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The Approaches to Study Inventory in Malawi: a lesson for educational testing?

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It is important to identify the best fit between the learning environment and students' preferred modes of learning, and we aimed to explore the utility of the Approaches to Study Inventory (ASI) in Malawi, which has one of the poorest resourced educational systems on the African continent. Two hundred and fourteen undergraduates from a variety of faculties of the University of Malawi completed the short (18 item) form of the ASI. Factor analysis suggested both etic and emic orientations to study, from Reproducing and Organized study behaviour to Achievement-in-Context (which may entail a traditional sense of meaning). This search for a practical instrument to improve the match between teaching product and student study style suggests that such devices may often need to be developed locally. We discuss the implications of our results for the ongoing development of testing standards by the International Test Commission.

Many of the problems of developing countries are, in part, due to illiteracy and poor education. For instance, Malawi has four to five per cent enrolment at secondary school level, with less than one per cent reaching tertiary education (House and Zimalirana, 1992). Yet education is widely recognized as essential to boost national productivity and employment; to reduce infant/child mortality and morbidity; and to increase life expectancy (House and Zimalirana, 1992). Within the context of very scarce resources, there is a great need to maximize the potential of students who do progress through the restricted Malawian educational system. It is therefore unfortunate that psychologists have paid so little attention to studying the educational process in developing countries, especially at the level of university education.

Of great importance in the educational process is achieving a 'fit' (Furnham, 1992) between styles of teaching and studying, so that learning can be maximized. Research ranging from Britain (Newstead, 1992) to the United Arab Emirates (Albaili, 1994) has identified distinct patterns of studying, and has related these patterns to academic achievement in those contexts. The ability to identify the best 'fit' between teaching and study styles in a 'quick and easy' manner

(Newstead, 1992) would be especially valuable in the tertiary education institutions of developing countries, characterized by heavy teaching and administrative work loads.

The relevant literature on 'approaches to study' derives originally from Craik and Lockhart's (1972) 'levels of processing' model of human memory. Students were found to adopt either a 'surface' (verbatim) or 'deep' (conceptual understanding) approach towards learning material from a textbook (Marton and Säljö, 1976). Once students are so categorized, the person-environment 'fit' might then be improved by engineering change in the students or in the curriculum. Either way, some investigation of the students' predominant study style must first be made. Educational psychologists have therefore developed psychometric instruments precisely for this purpose.

Although there are now several such instruments available (e.g. Biggs, 1976; Entwistle and Ramsden, 1983; Richardson, 1990), one of the best known, and tailored to the resource constraints in Malawi, is the short form of the Approaches to Study Inventory (ASI). This was first developed by Gibbs et al. (1988). It contains just 18 test items and purports to measure three basic orientations to study: 'Meaning' (i.e. deep level of processing); 'Reproducing' (surface); and 'Achievement' (studying to obtain social benefits like qualifications and status). Such achievement motivation has often been linked, in the psychological literature, to educational and national development (see McClelland, 1987, for a discussion of achievement motivation and developing countries). In the United Kingdom, the three-factor structure of the ASI has been found to be reasonably robust, with moderate reliability, while scores on achieving and meaning correlated significantly with academic performance (Newstead, 1992, p.307).

The *cross-cultural* literature on 'approaches to study' is more equivocal. On the one hand, in the Confucian Hong Kong setting for example, measures of deep and surface approaches have provided measures of approach to study that predict academic performance (Biggs, 1993). On the other hand, studies in Australia (e.g. Harper and Kember, 1989) and in the Philippines (Watkins, 1984) have revealed shortfalls respectively in factor structure and internal consistency. With one recent exception to be discussed (Richardson et al., 1995), the short ASI itself does not appear to have been studied outside a Western cultural context. Furthermore, 'Third World' countries in general, and African ones in particular, are conspicuous by their relative absence from the literature, an under-representation that is ironic given the greater needs in these countries (for a thorough review of the longer form of the ASI and cultural context, see Richardson, 1994). In this respect, the 18-item version of the ASI, if reliable and valid in the Malawian context, could provide an important means to improving the education of university students.

The students at the National University of Malawi originate from materially very poor rural and urban backgrounds. They arrive at the nation's only university direct from O level type examinations, but then follow a four, rather than three year, Bachelor degree program, which is broadly equivalent to the three year undergraduate program in the United Kingdom. The department of psychology is located at Chancellor College, which is the largest of five constituent colleges, with a student population of 1300 and faculties of science, education, law, arts and humanities, and social science – wherein psychology is housed.

Over the past five years, the popularity of psychology has been steadily increasing (Carr and MacLachlan, 1993). This may, in part, be due to the departmental policy of learning from our students and their potential employers, in terms of what modes of psychology should be taught and how the discipline should be developed within Malawi (Carr, 1994; MacLachlan and Carr, 1993). Exploring students' approach to study is an extension of the ethos of developing a product – teaching methods – with the consumer of the product – students – in mind.

The application of the ASI in Malawi therefore seemed an attractive proposition.

However, educational 'cultures' differ not only between countries, but also between university departments (Entwhistle & Ramsden, 1983). This may be so even when the curriculum being taught in different departments is broadly similar (for instance, being approved by The British Psychological Society for graduate membership). The psychology curriculum in Malawi is however quite distinct from that to be found in 'Western' psychology departments. Our teaching straddles the 'etics' vs 'emics' debate. The curriculum has been designed in order to be relevant to the local 'settings and conditions' (Carr and MacLachlan, 1993), rather than somehow trying to examine whether certain aspects of the subject are 'universal' (from one point in the universe).

Thus on the one hand we teach psychology which has been researched and developed elsewhere and adapt it to local needs (Carr et al., 1995; MacLachlan and Carr, 1994; MacLachlan and Carr, 1997). For example, many psychology graduates will seek employment as personnel and marketing managers, with either multinational organizations or Malawian organizations operating in international markets. For such work, the vocabulary and concepts of personnel and consumer psychology – developed elsewhere – are going to be necessary for basic communication. On the other hand, some psychology graduates will work on malaria control programmes, in leper communities, or with refugees. Here, a more indigenous psychology will be required to meet local needs.

Psychologists in every country no doubt borrow some ideas from elsewhere (think of Piaget, Wolpe or Freud in 'British' psychology) and develop some of their own ideas based on the particular problems they need to confront locally. So it is not necessarily the process of Malawian psychology which differs from that of others, but rather the resulting mix of what is taught. The point is that a 'different' mix may also encourage students to choose a different style of study.

Finally, it seems obvious that if different departments and different curricula may give rise to different study styles, then so too may different cultures. We have no reason to believe that the study styles of Malawian psychology students will mirror those of British psychology students. We do however have reason to hope that the 'quick and easy' ASI may have some benefit in the Malawian context, and this justifies our trialing of the instrument. In the present study, we sought to investigate two hypotheses:

H1. ASI responses will reflect certain study styles, that is, the instrument will be salient to Malawian university students.

H2. ASI responses will be related to academic performance, that is, they will have some predictive value.

Six other items were appended to the end of the ASI to explore additional aspects of the educational climate thought to be germane to our students. These included items on the relevance of the psychology taught, the purpose of higher education, and preference to be taught by local rather than foreign lecturers (see MacLachlan and Carr, 1993).

The nearest rival to the ASI and related instruments is probably the 36-item LSI or Learning Style Inventory (Kolb, 1976). The 'learning style' approach (Kolb, 1984) focuses on just two orthogonal dimensions. Learners' preferences range a) from 'concrete experiences' to 'abstract conceptualization' and b) from 'reflective observations' to 'active experimentation' (i.e. intervention). These two dimensions create four possible learning styles: 1) 'divergers' have had concrete experiences and made reflective observations; 2) 'assimilators' go on to develop abstract models; 3) 'convergers' actively apply these models, but in an uninvolved fashion; and 4) 'accommodators' become actively involved and committed. According to Kolb, education follows a 'learning cycle', passing through stages 1 to 4, although there will be individual differences in which level is attained. Divergers are imaginative but indecisive, assimilators can be over-theoretical, and convergers prefer the 'cold' applica-

tion of theory. 'Accommodators', however, are committed and adaptable. Perhaps the psychology curriculum, as we have described it, was designed with the 'accommodating' stage (implicitly) in mind, and we wished to somehow check that unverified assumption.

There have been serious criticisms of the LSI instrument in the West (Newstead, 1992). These include low temporal reliability, artefactual scoring procedures, unclear factor structure, low concurrent validity, and low predictive validity. An alternative instrument (Honey and Mumford, 1982) has 80 items, which may have rendered it an impractical option in our resource-constrained setting. Given the psychometric problems where the LSI was *designed* to function (i.e. in the West), we decided against using it in the Malawian context. Instead, we restricted our enquiry to the following individual, and purely exploratory, items: 'I prefer material that deals in concrete examples rather than abstract theories'; and 'I prefer learning through practical exercises rather than intellectual reflection'. These items were created to reflect the conceptual basis of the LSI.

Method

Subjects

Two hundred and forty undergraduates at the National University of Malawi, Chancellor College, took part in the study. They were all students taking psychology in the first (N = 120) and second (N = 120) year of their four-year Bachelor's program. Their ages ranged from 16 to 26 years, with a mean of 20.5. The male:female ratio was 3:1, a ratio which is nevertheless representative of the gender stratification in the student population as a whole. Similarly, the full range of faculties were represented in the sample, since psychology is an open option at Chancellor College.

Materials and procedure

After Gibbs et al. (1988), the 18-item version of the ASI (see Richardson, 1992) was administered to the students during a regular psychology class. The rationale for conducting the study was carefully explained beforehand, the students participating under conditions of informed consent and complete confidentiality. In addition to the ASI, the questionnaire also contained (single) items about: Kolb's (1984) learning styles; changes in these since secondary school (Malawian students arrive at university directly from the equivalent of O levels); preferences for Malawian versus expatriate instructors; the relevance of the type of psychology being taught; and the purpose of higher education, in the students' own words. The latter excepted, all items used the same five-point scale, from 0 (definitely disagree) to 4 (definitely agree).

In order to ascertain the predictive validity of any of these measures in relation to academic performance, student end-of-term grades, compiled from a multiple-choice test, were matched to questionnaire data records. This matching was performed anonymously throughout, by using student registration numbers as identifiers and by employing a research assistant who was 'blind' to student names. Multiple choice tests are often used for assessment in Malawi, partly because they are 'quick and easy'. Items are chosen to reflect the students' grasp of basic facts and their ability to use those facts to solve psychological problems. This combination of item types creates the possibility for both 'reproducing' (factual) and 'meaning' scores to predict academic grades (Van Rossum and Schenk, 1984).

Results

Recent research from Kenya and Malawi's neighbour Zimbabwe has found that students scored highly on all scales of Bigg's Learning Process Questionnaire, which measures dimensions similar to the ASI (Watkins et al., 1994). We therefore carefully inspected the item frequency distributions of our data for ceiling responses. On nine of the 18 items, the modal response category was the ceiling scale value. However, averaged over all nine items, the proportion of subjects responding

in the modal category was 54 per cent, and there was only one item on which more than 75 per cent of the sample (92 per cent) responded at ceiling, namely: "It is important for me to do really well in the courses here". Thus, while converging with contemporary findings from elsewhere in Africa by finding elevated scores, the ASI in Malawi also possessed sufficient discriminatory power to proceed with statistical analysis.

There were 26/240 cases with one or more missing answer(s) to the ASI. We did not feel comfortable replacing those missing values with the midpoint scale value of 2 (i.e. on the assumption that the respondents felt that the item did not apply to them). This is because the midpoint had not been explicitly labelled as such on our questionnaire. The possibility of replacing these values by regression was ruled out by low multiple correlations between year of study, faculty, age, and gender (grade could not be used because it would later serve as a criterion variable). However, given the low rate (11 per cent) of missing cases, the lack of replacement by regression was not considered serious. Nevertheless, we took the added precaution of comparing age profiles of present and missing cases as a function of both year of study and gender. In both comparisons, the two profiles (present and missing cases) were similar.

At first glance, the ASI appeared to hold some promise with regard to construct validity. On summing the Reproducing (R), Meaning (M), and Achievement (A) scales, we obtained a significantly negative correlation between R and M (From Table 1, $r = -.26$, $p<0.01$). Also from Table 1, coefficients alpha for these two scales are comparable to the values obtained by Richardson (1992) in the UK, and Watkins (1984) in the Philippines. However, alpha for the A scale is unacceptably low. This could have been partly due to ceiling effects on items A2 and A6 (75 per cent of Ss at ceiling), but with either or both of these items removed, alpha falls still further. Furthermore, Table 1 reveals that none of the scale scores correlated significantly with the criterion of examination grade.

Before conducting factor analysis on the ASI, we inspected its correlation matrix. While correlations were not strong, four were >0.3, and a further five were >0.25, indicating that the correlation matrix was 'factorable', with sample size in the fair to good region (Tabachnick and Fidell, 1989, p.379). A preliminary Scree test revealed that a maximum of three factors ought to be extracted. Given from Table 1 that scores on M and A were positively correlated (.33, $p<.01$), and following Richardson (1992), we decided to use oblique rotation.

The results of a factor analysis using principal components extraction are presented in Table 2. Maximum Likelihood extraction produced a similar outcome. Consistent with Richardson (1992), the rotated factors were essentially orthogonal to one another, since the correlation coefficients between them ranged from .04 to .12. The fact that only 34 per cent of the variation is explained means that the data are 'noisy'. This is not unusual in cross-cultural testing, and indicates that the items could be refined to avoid some ambiguity in the local context. Our less styl-

Table 1. The ASI 'off-the-shelf' in Malawi

	Reliability	Intercorrelations			
	(Alpha)	'R'	'M'	'A'	End of term grade (criterion)
Scale					
Reproducing (R)	.39	1.00			+.05
Meaning (M)	.45	-.26	1.00		-.07
Achievement (A)	.22	+.09	+.33	1.00	-.04

ized picture might also reflect the fact that the students were comparatively diligent in completing their questionnaires. In Malawi, undergraduates are not widely exposed to popular notions (and thereby possible 'scripts') about 'how to study'. They also tend to adopt a fairly serious attitude towards completing questionnaires, which are relatively rare events for them.

Whatever the case, the factor solution does not contain much overlap, and it is interpretable. Following Child (1979, p.45), we considered loadings of ±.30 or greater as significant. Richardson et al. (1995) used ±.40 as the criterion, which would produce an even clearer solution. In order to allow readers to make up their own minds, we have therefore provided a complete table of factor loadings, with those at or exceeding the higher criterion set in italics.

Most readily named is the third factor to be extracted, which clearly reflects Reproducing orientation. The higher loading items are taken from the R scale on the ASI. In ascending order of magnitude, M1, M6, and M2 ("My main reason for being here is so that I can learn more about the subjects which really interest me") load negatively, a bipolarity that has already been noted as consistent with the theoretical relationship between the constructs M and R (Marton and Säljö, 1976). The positive loading for A4 is marginal, and, conceivably, partly reflects a reproducing orientation ("I'm usually prompt in starting work in the evenings").

The first factor to be extracted is also readily interpretable, as reflecting organized study behaviour, following Richardson (1992). As in Richardson's UK study, neither of the items from the original 'achievement motivation' subscale (A2 and A6) loaded on this factor, although both items produced

Table 2. Factor pattern matrix

	Organized study beh.	Achievement in context	Reproducing orientation	Communality (h^2)
A5	*.71*	-.05	.17	.495
M5	*.64*	.11	-.11	.461
M6	*.48*	-.03	-*.46*	.493
A4	*.47*	-.08	.32	.287
M3	*.45*	.23	.00	.277
A1	.37	-.15	-.16	.188
M4	.36	.24	-.11	.233
A3	.05	.62	.08	.405
M1	.07	*.62*	-.35	.507
A2	-.01	*.59*	-.07	.349
R2	-.03	*.50*	.34	.379
A6	-.01	*.49*	.09	.252
R3	-.08	.04	*.60*	.380
R6	.11	.25	*.60*	.432
R5	.02	-.04	*.45*	.204
R1	-.05	.09	*.40*	.181
M2	-.03	.21	-*.48*	.268

Notes
M = meaning orientation
R = reproducing orientation
A = achievement orientation

R4 was deleted due to low communality (.11) and failing to load ≥.30 on any factor.

modal responses at ceiling. However, and again consistent with Richardson's findings, the following items derive from Entwistle's (1981) organized study methods subscale: A5 "If conditions aren't right for me to study, I generally manage to do something to change them"; A4 (see above); and A1 "I find it easy to organize my study time effectively".

This leaves us with the task of interpreting the M items loading on the first factor, a tendency that is consistent with the positive correlation between M and A in Table 1. The items concerned are: M5 "I spend a good deal of my *spare time* in finding out more about interesting topics which have been discussed in class" (emphasis added); M6 "I find academic topics so interesting I should like to continue with them after I finish this course"; M3 "I generally put a lot of effort into trying to understand things which initially seem difficult"; and M4 "I often find myself questioning things that I hear in lessons or read in books".

For M5, classes in Malawi were so large and staff so few that topics could not be 'discussed in class', a study activity that would consequently *have to be organized into one's spare time*. The same local interpretation could apply to M3. While M6 and M4 are more sharply M-oriented, they do not load most strongly on the factor, particularly M4. Factor 1 does not appear to capture meaning orientation, a function that may therefore be assumed by the remaining factor.

From Table 2, this factor also contains a mixture of items, which might collectively be termed 'achievement in context', by respecting local and traditional values (Hofstede, 1985). These values include 'power distance' (respect for authority) and 'collectivism' (respect for one's ingroups, most notably the extended family). The items comprise: A3 "When I'm doing a piece of work, I try to bear in mind exactly what that particular lecturer seems to want"; M1 "I usually set out to understand thoroughly the meaning of what I am asked to read"; A2 "It's important for me to do really well in the courses here"; R2 "When I'm reading I try to memorize important facts which may come in useful later"; and A6 "It's important for me to do things better than my friends, if I possibly can". With the exception of the latter (lowest loading) item, these items might coherently reflect respect for both elders and family. Clearly, 'achievement in context', might also encompass a meaning orientation, in the traditional sense (Zindi, 1996). The link with A6 (which is competitive in tone) may be partly attributable to the acute shortage of education places in the Malawian context, resulting in a self-selected sample of relatively hard-working and competitive individuals.

With regard to predictive validity, we entered the factor scores from Table 2, plus year, age, gender, Kolbian items, change in study habits since secondary school, preference for Malawian versus expatriate lecturers, and relevance of the curriculum, into a stepwise multiple linear regression analysis, with grade as the dependent variable. The resulting regression equation explained a small but statistically significant amount of the variation in the criterion ($F_{3,191} = 7.27$, $p<.0001$, adjusted $R^2 = .088$). From Table 3, gender, organized study, and the Kolbian preference for concrete examples over abstract theories are each included in the equation. As a whole, Malawian students tended to prefer concrete to abstract learning material (mean = 3.4/4) as well as practical exercises to intellectual reflection (mean = 2.8). According to Kolb, and consistent with the assumption previously implicit in our curriculum, many of the students were therefore 'accommodators', thriving on concrete and active modes of learning. This concurs with our own experience of the students, who often asked for concrete examples and practical exercises. It also converges with Jones' (1991) survey of Malawian trainee managers, who preferred both real problems and learning by doing.

In Table 3, those individuals who more clearly preferred concrete examples, especially if male, tended to score higher grades than students who preferred abstract theories, especially if they were female. Organized study, on the other hand, was equated with somewhat lower grades in the

Table 3. Stepwise multiple linear regression on grade

Variable	[T]	Prob.	Adjusted R^2
Gender	3.10	.0022	3.8
Organized study beh.	2.87	.0046	3.2
Concrete examples	2.20	.0289	1.8

Table 4. Student views on purpose of higher education in Malawi (N = 240)

Theme	Percentage Ss mentioning
Acquiring knowledge	53
Personal dignity ("a decent job")	43
National development	36
To be able to earn more money	19
Material comforts	16
Social status	13
Getting a job	3
Helping relatives	2
Instilling personal hope for the future	2

exam. The latter may have been partly due to ability, with the more able students having to spend less time outside of lecture hours. In Malawi, shortages of human and material resources, such as laboratories and books, mean that students necessarily spend most of their day in 'chalk-and-talk' lectures. These typically begin at 7.30 am and continue into the early evening. The same resource constraints naturally prevented us from providing students with laboratory classes, a lack of fit that could have obscured any possible link between personal need for practical exercises and grade.

In order not to overlook any relationships that might have been masked by the level of noise in the data, we recomputed the factor analysis without the 'A' items – which from Table 2 seemed to have been least localized on any one factor. The reduced item pool did indeed produce a clear 'M versus R' factor solution, but this increased neither variation explained (33 per cent), nor predictive validity. We therefore felt that there was more to be lost than gained from adopting this more constrained, and therefore conceivably Eurocentric resolution of the data (see Carr et al., 1996, for a discussion of the dangers in excluding data to fit a Western model).

With the same concern, we content analysed students' open-ended responses to our question on the purpose of higher education in Malawi. The results are presented in Table 4. The figures in Table 1 have already indicated that reproduction is a relatively low priority for Malawian students, and this possibility was supported by the qualitative data. The predominant themes in Table 4 are not extrinsic. Despite the extreme material poverty in the country, the students perceive intrinsically valuable purposes to their educational experience. This pattern is consistent with Watkins et al.'s Kenyan and Zimbabwean data, on the basis of which they 'question the stereotype that students from African countries are more prone to surface learning strategies than Western students' (1994, p.1). Although these authors recruited 14-15 year secondary school students as subjects, many of the Malawian undergraduates felt that their study habits had not changed since secondary school (mean = 1.9/4, s.d. = 1.44).

Our students were clearer about the

change to expatriate instructors, responding with a mean of 1.1 (s.d. = 1.13) to the item "I prefer Malawian lecturers to expatriates". This readiness to disagree suggests that respondents were not particularly prone to acquiescence bias. Reinforcing that suggestion, the mean response to the statement "The psychology we are taught is more relevant to the West than to Malawi" was an undecided 2.1 (s.d. = 1.32). Thus, while efforts had already been made to tailor the curriculum to the Malawian context (Carr, 1994; MacLachlan and Carr, 1993), there was evidently room for improvement. This of course is why we became interested in assessing the fit between curriculum and student in the first place.

Discussion

The key findings of this study with regard to our hypotheses regarding the ASI are: (1) that the ASI reflected a complementary combination of etic and emic study styles, namely Reproducing, Organized study, and Achievement in Context (which possibly includes some Meaning in a traditional sense). Also (2) organized study behaviour negatively predicted academic grade (possibly because only the less able students needed to organize themselves outside of the highly structured lecture programme). It is important that some of our data addressed the issue of possible social desirability effects. In the 'developing' context of the South Pacific, and in the only other cross-cultural study employing the short ASI, Richardson et al. (1995) discuss the possibility that their data were partly attributable to negative response effects.

The main basis for this suspicion was the finding that Fijian students produced uniformly high scores on each factor. This also partly occurred in our study, namely on the factor Achievement in Context. On four out of the five major items loading on this dimension, the modal response was also the ceiling response. Taken in context however, maybe we should not be surprised by this finding. Malawi is an acutely poor country, with a corresponding record in the availability of higher education. In relative terms, Malawian undergraduates are highly privileged to be where they are, with lecturers commanding a commensurate level of respect (see Shouksmith, 1996, for wider support of this point). Students commonly reported feeling intense pressure from all sides 'to perform well'. Our point is that motivation may be a particularly salient factor in resource-depleted contexts, an idea that is consistent with the findings in Fiji, where "the constituent structure of the short ASI ... seems to be dominated by motivational considerations" (Richardson et al., 1995, p.425).

There is a wider empirical argument for the relative importance of motivation in developing economies. Wainer (1993) has argued that proficiency on tests may be inseparable from motivation, citing the examples of Korean students' relatively keen awareness of the honour of representing their country in international comparative research. In addition to Watkins et al.'s (1994) Kenyan and Zimbabwean data, plus Richardson et al.'s findings in Fiji, elevated test norms have been found in two other 'developing' countries, namely Papua New Guinea (Wilson, 1987) and Indonesia (Emilia and Mulholland, 1991). Our own finding of highly *intrinsic* motivation converges with results from the Philippines (Church and Katigbak, 1992). Once again in relation to the educational context, Van de Vijver and Poortinga (1991) observe that black South African students were consciously and uniformly demotivated to perform above minimally acceptable levels in tests designed and administered by a 'white' system. The point that we extract from these findings is that the salience of motivation is typically not well represented in scales *imported* from wealthier Western countries rather than developed locally.

Armed with just such a contextual perspective, can we possibly reconcile Richardson et al.'s Fijian findings with our own? The factor that Richardson et al. believed may have most reflected an acquies-

cence bias was factor 1, which they termed 'achievement motivation' (p.425). Given the undeniably wide difference in cultural settings (which we certainly would not want to underplay), there is a remarkable similarity between this factor and our own 'Achievement in Context'. The highest loading four items on achievement motivation (in descending order, A6, A2, M1, and R2) also appear on 'Achievement in Context'. In our opinion, it is conceivable that both factors, *almost by accident as it were, tapped into a* desire to do well given a set of contextual circumstances that tend to recur (with variations of course) in 'developing' countries. This motive could be considered as a general tendency to be socially responsive (in a broad sense *'acquiescent'), which would include* studying conscientiously so as not to disappoint *family and other reference groups.*

Because such desires are not unique to students in 'developing' countries, we might expect this motive to show up, although less clearly perhaps, in more 'developed' economies. And in fact Richardson et al. (1995) remark how 'achievement motivation' in Fiji resembled their (fourth) factor in the UK (comprising M1, A6, R2, and R3). Thus, while accepting Richardson et al.'s (1995) point that acquiescence bias needs in future to be addressed in the ASI by using standard psychometric precautions, we feel that there is a further, perhaps more substantial issue being raised by the data. That issue is the extent to which motivation to study well or hard plays a significant part in effective study, not only in 'developing' worlds but also in the so-called 'developed' ones. Thus, contextual circumstances may 'turn up' and 'turn down' (but never extinguish) the salience of motivation.

In Fiji, Richardson et al. (1995) report that none of the forms of motivation tapped by the ASI was associated with academic performance (p.428). This was linked with an interpretation "that the various forms of motivation are not guided by appropriate and effective [cognitive] approaches to learning" (1995, p.426). In Malawi, we adopted a different perspective. One reason why Achievement in Context was non-predictive of grade may have been its psychometric insensitivity at the upper reaches of the motivation continuum. A more locally-attuned, *fine-grained instrument might have been* able to capture individual differences at these reaches, thereby (potentially at least) providing more predictive power and more direction for fitting the curriculum to student needs. These points apply also to the ASI as a whole (the factor solution explained only one *third of the total variation). There could be* any number of further, localized factors contributing towards variability in grades. In developing Malawi's first computer aptitude test for instance, it was discovered that the predictors of grade were much more 'basic' *than those which work in the West (Ugeni,* 1993). These included the lack of spectacles *for long- and short-sightedness, and whether* the student had had any prior experience whatsoever with similar equipment.

In retrospect, it seems self-evident that local conditions and culture would impact not only upon students' typical *choice* from among study styles, but also upon the *content* of those styles. Nevertheless, we have seen that imported ideas such as Kolb's styles may still provide some useful directions for future research. That is, emic and etic will continue to exist side-by-side. This very conclusion is drawn by Frewer and Bleus (1991), in a South Pacific context, and in relation to the Eysenck Personality Inventory. The International Test Commission (ITC), however, is currently developing standards for adapting 'Western' instruments (Hambleton, 1994).

While some Western psychometric instruments appear to have very similar properties in different cultures (e.g. Ager and MacLachlan, in press; Carr, 1996), others clearly do not (e.g. Carr and MacLachlan, 1996; MacLachlan et al., 1997). It is also important to realize that the intrinsic properties of psychometric instruments can be influenced by their 'extrinsic' properties, such as face validity. More research is needed to establish what sorts of psychometric instruments are most acceptable and reliable

in which cultures (Carr et al., 1996; Carr, Powell et al., 1996; MacLachlan et al., 1995).

In the final analysis, what our data suggest is that the ITC might consider complementing its approach with some test development *from the alternative direction*. In this regard, a review of testing in 44 countries provides some sobering statistics (Oakland, 1995). Of 740 tests in use, only 290 were developed locally, even though the local professionals themselves judged homegrown tests to be more reliable than foreign instruments. The greatest need for additional tests was found in developing nations, where tests are most commonly used to measure personal characteristics. Perhaps approaches to study should now be included among them?

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