

An examination of changes in the approaches to learning in a sample of sojourner students from Confucian heritage cultures (CHC) over time in a new academic environment using hierarchical linear modelling

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Abstract: A longitudinal study was undertaken to investigate whether Confucian heritage culture (CHC) students' approaches to learning were retained or in some way modified in a Western cultural, social and educational environment. The tertiary students were sojourners in Australia who intended to return to their homes in Asia on the completion of their studies. A bilingual (Chinese and English) version of the *Study Process Questionnaire* (SPQ) (Biggs, 1987a) was used to measure sojourner students' approaches to learning on five occasions over two years in Australia. A two-level analysis, using hierarchical linear modelling, was undertaken at the within and between student levels to see if there were statistically significant changes in the students' approaches to learning. A negative occasion slope for Surface Motivation suggested that superficial learning decreased while the significant positive occasion slopes associated with the Deep and Achieving Approaches to learning indicated that learning approaches that were problem-based and directed toward achievement increased over time. These results showed that five of six approaches to learning changed during the period of the study, but not for all groups of students. While there was no significant change for the Surface Strategy approach to learning over time, there were significant effects for particular groups of students. Implications for teaching overseas tertiary students in new learning environments were examined and recommendations made for the implementation of adjustments that would accommodate any differences in approaches to learning that were encountered.

Keywords: Approaches to learning, the *Study Process Questionnaire*, hierarchical linear modelling, intra and inter student levels, two-level analysis, occasion slope, direct effects and interaction effects.

Introduction

A longitudinal study was undertaken to investigate whether students from Confucian heritage cultures (CHC) changed or in some way modified their approaches to learning in a Western social, cultural and educational environment. Multilevel modelling, using hierarchical linear modelling (HLM) (Bryk, Raudenbush and Congdon, 2000) was employed to examine the data. Thus, analyses were undertaken at the intra and inter student levels to assess the degree of change that had occurred. HLM was also able to indicate a significant absence of change if none occurred.

In order to ensure an interval scale of measurement, the raw score data that were obtained from the SPQ were scaled and equated using the QUEST program (Adams and Khoo, 1993). The Rasch model was employed to produce interval scales on which all items in a particular scale and all participants in the study were placed. This procedure enabled the examination of the performance of individual students to be examined over time, rather than the mean performance of a sample of students. This was particularly useful as there was considerable variability between different students who provided responses on the five occasions of measurement. Therefore, if a student responded on at least two of the five occasions, the data provided were included.

An original sample of 153 cases was examined on five occasions over a period of two years in Australia. At the completion of the investigation a total of 573 case records were available for analysis. Only responses from sojourner students who said that they intended to return to their home country on completion of their studies were included in the data set. Data on the students' approaches to learning were gathered using a bilingual (Chinese and English) version of Biggs' (1987a, 1987b) *Study Process Questionnaire* (SPQ). On the first occasion this was done by the investigator personally in hard copy format, but on subsequent occasions, the data were collected online, using the internet and a university server. There were three occasions of measurement in the first year and two in the second year of the study.

Study Process Questionnaire (SPQ). The six approaches to learning had been designated by Biggs (1987a) as: Surface Motivation, Surface Strategy, Deep Motivation, Deep Strategy, Achieving Motivation and Achieving Strategy. Each of the six subscales or approaches was measured by a scale of seven items. There was no consideration of gender difference on the SPQ questionnaire; although the gender of participants was recorded and analysed using HLM modelling. The SPQ was designed to measure the following concepts; an example from each scale is included: (a) Surface Motivation ("Whether I like it or not, I can see that further education is for me a good way to get a well paid or secure job."); (b) Surface Strategy ("I think browsing around is a waste of time, so I only study seriously what's given out in class or in the course outlines."); (c) Deep Motivation ("I find that at times studying gives me a feeling of deep personal satisfaction."); (d) Deep Strategy ("I find that I have to do enough work on a topic so that I can form my own point of view before I'm satisfied."); (e) Achieving Motivation ("I would see myself basically as an ambitious person and want to get to the top, whatever I do."); and (f) Achieving Strategy ("I try to work consistently throughout the term and review regularly when the exams are close."). Participants responded to each item using a five-point Likert-type scale that ranged from (1) "Never or only rarely true of me." to (5) "Almost or almost always true of me."

The structure of approaches to learning was established using confirmatory factor analysis and the LISREL 8.30 computer program (Jöreskog and Sörbom 1999). The best-fitting model, of the many that were tested, was a baseline model whereby the six approaches to learning or latent variables were allowed to correlate freely with each other and the observed or manifest variables.

Student approaches to learning

The initial impetus for these ideas came from a study by the Swedish team of Martön and Säljö (1976a, 1976b). Their reports described an investigation undertaken with university students who were asked to read an academic paper and then were asked what they had learned and how this learning had come about. The students' responses indicated that they tended to use two principal ways of processing the information. Some tried to memorise details or key words in order to answer subsequent questions and tended to focus at the word or sentence level. Others attempted to understand the message imparted by the passage globally and focussed on themes and principal ideas as well as trying to process the content for meaning. These approaches and associated reading strategies were called 'surface' and 'deep' approaches respectively. The researchers found qualitative differences in learning outcomes that were related to the approaches taken. Those students using a surface approach were unable to explain the central message of the article read and only recalled fragments of the material. However, those students adopting a deep approach were able to show a more global understanding of the author's intentions and even recalled extracts from the text.

Martön and Säljö called their research approach ‘phenomenography’ (Martön, 1981; Martön and Säljö, 1976a, 1976b). Martön et al. (1997) concluded that repetition was associated with mechanical rote learning whereas memorisation might be used to develop and deepen understanding. When memorisation was interpreted in this way, the tension associated with understanding the different approaches to learning was largely resolved. Therefore, the goal of their study was to understand how students perceived the content and processes of learning (Watkins, 1996a, 1996b, 2003, 2004).

Table 1 presents a summary of the approaches to learning that has been developed by Biggs (1987a). He specifies the three approaches to learning as Surface, Deep and Achieving. Each approach is composed of a motivation that directs learning and a strategy for the implementation of the approach.

Table 1 *Possible motivations and strategies in student approaches to learning*

Approach	Motive	Strategy
SA: Surface Approach	Surface Motivation (SM) is instrumental: to meet requirements minimally; a balance between working too hard and failing.	Surface Strategy (SS) is reproductive: to limit target to bare essentials and reproduce through rote learning.
DA: Deep Approach	Deep Motivation (DM) is intrinsic: study to actualise interest in what is being learned; to develop competence in academic subjects.	Deep Strategy (DS) is meaningful: read widely, inter-relating with previous relevant knowledge.
AA: Achieving Approach	Achieving Motivation (AM) is based on competition and ego-enhancement: to obtain highest grades, whether or not material is interesting.	Achieving Strategy (AS) is based on organising time and working space; to follow up suggestions; behave as a ‘model’ student.

Following Biggs (1987a) and Murray-Harvey (1994)

The Surface Approach is utilitarian. The motivation is to gain maximum qualifications and strike a balance between working too hard and failing. The strategy that is employed is reproductive and often utilises rote learning. The Deep Approach is based on actualising what is learned by reading widely and relating new knowledge to previously gained information whereas in the Achieving Approach, the student’s primary motivation is to gain the highest possible grades by being an ideal student, being punctual to class and using strategies such as extra reading and research that assists an individual student to attain his or her desired goals.

All students are likely to manifest all three approaches to learning to some degree at some time in the process of studying and learning. However, the primary concern of this investigation is to understand more about how CHC students learn, particularly in an educational environment that is physically, socially and culturally Western. Other investigators have examined learning within students’ home cultures (Watkins and Biggs, 1996, 2001). Still others have concluded that the Achieving Approach to learning is not as important to as the Deep and Surface Approaches (Biggs, Kember, and Leung, 2001; Kember, Biggs and Leung, 2004). However, for students in this study, the Achieving Approach to learning appears to be critically important to academic success.

Wilding and Andrews (2006) found that study approaches formed part of a wider approach to living whereby students who used a deep approach to learning appeared to prefer more altruistic life goals than students who chose a more superficial learning approach that tended to be associated with the acquisition of wealth and status. Older students in their sample who were high achievers in examinations reported a greater desire to succeed than younger students who did not manifest this desire. The present study also found similar results in sojourner CHC students. Biggs (1987a) and Wilding and Andrews (2006) also noted that study approaches tended to become more superficial and achievement oriented during the first and subsequent years of university study. Students who showed a need or desire to achieve demonstrated stronger academic performances. Learners using this approach did not achieve the cognitive levels of deep learning unless what was learned was later internalised in a process that Biggs (1996b) subsequently called 'deep memorisation'.

Two types of achievement goal orientation have been identified: (a) performance goals whereby students try to maintain positive judgment about their competence; and (b) mastery goals whereby students seek to increase competence by understanding and become proficient at new tasks. Students who are highly motivated to achieve also exhibit a stronger external locus of control. Kong and Hau (1996) have found a strong correlation between mastery and performance goals and approaches to learning. Therefore, students' goal orientation appears to have a significant effect on learning motivations and strategies. Students who are mastery goal oriented are able to regulate their own learning as their approach is deep or intrinsic whereas students who are performance goal oriented employ a more superficial approach to learning that is extrinsic in nature.

Ng and Renshaw (2002, 2003) correlated achievement goals with values and cultural factors that were assumed to mediate and influence the means of achievement. Results of the study showed that mastery goals were associated with motivations or engagement patterns and strategies that were consistent with a deep approach to learning. This approach was related to positive learning outcomes. In contrast, performance goals were associated with motivations and strategies that tended to be superficial in nature and consistent with a surface approach to learning that yielded a lower level of achievement (Chan 2002, Grant and Dweck 2001; Hau and Salili, 1990, 1996; Lai and Biggs 1994; Salili, 1996a, 1996b, Watkins, 2003).

Valle et al. (2003) identified three distinct groups of students with different motivational orientations in a study of university students, one with a preference for performance goals, another with a partiality for deep learning goals and a third with a predilection for multiple goals that afforded a greater flexibility to adapt more efficaciously to different learning contexts and situations. This group of students exhibited both mastery and performance goals simultaneously. Students from this group attributed their academic success and subsequent achievement more to the effort made to learn than did students from the other two groups. Lam et al. (2004) investigated the effects of competition on learning motivation in two cohorts of Hong Kong secondary students. The results showed that students in competitive conditions performed better in easy tasks than students in non-competitive conditions. These students were more performance-oriented and appeared to be willing to sacrifice deeper learning for improved achievement outcomes. Similar results were found in the students in the study reported in this paper.

Cano (2005) found that older female students tended to score higher on the deep and achieving approaches to learning than younger male students. However, he noted that these results may have been tempered by academic demands such as a dense curriculum and time

limitations. Research also appeared to confirm the conclusions that (a) deep and achieving approaches to learning tend to be associated with academic success and (b) surface approaches are negatively linked to learning (Cano 2005, Watkins 2001). Cano (2005) and Schommer (1998) concluded that epistemological beliefs and approaches to learning changed as students advanced in their academic pursuits and that the relationship between epistemological beliefs and intellectual or academic outcomes may have been mediated by students' approaches to learning. Lietz, Matthews and Darmawan (in press) found similar results in a sample of students in an international university.

Overview of the HLM procedure

Hierarchical linear modelling (HLM) allows the investigator to model possible changes in student's approaches to learning by the examination of changes: a) within individual students over time as an estimation of the occasion of measurement in the students in the sample (intra student change); b) between different students in the same study sample in two distinct ways (inter student change): i) as a direct effect on the level of an approach to learning taken by students which may increase, decrease or remain the same; and ii) as an interaction effect between students, the approach to learning and time as measured by occasion.

The outcome variables used in separate analyses in the multilevel modelling were the six approaches to learning listed above. At Level-1, the predictor variable was time, as determined by the five occasions of measurement. At Level-2, the student level characteristics that had been measured on the first occasion were accepted if they were significant at the 0.05 level. The statistically significant variables are included in Table 2.

Therefore three questions acted as a guide to the investigation of the data collected on changes in students' approaches to learning: (a) was there change in the learning approaches over time; (b) was the level of the measured approaches to learning the same or different between students (a direct effect); (c) if there was a difference between the approaches to learning of groups of students, what was the probable cause of the change that was an interaction effect between three factors: time, the student characteristic and the approach to learning scale?

Summary of the effects for the three approaches to learning

Figure 1 shows results for the student characteristics that are associated with the Surface Approach to learning, Figure 2 shows results for the student characteristics associated with the Deep Approach to learning and Figure 3 shows results for the student characteristics associated with the Achieving Approach to learning. Specific results are discussed in the section that follows.

All the significant effects for the three approaches to learning are summarised in the three figures below. At Level-1, the significant Occasion effects are indicated as solid lines while non-significant effects are seen as dashed lines. At Level-2, an effect that influences an outcome variable directly is indicated by lines that pass from the effect to the outcome variable directly whereas an effect that influences a variable indirectly is shown by a line that passes from the effect to the outcome variable by way of the associated occasion variable. Therefore, interaction effects are moderated through the Level-1 variable Occasion. Table 2 shows the predictor and interaction effects for learning. It shows the significant effects and specifies the ways in which each of the variables has been coded. Greater detail on these data, the variance explained, the deviance and the methods of analysis utilised may be found in Matthews (2004).

The analyses undertaken showed that changes with respect to five of the six approaches to learning were statistically significant. Therefore, a negative occasion slope for Surface Motivation indicated that superficial learning decreased while the positive occasion slopes associated with the Deep and Achieving learning approaches indicated that problem-based learning approaches that were directed toward achievement increased over time. These results showed that although five of the six approaches to learning changed during the period in which measurements were made, not all groups of students changed their approaches to learning. Further, while there was no significant change for the Surface Strategy approach over time, there were significant direct and interaction effects associated with this approach to learning and the characteristics of particular groups of students. Therefore, although the study provided evidence that learning approaches do change measurably over a two year period, three important issues and questions were raised: (a) why do some groups of students change their approaches to learning, (b) some students do not do not change the way they prefer to learn and (c) still other groups of students retain the same approaches to learning over time in a new learning environment?

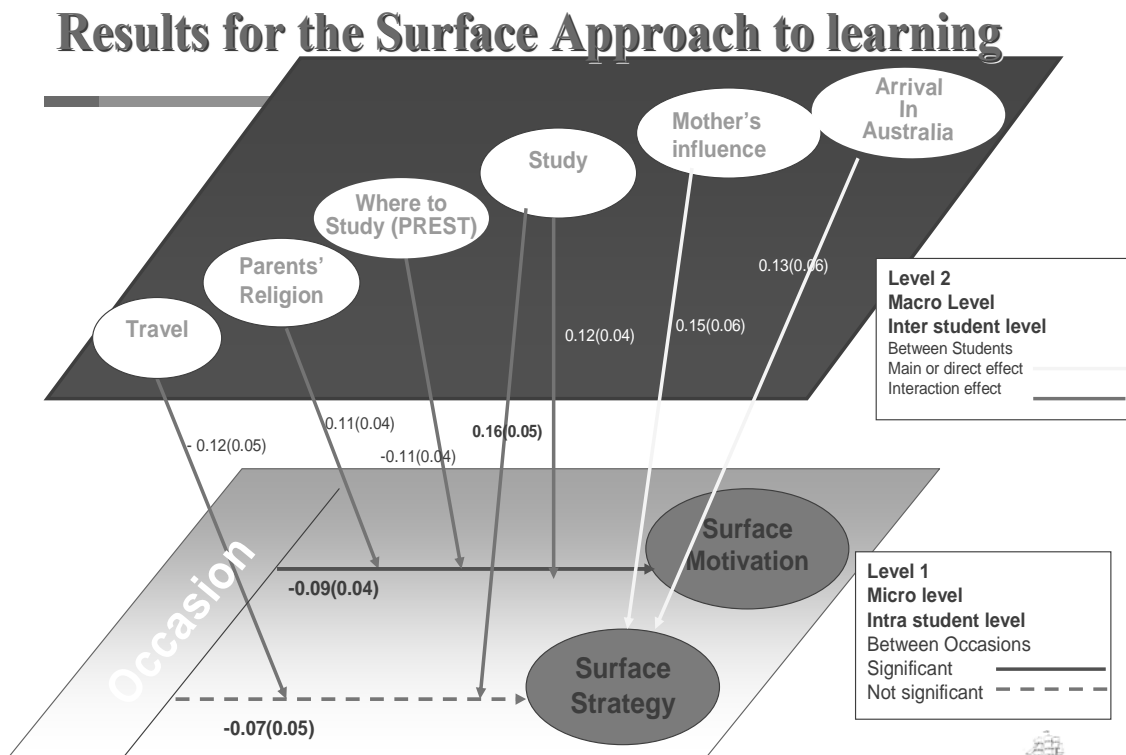


Figure 1 The Surface Approach to learning

Results for the Deep Approach to learning

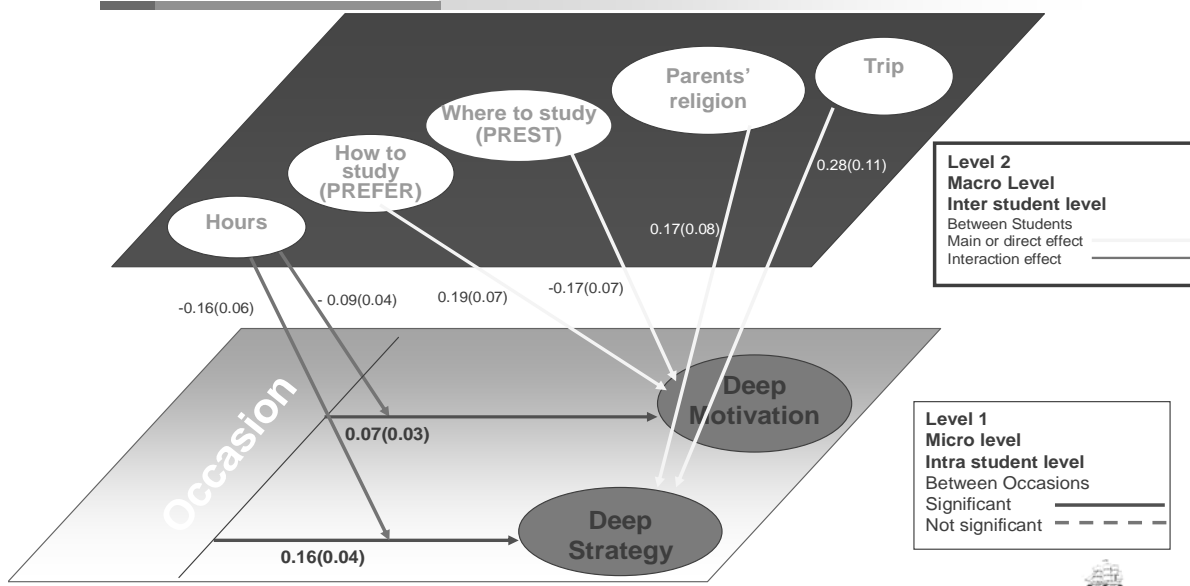


Figure 2 The Deep Approach to learning

Table 2 Predictor and interaction effects for learning

	Surface Motivation	Surface Strategy	Deep Motivation	Deep Strategy	Achieving Motivation	Achieving Strategy
Direct effects; Adjusted occasion slope (Slope at β_1)	-0.087†	-0.070	0.073	0.164	0.053‡	0.127
Gender -sex of students Female = 1, Male = 0					0.216†	
Granrel -grandparents religion Different beliefs to grandparents = 1 Same beliefs as grandparents = 0					-0.217	
Agegp -age group of student Over 25 = 1, 25 years or under = 0					0.206	0.223
Mominflu -Most influential person in childhood - under five years Mother = 1, Another person = 0		0.147				0.174‡
Arinoz -When student arrived in Australia >1 year ago = 1, <1 year ago = 0		0.134				
PREST -Where student prefers to study Home = 1, Not at home = 0			-0.166			
Prefer How the student prefers to study Alone = 1, With others = 0			0.189			
Trip -Student lived overseas before coming to Australia Trip = 1, No trip = 0				0.280		
Country -Country of birth Less developed=1, Developed = 0					0.166	
UniSA -University attended by student UniSA or TAFE = 1, Another university = 0					-0.189	
Parrel - Parents' religion Different beliefs to parents = 1 Same beliefs as parents = 0				0.166		
Interaction effects						
Study - Student's major area of study- Business subjects=1, Other subjects=0	0.121	0.155				
PREST -Where student prefers to study Home = 1, Not at home = 0	-0.113					
Parrel - Parents' religion Different beliefs to parents = 1 Same beliefs as parents = 0	0.111					
Hours -Hours of study 10+ hours each week =1, <10 hours each week=0			-0.093	-0.156		-0.267
Couvis -Countries visited before coming to Australia Beyond Asia = 1, Asia only = 0						0.113‡
Travel - Travel before coming to Australia Travel = 1, No travel 0		-0.115				
Speak -Language spoken at home in Australia English = 1, Home or other language=0					-0.104	

‡These variables are significant at the ten per cent level †All significant slopes and effects

Results for the Achieving Approach to learning

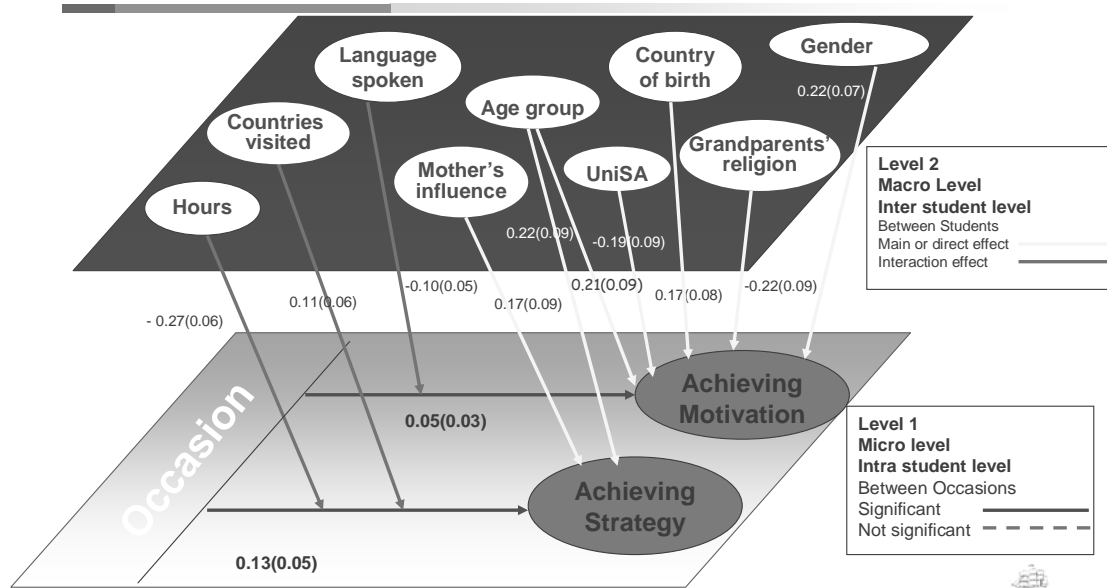


Figure 3 The Achieving Approach to learning

Differences between groups of students shown by Level-2 direct effects

Age of students. Older students, those over the age of 25, are higher in Achieving Motivation and Achieving Strategy than students aged 25 years or less. Older students would appear to be more highly motivated to succeed in their studies than younger students. They seem to be stimulated to make more of an effort and study harder than younger students and to use strategies that assist them to achieve better results. Their motivations and strategies are guided by the need to achieve that comes from family, teachers and others in their home countries who want the skills these students have been sent to Australia to acquire. The high levels of Achieving Motivation and Achieving Strategy seem to occur because of a need to achieve so that they may be of greater use on their return to their country of birth. These results are consistent with research reported by Butcher (2002) and Ward and Kennedy (1993a, 1993b, 1999).

Gender of students. Women are significantly higher in Achieving Motivation than men in this study. Women may feel a greater need to attain and are, therefore, more highly motivated to achieve in Australia than men from Confucian cultures. Zhang Zhen (2001) comments that women have a stronger motivation to achieve than men do and that this effect is particularly strong in contemporary Asian women who live in urban environments. Further, if the women students are married, their own and their husbands' families may be encouraging them to reach higher levels of Achieving Motivation.

Most influential person. Students who say their mothers have been the greatest influence on their pre-school years are higher in both Surface and Achieving Strategies. Mothers' influence is marginally significant in its effect on Achieving Strategy. Mothers encourage higher levels of excellence and appear to demand higher academic outcomes than other, less interested persons. Therefore, it would seem that students who are influenced by their mothers' encouragement choose learning strategies to assist them to succeed at a higher level in their chosen field of study. The effect of increasing Achieving Strategy confirms the

importance of mothers as people who encourage high levels of achievement. Yue and Ng (1999) have found similar results in their research. The coefficient of mother's influence indicates that this influence has a significant and positive effect on Surface Strategy. Ho (1994, 1996) has also found that mother's influence is important in the lives of students from Confucian cultures.

Grandparents' religious beliefs. Students who have different religious beliefs to their grandparents are lower in Achieving Motivation than students who have the same religious beliefs as their grandparents. In Asia many young people are brought up or strongly influenced by their grandparents. This is particularly true in countries where the extended family is of cultural and practical importance. Young persons may spend more time with their grandparents than with their parents. Therefore, grandparents often have an important role in the cultural and attitudinal development of the young so that if grandparents have strong religious beliefs, it is likely that these beliefs may have been passed on to their grandchildren (Yen Mah, 2000). In contrast, the results show that these students may have rejected their traditional religious beliefs or may have sought a new support network that a religious group is able to provide and one that has replaced the encouragement given by grandparents and members of the extended family in Asia. Therefore, if grandparents have positively influenced students' religious beliefs, this influence is likely to remain with them because it provides a measure of stability in their lives in a new academic setting and is related to the high level of Achieving Motivation noted in this study and in a recent article published by Butcher (2002).

Time of arrival in Australia. Students who have been in Australia for more than one year are higher in Surface Strategy whereas those who have been in Australia for less than one year are lower in this approach to learning. A superficial approach that uses rote memorisation may assist those students who have been in Australia for more time to achieve the qualifications they are seeking from their study in a Western learning environment. Biggs (1987a) and Wilding and Andrews (2006) also note that study approaches tend to become more superficially oriented during the first and subsequent years of university study.

Students' preferred place and manner of study. Students who study away from home and alone are higher in Deep Motivation than students who say they prefer to study at home or in a group. This outcome may reflect the conditions in which most students live. The places where students can afford to live are often noisy or crowded so that students who are serious about their academic work may look for a quiet place to study away from the distractions found in the home environment. Further, studying on their own represents a change from what (Biggs, 1996a, 1996b and Tang and Biggs, 1996) have said about CHC students' preferences for studying in groups in their home environment in Asia. Therefore, finding a suitable place to study enables most students to ponder over what they are learning and may increase students' motivation to produce well-written assignments in English.

Parents' religious beliefs. Students who have different religious beliefs to their parents are higher in Deep Strategy compared with students who have the same religious beliefs and practices as their parents. Butcher (2002) comments that a change in religious beliefs is a common phenomenon in Asian students who study in Western learning environments. These students read widely and relate what they are studying to previous knowledge. Holding different religious beliefs may be part of the strategy that helps these students in their studies.

Attendance at University of South Australia (UniSA) or Adelaide TAFE. Students who attend the University of South Australia or the Adelaide College of Technical and Further Education (TAFE) are much lower in Achieving Motivation. The information that may be deduced from these data is that students who attend either Adelaide or Flinders Universities may be more academically inclined and therefore, more motivated to achieve than University of South Australia students or those who come to Australia to study English at the tertiary level as TAFE students. These students may not be seeking the rewards that a higher level of achievement can provide.

Development of the home country. Sojourner students who come from less developed countries are higher in Achieving Motivation than those students who come from more developed countries. This is understandable because students from countries less developed than Australia are generally sent to acquire skills needed to improve the educational, technological and agricultural level of development in their own countries. These students are likely to have been chosen because of their high motivation to achieve and enthusiasm to learn skills to take back to their own countries after study in Australia as well as their awareness of the particular needs of their home countries. Cannon (1999) and Chan (1988) have found similar results in their own research.

Previous travel. Students who have travelled extensively before coming to Australia are considerably higher in Deep Strategy compared with those who have not had the opportunity to travel. This variable is coded 1 for students who have travelled for a period of a month or more and 0 for students who have not travelled at all or only travelled to the Asian region. As Ward and Kennedy (1993a, 1993b, 1994, 1999) and Ward et al. (2001) have commented, students who have lived overseas for longer than a holiday are markedly higher in deep approaches to learning than students who have travelled for short periods to a similar cultural environment or who have never travelled. Their previous travel would appear to have shown these students more of the world and may have resulted in students who are intellectually stronger compared with those who have not travelled. Previous travel may also have heightened their interest in what they are studying and thus encouraged them to use deeper strategies in their academic studies as noted in their approaches to learning.

Differences between groups of students shown by Level-2 interaction effects

Subject of study effects. Students who study business and commerce subjects show interaction effects with the Surface Motivation and Surface Strategy learning scales. The coefficient is positive and indicates that these students show a slight increase in scales associated with the Surface Approach to learning. This may occur because business and commerce subjects require more rote memorisation than deep thought whereas students who study other subjects show a decrease in this learning approach over time. This is shown by a negative value for time as measured by the occasion slope. The interaction effect shows that students who study other subjects to use a deeper learning strategy than students who learn by memorisation alone.

Students' preferred place of study effects. Students who prefer to study at home seem to show a greater decrease in Surface Motivation than students who have said they prefer to study away from home over their time of study in Australia. Students who choose to study at home would appear to be less motivated to use a superficial approach to learning than students whose prefer to study away from the home environment. These students may find that they are not as superficially motivated to learn as they were in the country of their birth.

However, it should be noted that this decrease in Surface Motivation is not accompanied by an increase in a deeper approach to studying and learning by this group of students.

Parents' religious beliefs effects. Students who have different religious beliefs to those of their parents show a slight increase in Surface Motivation over time. However, if students do not change their religious beliefs in Australia, there is a significant decrease in the value of the occasion slope as noted in Table 2. Butcher (2002), Chang (2000), Ward and Chang (1997) and Ward et al. (2001) comment that many students express the desire to follow different religious practices when they are studying in cultural environments dissimilar to those in their home countries. Even if students have changed their religious practices, there does not appear to be a large effect on the Surface Motivation approach to learning that directs their study.

Student travel effects. Students who have travelled before coming to Australia to study show a greater decrease in Surface Strategy over time compared with students who have not travelled. This would appear to indicate that students who had travelled have decreased their use of a superficial approach to learning as a result of travel. These students may have been influenced by what they had seen and experienced during their travels which may have led to a decrease in Surface Strategy.

Hours of study effects. Hours of study is a variable that shows interaction effects with three approaches to learning. In the case of the Deep Motivation and Deep Strategy scales there is no significant change in students who study more than ten hours outside of classes each week over the occasions of measurement. The lack of change would seem to indicate that these students continue to use memorisation as a learning tool as they did in their Confucian cultural environment. However, there is a strong interaction effect with the Achieving Strategy learning scale over time. This observation may result from a change in approach to learning that is necessitated by a difference in the methods of assessment practised in Australia. In Asian countries education is examination-dependent (Biggs, 1996; Tang, 1996; Tang and Biggs, 1996) whereas Western education tends to rely more on written assignments and oral presentations as the primary methods of assessment. This effect also shows that students who spend ten hours or less each week on study show an increase in Achieving Strategy over the occasions of measurement.

Students' preferred language effects. Students who speak English rather than their home language in their free time show a marginal, but significant decrease in Achieving Motivation whereas students who prefer to use their home or another language show an increase in Achieving Motivation. Speaking the home language may increase the students' confidence in their ability to study in a new social and cultural environment and have a positive influence on their motivation to achieve. It may also assist them to retain cultural ties with the country they expect to return to on the completion of their studies. Cannon (1999) has found this to be the case in his research. After a period of adaptation to the new language environment, even hesitant students are likely to show a stronger desire to learn and this may result in a further increase in Achieving Motivation.

Effects of counties visited on students' learning effects. Students who have travelled beyond the Asian region show a marginal, but positive interaction effects with the predictor variable Occasion and the outcome variable Achieving Strategy. Two factors are considered to have had an influence on the results encountered with this variable: (a) greater distances travelled and (b) travel for periods of a month or more. Travel of any kind gives individuals

the opportunity to experience life in different living and learning environments. This may explain why students who have travelled beyond Asia also show a marginally higher level of Achieving Strategy compared with students who have only visited Asian countries that are physically, socially and culturally similar to their home living and educational environment. Ward and Kennedy (1993a, 1993b, 1999) have confirmed this in their research with students who travelled to different cultures and countries to live and study. This effect is reflected in an increase in Achieving Strategy over the occasions of measurement in this study.

Summary

In summary, it may be noted that five of the six scales associated with learning show significant change over time. Surface Motivation generally decreases while the motivation and strategy scales associated with both the Deep and Achieving Approaches increase over the period in which measurements have been made. This information provides evidence that learning approaches change or are modified in some, but not all groups of CHC students in the Australian learning environment.

A key point in understanding why learning approaches changed was knowledge of the Australian teaching and learning environment. The Australian way of teaching appeared to be different to what students from Confucian cultures were accustomed to and it was this difference that seemed to be producing changes in some students' approaches to learning. This difference led to the question: why did some groups of students' approaches to learning change whereas some did not change and other groups' approaches to learning remained the same?

It would seem, therefore, that different teaching approaches and learning environments generated changes in motivations to learn that, in turn, required different learning strategies. Research by Watkins and Biggs (1996, 2001b) noted that Asian students previously considered surface learners often became deep learners if they encountered learning environments that encouraged and promoted this change. The results from similar longitudinal studies have been discussed in publications by Renshaw and Volet (1995); Volet and Renshaw (1994, 1995, 1996); and Volet, Renshaw and Tietzel (1994).

Two issues that have been raised by these particular results need further consideration. The results may be improved by a refinement in the research design. Two variables: hours of study and time of arrival in Australia have proved somewhat problematic. These variables could be measured on several and not a single occasion. This would enable closer monitoring of any alteration in particular variables that are likely to change over time.

Conclusion

The observations noted were confirmed by the students in the study sample who generally showed a change to a deeper, more problem-based learning approach. The fact that the Surface Approach to learning generally decreased over the two years of the study at the same time as the Deep and Achieving Approaches increased indicated that some, but not all groups of students changed their approaches to learning.

Further, the motivation to achieve and the allied strategy that implements this motivation seem to be crucial factors to sojourner students from Confucian cultures. This knowledge necessitates a wider acceptance as well as a greater acknowledgement of overt and latent differences between individuals from different cultural groups. The appreciation of difference, as noted by Ang (2001) is the first step toward the ultimate goal of social cohesion that is an

acknowledgement of the co-existence of multiple cultures within a single nation-state. These findings and the concomitant appreciation of difference are of particular importance for individuals who are teaching and working with CHC students in Western learning environments.

References

- Ang, I. (2001). *On not speaking Chinese: living between Asia and the West*. London: Routledge.
- Adams, R. J. and Khoo, S. T. (1993). *QUEST The interactive test analytic system*. Melbourne: Australian Council for Educational Research.
- Biggs, J. B. (1987a). *Student approaches to learning and studying. (Research monograph)*. Melbourne: Australian Council for Educational Research.
- Biggs, J. B. (1987b). *Study Process Questionnaire manual*. Melbourne: Australian Council for Educational Research.
- Biggs, J. B. (1996a). Learning, schooling and socialization, a Chinese solution to a Western problem. In S. Lau (Ed.), *Growing up the Chinese way* (pp. 147-167). Hong Kong: The Chinese University Press.
- Biggs, J. B. (1996b). Misperceptions of the Confucian-heritage learning culture. In D. A. Watkins and J. B. Biggs (Eds.), *The Chinese learner: cultural, psychological and contextual influences* (pp. 45-67). Hong Kong: ACER and CERC.
- Biggs, J. B., Kember, D. and Leung, D. Y. P. (2001). The revised two factor Study Process Questionnaire, R-SPQ-2F. *British journal of educational psychology*, 71(1), 133-149.
- Butcher, A. (2002). A grief observed: grief experiences of East Asian international students returning to their countries of origin. *Journal of Studies in International Education*, 6(4), 354-368.
- Bryk, A. S., Raudenbush, S. W. and Congdon, R. T. (2000). *HLM5 for Windows*. Chicago: Scientific Software International.
- Cannon, R. (1999). International education and a professional edge for Indonesian graduates: the third place? In D. Davis and A. Olsen (Eds.), *International education: the professional edge*. A set of research papers presented at the 13th Australian international education conference, Fremantle, 1999 (pp.15-36). Canberra: IDP Education Australia.
- Cano, F. (2005). Epistemological beliefs and approaches to learning: Their change through secondary school and their influence on academic performance. *British Journal of Educational Psychology*, 75, 203-221.
- Chan, H. (1988). Chinese students, adaptation, life satisfaction and academic achievement. In P. Hanks and A. Perry (Eds.), *The Chinese in Australia*. Conference held 19 March 1988 (pp.25-36).
- Chan, K. W. (2002, December). Students' epistemological beliefs and approaches to learning. Paper presented at the AARE Conference, Brisbane, Australia.
- Chang, W. N. (2000). In search of the Chinese in all the wrong places. *Journal of Psychology in Chinese Societies*, 1(1), 125-142.
- Grant, H. and Dweck, C. S. (2001). Cross-cultural response to failure: considering outcome attributions with different goals. In F. Salili, C. Y. Chiu and Y. Y. Hong (Eds.), *Student motivation: the culture and context of learning. (Plenum series on human exceptionality)* (pp. 203- 219). New York: Plenum Publishers.
- Hau, K-T. and Salili, F. (1990). Examination result attribution, expectancy and achievement goals among Chinese students in Hong Kong. *Educational Studies*, 16 (1), 17-31.

- Hau, K-T. and Salili, F. (1996). Achievement goals and causal attributions. In S. Lau (Ed.), *Growing up the Chinese way* (pp. 121-145). Hong Kong: The Chinese University Press.
- Ho, D. Y. F. (1994). Cognitive socialization in Confucian heritage cultures. In P. M. Greenfield and R. R. Cocking (Eds.), *Cross-cultural roots of minority child development* (pp. 285-313). Hillsdale: L. Erlbaum Associates.
- Ho, D. Y. F. (1996). Filial piety and its psychological consequences. In M. H. Bond (Ed.), *The handbook of Chinese psychology*. (pp. 155-165). Hong Kong: Oxford University Press.
- Ho, J. and Crookall, D. (1995). Breaking with Chinese cultural traditions, learner autonomy in English language learning. *System*, 23(2), 235-243.
- Hong, Y. Y. (2001). Chinese students' and teachers' inferences of effort and ability. In F. Salili, C. Y. Chiu and Y. Y. Hong (Eds.), *Student motivation: the culture and context of learning. (Plenum series on human exceptionality)*, (pp. 105- 120). New York: Plenum Publishers.
- Kong, C-K. and Hau, K-T. (1996). Students' achievement goals and approaches to learning: the relationship between emphasis on self-improvement and thorough understanding. *Research in Education* 55, 74-85.
- Jöreskog, K. G. and Sörbom, D. (1999). *LISREL 8.30*. Chicago: Scientific Software International.
- Kember, D. Biggs, J and Leung, D. Y. P. (2004). Examining the multidimensionality of approaches to learning through the development of a revised version of the Learning Process Questionnaire. *British Journal of Educational Psychology*, 74, 261-279.
- Kong, C-K. and Hau, K-T. (1996). Students' achievement goals and approaches to learning: the relationship between emphasis on self-improvement and thorough understanding. *Research in Education* 55, 74-85.
- Lai, P. and Biggs, J. B. (1994). Who benefits from mastery learning? *Contemporary Educational Psychology*, 19 (1), 13-23.
- Lam, S-F., Yim, P-S, Law, J. S. F. and Cheung, R. W. Y (2004). The effects of competition on achievement in Chinese classrooms. *British Journal of Educational Psychology*, 74, 281-296.
- Lee, W. O. (1996). The cultural context for Chinese learners, conceptions of learning in the Confucian tradition. In Watkins, D. A. and Biggs, J. B. (Eds.). *The Chinese learner: Cultural, psychological and contextual influence*. (pp. 25-42). Hong Kong: ACER and CERC.
- Lietz, P., Matthews, B., & Darmawan, I.G.N. (in press). Values and learning approaches of students at an international university. *Social Psychology of Education*.
- Martön, F., & Säljö, R. (1976a). On qualitative differences in learning–I, outcome and process. *British Journal of Educational Psychology*, 46, 4-11.
- Martön, F., & Säljö, R. (1976b). On qualitative differences in learning–II, Outcome as a function of the learner's conception of the task. *British Journal of Educational Psychology*, 46, 115-127.
- Martön, F., Watkins, D. and Tang, C. (1997). Discontinuities and continuities in the experience of learning, an interview study of high school students in Hong Kong. *Learning and Instruction*, 7(1), 21-48.
- Matthews, B. (2004). *Life values and approaches to learning: A study of university students from Confucian heritage cultures. Studies in comparative and international education series* Adelaide: Flinders University Institute of International Education.

- Murray-Harvey, R. (1994). Learning styles and approaches to learning, distinguishing between concepts and instruments. *British Journal of Educational Psychology*, 64, 373-388.
- Ng, C. H. and Renshaw, P. D. (2002). Self-schema, motivation and learning: a cross-cultural comparison. In D. M. McInernay and S. Van Etten (Eds.), *Research on sociocultural influences on motivation and learning* (Vol. 2, pp. 55-87). Greenwich, CT: Information Age Publishing, Inc.
- Ng, C. H. and Renshaw, P. D. (2003). Motivation and school learning. In J. P. Keeves (Ed.), *Handbook of educational research in the Asia-Pacific region*. (pp. 495-510). Dordrecht: Kluwer.
- Rasch, G. (1960). *Probabilistic models for some intelligence and attainment tests*. Copenhagen: Danish Institute for Educational Research.
- Renshaw, P. D. and Volet, S. E. (1995). South-east Asian students at Australian universities: a reappraisal of their tutorial participation and approaches to study. *Australian Educational Researcher*, 22(2), 85-106.
- Salili, F. (1996a). Achievement motivation: a cross-cultural comparison of British and Chinese students. *Educational Psychology* 16(8), 271-281.
- Salili, F. (1996b). Accepting personal responsibility for learning. In D. A. Watkins and J. B. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences* (pp.85-106). Hong Kong: ACER and CERC.
- Salili, F., Chiu, C. Y. and Hong, Y. Y. (Eds.) (2001). *Student motivation: the culture and context of learning. (Plenum series on human exceptionality)*. New York: Plenum Publishers.
- Schommer, M. (1998). The influence of age and education on epistemological beliefs. *British Journal of Educational Psychology*, 68, 551-562.
- Shi, K., Wang, P., Wang, W., Zuo, Y., Liu, D., Maehr, M. L., Mu, X., Linnenbrink, L. and Hruda, L. (2001). Goals and motivation of Chinese Students—testing the adaptive learning model. In F. Salili, C. Y. Chiu and Y. Y. Hong (Eds.), *Student motivation: the culture and context of learning. (Plenum series on human exceptionality)* (pp. 249- 270). New York: Plenum Publishers.
- Stipek, D., Weiner, B. and Li, K. (1989). Testing some attribution-emotion relations in the People's Republic of China. *Journal of Personality and Social Psychology*, 56(1), 109-116.
- Tang, C. (1996). Collaborative learning; the latent dimension in Chinese students learning. In D. A. Watkins and J. B. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences* (pp. 183-204). Hong Kong, ACER and CERC.
- Tang, C. and Biggs, J. B. (1996). How Hong Kong students cope with assessment. In D. A. Watkins and J. B. Biggs (Eds.), *The Chinese learner: cultural, psychological and contextual influences* (pp. 159-182). Hong Kong: ACER and CERC.
- Valle, A., Cabanach, R. G., Nuñez, J. C., González-Pienda, J., Rodríguez, S. and Piñeiro, I. (2003) Multiple goals, motivation and academic learning. *British Journal of Educational Psychology*, 73, 71-87.
- Volet, S. E. (2001). Significance of cultural and motivational variables on students' attitudes towards group work. In F. Salili, C. Y. Chiu and Y. Y. Hong (Eds.), *Student motivation: the culture and context of learning (Plenum series on human exceptionality)* (pp. 309- 333). New York: Plenum Publishers.
- Volet, S. and Renshaw, P. (1995). Cross-cultural differences in university students' goals and perceptions of study settings for achieving their goals. *Higher Education*, 30, 407-433.
- Volet, S. and Renshaw, P. (1996). Chinese students at an Australian university, adaptability and continuity. In D. A. Watkins and J. B. Biggs (Eds.), *The Chinese learner:*

- Cultural, psychological and contextual influences* (pp. 205-220). Hong Kong: ACER and CERC.
- Ward, C. A., Bochner, S. and Furnham, A. (2001). *The psychology of culture shock* (2nd edition). London: Routledge.
- Ward, C. and Chang, W. C. (1997). "Cultural fit": a new perspective on personality and sojourner adjustment. *International Journal of Intercultural Relations*, 21(4), 525-533.
- Ward, C. and Kennedy, A. (1993a). Where is the "culture" in cross-cultural transition? *Journal of Cross-cultural Psychology*, 24(2), 221-249.
- Ward, C. and Kennedy, A. (1993b). Psychological and socio-cultural adjustment during cross-cultural transitions: a comparison of secondary students overseas and at home. *International Journal of Psychology*, 28, 129-147.
- Ward, C. and Kennedy, A. (1994). Acculturation strategies, psychological adjustment and sociocultural competence during cross-cultural transitions. *International Journal of Intercultural Relations*, 18(3), 329-343.
- Ward, C. and Kennedy, A. (1999). The measurement of sociocultural adaptation. *International Journal of Intercultural Relations*, 23(4), 659-677.
- Watkins, D. A. (2001). Correlates of approaches to learning: a cross-cultural meta-analysis. In R. J. Sternberg and L-F. Zhang (Eds.), *Perspectives on thinking, learning and cognitive styles. (The education psychology series)* (pp.165-195). Mahwah, New Jersey: Lawrence Erlbaum Associates Inc.
- Watkins, D. A. (2003) Student learning: a cross-cultural perspective. In J. P. Keeves (Ed.), *Handbook of educational research in the Asia-Pacific region* (pp. 441-462). Dordrecht: Kluwer.
- Watkins, D. A., McInerney, D., Lee, C., Akane, A. and Regmi, M. (2002). Motivation and learning strategies: a cross-cultural perspective. In D. M. McInerney and S. Van Etten (Eds.), *Research on sociocultural influences on motivation and learning* (Vol.2, pp. 329-343). Greenwich CT: Information Age Publishing, Inc.
- Watkins, D. A. and Biggs, J. B. (Eds.) (1996). *The Chinese learner, cultural, psychological and contextual influences*. Hong Kong: ACER and CERC.
- Watkins, D. A. and Biggs, J. B. (2001a). The paradox of the Chinese learner and beyond. In D. A. Watkins and J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp. 3-23). Hong Kong: CERC and ACER.
- Watkins, D. A. and Biggs, J. B. (Eds.) (2001b). *Teaching the Chinese learner: Psychological and pedagogical perspectives*. Hong Kong: CERC and ACER.
- Wildiing, J. and Andrews, B. (2006). Life goals, approaches to study and performance in an undergraduate cohort. *British Journal of Educational Psychology*, 76, 171-182.
- Yen Mah, A. (2000). *Watching the tree to catch a hare*. London: Harper Collins Publishers.
- Yue, X. and Ng, S. H. (1999). Filial obligations and expectations in China: current views from young and old people in Beijing. *Asian Journal of Social Psychology*, 2, 215-226.
- Zhang Zhen (2001). Mediating time: "rice bowl of youth" in fin de siècle urban China. In A. Appadurai (Ed.), *Globalization* (pp. 131-154). Durham: Duke University Press.