieved or not achieved with only endorsements for Merit available for a small number of credits, e.g., in business subjects). Flexibility in the accumulation of credits and opportunities to complete selected assessments was designed to increase student choice and hypothesised to result in greater responsibility and autonomy by young people (Alison, 2005; Hipkins, 2005; Ministry of Education, 1999). Of course, students could also actively choose to avoid assessments that they find difficult. Wylie, Hipkins, and Hodgen (2008) reported that both teachers and students do make such choices, but argued that these decisions simply reflect the kinds of opportunities typically available in various contexts. Further research would be needed to investigate whether the short and long-term consequences of such choices are negative or positive.

Our research has provided support for the NCEA as a criterion-referenced, standards-based assessment whereby students are measured in relationship to their own effort and achievement, not in comparison to others. Students, parents, and teachers are particularly positive about having a mix of assessments, with internal (classroom) assessments added to end of the year external examinations. Internal

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<sup>3</sup> Unit standards were developed originally in the 1990s prior to the NCEA and were designed to provide flexibility for study in subjects that were less traditional academically (e.g., photography); many were introduced from industry and other private training providers rather than by the schools, though they continue to be used and also developed by schools for specialized options across the curriculum.

assessments were seen as ensuring that students spread their effort and learning across the year, and students appreciated the balance in workload as well as what was seen as better preparation for the future in comparison to single assessments after a full year of study (Meyer, McClure, et al., 2006; Meyer, Weir, et al., 2007). Our previous findings also, however, revealed some unintended consequences of high levels of flexibility, including the possibility that students would cease participation in assessments once they thought they had accumulated the credits needed at each level. Further, students continued to advocate for more recognition for different levels of academic performance on the NCEA, including finer grade bands and recognition for higher achievement in particular (Meyer, McClure et al., 2006; Meyer, Weir et al., 2007). Finally, there continued to be concerns that unit standards largely did not offer challenges for students, and there were perceptions of continuing inconsistencies in practice across subjects and schools.

In July 2007, a number of design changes were announced for the NCEA that could potentially address these challenges (Harris, 2007). These included:

- Certificate endorsements: All 3 levels of the NCEA could be endorsed with Merit or Excellence by attaining the necessary number of credits with Merit and Excellence. This could provide incentive to students to continue striving beyond attaining the required minimum number of credits each year, and it also provided recognition to students who did achieve at higher levels without lowering outcomes for others (as in a norm-referenced system).
- Subject endorsements: In addition to the overall certificate endorsements available at each level, individual subject endorsements for Merit and Excellence were to be introduced at a future date.
- Increased moderation of internal assessment: To address concerns about lack of consistency in marking across teachers, subjects and schools, the NZQA increased moderation of internally assessed standards to 10% of all internal assessments across schools, and a specialised team of moderators was recruited and established to provide expertise for this task across schools.
- Review of standards: A comprehensive review of unit standards would be undertaken to examine overlap with achievement standards, credit parity and other issues, with both expert and stakeholder input into the review.

This research report incorporates data regarding how students, parents and others have responded to these design changes.