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13

## *Comparing Ways of Learning*

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The authors have investigated and learning in different cultures for several decades. This chapter describes some of the methodological problems we have faced, and some of our findings. In particular, the chapter notes what types of comparisons of learning can be justified, and the analytic methods appropriate for conducting such comparisons.

Our early work was informed by our backgrounds in scientific disciplines, particularly cognitive psychology. In psychology, cross-cultural research has always raised a fundamental problem. Psychology is basically the study of individual differences in behaviour, so the natural unit of analysis is the individual. Aggregating the responses of individuals from one culture to represent that culture's score on a variable of interest can lead to what has become known as the ecological fallacy (van de Vijver & Leung 1997).

To illustrate the problem, consider the correlation between death rates resulting from heart attacks and strokes. Both involve blood vessels and may have similar causes, but a stroke is an attack on the brain rather than the heart. At the individual level the correlation between death rates from heart attacks and strokes is zero since people do not die from both events. However, at a country level a considerable correlation is found between the pair of problems: in most affluent countries, both causes of death are typically higher than in less developed ones.

Similarly, it became apparent in the 1990s that the laboratory studies of human verbal learning and animal maze learning that had dominated psychology had little to say about learning in classrooms (Brown 1992). Experimental studies of learning typically tried to copy the laboratory conditions of the physical sciences by attempting to control all variables except for a few independent ones, which were manipulated to observe their effect on a dependent variable. For example, patterns of reinforcement could be varied to observe their effect on the number of nonsense syllables a research subject could learn in a fixed period. Too often, such research seemed to focus on testing often complex theories of unimportant types of learning in artificial conditions, and typically with samples of only Caucasian White American college students.

From this background developed the research agenda that is described in this chapter. Reflecting our own interests and expertise, the chapter especially focuses on comparison of ways of learning by students in Chinese and Western societies. It begins with the foundational literature on learning approaches, and then turns to comparisons of correlates of learning strategies. This section highlights matters of conceptual equivalence, reliability, and within-construct validity. The chapter then focuses on the so-called paradox of the Asian learner, indicating what the paradox was and how it could be explained. A further section addresses conceptions of teaching from a Chinese perspective, before the chapter rounds up in conclusion.

## Learning Approaches

The first author was first drawn into research on the learning ecology by two seminal papers (Biggs 1979; Marton & Säljö 1976), which are among the most widely cited items in the literature on educational psychology. Biggs, Marton and Säljö wanted to find out about learning *from the learner's perspective* rather than from that of the researcher. This has become known as the *second order perspective* (Marton & Booth 1997).

These researchers, though all from a psychological background, approached their task in very different ways. Marton and Säljö asked Swedish university students to read an academic article and then answer questions about what they had learned and how they had learned it. During in-depth interviews, students reported two main ways of tackling the task. Some tried to memorise details or key terms in order to be able to answer subsequent questions. These students tended to focus on the

reading at word or sentence level. Most of the other students tried to understand the message that the passage was trying to impart. They tended to focus on the themes and main ideas, and generally tried to process the reading for meaning.

These intentions and their associated reading strategies were called 'surface' and 'deep' approaches to learning. Significantly, the researchers also found qualitative differences in learning outcomes, depending on the approach to reading that had been utilised. Students who had adopted a surface approach typically could not explain the authors' message and could only recall isolated factual fragments of the passage. Those adopting a deep approach were able to provide a more sophisticated overview of the authors' intentions, and frequently used extracts from the article to support their reasoning.

The Swedish researchers went on to develop a qualitative research approach that they called 'phenomenography' (Marton 1981). This approach aims to understand how students perceive the content and process (the 'what' and 'how') of learning. The underlying rationale is the phenomenological notion that people act according to their interpretations of a situation rather than to 'objective reality'.

Biggs in Australia and Entwistle in the United Kingdom independently developed learning process inventories which owed a debt both to the paper by Marton and Säljö (1976) and to later phenomenographic writing, and adopted the 'surface/deep' and 'approaches to learning' terminology. Biggs (1987), in his Learning Process Questionnaire (LPQ) and its tertiary counterpart, the Study Process Questionnaire (SPQ), and Entwistle and Ramsden (1983) in their Approaches to Studying Inventory (ASI) added a third approach, 'achieving'. Students adopting this approach tried to achieve the highest possible grades by such strategies as working hard and efficiently, and by being cue conscious. They would use any strategy, including rote memorising many facts and understanding basic principles, that they perceived would maximise their chances of academic success.

Watkins followed the approach of Biggs and Entwistle, and provided some of the early supporting reliability and validity evidence for their questionnaires. While much of his early work had investigated factors influencing the learning of Australian university students, he undertook parallel studies at a university in the Philippines. He was able to confirm the psychometric properties of the questionnaire for Filipino students (factor validity and reliability), but this still left open the ques-

tion of comparing the raw scores of Australian and Filipino students. In the cross-cultural psychology literature this problem is known as the problem of measurement equivalence. As argued by Hui and Triandis (1985), when psychological measuring instruments are used in different cultures, range of types of equivalence need to be demonstrated, each of which could justify corresponding types of interpretations. At the most basic level, the concepts involved must be equivalent in both cultures so that researchers can use such questionnaires to compare the cultures.

The highest level of equivalence is known as *metric equivalence*. This means that a raw score of a respondent from one culture is equivalent mathematically to that from another culture. For example, a score of 19 by a Nepalese student on the Surface Strategy scale of the SPQ means that that student's use of surface strategies is the same as an Australian student who also scores 19 on that scale. Unfortunately such metric equivalence is almost impossible to demonstrate, and there is one major reason why it should not be assumed: the existence of response sets that operate differently across cultures. Thus whatever questions are asked, respondents from different cultures are likely to differ in the extent that they will agree with the question statement, provide socially desirable responses, or use extreme rating points. While such response sets tend to cancel out within a culture, they tend to confound cross-cultural comparisons of raw scores (see van de Vijver & Leung 1997). In addition, the statistical tests typically used to compare means assume that random sampling has been used, which is seldom possible in real-life classrooms. Moreover, when comparisons are made across cultures, the samples selected need to be representative of students and teachers in these cultures. This is seldom achieved, and so such comparisons must therefore be treated with caution.

At an intermediate level of equivalence, if responses to the instrument can be shown to be reliable and valid for each culture, then correlations can be compared between the constructs measured and other variables within each culture. For example, a comparison can be made of the correlations between scores on the LPQ Deep Strategy scale and academic achievement of like students in the Philippines and Australia. Such correlations allow comparison of the relationships between approaches to learning and other important psychological and educational variables across different cultures. The technique further allows testing of the validity of a number of Western theoretical propositions in non-Western cultures. Work in this arena by the first author led to a series of papers

and to a long-term research programme labelled 'cross-cultural meta-analyses' (e.g. Watkins 1998; 2001).

### Comparing Correlates of Learning Strategies

The first stage in this research programme established that the concepts involved were relevant for different cultures, and that the instruments used were reliable and valid for use with respondents from these cultures. This required attention to conceptual equivalence, reliability, within-construct validity, and a number of other matters.

#### *Conceptual equivalence*

The notions of conceptual equivalence are closely related to 'etic' and 'emic' approaches to research (Berry 1989). The etic approach seeks to compare cultures on what are thought to be universal categories. In contrast, the emic approach uses only concepts that emerge from within a particular culture. It is associated with the traditions of anthropology, but also more recently those of indigenous psychology (Kim & Berry 1993). Triandis (1972) pointed to the dangers of 'pseudo-etic' research, which involves the imposition of the concepts of one culture upon another as if they were universal without any prior research into the veracity of this assumption.

Psychologists claim that they can identify problems with conceptual equivalence primarily through comparing the distribution of responses to a questionnaire by respondents from different cultures (van de Vijver & Leung 1997). The methods of item-bias analysis that they advocate can indeed highlight problems with the wording of different items. However, this approach missed the central question: *Are the concepts equivalent?*

It seems clear that assessment of the conceptual equivalence of the constructs underlying learning instruments such as the SPQ require qualitative analysis, such as phenomenography. Studies in non-Western cultures have been conducted with non-Western students in China, Hong Kong, Japan, Malaysia, Nepal and Nigeria, and at the University of the South Pacific.

To illustrate, several studies support the proposition that the concepts underlying the theorising of Biggs and Entwistle are relevant to Nigerian students. An ethnographic study based on 120 hours of observations in primary schools in Lagos found that Nigerian pupils were trained to believe that getting the right answer by any means, even

cheating, was the essence of learning (Omokhodion 1989). Neither the teachers nor the pupils considered that the processes of understanding the problem and of obtaining the solution were important. Omokhodion concluded that a superficial, surface approach to learning was encouraged. Further evidence came from a study in which 250 Nigerian university students responded to the question "What strategies do you use to study?" (Ehinder 1990). Content analysis revealed three main themes in the students' responses: diligence, building up understanding, and memorising content material without understanding. These themes appeared to correspond to the notions of achieving, deep, and surface approaches to learning.

Qualitative investigations of the learning approaches and conceptions of Chinese learners in Hong Kong and China (e.g. Kember 1996; Kember & Gow 1991; Marton et al. 1996; Dahlin & Watkins 2000; Jin 2001) have partially supported the conceptual validity of the constructs of deep and surface approaches for Chinese students. However, all of these studies have concluded that Chinese students tend to view memorisation as relevant to both approaches, whereas Western students are more likely to view memorisation as characteristic of a surface approach. Research in Nepal (Watkins & Regmi 1992, 1995) found that while deep and surface approaches were relevant for the sampled Nepalese students, the concept of learning as character development emerged at a lower cognitive level than in Western studies. Thus while the constructs of deep and surface approaches to learning are relevant to non-Western cultures, culturally specific aspects must also be considered.

#### *Reliability*

The responses to any measuring instrument must be assessed for reliability in the culture in which it is to be used. There is fairly strong support for the reliability of responses of the SPQ, LPQ, and ASI in a range of cultures. Watkins (2001) obtained coefficient alphas for responses to the SPQ scales by 14 independent samples of 6,500 university students from 10 countries generally exceeding .50. This magnitude is widely considered acceptable for a research instrument used for group comparisons, but well below the level required for important academic decisions about an individual student (Nunnally 1978). Not surprisingly, the reliability estimates were slightly higher for Australian students for whom these instruments were originally developed. They were particularly low for

the Nepalese for whom the concepts may not have been as relevant and whose level of English competence was relatively low.

#### *Within-construct validity*

The within-construct validity of the LPQ and SPQ has been demonstrated by comparing the results of internal factor analysis of responses to the LPQ and SPQ scales for different cultures both with each other and with the theoretical model expected. Thus, confirmatory factor analysis of responses to the LPQ, which shares the same underlying motive/strategy model as the SPQ, by 10 samples of school students from six different countries confirmed the two basic factors of deep and surface approach (Wong et al. 1996). A review of the factor analytic studies by Richardson (1994) also supported the cross-cultural validity of the ASI as a measure of deep and surface approaches.

#### *The cross-cultural meta-analysis*

Cross-cultural meta-analysis employs quantitative synthesis methods in the meta-analytic tradition (Glass et al. 1981; Rosenthal & DiMatteo 2001) to test the cross-cultural relevance of variables proposed in learning theory to be significantly correlated with surface, deep, and achieving approaches to learning. According to Biggs (1987), how a student learns depends on presage factors related to both the person and the learning environment. In particular, the following relationships have been examined from a cross-cultural perspective:

- *Correlates with academic grades.* Students' approaches to learning are expected to influence their academic performance. In particular, it is predicted that in any culture use of a surface approach is negatively correlated with academic achievement, and use of deep and achieving approaches is positively correlated with grades (Biggs 1987; Schmeck 1988). However, an assumption underlying these predictions is that higher quality learning outcomes are rewarded by the assessment system, which unfortunately is often not the case.
- *Correlates with self-concept and locus of control.* Students who are more self-confident, particularly about their academic abilities, and who accept greater responsibility for their own learning outcomes, are more likely to adopt deeper, more achieving approaches to learning. These approaches require them to rely more on their own understanding of the course materials, rather

than to rely greatly on the teacher and textbook (Biggs 1987; Schmeck 1988).

The first stage of any meta-analysis is to select the studies to be quantitatively synthesised. A decision to be made at this stage is whether only studies satisfying some predetermined quality criteria should be included. A further decision, of course, is what the criteria should be.

Watkins conducted a cross-cultural meta-analysis using formal searches of established CD-ROM databases and more informal searches of the extensive journal collection in the library of the University of Hong Kong. He also sought relevant published and unpublished material at international conferences, and sent letter and e-mail appeals to established researchers in the area. All studies which reported correlates of at least one approach to learning and measures of self-esteem, locus of control, and/or academic achievement (or where it was possible statistically to estimate such correlations from the data provided) were included in the meta-analysis, provided responses to the scales showed a reasonable level of internal consistency (alphas of at least .50) for the culture being studied. These criteria led to four studies being discarded.

An issue in this type of meta-analysis is whether scales from different instruments are really measuring the same variables and thus can be combined. In this meta-analysis a number of different learning process instruments were assumed to be assessing a student's approach to learning as their test constructors claimed. In addition, different measures of self-esteem, locus of control, and academic achievement (measured by school tests, grade point average, standardised achievement tests, etc.) were assumed to be measuring the same variable.

Once all the studies to be included had been identified and the relevant correlations obtained, average correlations were calculated. One of the main aims of meta-analysis is not just to obtain an overall estimate of the strength of a relationship, but often, more importantly, to find out if the relationship varies according to the characteristics of the sample. Thus, it was hoped that the analysis would provide insight into the nature of the relationship. The study sought to find out whether the relationships between approaches to learning and the other variables of interest varied between Western and non-Western samples and at school and university levels.

The average Pearson correlation coefficients between approaches to learning and academic achievement, self-esteem, and internal locus of control, respectively, are shown in Table 13.1. Separate analyses were



also carried out for school and university students and different measures of the variables concerned.

*Table 13.1: Average Correlations between Learning Approach Scales and Academic Achievement, Self-Esteem and Locus of Control*

Groups	Sample Size	Surface Approach	Deep Approach	Achieving Approach
<u>Academic Achievement</u>				
Western	11,023	-.13	.18	.21
Non-Western	17,030	-.10	.14	.16
Total	28,053	-.11	.16	.18
<u>Self-Esteem</u>				
Western	5,478	-.03	.33	.30
Non-Western	3,232	-.08	.27	.25
Total	8,710	-.05	.30	.28
<u>Locus of Control</u>				
Western	4,339	-.15	.10	.15
Non-Western	8,673	-.22	.09	.11
Total	13,012	-.20	.09	.12

Source: Adapted from Watkins (2001).

- *Approaches to learning and academic achievement.* The average correlations based on data from 28,053 respondents (55 independent samples from 15 countries) were -.11, .16, and .18 with surface, deep and achieving approaches respectively. The average correlation coefficients appeared to be somewhat higher (particularly at school level) for Western samples. While the relatively low correlations between approaches to learning and academic achievement were disappointing, this was not unexpected because school and university grades often reward superficial learning outcomes. The relationship between deeper approaches to learning and higher quality learning outcomes has been shown to be much stronger (Watkins & Biggs 1996).
- *Approaches to learning and self-esteem.* The average correlations based on data from 8,710 respondents (involving 28 independent samples in 15 countries) were -.05, .30, and .28 with surface, deep, and achieving approaches respectively. The average correlations with deep and achieving approaches exceeded .25 for all subsamples, but were particularly strong (.33) for Western university students with deep approaches.

- *Approaches to learning and internal locus of control.* The average correlations based on data from 13,012 respondents (involving 27 independent samples in 11 countries) were -.20, .09, and .12 with surface, deep and achieving approaches respectively. Further analysis showed that the negative correlations with surface approaches were larger than those with the other approaches for non-Western and Western school samples. However, at the university level correlations with both deep and achieving approaches were much higher for Western samples.

In summary, this cross-cultural meta-analysis showed that the correlates of approaches to learning and academic achievement, self-esteem, and locus of control were similar across a range of Western and non-Western schools and universities, and also across a range of measuring instruments. The findings support the cross-cultural validity of Western theorising in this area, and suggest that Western interventions designed to improve the quality of learning strategies based on such theorising may also be appropriate for non-Western students.

### **The Paradox of the Asian Learner**

The value of qualitative methods for interpreting comparisons of student learning across cultures may be illustrated by research into the so-called 'paradox of the Asian learner'. This paradox starts with a seemingly simple syllogism:

1. Asian students use rote learning more than Western students.
2. Rote learning leads to poor learning outcomes.
3. Therefore, Asian students have poorer learning outcomes than Western students.

The problem is that international comparisons of educational performance show that the reverse is true: e.g. students from Singapore, Japan, Taiwan and Hong Kong consistently outperform students from almost all other countries participating in the Trends in Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA) (Martin, Mullis, Foy, & Stanco 2012; Mullis, Martin, & Foy 2008; Mullis, Martin, Foy, & Arora 2012; OECD 2010). Such results have been remarkably stable despite curriculum reforms that have attempted to 'Westernise' education. Results for these jurisdictions in the

Progress in International Reading Literacy Study (PIRLS) also are above the international average (Mullis, Martin, Foy, & Drucker 2012). It seems that the conclusion of the above syllogism is incorrect, and so must be at least one of the premises.

The evidence for the claim about rote learning comes from reports of examiners and teachers of such students in Asian as well as Western countries. For example, examiners in various subjects at the main public examinations in Hong Kong often complain about the model answers given by candidates – in some cases hundreds of students from the same school giving the same long answer. Western university lecturers have also commented that students prefer rote learning and are disinclined to question readings or the lecturer (Biggs 1996).

As Biggs (1996) argued, such observations often reveal what he called ‘Western misperceptions of Confucian learning culture’ (p.45), and are not consistent with findings from qualitative studies. For example, the TIMSS Video Study, which analyzed Grade 8 mathematics lessons in the United States, Germany and Japan (Stigler & Hiebert 1999), showed that teaching in Japanese schools is not generally oriented toward rote learning. Japanese mathematics lessons tended to begin with a brief review of the previous lesson, and then had students solve challenging problems—first individually and then in small groups—and present their solutions to the class; at the end of lessons teachers summarized the main points. Japanese lessons were more likely to contain high-level mathematical content, and had more seatwork that involved thinking and invention. However, there also were deviations from these patterns, and Japanese lessons dealt with some content via lectures and asking students to commit content to memory. Stigler and Hiebert noted that these different approaches often co-existed in the same lesson (p.49). A study of the teaching of Pythagoras’ theorem involving eighth grade students in Shanghai, Hong Kong, and the Czech Republic (Huang & Leung 2002) found that the Shanghai teacher provided the most challenging problems; students not only made conjectures based on drawings and calculating, but also explored multiple mathematical proofs of the theorem. The students were ‘quite involved in the process of learning such as putting up and presenting diagrams and explaining their understanding’ (p.276). We have observed similar lessons in Hong Kong (van Aalst 2010).

Further, as Wong (2004) has observed, Chinese learners tend to first commit new information to memory, then attempt to understand and apply it, and only then question and modify it. And Li’s (2009) stud-

ies of the beliefs about learning of American and Chinese university students have identified the following positive affects in Chinese learners: commitment to learning, thirst for learning, respect for teachers and knowledge, and humility. Learning 'aims at breadth and depth of knowledge, its application to real-life situations, and the unity of one's knowledge and moral character' (Li 2009). 'Respect' does not mean that students uncritically accept what the teacher says but that they are receptive and sincere toward the teacher, and students remain 'humble' after learning to stay alert to complacency and then continue their journey of self-perfection. In a study that compared peer interaction in Australian and Taiwanese middle-school science classrooms, Wallace and Chou (2001) found that Taiwanese students talked, during interviews, about their peers as sources of help for learning, while Australian students 'seemed more interested in the importance of relationships for their own sake' (p. 704). These authors further observed that when students in Taiwanese classes gathered in groups they remained focused on the learning task and leaned their bodies toward each other to maximize eye contact—a state of cognitive engagement. Finally, in comparison studies involving the LPQ and SPQ questionnaires, Australian students self-reported the use of surface learning strategies more often than Asian students from Hong Kong, Malaysia, and Nepal (Biggs 1992; Kember & Gow 1991; Watkins et al. 1991).

The aforementioned findings do, in our opinion, debunk the Western misperceptions of the learning behaviours of Asian students that lead to the first premise. However, it is unclear whether Confucian-heritage beliefs about learning will endure in the face of continuing exposure to Western values. In a recent volume that re-examines the notion of a distinctly Asian learner, Chan and Rao (2009) argue that it is more accurate to refer to *contexts* in which Confucian values are important, and that these contexts are changing in response to global developments.

The affects identified by Li (2009), such as the extent of commitment to learning and desire to learn, are likely to be important factors in explaining the positive results of East Asian learners on international comparisons of achievement. However, Asian learners do memorize and a culturally sensitive understanding of the relationship between memorization and understanding also seems necessary for resolving the paradox.

While Western education has in the past depended on rote learning, Western educators today reject such learning. In doing so, many have failed to draw a distinction between *rote* learning, i.e. memorising 'without thought or understanding' (*Oxford English Dictionary*), and *repetitive* learning, i.e. learning in order to enhance future recall alongside understanding. Memorising without understanding undoubtedly leads to very limited learning outcomes, but many Western teachers mistakenly assume that when Chinese students memorise, they are rote learning at the expense of understanding. In fact, Chinese students frequently learn repetitively, both to ensure retention *and* to enhance understanding. On the basis of in-depth interviews with teachers and students in Hong Kong and China, it has become clear first that many teachers and better students do not see memorising and understanding as separate but rather as *interlocking* processes, and second that high quality learning outcomes usually *require* both processes as complements to each other (Kember 1996; Marton et al. 1996; Marton et al. 1997). This is purportedly the solution to the paradox. Students in Confucian-heritage cultures are correctly observed as making great use of memorisation, but they are not necessarily rote learning, as their Western teachers have supposed. Many such students actually develop understanding through the process of memorisation, and so can perform well academically.

Dahlin and Watkins (2000) investigated this possibility empirically. Through in-depth interviews with students attending international schools and public secondary schools, they showed that students in China, unlike their Western counterparts, used repetition for two different purposes. On the one hand it was associated with creating a 'deep impression', and thence with memorisation; but on the other hand it was used to deepen or develop understanding by discovering new meaning. The Western students on the other hand tended to use repetition only to check that they had really remembered something. This finding was consistent with another cross-cultural difference identified by Dahlin and Watkins (2000). Whereas Western students see understanding as usually a process of sudden insight, Chinese students typically think of understanding as a long process that requires sustained mental effort.

### **Conceptions of Teaching: A Chinese Perspective**

In their earlier research, Watkins and Biggs (1996) focused on Chinese students, but also recognised that Chinese teachers must be doing some-

thing right to help bring about learning outcomes that are frequently superior to those in Western schools. It did not take long to realise that the relationship between teacher and student is fundamental to understanding the role of the teacher in Chinese classrooms. According to Chinese tradition, the relationship between teachers and students is akin to that of parents and their children. This is an area where Western observers often see only part of the picture. Thus, the comment by Ginsberg (1992, p.6) that a lecturer in China is an authority figure, 'a respected elder transmitting to a subordinate junior', certainly has a ring of truth. However, the typical method of teaching is often not simple transmission of superior knowledge but utilises considerable interaction in a mutually accepting social context.

Ho (2001) presented an important cross-cultural difference in perceptions of what is involved in good teaching. She used a survey to compare Australian and Hong Kong secondary school teachers, and found that while the former saw their role as restricted primarily to instruction within the classroom, the latter saw their role as extending to the students' domestic problems and behaviour outside the school.

Further research confirmed the widespread conception that Chinese teachers should be of good character as well as concerned with the moral development of their students (Gao & Watkins 2001). A major aim of that study was to develop a model of conceptions of teaching appropriate for secondary school physics teachers in China's Guangdong Province. After numerous in-depth interviews, classroom observations and a pilot quantitative survey, Gao and Watkins developed a model with five basic conceptions (knowledge delivery, examination preparation, ability development, attitude promotion, and conduct guidance). The first two of these were grouped into a higher order 'moulding' orientation which corresponded fairly well with the 'transmission' dimension identified in Western research (see e.g. Kember & Gow 1994). Gao and Watkins grouped the remaining three lower-level conceptions into a higher-order 'cultivating' orientation. This not only involved a concern with developing student understanding and higher quality learning outcomes, as in the 'facilitating' dimension of Kember and Gow, but broadened it to focus on affective outcomes such as developing the student's love of science and moral (not ideological) aspects such as their responsibilities to their families and society as a whole.

Cultural differences were further exposed by a study of British and Chinese secondary school students by Jin and Cortazzi (1998). In this

study, which employed both survey and observational methods, British students characterised a good teacher as one who is able to arouse the students' interest, explain clearly, use effective instructional methods, and organise a range of activities. These are very much the teaching skills taught in typical Western teacher-education method courses. The Chinese students, by contrast, preferred the teacher to have deep knowledge, be able to answer questions, and be a good moral model. In terms of teacher-student relationships, the British students liked their teachers to be patient and sympathetic with students who had difficulty following the lesson, whereas the Chinese students considered that their relationship with a good teacher should be friendly and warm well beyond the classroom.

This perception of Chinese teachers as friendly and warm has been noted by a number of researchers and linked to the Confucian concept of *ren* (Jin & Cortazzi 1998; Gao & Watkins 2001), which translates as something like human-heartedness or love. Indeed, according to Jin and Cortazzi (1998), all education in Mainland China is based on Confucian principles even though the teachers and students are often unaware of it. These principles include that education is highly valued by society; learning involves reflection and application; hard work can compensate for lack of ability; the teacher is a model both of knowledge and morality; and learning is a moral duty and a responsibility to the family (see also Lee 1996; Li 2001).

Another study in this area showed how quantitative and qualitative methods can be combined to provide a better understanding of how the good teacher is viewed in different cultural contexts (Watkins & Zhang 2006). The great majority of their 128 respondents were Chinese students but studying either in regular Hong Kong Chinese secondary schools or American international secondary schools in Hong Kong. In the latter case most of the teachers were American, and the pupils studied in English using an American syllabus. Following the approach to research utilised by Beishuizen et al. (2001), the students were first each asked to write a short essay about 'The Good Teacher'. These essays were then content analysed, and the constructs utilised were identified. Each essay was then re-scored '0' or '1', depending on whether that essay used each of these constructs in turn. Thence dual scaling was used to identify dimensions of the good teacher used by these respondents. Two dimensions were easily identifiable. The first referred to characteristics such as keeping promises, being responsible, and being honest, while the second

referred to having deep knowledge, organising a variety of learning situations, and giving students freedom. Consistent with previous findings, the international school students scored much higher on the second dimension but lower on the first. Thus it seems that just contact with a Western educational context was sufficient for these Chinese students to view teaching from a more 'Western' perspective.

## **Conclusions**

This chapter has illustrated some methodological issues involved in comparing learning across cultures by describing some of our own and colleagues' work. Much of the literature in this area uses the methods and theories of psychology. We have shown how, once educational psychologists emerged from the laboratory and started using second-order research methods based on the perspective of actual students and teachers, researchers were able to make real progress in understanding the processes of learning in Western classrooms. However, most of this work has used the individual students or teachers as the unit of analysis. Thus, like psychology in general, these methods are not so suitable for comparisons across cultures.

In our opinion, comparisons of means from instruments designed to measure most, if not all, psychological constructs related to learning must be questioned due to problems of metric equivalence and sampling. Fortunately, to test whether most theories and training programmes are appropriate in different cultures requires only comparisons of correlations across cultures (see Table 13.1) or of means within cultures. Such analyses require less stringent tests of conceptual equivalence and the reliability and validity of the instrument(s) for respondents of each culture being studied.

We have also shown how a qualitative approach (or a combination of quantitative and qualitative) can be adopted to explore the meaning of concepts such as learning across and within cultures (and thus of testing conceptual equivalence). Such in-depth research, in our view, is required if we are validly to compare the processes of learning across cultures. It may also be the best hope to provide the basis for developing training programmes suitable for improving the quality of learning outcomes in different cultures.



## References

- Beishuizen, J.J.; Hof, E.; van Putten, C.M.; Bouwmeester, S. & Asscher, J.J. (2001): 'Students' and Teachers' Cognitions about Good Teachers'. *British Journal of Educational Psychology*, Vol.71, No.2, pp.185-202.
- Berry, John W. (1989): 'Imposed Emics – Derived Etics: The Operationalisation of a Compelling Idea'. *International Journal of Psychology*, Vol.24, No.6, pp.721-735.
- Biggs, John B. (1979): 'Individual Differences in Study Processes and the Quality of Learning Outcomes'. *Higher Education*, Vol.8, No.4, pp.381-394.
- Biggs, John B. (1987): *Student Approaches to Learning and Studying*. Melbourne: Australian Council for Educational Research.
- Biggs, John B. (1992): *Why and How do Hong Kong Students Learn? Using the Learning and Study Process Questionnaires*. Education Paper 14, Hong Kong: Faculty of Education, The University of Hong Kong.
- Biggs, John B. (1996): 'Western Misperceptions of Confucian-heritage Learning Culture', in Watkins, David A. & Biggs, John B. (eds.), *The Chinese Learner: Cultural, Psychological and Contextual Influences*. Hong Kong: Comparative Education Research Centre, The University of Hong Kong, pp.45-67.
- Brown, Ann L. (1992): 'Design Experiments: Theoretical and Methodological Challenges for Creating Complex Interventions in Classroom Settings'. *The Journal of the Learning Sciences*, Vol.2, No.2, pp.141-178.
- Chan, Carol K.K. & Rao, Nirmala (eds.) (2009): *Revisiting the Chinese Learner: Changing Contexts, Changing Education*. CERC Studies in Comparative Education 25, Hong Kong: Comparative Education Research Centre, The University of Hong Kong, and Dordrecht: Springer.
- Dahlin, Bo & Watkins, David (2000): 'The Role of Repetition in the Processes of Memorising and Understanding: A Comparison of the Views of German and Chinese Secondary School Students in Hong Kong'. *British Journal of Educational Psychology*, Vol.70, No.1, pp.65-84.
- Ehinderer, O.J. (1990): 'A Discriminant Function Analysis of Study Strategies, Logical Reasoning Ability and Achievement across Major Teaching Undergraduate Curricula'. *Research in Education*, Vol.44, No.1, pp.1-11.

- Entwistle, Noel J. & Ramsden, Paul (1983): *Understanding Student Learning*. London: Croom Helm.
- Gao, Lingbiao & Watkins, David A. (2001): 'Identifying and Assessing the Conceptions of Teaching of Secondary School Physics Teachers in China'. *British Journal of Educational Psychology*, Vol.71, No.3, pp.443-469.
- Ginsberg, E. (1992): 'Not just a Matter of English', *HERDSA News*, Vol.14, No.1, pp.6-8.
- Glass, Gene V.; McGaw, Barry & Smith, Mary Lee (1981): *Meta-Analysis in Social Research*. Beverly Hills, CA: Sage.
- Ho, Irene T. (2001): 'Are Chinese Teachers Authoritarian?', in Watkins, David A. & Biggs, John B. (eds.), *Teaching the Chinese Learner: Psychological and Pedagogical Perspectives*. Hong Kong: Comparative Education Research Centre, The University of Hong Kong, pp.99-114.
- Huang, Rongjin & Leung, Frederick K.S. (2002): 'How Pythagoras' Theorem is Taught in Czech Republic, Hong Kong and Shanghai: A Case Study'. *Zentralblatt für Didaktik der Mathematik*, Vol.34, No.6, pp.268-277.
- Hui, C. Harry & Triandis, Harry C. (1985): 'Measurement in Cross-Cultural Psychology: A Review and Comparison of Strategies'. *Journal of Cross-Cultural Psychology*, Vol.16, No.2, pp.131-152.
- Jin, Lixian & Cortazzi, Martin (1998): 'Expectations and Questions in Intercultural Classrooms'. *Intercultural Communication Studies*, Vol.7, No.2, pp.37-62.
- Kember, David (1996): 'The Intention to both Memorise and Understand: Another Approach to Learning?'. *Higher Education*, Vol.31, No.3, pp.341-354.
- Kember, David & Gow, Lyn (1991): 'A Challenge to the Anecdotal Stereotype of the Asian Student'. *Studies in Higher Education*, Vol.16, No.2, pp.117-128.
- Kember, David & Gow, Lyn (1994): 'Orientations to Teaching and their Effect on the Quality of Student Learning'. *Journal of Higher Education*, Vol.65, No.1, pp.58-74.
- Kim, Uichol & Berry, John W. (eds.) (1993): *Indigenous Psychologies: Research and Experience in Cultural Context*. London: Sage.
- Lee, Wing On (1996): 'The Cultural Context for Chinese Learners', in Watkins, David A. & Biggs, John B. (eds.), *The Chinese Learner: Cultural, Psychological and Contextual Influences*. Hong Kong: Compara-

- tive Education Research Centre, The University of Hong Kong pp.25-41.
- Li, Jin (2001): 'Chinese Conceptualization of Learning'. *Ethos*, Vol.29, No.2, pp.111-137.
- Li, Jin (2009): 'Learning to Self-Perfect: Chinese Beliefs about Learning', in Chan, Carol K.K. & Rao, Nirmala (eds.), *Revisiting the Chinese Learner: Changing Contexts, Changing Education*. CERC Studies in Comparative Education 25, Hong Kong: Comparative Education Research Centre, The University of Hong Kong, and Dordrecht: Springer, pp.35-69.
- Martin, M.O.; Mullis, I.V.S.; Foy, P. & Stanco, G.M. (2012): *TIMSS 2011 International Results in Science*. Chesnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.
- Marton, Ference (1981): 'Phenomenography: Describing Conceptions of the World around Us'. *Instructional Science*, Vol.10, No.2, pp.177-200.
- Marton, Ference & Booth, Shirley (1997): *Learning and Awareness*. Mahwah, NJ: Lawrence Erlbaum.
- Marton, Ference & Säljö, Roger (1976): 'On Qualitative Differences in Learning - I: Outcome and Process'. *British Journal of Educational Psychology*, Vol.46, No.1, pp.4-11.
- Marton, Ference; Dall'Alba, Gloria & Tse, Lai Kun (1996): 'Memorizing and Understanding: The Keys to the Paradox?', in Watkins, David A. & Biggs, John B. (eds.), *The Chinese Learner: Cultural, Psychological and Contextual Influences*. Hong Kong: Comparative Education Research Centre, The University of Hong Kong, pp.69-83.
- Marton, Ference; Watkins, David A. & Tang, Catherine (1997): 'Discontinuities and Continuities in the Experience of Learning: An Interview Study of High-School Students in Hong Kong'. *Learning and Instruction*, Vol.7, No.1, pp.21-48.
- Mullis, I.V.S.; Martin, M.O. & Foy, P. (2008): *TIMSS 2007 International Mathematics Report: Findings from IEA's Trends in International Mathematics and Science Study at the Fourth and Eighth Grades*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.
- Mullis, I.V.S.; Martin, M.O.; Foy, P. & Arora, A. (2012): *TIMSS 2011 International Results in Mathematics*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

- Mullis, I.V.S.; Martin, M.O.; Foy, P. & Drucker, K.T. (2012): *PIRLS 2011 International Results in Reading*. Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.
- Nunnally, Jum C. (1978): *Psychometric Theory*. 2<sup>nd</sup> edition, New York: McGraw Hill.
- OECD (2010): *PISA 2009 Results: What students know and can do – Student performance in reading, mathematics and science (Volume I)*. Paris: Organisation for Economic Co-operation and Development (OECD).
- Omokhodion, J. Otibhor (1989): 'Classroom Observed: The Hidden Curriculum in Lagos, Nigeria'. *International Journal of Educational Development*, Vol.9, No.2, pp.99-110.
- Richardson, John T.E. (1994): 'Cultural Specify of Approaches to Studying in Higher Education: A Literature Survey'. *Higher Education*, Vol.27, No.4, pp.449-468.
- Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: recent developments in quantitative methods for literature reviews. *Annual Review of Psychology*, 52 (1), 59-82.
- Schmeck, Ronald R. (ed.) (1988): *Learning Strategies and Learning Styles*. New York: Plenum.
- Stigler, James W. & Hiebert, James (1999): *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom*. New York: Free Press.
- Triandis, Harry C. (1972): *The Analysis of Subjective Culture*. New York: John Wiley.
- van Aalst, Jan (2010): 'Gaining an Insider Perspective on Learning Physics in Hong Kong', in Gomez, K., Lyons, L. & Radinky, J. (eds.), *Proceedings of the 9th International Conference of the Learning Sciences* Chicago, IL: International Society of the Learning Sciences, (pp. 881-888).
- van de Vijver, Fons & Leung, Kwok (1997): *Methods and Data Analysis for Cross-Cultural Research*. London: Sage.
- Wallace, John, & Chou, Ching-Yang (2001). 'Similarity and difference: Student cooperation in Taiwanese and Australian science classrooms.' *Science Education*, 85, 694-711.
- Watkins, David A. (1998): 'Assessing Approaches to Learning: A Cross-Cultural Perspective on the Study Process Questionnaire', in Dart, Barry & Boulton-Lewis, Gillian (eds.), *Teaching and Learning in Higher Education*. Melbourne: Australian Council for Educational

Research, pp.124-144.

- Watkins, David A. (2001): 'Correlates of Approaches to Learning: A Cross-Cultural Meta-Analysis', in Sternberg, Robert & Zhang, Li-fang (eds.), *Perspectives on Thinking, Learning, and Cognitive Styles*. Mahwah, NJ: Lawrence Erlbaum, pp.165-196.
- Watkins, David A. & Biggs, John B. (eds.) (1996): *The Chinese Learner: Cultural, Psychological and Contextual Influences*. Hong Kong: Comparative Education Research Centre, The University of Hong Kong.
- Watkins, David A. & Regmi, Murari (1992): 'How Universal are Student Conceptions of Learning? A Nepalese Investigation'. *Psychologia*, Vol.35, No.2, pp.101-110.
- Watkins, David A. & Regmi, Murari (1995): 'Assessing Approaches to Learning in Non-Western Cultures: A Nepalese Conceptual Validity Study'. *Assessment and Evaluation in Higher Education*, Vol.20, No.2, pp.203-212.
- Watkins, David A.; Regmi, Murari & Astilla, Estela (1991): 'The Asian-Learner-as-a-Rote-Learner Stereotype: Myth or Reality?'. *Educational Psychology*, Vol.11, No.1, pp.21-34.
- Watkins, David A. & Zhang, Q. (2006). 'The good teacher: a cross-cultural perspective.' In D. M. Inerney, M. Dowson & S. van Etten (Eds.), *Effective schools* (pp. 185-204). Charlotte, NC: Information Age Publishing.
- Wong, Ngai\_Ying (2004). 'The CHC learner's phenomenon: Its implications on mathematics education.' In L. H. Fan, N. Y. Wong, J. F. Cai & S. Q. Li (Eds.), *How Chinese learn mathematics: Perspectives from insiders* (pp. 503-534). Singapore: World Scientific.
- Wong, Ngai-Ying; Lin, Wai-Ying & Watkins, David A. (1996): 'Cross-Cultural Validation of Models of Approaches to Learning: An Application of Confirmatory Factor Analysis'. *Educational Psychology*, Vol.16, No.2, pp.317- 327.