

Who deserves a chance? Identifying talent that might otherwise be lost in university admissions processes.

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The ENTER represents an efficient, cost-effective way of selecting school leavers for admission to university courses. Nonetheless, there are many reasons why a student's true potential may not be represented by a single summary score of achievement. The philosophy underlying the development of a selection instrument for students seeking admission to alternative entry programs is outlined. Dispositional characteristics such as confidence to achieve in an academic setting, ability to enact strategies for success, and enjoyment of cognitively challenging tasks should survive in spite of negative academic outcomes like a lower than expected ENTER score. The utility of measuring these is discussed. Preliminary findings relating to these variables are compared to results reported in the literature for students selected through normal competitive processes. The instrument has yet to be validated, but more appropriate selection procedures for students who have talent but who would otherwise be lost to the system are justified.

School leavers in Victoria are typically selected for admission to university based on their Equivalent National Tertiary Entrance Rank. This ENTER is represented as a number between 0 and 99.95 that allows a comparison of each student's performance during the final two years of secondary school, relative to all other candidates completing high school in Australia for that particular year.

Cooney (2001) summarised the selection processes of Australian universities from their inception in the 1850s to the present day. Basically the ENTER is the outcome of the refinement of a broad admission policy. The original admission policy allowed access to those who matriculated and had the means to pay for tertiary education. Matriculation involved passing a set number of subjects, and always included English. Traditionally, matriculation subjects were regarded as academically demanding, and those which could be studied further at university. Today applicants are screened, using the ENTER as an index, to identify the most academically able individuals. This statement assumes that the ENTER score signifies a measure of the relevant knowledge and skills that would underpin success in tertiary studies. Such filtering of candidates is particularly relevant in high demand courses such as Medicine and Law where quotas for admission are inevitable.

The calculation of the ENTER of a student is a complicated process. Students in their final two years of secondary schools (and sometimes earlier) choose the subjects on which their performance will be evaluated. This choice is from a wide range of possible subjects varying from the traditional academic offerings through to more vocationally oriented units. The coursework pertaining to these subjects is assessed by the schools in which the student is enrolled, and these marks are moderated externally. In addition, in some subjects, examinations are set and marked by the Board of Studies and for these subjects the coursework and examination marks are collated for each student.

The compiled scores for all individuals enrolled in each subject are plotted on a normal distribution with a range extending from 0 to 50, a mean of 30 and a standard deviation of 7. The Tertiary Admissions Centre for Victoria examines the raw scores of students, comparing performance in one subject with the marks obtained in all other units in which students undertaking that subject are enrolled. The mean score obtained in all other subjects taken is calculated and used as the scaled mean for the subject of interest.

The scores for some subjects are thus adjusted upwards or downwards to reflect their relative difficulty. For example, if students enrolled in Biology tended to do well in their other subjects indicating that these students were a particularly able group, scores in Biology are scaled up. Scaling to some extent compensates for competing against very capable peers.

The ENTER for each student comprises the aggregate of their scaled score for English or English as a Second Language (ESL) and their next three best units of study, and ten per cent of their score in their fifth and sixth subject if other subjects are undertaken. Students are ranked against all other students in terms of these combined scores.

Advantages of Using the ENTER as a Criterion for Admission to University

The ENTER system has some clear advantages. There is reportedly a strong correlation between earlier academic accomplishments as represented by the ENTER and later tertiary success (Dickson, Fleet, & Watt, 2000; McKenzie & Schweitzer, 2001; Birch & Miller, 2006). This relationship is particularly robust when the student is successful in a subject *e.g.*, accounting, at school and chooses to continue studies in this area at university (Tickell & Smyrnios, 2005). The student's ENTER summarises their achievement at secondary school, considering both cumulative attainment over the final years of school and external "once-off" examinations, and/or a combination of both. It permits a direct comparison to the achievements of others within the same cohort. The process of deriving the student's ENTER attempts to be objective, and takes into account the ability of the student's peers which would obviously influence their ranking, and the relative difficulty of subjects studied, a variable that would influence attainments in both set assignments and externally set examinations.

From the institutional perspective, the ENTER system is an efficient way to assess the suitability of prospective students, reducing their merits to a single number that allows ready comparisons within the relevant cohort. In addition, its use minimises any possible bias in selection. Superior attainment is recognised and rewarded by admission to the degree course of choice at the selected university. The corollary is also true: the reputation of universities depends to a large part on the ENTER scores advertised as cut-offs for admission to their various degree courses (Cooney, 2001). This is reflected in the phenomenon of "ENTER creep" whereby the cut-off points for entrance are set higher with each successive year, rendering the possibility of admission to tertiary studies ever more remote for the school leaver.

Some other countries use similar procedures to admit their school leavers to university, see for example the A level system in Great Britain (Hoskins, Newstead, & Dennis, 1997), so there is some level of international agreement about this process. Interestingly, Finland, which in contrast to other European countries, relies on intensive entrance examinations that are individual to each tertiary institution in order to select university entrants, is now being urged to develop a similar admission system in the interests of quality and efficiency (Ahola & Kokko, 2001). This system is to be introduced in 2008 / 2009.

Disadvantages of the ENTER as a Criterion for Admission to University

Nonetheless, concerns regarding the use of the ENTER have also been expressed. One is that the ENTER may unduly influence the student's choice of subjects at secondary school. For example, if students undertake to study subjects that offer the possibility of higher marks, while ignoring their suitability in terms of preparation for tertiary studies and the student's own predilections, then the student's ENTER may be either artificially inflated or lowered and hence not a good predictor of subsequent success (Middleton & Gillies, 2000). Learning strategies that are rewarded at school may not be permitted to the same extent or valued at university. For example, when completing their final year subjects, students are given the opportunities to draft and re-draft assignments with extensive feedback from teachers in a process akin to scaffolding. By contrast, at university independent learning and collaboration with peers is the norm. Another issue is that given the continuous aspect of ENTER assessment the effect of events intruding on the student's academic performance may be magnified. Thus a single point of assessment, well prepared for, may provide a better index of ability. An example of this would be the Scholastic Aptitude Test (Baron & Norman, 1992) used to select students for admission to North American universities and administered by an independent body.

In addition, the ENTER assessment may be deliberately designed to avoid bias, but equality of opportunity to acquire and demonstrate knowledge is not assured across the secondary school system. Typically, students from independent (private) schools achieve the highest ENTERs, as compared to those attending Government schools (Dobson & Skuja, 2005). Hence it must be acknowledged that specialist tuition (perhaps featuring smaller teacher-to-pupil ratios, and higher and more appropriate levels of qualifications to teach specific subjects or particular expertise in preparing students for externally moderated assessment) may impact on academic outcomes such as ENTER.

Interestingly, follow-up studies have demonstrated that this initial advantage in achievement does not persist for graduates from independent schools (Dobson & Skuja, 2005). This observation begs the question, if ENTER scores can be manipulated to higher levels than would perhaps be achieved otherwise, should the ENTER be used to select university students and predict subsequent academic performance?

The answer would appear to be "it depends". Murphy, Papanicolaou and McDowell (1991) reported on a three year longitudinal study exploring this issue. Their findings were that an ENTER score greater than 80 correlated positively with later performance, that there was no discernible relationship between ENTER and subsequent achievement for students scoring between 40 and 80 (where arguably there is the greatest need for discrimination in terms of selection) and that the relationship between low ENTERs (<40) and performance was variable. Their sample was drawn from the Royal Melbourne Institute of Technology (RMIT) and included students enrolled in Engineering, Physical Sciences, Nursing, Humanities, Education and Health. The relationship between ENTER score and subsequent achievement varied across disciplines, with ENTER score accounting for 25% of the variance in performance in Engineering, but only 4% in Education, for example. Their study was particularly useful in terms of providing insights into the relationship between ENTER scores and subsequent performance because it was longitudinal, extending consideration past the first year of university. Most other studies in the field are cross-sectional and relate to first year (regarded as the most influential year) only (McKenzie, Gow, & Schweitzer, 2004).

Demographic and Psychosocial Variables Associated with Tertiary Success and Failure

There has been a plethora of studies aimed at identifying demographic and psychosocial variables that are associated with tertiary success in addition to indexes of previous academic achievement such as the ENTER. Several such variables have been isolated, some of which are seen as independent predictors in their own right, others which are regarded as moderators, exerting their influence in tandem. For example, according to Nguyen, Allen, & Fraccastoro (2005) the personality trait, conscientiousness, predicted academic performance, whereas gender moderated the relationship between emotional stability and success (with emotional stability and intellect significantly predicting success for males but not for females). However, using structural equation modelling, McKenzie, Gow and Schweitzer (2004) showed that conscientiousness exerted its effect on achievement by impacting on self-regulatory learning strategies, as did academic motivation. Adoption of these strategies *per se.*, was directly related to first semester success. The personality characteristics introversion and agreeableness were also associated with good academic outcomes.

Robbins, Lauver, Le, Davis, Langley, & Carlstrom (2004) conducted a meta-analysis of 109 studies exploring this issue and reported that academic self-efficacy and achievement motivation made the greatest contribution to the prediction of academic success, operationally defined as grade point average. Robbins *et al.*, (2004) noted that their review was affected by a general failure of previous research to consider other motivational constructs that may be important in predicting academic success and made the methodological criticism that there were few well designed measures of the variables of interest. In response to this Le, Casillas, Robbins and Langley (2005) explored existing models purporting to explain college success and went beyond the educational literature to include relevant work from Organisational Psychology, for example.

Consequently, Le *et al.*, (2005) developed the Student Readiness Inventory, an instrument that measures psychosocial and academic-related factors that predicted persistence and performance in their sample of 5970 first year undergraduates and final year school students. They identified ten first-order factors that related to academic success. These included “general determination” a construct incorporating persistence; “academic discipline” the value accorded to study, “goal striving” encompassing goal-setting, effort and self-efficacy; “commitment to college” students’ dedication to the task of completing a degree, “study skills” a reflection of effective academic work habits; “communication skills” an indication of interpersonal facilities; “social activity” a measure of comfort in social situations; “social connection” involvement in school or college activities; “academic self-confidence” akin to assurance that one can perform well in learning situations; and “emotional control” a representation of self-awareness and regulation. These were then grouped into three second-order factors. These were “motivation and academic-related skills” incorporating motivation, conscientiousness, academic and communication skills; “self-management” derived from the variables academic self-confidence and emotional control. The final factor was social engagement. Le *et al.*, (2005) called for future work to validate the student readiness inventory.

Harackiewicz, Barron, Tauer, and Elliot (2002) reported another longitudinal study following students from first year through to graduation from university. Ability and previous academic performance predicted tertiary success but not interest in university studies. Achievement goals, subdivided into two components, mastery (the development of knowledge and skills) and performance (competence as compared to one’s peers) goals, were also found to be important, with mastery goals related to interest in discipline areas, and performance goals

associated with accomplishments. This examination of two outcome variables, performance at university and interest in the discipline area in which one is enrolled, raises the question of the multidimensionality of the outcome of interest. How should “performance” at university be operationally defined? Some researchers take a simple approach and equate persistence with success, while others explore ratings of ability such as degree rankings (Arnison, 2001).

Pritchard and Wilson (2003) examined the relationship between social and emotional factors and student success at the tertiary level. Stress was found to be negatively associated with grade point average, and unsurprisingly low self-esteem was directly related to attrition. In their study, fatigue was also isolated as a possible contributing factor to student drop-out. The need to support oneself as a student could also have a deleterious effect on academic performance as external demands on the student’s time and resources would impact on time spent attending classes and studying. Indeed Birch and Miller (2006) highlighted the importance of just such academic work patterns on ultimate success or failure at university.

Birch and Miller (2005) found that the accrual of debts under the Higher Education Contribution Scheme (HECS) was associated with poorer performance during the first year of university study, but there was no relationship between debt and performance during subsequent years. This initial effect was particularly pronounced for students who did well at secondary school, who would be expected to also perform well at university. Understandably, financial security while studying is an important consideration.

The Response of Universities to the Issues of Selection and Support of Students

Commenting on the reform of higher education in Australia that commenced in the late 1980s and continues today, Wimshurst, Wortley, Bates, & Allard (2006) isolated a number of performance indicators. Universities can be found wanting in relation to accessibility, and then subsequently student attrition, failure rates, and pace of progression through degree courses. How then do universities address these issues of accountability?

Universities do have alternative entry programs that allow students to bypass traditional selection criteria. The emergence of these programs has partly been in response to the call to make education available to all (following the Dawkins report), and also to a shift in demographics so that there are fewer traditional school leavers available for selection. Some of these “second chance education” (Ross & Gray, 2005) programs are articulated through the Tertiary and Further Education (TAFE) system in Australia.

Universities with a special admissions program often select students for these courses by lowering or waiving the minimum entrance requirements. Thus within first year courses there may exist groups of students who could be regarded as academically ill-equipped for tertiary studies as compared to their peers admitted through the normal channels (Ting, 1997). Various interventions have been designed to support students in their academic endeavours once admitted to these programs.

It has been reported that these initially poorly prepared students can succeed at university. Various institutional factors have been implicated in these successful outcomes, one of which is student engagement (Finn & Rock, 1997). Engagement comprises involvement in learning activities such as attending class and also interaction with the wider university community for example, participating in clubs and societies. A good example of this is the formation of peer study groups such as those designed for first year science students at the University of Sydney (Dalziel & Peat, 1998).

The regional campus of Monash University has designed an alternative program of study for students who do not attain the requisite ENTER score for their chosen area of study. In addition to classes in their selected discipline, these students attend classes designed to support their academic endeavours and extend their repertoire of academic skills by providing specific instruction on academic reading and writing, preparation for examinations, and incorporating more supportive pedagogical practices in teaching situations *e.g.*, greater access to staff through increased contact hours, and smaller classes allowing for more individual attention. The program has had marked success, with graduates of the program going on to complete degrees and commence postgraduate study or enter the workforce at equivalent rates to their contemporaries. Thus without this opportunity to attend university in a supportive environment much talent would otherwise be lost to the academic community and skilled workforce.

So, who should be admitted to such programs? In 2006, school students who had some concern about their ENTER scores were invited to register interest in this program, at two separate points in time. One was on completion of their Victorian Certificate of Education (VCE) examinations and continuous assessment tasks (CATS) but prior to the publication of results. The second was after they had been notified of their results. The concerns expressed by the first group could be attributed to either an accurate perception of poor performance or an unfounded anxiety about future results with attendance at the information session representing a possible means to secure a place at university. For the latter group attendance at the information session would have represented an attempt to explore ways to avoid or minimise the impact of a lower than expected score on admission to higher education courses.

It is ironic that the principal criterion for selection of such students is the same index for admission, capped at a lower level. In some cases this selection process is supplemented by, or replaced with an interview of the prospective student, the outcome of which would probably be based on subjective impressions.

An Alternative Approach to Selection

An instrument to profile potential candidates was designed. An underlying principle in the construction of this questionnaire was the awareness that such students were likely to have encountered failure or unmet academic expectations and so some psychosocial indicators of achievement would possibly be lowered. It was decided to concentrate on stable dispositions that should denote general potential rather than dynamic measures that would be affected by recent experiences.

The instrument included general questions about demographic variables known to place students at risk of academic failure *e.g.*, disrupted school attendance, no family history of attending university, and extensive outside school work commitments. In addition it asked about values in relation to further education (Eccles, Adler & Meece, 1984), and attributional style in response to success and failure. Verbal and numerical reasoning strategies were recorded. Of most relevance to this paper the questionnaire contained the individual-differences measure of hope (Snyder, Harris, Anderson, Holleran, Irving, Sigmon, Yoshinobu, Gibb, Langelle, and Harney (1991), and the Need for Cognition scale (Cacioppo & Petty, 1982). These specific variables will be described below.

Hope is a construct that reflects the individual's expectations that they can attain their goals (Stotland, 1969). It has a long history in social psychology research. Snyder *et al.*, (1991) expanded on the original unidimensional concept of hope to isolate a cognitive set comprising

two components termed “agency” and “pathways”. Agency represents a holistic impression of success in meeting goals over a period of time encompassing past, present and future. Although agency can be regarded as similar to motivation, it actually represents the confidence to achieve as opposed to the drive to do. “Pathways” signifies a perception that one is capable of developing and enacting plans to satisfy goals. These components exert a reciprocal influence but are qualitatively distinct. The Hope scale employed for the present study was the twelve item individual differences measure comprising four items targeting agency, four exploring pathways, and four fillers. This scale produced a total Hope score and a score for both pathways and agency, derived from summed four-point likert ratings.

Snyder, Shorey, Cheavens, Pulvers, Adams, & Wiklund (2002) reported on a longitudinal study investigating the relationship between hope and performance at university. They found that high levels of hope predicted better outcomes, even when controlling for admission scores. Thus hope may be a useful measure of potential success at university for students who have experienced some difficulty at the secondary level of education. Snyder *et al.*, (2002) observed “hope enables students to approach problems with a focus on success” (p.820).

Need for Cognition (NFC) (Cacioppo & Petty, 1982) is a construct taken from social psychology whereby it has been proposed that individuals differ in their predisposition to tackle and enjoy cognitively demanding activities because of an underlying intrinsic motivation. Students recording high need for cognition scores are better at processing information, and comprehend information more readily (see Coutinho, 2004). Cacioppo and Petty (1982) developed a 34 item NFC scale that was used in the present study. Their questionnaire successfully differentiated between occupational groups typically engaged in work taken to represent opposite ends of the cognitively challenging spectrum, and was directly related to measures of general intelligence. Students were instructed to rate their agreement or disagreement with statements reflecting NFC on a nine-point scale, with some items being reverse scored to avoid response bias. The NFC score was then calculated as the mean response to the 34 items. Dickhauser and Reinhard (2006) claimed that expectations for success varied according to NFC. Individuals with a low NFC derived their expectancies for success from their general self-concept, whereas those with a high NFC tended to employ specific self-concepts relating to particular skills. Since university allows students a chance to concentrate on a limited range of subjects that it could be assumed would better reflect their interests and aspirations than the broader school curriculum, high levels of NFC measured in this particular context, could be taken as an indication of potential to succeed, despite recent academic setbacks.

Data pertaining to 117 students who expressed interest in Monash University’s alternative entry program, and who subsequently enrolled in this program are discussed here. These comprise the individuals who answered all questions on the profiling instrument and for whom ENTER and VCE English scores are available, providing some objective measure of ability. In addition, designated teachers from each of the “feeder” schools provided ratings of their students’ suitability for admission to this program. Teacher ratings were derived from responses to nine questions rated on a five-point scale. Scores on each of these variables were compared to Total Hope scores, Hope agency and Hope pathways scores; and mean NFC scores.

Descriptive scores for each of these variables is presented in Table 1 below.

Table 1
Descriptive results for the sample of selected students

| Variable | Mean | Standard Deviation |
|---------------------------|--------------|---------------------------|
| ENTER | 56.09 | 8.62 |
| English | 28.91 | 2.44 |
| Teacher rating | 37.73 | 4.48 |
| Hope Total | 25.96 | 2.35 |
| Hope Agency | 13.14 | 1.45 |
| Hope Pathways | 12.82 | 1.45 |
| Need for Cognition | 1.34 | 0.80 |

Thus broadly speaking, this program did admit students who would have otherwise missed out on the opportunity to engage in tertiary studies. On average, their teachers did recommend their inclusion in this program. Their three Hope scores are comparable to Snyder *et al.*'s (1991) original samples of first year psychology students at North American universities, admitted through the usual competitive processes, and above their comparison groups sampled from individuals undergoing psychological interventions at health centres and hospitals. Need for Cognition scores placed this group between Cacioppo and Petty's (1982) two occupational groups, assembly line workers with a mean of .70, representing low NFC and university academics with a mean of 2.18 indicating high NFC.

Significant correlations were found between ENTER, English and teacher ratings representing a snapshot of ability ratings on completion of formal school assessment. These are summarised in Table 2.

Table 2
Correlation matrix showing relationship between ENTER, English and Teacher ratings

| Variable | ENTER | English |
|-----------------------|--------------|-----------------|
| English | .52* | |
| Teacher rating | .35* | .19 (ns) |

Spearman's rho
*** p < .001**

Significant correlations were also found between the various hope scores and these variables and total NFC. These relationships are presented in Table 3.

Table 3
Correlation matrix showing relationship between Hope scores and Mean Need for Cognition

| Variable | Total Hope | Hope Agency | Hope Pathways |
|--------------------|------------|-------------|---------------|
| Hope Agency | .81* | | |
| Hope Pathways | .76* | .27* | |
| Need for Cognition | .53* | .44* | .40* |

Spearman's rho
*p < .001

The relationships between the components of Hope and NFC could be regarded an integrated picture of potential for success in the tertiary sector where their confidence in their abilities, their strategies to achieve success and the pleasure they would derive from the challenges of academia could be properly tested.

The Next Step

The next step is to follow these students over the course of their academic career in order to assess whether dispositional characteristics such as Hope and NFC better predict academic outcomes than summary scores that may be affected by opportunity, ongoing negative life events, or even test anxiety. It is also hoped to extend this examination to look at the effect of special instructional programs, like that offered at Monash University, on students who clearly have promise, as yet not expressed, and who represent potential lost talent and / or at risk cohorts.

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