

Assessing Motivational Styles of Students in the South-East Asian Context of Singapore

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High levels of academic achievement in Asian educational systems have generated interest in the study of motivational patterns of students in these contexts. The objectives of this paper are firstly, to provide a review of existing literature on the study of motivational styles amongst students and secondly, to identify the occurrence of different motivational styles amongst students in Singapore. The method of identifying different motivational styles was adapted from a procedure first developed by Craske (1988). The findings of this study indicate that although the distribution of motivational styles amongst the Singaporean students was consistent with that as obtained by Craske, there was a higher tendency for maladaptive motivation amongst the males than the females. In contrast, Craske found no gender differentiation, though earlier researchers had found that maladaptive motivation was more common among the females.

Key words: Motivational styles, attribution theory, mastery orientation, maladaptive motivation, self-worth motive, learned-helplessness

Introduction

In motivational psychology, there has been considerable work on the theory of attribution, which deals with what people perceive as the reasons for the outcome of events. Attribution Theory has likewise made a significant impact in the field of educational research on students' motivation, whereby it has been found that students have different causal attributions to their academic performance. The significance of knowing students' different causal attributions to academic performance lies in the prospect of devising and implementing a variety of attribution retraining procedures to assist students with maladaptive motivational styles.

Although there has been much research on the application of Attribution Theory in education in the Western context, this field is as yet sparsely explored in Asian educational systems. In addition, the numerous reports on the high levels of academic performance in Asian systems warrants further study on the motivational patterns of students in an Asian context.

Motivational Styles

Galloway, Leo, Rogers and Armstrong (1996, p.197) defined motivational styles as 'the ways in which pupils respond in the face of a perceived threat of failure on an educational task'. One of the early attempts at identifying motivational styles was undertaken by Seligman and Maier (1967). The latter found that animals held in captivity and given shock treatments, eventually 'gave up trying' to escape from the unpleasant stimuli even when they were given the opportunity to do so. The term 'learned helplessness' was thus coined to describe this perceived inability to change the

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outcome of an adverse situation.

Dweck (1975), and Diener and Dweck (1978; 1980) worked primarily on attributions that school children made following failure experiences. They found that the children could be grouped into basically two categories, learned helpless and mastery oriented, and that these two groups differed considerably in the attributions made following failure and their expectancies of future task outcomes. In a series of studies on the two groups, marked differences were observed in several areas.

For instance, it was found that while learned-helpless children attributed their failure to factors beyond their control, the mastery oriented children perceived their failure experience as a 'problem' that could be remedied and was within their control. In addition, Diener and Dweck (1980) investigated the responses of the two groups of children to experiences of success and found that the learned helpless individuals viewed success as a less rewarding experience than mastery oriented ones, and attributed their achievements to situational factors such as luck and ease of the task at hand, whereas mastery oriented children viewed their success as due to their own ability.

The perceptions of the two groups of children regarding the role of effort also varied considerably. As observed by Dweck and Leggett (1988), mastery oriented children view effort as a tool to overcome failure and achieve success, whereas learned helpless children consider the need for effort in a task as a proof of their lack of ability. Failure experiences did little to lower the confidence of mastery oriented children as regards to future success. On the other hand, the learned helpless children developed a lowering of expectancy of success, an inclination towards failure acceptance, a tendency to give up trying and a refusal to put in effort that they considered futile.

Dweck (1986) later described the characteristics of mastery orientation and learned-helplessness as belonging to the two motivational patterns, adaptive and maladaptive. She qualified as adaptive motivational patterns, those that promote 'learning' goals, whereby individuals seek to increase their level of competence and understanding in a task. Maladaptive patterns, on the other hand, fail to promote the establishment of realistic learning goals but favour instead 'performance goals' characterised by the pursuit of positive judgements or avoidance of negative judgements of competence. Hence, whereas adaptive individuals consider an assigned task as an opportunity to improve themselves, the maladaptive individuals would tend to give up on the task or avoid the challenge altogether. It soon became apparent that the task avoidance

strategy was a response adopted by individuals showing a third motivational pattern.

Covington (1984) suggested that in addition to learned helplessness and mastery orientation, the self-worth motive illustrates students' maladaptive motivational responses to tasks perceived as difficult.

The concept of self-worth motivation has its roots in a study carried out by Weiner and Kukla (1970) on the effects of social norm information on causal attributions. They found that if there was a high positive correlation between the outcome of one's own performance and that of others, there was generally a low attribution to personal ability and a high one to task difficulty. On the other hand, low or negative correlation between one's own outcome and that of others led to high attribution to self (personal) and low to task. Hence, social norm is an important determinant of whether the outcome of the task is attributable to self or to task. This is a characteristic of the self-worth motive described by Covington (1984, pp. 77-78). He further described the motive of self-worth as "the general tendency for the establishing and maintenance of a positive self image" and which has its roots in "basic human need for personal and social acceptance." This is closely linked with what Weiner (1992, pp. 244-245) described as the 'hedonic bias,' an irrational, self-serving attribution bias referring to 'people's tendency to take more credit for success than they do responsibility for failure.'

There seems to be an inclination for people to maximise pleasure due to success but to minimise pain due to failure, hence the attempt to maintain self-worth by ego-enhancing (eagerness to take credit for success) and ego-defensive mechanisms (finding fault with external factors rather than with self). Self-worth motivated students thus attribute beliefs to others and employ strategies of failure avoidance to prevent others from making negative judgements (e.g. of their incompetence) about them. When confronted with a difficult task, they tend to minimise risk-taking in order to 'look good' or 'save face' and to prevent others from believing that they lack ability. This need for self-worth protection arises primarily in the case of culturally high status tasks, when social status and reputation are at stake. This is unlike the case of the learned helpless individual, who has stable, internal but negative attributions of his/her own ability. The learned helpless person believes in and is willing to admit his/her own lack of competence, irrespective of the nature and status of the tasks.

There are undoubtedly many negative outcomes associated with the self-worth motive. Students who are self-worth motivated employ a plethora of defensive strategies which

researchers (Thompson, 1993, 1994; Covington, 2000) have attempted to classify into three inter-related categories: (i) self-handicapping strategies, (ii) self-worth protection and (iii) defensive pessimism. Thus, students who employ self-handicapping strategies tend to provide excuses for potential failure by procrastinating (Beery, 1975; McCown & Johnson, 1991), holding unrealistic beliefs about themselves and pursuing self-defeating and unattainable goals (Covington, 1992). Unlike self-handicapping behaviour, self-worth protection arises when students evade the risk of failure by withholding effort, avoiding or abstaining from a task (Mayerson & Rhodewalt, 1988; Thompson, Davidson & Barber, 1995). The self-worth motive may also create situations, as in defensive pessimism, where students would rather be underachievers (Bricklin and Bricklin, 1967) and ensure success by attempting only easy tasks which are of no challenge to their ability (Atkinson and Raynor, 1977). Alternatively, they choose to indulge in self-deprecation, either playing down their expectations of success or the importance of the task. In the long run, the self-worth motive may encourage escapism and prolonged use of failure avoiding strategies, leading to a gradual decrease in willingness to learn and hence, a transformation from being success-oriented to becoming failure prone and eventually failure accepting.

Covington and Omelich (1979) investigated how students' perception of their own ability (or lack of it) affected their sense of self-respect under situations of test failure which differed in terms of effort input and availability of excuses. The authors found that whereas shame was experienced to the greatest extent by the students in situations where their effort input was highest and least when effort was minimal, the availability of an excuse was a key factor in preventing the loss of self-respect. It thus appears that students were more likely to experience shame when they perceived themselves as incompetent as a result of failure, especially when there was an input of effort. On the other hand, when there was little effort put in, students experienced the least shame. Covington (2000) referred to these students as having 'performance/ avoidance goals' since their goal is to avoid the shame of failure by providing face-saving excuses. These subjects are to be distinguished from those with 'performance/ approach goals', whose face-saving strategy is to invest considerable effort in their work in order to secure success and outperform their peers.

However, it is questionable whether the same conclusion can be made of students in an Asian context. Thus, authors like Cheng (1995, p. 17) argued that 'the social contexts are

different; the basic assumptions are different. They aim at different goals, and hence not only that they approach education differently but also they arrive at different results.' Lee (1996) further argued that in the Asian context, the belief is that education and improvement are achievable by everyone, hence the emphasis on effort and personal commitment. Thus, Volet (1999), studying the performance of South-East Asian students in Australian universities, suggested that "the emphasis, in Southern and Eastern Asian educational contexts...on the value of effort over the importance of innate abilities when making causal attribution of success and failure...have been widely used to explain cross-cultural differences in student motivation". In contrast, Lam et al. (2004, p. 289) found that in a competitive environment, Asian students have a tendency to opt for an easy task "that could protect their ego but helped them little in learning", and hence show as much inclination towards performance goals, as their Western counterparts. It is therefore not clear whether the traditionally stronger influence of pro-social goals and the general belief in the value of effort in Asian classroom settings would have different effects on students' responses to performance outcome.

With this in mind, the purpose of the present study was to investigate whether students from a South-East Asian background like Singapore, would display the same correlation between perceived failure attributions and subsequent affective reactions, as did their Western counterparts.

Gender Differences in Motivational Styles

Many authors (e.g. Dweck and Reppucci, 1973; Dweck and Gilliard, 1975; Wilson, Seybert & Craft, 1980; Craske, 1985) have reported a higher incidence of learned-helplessness amongst girls who also tend to attribute failure to lack of ability. On the other hand, there seems to be a greater prevalence of self-worth motivation amongst boys (Covington and Omelich, 1979; Snyder, et. al., 1978). However, Craske (1988) in a later study, observed no sex differentiation amongst the maladaptive pupils she worked with. There is thus a need for further research into the possibility of gender differentiation in motivational styles. Since much less is known about this in Asian educational contexts, the present study explored the occurrence (if any) of gender differentiation in the motivational styles of adolescent students in Singapore.

Assessing motivational styles

Past research has placed a greater emphasis on developing self-report measures rather than those investigating engagement with task in real life, and thus ecologically valid, classroom structures. Undoubtedly, self-report questionnaires such as the Self-Worth Protection Scale (Thompson & Dinnel, 2003), the Revised Academic Self-Handicapping Scale (Murray & Warden, 1992) and the Fear of Negative Evaluation Scale (Watson & Friend, 1969) have their merits in that the assessment of the reliability and validity can be achieved with relative ease. Nonetheless, there remains the unresolved question as to whether they truly reflect students' actual classroom behavior or whether they merely provide a prognosis of the latter.

Some researchers tend to consider motivation as being different from engagement, described by Elliot and Hufton (2003, p. 158) as "actual behaviours involved in undertaking a given activity". This suggests that there should be a distinction between motivation (the extent of willingness to undertake a course of action) and engagement (the outcome of motivation). This view is supported by Brophy (1999) who highlighted the distinction between measures of motivation and measures of engagement. If that were indeed the case, one would tend to conclude that the higher an individual's motivation (self-reported inclination to do something), the greater the extent of actual engagement in the task. However, in their ethnographic research on a U.S. high school, Grant and Sleeter (1996, p. 222) reported that the students they interviewed understood the value of schooling and education and yet paradoxically, invested little effort in those areas. Likewise, in their study on achievement motivation in real contexts, Elliot and Hufton (2003) found that some of the students who participated in their inquiries, reported high levels of achievement motivation and yet behaved in ways that contradicted their self-reports. Hence, if one were to consider motivation as a cognitive variable that eventually translates into achievement, there is the need, as recognised by Elliot and Hufton (2003) to couple motivation with engagement, and to assess motivation not only with self-report instruments, but with measures of actual outcomes of student behaviours. However, past research has placed a greater emphasis on developing self-report measures rather than those investigating engagement with task in real life, ecologically valid, classroom structures.

In view of this, the current study employed a procedure adapted from the method used by Craske (1988), as it is one of the few measures of actual behavior outcomes that can be

used to differentiate between the three motivational styles. One of the main reasons for choosing Craske's method is that it had a potentially greater ecological validity than self-report measures.

Craske's procedure has been used by other researchers (Galloway, Leo, Rogers and Armstrong, 1998) and the current study aims to extend its ecological validity to science by using it in the assessment of Biology.

Method

Sample

The current study dealt with a sample of 107 students from a sixth form Junior College in Singapore. They were from five different classes in the Science stream and their mean age was between seventeen to eighteen years. Prior to attending Junior College, most students in Singapore sit for the University of Cambridge General Certificate of Education (GCE) examination at Ordinary level ('O' level). They then take their GCE Advanced level ('A' level) examination after a two-year program in a Junior College. The students represented a range of abilities within the school (with 'O' level aggregates ranging from 7 to 16 points for English language and their five best subjects). They were of diverse socio-economic backgrounds, although most came from the average income group. The computation of a student's 'O' level aggregate is based on his/her performance in each subject, whereby the highest grade corresponds to a score of 1 and the lowest corresponds to a score of 9. Thus, the better the student's performance, the lower is his/her aggregate.

Identification of motivational styles

In the process of selecting an appropriate method for identifying motivational styles, Craske's procedure was chosen due to the fact that it is one of the few existing measures of behavior outcomes that can be used to assess motivational styles. As explained in the previous section, the focus of this study was not on the motivational intent of the subjects, in which case the use of self-report questionnaires would be more appropriate. Thus, although it can be argued that validity might be an issue in the use of Craske's procedure, performance outcomes are a valid way of assessing motivational styles in *this particular context*, where the administration of topical tests in classroom settings is a routine procedure that students are familiar with. Furthermore,

in Craske's own study, the procedure was validated using the Coopersmith Self-Esteem Inventory (Coopersmith, 1981).

Identifying motivational styles using Craske's procedure

As in Craske's procedure for identifying motivational patterns, the students were subjected to a series of four tests, Tests A to D, which were carried out on a weekly basis. However, whereas Craske's tasks consisted of basic maths sums on addition, subtraction, multiplication and division, the tests in this study were based on current 'A' level Biology topics being taught, i.e. enzyme studies (Test A), DNA (Test B), protein synthesis (Test C) and gene manipulation (Test D). The aim here was to assess whether Craske's method could be applied in conjunction with routine class tests, to identify students' motivational styles with minimum disruption to the normal curriculum. The students were given feedback on their performance after each of the tests.

Test B was of a higher level of difficulty than Test A and was designed to provide a more challenging experience. This was achieved by increasing the complexity of the questions asked. Unlike the rest of the tests in which the questions focused mainly on content knowledge and factual recall, the questions in Test B required students to analyse data from new and unfamiliar sources, and to make the relevant interpretations based on their understanding of the topic. Following the administration of the tests, poorer performance in Test C as compared to Test A indicated a maladaptive response. For Test D, students were given the following preliminary instructions: "The questions in this test are harder than usual but just try your best..." This was designed to provide Craske's 'mitigating circumstance' (1988, p. 154) or an excuse for failure.

The students' scores in each test were computed in percentages and the mean scores for each test shown in Table

Table 1. *Mean Scores and Standard Deviations of Tests A to D*

Test	No. of Scores (n)*	Mean (\bar{X})	Standard Deviation (SD)
A	121	70.37	11.18
B	118	45.03	13.52
C	115	58.25	17.21
D	114	54.24	13.18

Note. * The values of n varied as some students were absent on the days when the tests were conducted.

1. Since the mean score for Test B was lower than Test A, this indicates that Test B served its purpose and was indeed more difficult than Tests A, C and D.

Interpretation of Students' Performances in the Tests

Students who improved their grades or did equally well in Test C as compared to Test A, were identified as being mastery oriented. These included students who had higher scores in Test C but lower scores in Test D as compared to those in Test A. Their higher Test C scores implied that their motivation was not adversely affected by an experience of failure or poor performance in Test B. Those who did worse in Test C than in Test A were considered as showing a maladaptive motivational style. Those who did worse in Test D than in Test A were considered as learned helpless since deteriorating grades and lack of improvement are indicative of 'giving up' and a belief in their lack of ability. On the other hand, the self-worth motivated were those who showed some improvement in Test D as compared to Test A, since the supposedly higher difficulty of the task served as an excuse for failure and hence poor performance despite effort input would not be attributed to lack of ability. Although Craske's paper did not make any reference to the situation whereby students did equally well in Test D as in Test A, these students were taken into consideration in this study. They were classified as self-worth motivated since their results in D could be considered as an improvement over those in Test C and did not deteriorate further. The use of test scores to categorise students according to their motivational patterns could only be made if one assumed that Tests A, C and D were of equal difficulty. Hence, before one could proceed with the actual categorisation, there was the need to assess the equivalence of the tests.

Standardizing Tests A, C and D in Terms of Difficulty Level

In Craske's study, Sets A, C and D of sums were made equivalent in terms of their levels of difficulty by ensuring consistency in the types of sums used in all three sets, with changes in the actual numbers to allow for variation. However, in the 'A' level context in which the current research was conducted, the process of matching the questions in the tests to the same level of difficulty required a more complex procedure than that employed by Craske. There are two main reasons for this. Firstly, each test was on a different topic and assessed knowledge and understanding of different concepts in 'A' level Biology. Secondly, some of the

questions required qualitative responses that could affect the reliability of the marking.

To overcome the first problem, the following steps were undertaken to standardize the tests:

(1) significant differences between the means of the tests were assessed using one-way ANOVA and Tukey's HSD range test;

(2) the students' scores for the tests were standardized by conversion into z-scores.

The second problem, one of inter-scorer reliability, could be addressed by assessing the degree of variation between two independent markers in the scores they gave for the same scripts and the same test.

Assessing the Equivalence of Tests A, C and D

The occurrence of significant differences (if any) between the mean scores of the three tests A, C, D was assessed using one way ANOVA. Following this, Tukey's HSD range test was used to assess the extent to which they were different.

Some of the students involved in this study were sorted out into three groups. The allocation of students to their groups was carried out by first ranking them from the highest to the lowest scorer according to their performance in Test A. The students thus ranked, were then sorted into five groups such that the mean scores in each group did not vary by more than one mark. Each group thus consisted of about 20 students of mixed abilities, and the three groups were equivalent in terms of the level of ability of their members. The students from each of the three groups were then asked to sit for one of the three tests A, C and D. The administration of these tests was carried out independently of those for Craske's procedure for identifying motivational style, shortly after the students' end of year exam and after they had reviewed all the topics covered throughout the year.

One-way ANOVA was conducted to examine the differences between the means of the scores of the three tests. The results ($F = 21.2$, $P < 0.05$) showed that these differences

were significant.

Tukey's HSD range test was carried out to establish the magnitude of the differences between the mean scores of the three tests, and to make pair wise comparisons between any two tests to establish whether they were significantly different. The value of Tukey's range test ($HSD=9.69$, $q=3.40$, $\alpha=0.05$) was lower than the difference (25.5) between the mean scores of tests A and D and the difference (16.5) between the means of tests C and D. This showed that there were significant differences between Test D and the two other tests but not between Test A and Test C.

Transforming Raw Scores into Standardized Z-Scores

Since the outcomes of ANOVA and Tukey's HSD showed that there were significant differences in difficulty between the tests, it was necessary to standardize the scores obtained for these tests, so that each test could be treated as being of parallel difficulty. This was achieved by converting the raw scores into standard z-scores (or normal scores) which allowed the comparison of results of the distributions of scores in the different tests. The standardized scores could then be used to compare the performance of a particular student in the series of tests.

To achieve this, the raw scores for each test were transformed into standardized z-scores using the formula

$$z = \frac{x - \mu}{\sigma}$$

where x = raw score to be standardized

μ = mean of standardization sample

σ = standard deviation of standardization sample


Using the z-scores thus obtained in each of the tests A, C and D for a given student, it was then possible to compare the student's performance over the three tests and determine his/her motivational pattern. In the same way, standardized z-scores were calculated for all the students who sat for Tests A, C and D.  Sample of the results of this procedure and the

Table 2. *Sample Results of Standardization Procedure and Students' Corresponding Motivational Patterns*

Student	Test A		Test C		Test D		Motivation Style
	X	z	X	z	X	z	
L	70	-0.82	75	0.46	78	2.16	Mastery oriented
M	87	1.50	85	1.02	87	2.86	Self-worth motivated
N	78	0.27	55	-0.66	39	-0.9	Learned helpless

motivational patterns thus deduced is given in Table 2.

Given that the battery of tests was administered over a period not exceeding eight weeks, it would be reasonable to assume that dispositions of the students and the contexts in which they took the tests would not have changed significantly. As the tests were made equivalent by the standardization procedure, differences in z-scores (indicative of relative standings) of a particular student would be related to variation in performance outcomes, thus reflecting his/her motivational style.

Assessing Inter-Scorer Reliability

For each of the Tests A to D, ten answer scripts were obtained and the responses scored by two different markers using the same mark scheme. The two sets of marks were then compared and correlated to determine the Pearson's reliability coefficient (r) for each of the tests. The correlations obtained were in the range $0.62 < r < 0.96$, indicating that the correlation was generally high between the scores obtained by the two independent markers.

Results

Motivational Profile of Students

By comparing the z-scores for each of the Tests A, C and D, the motivational patterns of a total of 107 students were

determined. Table 3 shows the motivational profile of each of the five classes involved in the study and the differences in the distribution of motivational patterns amongst male and female students.

From these results, it would appear that the distribution of motivational patterns amongst the Singaporean teenagers involved in this study, did not differ considerably from that obtained in Craske's study (1988) in which 58% of the pupils were mastery oriented, 16% were motivated by self-worth and 26% were learned helpless. However, whereas Craske reported no significant gender differences in the motivational profile of boys did not vary to any great extent from that of girls, the results in this study suggest that there was a higher percentage of mastery oriented girls (68%) than boys (44%). This is also contrary to the outcome reported by Dweck (1975), Craske and other workers, suggesting that there was a higher incidence of learned helplessness amongst girls than amongst boys. Furthermore, in this study, the boys showing maladaptive motivational patterns (56%) outnumbered their female counterparts (32%) in both the self-worth motive and learned-helplessness. When assessing the significance of the differences between Craske's distribution of motivational styles and that obtained in the current study, statistical significance was found in the comparison of the number of mastery oriented males and females with those that are maladaptive ($\chi^2 = 4.94$; $df=1$; $n=107$; $p < 0.05$), showing that the differences in the distribution of maladaptive motivation and mastery orientation are significant and gender related.

Table 3. *Distribution of Motivation Patterns*

Category		Mastery oriented		Self-worth motivated		Learned helpless		Total number of students
		Number	%	Number	%	Number	%	
Class	P	9	53.0	4	23.5	4	23.5	17
	Q	11	52.4	3	14.3	7	33.3	21
	R	14	64.0	5	23.0	3	13.0	22
	S	15	62.5	3	12.5	6	25.0	24
	T	14	61.0	4	17.0	5	22.0	23
Gender	Male	18	43.9	10	24.4	13	31.7	41
	Female	45	68.2	9	13.6	12	18.2	66
Total		63	59.0	19	18.0	25	23.0	107

Discussion

It was found that the distribution of motivational styles amongst the Singaporean students was not significantly different from that obtained by Craske. This might seem surprising, in the light of recent work carried out in Hong Kong, a fairly similar context to that of Singapore, where researchers such as Salili (1995) found that culture and context have significant influence on students' motivation and performance. However, one has to recognize that such a claim can only be ascertained if it is found to be generalizable over a wider range of contexts and with larger samples and a variety of test subjects. The current study used a sample of students of generally good academic ability. The scope of the research could be expanded by extending the investigation to both elite students and those of lower academic ability within the same cultural setting.

There was, nevertheless, a notable difference between Craske's results and those obtained here. In this study, the percentage of mastery oriented female subjects was significantly higher than that of the males, who in turn showed a higher prevalence of maladaptive motivation. This was unlike Craske's data which showed no gender differences in the distribution of motivational styles, and the large amount of research suggesting that girls were more prone to learned helplessness (Crandall, 1969; Dweck & Gilliard, 1975). In this study, the higher prevalence of maladaptive motivation in males rather than females supports earlier claims that boys are more inclined to be self-worth motivated (Covington & Omelich, 1978; 1979; Covington, 2000). There are a number of possible explanations to these findings. For instance, the discrepancies reported in the various studies might have their roots in the different contextual settings in which these studies were carried out: the test subjects/ participants differed in age, social background and culture. For instance, Wentzel (1989, 1991) and Wentzel & Wigfield (1998) reported the association between pro-social goals and academic success and the joint influence of pro-social and academic goals on academic achievement.

Plausible explanations may also be gleaned from the many changes that have been observed in educational systems over the past decade. One notable trend is the tendency for female students to outperform their male counterparts in an increasing number of disciplines (Francis & Skelton, 2005). It is likely that the shift from maladaptiveness to mastery orientation observed amongst the girls is a reflection of this trend.

While Craske's procedure offers a simple method of

assessing motivational styles in the classroom, its limitation lies in the potential oversimplification of a complex cognitive response. Armstrong (Galloway et al, 1998, p. 105) pointed out that Craske's procedure is affected by the same criticism faced by attribution theory itself: that its rigidity may "actually reflect the categories which psychologists have imposed on children's meanings", rather than the true interpretations made by the children themselves of their experiences. Hence, the constraints imposed by the design of the procedure may inadvertently introduce inaccuracies in the outcome of its predictions.

There are questions as to whether Craske's procedure is able to show the various aspects of validity that serve as criteria for judgment. One of the queries is whether Craske's procedure is relevant to and adequately representative of the measurement of motivational style amongst students. The procedure relies heavily on the assumption that students' performance in a test series is an accurate measure of their motivational style. As discussed earlier, it was observed that irrespective of motivation, there were circumstantial factors (such as fluctuations in the test conditions and the physical and emotional state of the test subjects) that inexorably contributed to the variability of students' performance, which is therefore not necessarily predictive of quality of future performance. Thus, conventional assessment methods qualified as 'static' (Järvelä, Salonen, Lepola, 2002, p. 210) were said to 'rely on product-based measures, yielding no direct evidence regarding the processes that underlie the performance'.

Although there are limitations inherent in a process based on performance outcomes, Craske's procedure is based on the well-established principle in motivation research, that students' performance is influenced by how they interpret their performance in previous tasks. This is precisely what gives Craske's procedure face validity in a context like the one in Singapore, where students are constantly exposed to classroom tests. Further research can focus on validating Craske's procedure by comparing its outcome with those obtained from other validated measures of motivation. The difficulty here is to find an acceptable and relevant external criterion for measurement, of which the validity has been established. In Craske's paper (1988), attempts were made to correlate motivation with self-concept, assessed using the School Form of the Coopersmith Self-Esteem Inventory (Coopersmith, 1981). Likewise, a recently developed instrument, the Self-Worth Protection Scale (Thompson & Dinnel, 2003) could be used for a similar purpose. However, one should bear in mind that although the merit of Craske's procedure is that it provides a measure of the outcome of

motivation, it is limited by its inability to assess the motivational intent of an individual in cases when intent fails to translate into the corresponding outcome. The correlation between self-report instruments and Craske's procedure is likely to be low since the former assesses motivational intent whereas Craske's method measures motivational outcome. A more holistic approach is thus to use Craske's method in conjunction with the self-report instruments.

There is also the option of assessing Craske's procedure in terms of its *construct* validity, by considering to what extent it measures the theoretical construct of motivational styles. This can be achieved by examining the effects of a treatment intervention, in this case, attribution retraining, on students' motivation. In this instance, it would be predicted that attribution retraining would improve students' motivation and that it would enable students with maladaptive motivation to adopt a mastery oriented approach. In Craske's own article (1988), emphasis on effort attributions led to differential effects on the motivational styles of students, with positive results on the learned helpless students but not on those affected by the self-worth motive. This provides evidence, albeit indirect, of the validity of Craske's procedure since self-worth motivated students are likely to respond adversely to the treatment for fear of failure in spite of effort.

Conclusions

In the wake of globalization and the merging of cultural norms and values, the findings of this paper are of significance to educators and researchers interested in comparative cross-cultural studies on motivation. A review of the existing literature on attribution theory in motivation shows that it is a rapidly evolving and contentious area, augmented by input from studies carried out in contexts other than Europe and America. The identification of motivational styles amongst junior college students in Singapore showed a slight majority of mastery oriented individuals as compared to those with maladaptive motivation. This distribution was not significantly different from that obtained by Craske in an Australian context. This shows that the overall distribution of motivational styles is fairly stable although this does not preclude changes at individual level within a given population. However, it is noteworthy that this study supports the fact that the distribution of motivational styles is gender related and this gender differentiation is contextual in origin. Although our findings agreed with those in Western literature, and indicated a higher incidence of the self-worth motive amongst

males, they showed a surprisingly higher prevalence of mastery orientation amongst females than amongst males. In contrast, earlier findings by Western researchers advocated a higher occurrence of learned-helplessness amongst females. This is in support of the concept that motivation style can be transient over time and can vary from context to context.

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Received July 2, 2006

Revision received November 1, 2006

Accepted December 3, 2006