

Illustrating Assessment: How Hong Kong University Students Conceive of Assessment's
Purposes

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Abstract

The beliefs, attitudes, experiences, and responses (or assessment careers) Hong Kong higher education students have about assessment is an important facet to developing our understanding of the 'Chinese learner'. Using six focus groups, 26 Hong Kong university students drew pictures of assessment. The visual elements of the pictures were content analysed into eight major categories (i.e., negative emotions, being monitored, competition, lifelong, pride and pleasure, marks, inaccuracy, and burden). The most frequent categories were negative emotions and being monitored. Associations between image categories and pre-university academic performance were statistically non-significant. In addition to the portrayal of the Chinese student as an effective, persistent learner, this study shows that Chinese students are very aware of the negative, controlling impact of assessment on their lives. This study contributes to our understanding of Chinese learners in Hong Kong.

Keywords: assessment; attitude; academic performance; cultural studies; qualitative research

Ecclestone and Pryor (2003, p. 473) introduced the notion of students' 'assessment careers' as a way of understanding the "impact of different assessment systems on learners' dispositions in various learning contexts". They argued that students' personal identities and learning are shaped by consistent and powerful assessment regimes, such as the English post-age 16 Advanced General National Vocational Qualifications system. Such a regime consists of both policy and day-to-day practice elements which constrain instructors and students into endorsing the system and its consequences. The beliefs, attitudes, understanding, and practices students develop around assessment through their experience of an assessment regime constitute their assessment career.

The goal of this article is to explore Hong Kong higher education students' assessment careers by examining their conceptions of assessment. Conceptions are the beliefs and attitudes about any phenomenon derived from experience with the phenomenon; that is they are people's psychological truths about an object (Thompson, 1992). Furthermore, what a person believes about a phenomenon (i.e., their conceptions) influences the intentions or goals they have (e.g., believing assessment is for improvement allows a student to self-regulate and use errors or mistakes as a mechanism for improved learning) (Ajzen, 2005). Thus, conceptions influence intentions and the behaviour a person exercises in response to a phenomenon.

Research into teacher and student conceptions of learning and teaching is well-established in Hong Kong (Chan & Rao, 2009; Watkins & Biggs, 1996, 2001b); whereas, Chinese learner thinking about assessment has been much less studied. First, we review research into higher education students' conceptions of assessment, followed by an overview of the Hong Kong assessment system, which has been strongly influenced by British models of higher education and, naturally, Chinese cultural emphases about education and achievement. From this analysis, we identify the conceptions of assessment that Chinese students in Hong Kong are likely to express. While this study does not examine the beliefs of mainland China students, it is probable that, to the degree that the cultural values are shared between Hong Kong and the People's Republic of China, the results may be applicable to that context, a matter of future research.

Then, we examine the data collection methodology used in this study. We make use of a relatively novel data collection method (i.e., free response drawings) within the context of focus group discussions. Then, we report our content analysis of the visual imagery used in those drawings. We conclude our systematic analysis of the images used to portray student conceptions of assessment with a discussion of our insights into student assessment careers in Hong Kong.

Higher Education Students' Conceptions of Assessment

Consistent with early phenomenographic work into student conceptions of learning (Marton, Dall'alba, & Beaty, 1993), research into student conceptions of assessment has focused on participant understanding of the various purposes to which assessment might be put (Brown, 2008). Human goals, intentions, attitudes, and behaviours are influenced by and reflect the purposes people attribute to a phenomenon. Consequently, conceptions of assessment, partly because of its evaluative role, ought to contribute to our understanding of students' assessment careers and their academic behaviour. Struyven, Dochy, and Janssens (2005) found in their review of the research literature on student perceptions of assessment in higher education that how a student perceives an assessment will influence how that student learns and studies. For example, they found that a desire to avoid test-anxiety resulted in a preference for multiple-choice assessments. In contrast, other studies with students in European universities found that students' learning strategy preference shaped their understanding of the learning required by assessments; for example, preference for surface learning strategies led to the perception that assessment required surface learning (Segers,

Nijhuis, & Gijsselaers, 2006). In the context of a low-stakes institutional evaluation assessment program, Zilberberg, Brown, Harnes, and Anderson (2009) found that unless students understood the purpose of assessment, their test-taking motivation would be greatly depressed. Hence, understanding how students conceive of the nature and purpose of assessment can shed light on their learning, behaviour, and outcomes.

In a series of survey studies into New Zealand high school student understanding of the purposes, functions, and nature of assessment, four major conceptions of assessment have been identified through the *Student Conceptions of Assessment* (SCoA) inventory (Brown, 2008; Brown & Hirschfeld, 2007, 2008; Brown, Irving, Peterson, & Hirschfeld, 2009; Brown, Peterson, & Irving, 2009). Students endorsed to differing degrees the conceptions that: (1) assessment leads to improved teaching and learning; (2) assessment relates to external factors such as school quality and student futures; (3) assessment has a positive emotional and social impact on students, and (4) assessment is irrelevant because it is bad and can be ignored. Generally, they endorsed most strongly that assessment was for improvement, somewhat less so that it was related to external attributes, were relatively neutral about its emotional and social impact, and rejected its irrelevance. A survey study of New Zealand high school students, using the SCoA version 5, showed that endorsement of 'assessment for improvement' had a positive regression to higher grades in mathematics, while endorsement of 'assessment reflects external factors' regressed negatively on grades; a pattern consistent with self-regulated learning theories (Brown, Peterson, & Irving, 2009).

There is evidence that university students are aware of these competing purposes and that their conceptions of assessment have meaningful associations with their beliefs and behaviour. For example, using the SCoA version 5 inventory, Wise and Cotten (2009) showed, among students at one American university, that endorsement of the 'improvement' conception regressed positively on greater effort in and attendance at a low-stakes, computer-based test of generic skills. In a survey study of German psychology students with a German translation of the SCoA version 2 (cf. Brown & Hirschfeld, 2008), the conception that 'assessment grades students' (i.e., holds them accountable) had a positive regression on increased self-reported use of individualistic learning strategies; consistent with taking responsibility for learning because of evaluation (Hirschfeld & von Brachel, 2008). Matos (2010), using a Portuguese adaptation of the SCoA version 5, showed that, among Brazilian university students, endorsement of two conceptions of assessment (i.e., 'assessment was enjoyable' and 'assessment was ignored') negatively regressed on defining assessment with formal practices such as tests or examinations; in other words, students knew that while these types of assessment were unpleasant, they were important and could not be ignored. Matos (2010) also found that students enrolled in an elite public university had much weaker ($d > .60$) agreement with specific conceptions (i.e., 'teachers use assessment to improve teaching', 'assessment is enjoyable', 'assessment predicts student futures') than students enrolled in self-funded programs in a private university. The difference in conception mean scores appeared to reflect the much greater need of less academically able students in private universities to rely more on their instructors and to give credibility to the accountability processes they were subjected to through the institutional assessment system.

Wide-ranging studies have been carried out into university student achievement emotions and these have identified that students have many more emotions than anxiety (Pekrun, Elliot, & Maier, 2006; Pekrun, Goetz, Titz, & Perry, 2002). The range of emotions includes positive (e.g., pride, enjoyment, hope) and negative (e.g., boredom, anxiety, shame, or sadness) responses. However, as the stakes of schooling increase (e.g., qualifications, entry to higher education) students' dominant emotional response to assessment appears to become increasingly negative. Studies involving secondary students (Assessment Reform Group, 2002; Brookhart & Bronowicz, 2003; Harris, Harnett, & Brown, 2009; Moni, van

Kraayenoord, & Baker, 2002) and even university students (McKillop, 2006) have indicated that they have more negative responses to assessment than younger children. This negative affective response to the increasing pressure of accountability (Lerner & Tetlock, 1999) implemented through the assessment system may be an ecologically rational response (Rieskamp & Reimer, 2007). An ecologically rational response may not be the most rational choice but is one that makes sense within the constraints of the context which a person perceives as applying to their situation. Since the risks of doing poorly on high-stakes examinations are powerful, it seems rational to have less enjoyment in the process and to view the highly selective consequences as fundamentally unfair, especially when there is a chance that one might not do as well as needed or hoped.

However, less well reported are the conceptions of assessment from East Asian or Chinese students. Hence, a major goal of this study was to explore the belief systems of Hong Kong Chinese higher education students concerning the nature and purpose of assessment.

Hong Kong Uses of Assessment

One environment in which to explore the relationship of high-stakes examinations to student conceptions of assessment is Hong Kong, which is 95% Chinese in its ethnic make-up. Chinese culture has for over 2000 years used examinations and tests to select and reward talent (China Civilisation Centre, 2007). Indeed, formal assessment mechanisms are used extensively in Hong Kong, as well as mainland China, to select students into elite schools at all levels of schooling (Gao & Watkins, 2001; Watkins & Biggs, 2001a). At the same time, high academic performance on high-stakes examinations is seen as a legitimate, meritocratic basis for upward social mobility and for selecting talent, regardless of social background (Cheung, 2008; Lee, 1996).

The importance of examinations in the Chinese context can be seen in the responses that teachers and parents have towards assessment. Not only do teachers adopt an examination preparation model of teaching (Gao & Watkins, 2001), but parents expect teachers to deliver regular examination preparation activities as part of schooling (Watkins & Biggs, 2001b). Consider the recent discussion around the “Tiger Mom” phenomenon in which Chinese mothers drive their children to success (Paul, 2011). Indeed, in Chinese contexts an individual’s merit, worth, and value are ascribed through academic performance (China Civilisation Centre, 2007); that is, a good person is one who scores well because examination results reflect the quality of the individual. Li (2009) has argued that a major purpose of learning in Chinese culture is a consequence of Confucian thought that requires perfecting oneself morally and socially. Similarly, Tsui and Wong (2009) argued that in Confucian thinking the superior person has a strong love of learning. This can be seen in the cultivating teaching response (i.e., teacher are expected to help students to become better academically, attitudinally, and behaviourally) Gao and Watkins (2001) identified among Chinese teachers. This habit of attributing personal worth or value through assessment persists in contemporary Hong Kong (Pong & Chow, 2002). Hence, in the Chinese society of Hong Kong, doing well on an assessment, whether it be an in-class test or final public examination for a qualification, demonstrates perfection and superiority of character.

Ho (1986) reviewed studies in socialisation among Chinese people and found very high levels of parental and familial pressure for student academic achievement. Ho (1986) considers this pressure is often accompanied by strict discipline, the development of obedience, proper conduct, and conformity to social obligation, and strong emphasis on cooperative efforts within the group. More recently, Salili (2001) has also reported persistence of a harsh, authoritarian, non-praising style among Chinese parents and teachers for the purpose of developing effort and character. Indeed, these values appear to be internalized by Chinese students (Salili, 2001); praise feedback for success was interpreted as high effort, while blame feedback for failure was interpreted as low effort. Accordingly,

Chinese societies highly value both academic achievement and persistent, intense levels of effort on the part of the learner (Li, 2002). Rather than attribute success to given levels of ability as Westerners are wont to do (Salili, 2001), Chinese students attribute success to effort, which acts as a rational, self-regulating response to the importance of academic achievement within families and society. Not surprisingly, the long time pressure associated with assessment brings issues of psychological wellbeing and mental health.

Indeed, lecturers' use of assessment to motivate higher education student effort to master curriculum content appears to be a fundamental understanding of how assessment should function in Chinese contexts (Dahlin, Watkins, & Ekholm, 2001). However, it has been suggested that assessment functions do differ by academic discipline, with less external compulsion and deeper learning focus among Human or Social Science academics (Dahlin, Watkins, & Ekholm, 2001). Thus, we might expect Chinese students to be aware of the criticism that comes from poor performance; low scores indicate the learner has not tried and is not a good person. Consequently, students who do less well, albeit still well enough to gain entry into some form of higher education, may have a more negative evaluation of the assessment system.

University Education in Hong Kong

In Hong Kong, there are eight institutions funded by the University Grants Council (UGC) as providers of bachelor degrees. Approximately 20% of students entering secondary school win places in UGC-funded first degree courses (Choi, 1999); 2008 statistics (<http://www.edb.gov.hk/index.aspx?nodeID=6504&langno=1>) show that 17% of the population over the age of 15 have attained degrees, with another 8% having attended non-degree courses for a total of 25% who have some higher education. It is worth comparing the Hong Kong rates of higher education enrolment with other East Asian societies. For example, in 2009, Taiwan had 41% of all students beyond primary school age in universities, colleges, and junior colleges (<http://english.moe.gov.tw/ct.asp?xItem=946&ctNode=1184&mp=1>); in 2005, Japan had about 50% of the 18 year old population enter universities and junior colleges and 76% in higher education in general (<http://www.mext.go.jp/english/statist/07070310/005.pdf>); in 2009, China enrolled 24% of all 18-22 year olds in higher education (<http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s4959/201012/113470.html>); and in 2009, Singapore (<http://www.singstat.gov.sg/stats/themes/people/youth.pdf>) had 60% of all 15-29 year olds enrolled in tertiary education. Hence, it would appear, except for China, all East Asian societies have much higher levels of higher education provision and participation than Hong Kong. Thus, the current rates of participation in higher education in Hong Kong suggest that tertiary education is treated as a restricted and elite social resource. Hence, we might expect students to be quite emotionally negative concerning assessment because the pressure and risks are so high.

Access to higher education is determined on the basis of overall academic performance in secondary school. Institutions set their own standards for entry based on a mix of Fifth Form (i.e., 11th year of schooling, nominal age of 16) and Seventh Form public examination scores (i.e., Hong Kong Certificate of Education Examination (HKCEE) and Hong Kong Advanced Level Examination (HKALE) respectively). The total performance on the best six subjects taken by students in the Fifth Form HKCEE examination has a maximum of 30 points, with a maximum of 5 points per subject (A=5, B=4, C=3, D=2, E=1). All students in this study knew their HKCEE score regardless of how long ago they had obtained it and provided it freely to us.

For students not accepted into Hong Kong higher education, there are a number of alternative paths including enrolment in an overseas university, enrolment in a self-funded sub-degree or associate degree programs, or entry into the workforce. While efforts are being made to develop a criterion-reference grading system for the Hong Kong Diploma of

Secondary Education which replaces the HKCEE and HKALE in 2012 (Brown & Ngan, 2010), Hong Kong test and examination marks are predominantly norm-referenced scores; hence, high-scores reflect high-rank, rather than high-quality performance.

The extent of the selective process in Hong Kong is so pervasive that students and families pay a high financial, let alone psychological price. Families expend considerable sums of money for educational services (e.g., school and examination fees and private tuition fees) from pre-school onwards. For example, the 2004-2005 Hong Kong Consumer Price Index analysis indicated that between a quarter and half of all students (depending on educational level) had expenditure on tuition, with the average monthly expenditure of HK\$1150 (http://www.censtatd.gov.hk/FileManager/EN/Content_1064/A3_E.pdf) being about 4.6% of the 2004 average household expenditure in Hong Kong of HK\$18884 (http://www.censtatd.gov.hk/hong_kong_statistics/statistical_tables/index.jsp?subjectID=10&tableID=54B). Hence, we might expect Hong Kong higher education students to indicate a strong parental pressure and obligation to their families for both cultural and economic reasons.

Efforts have been made in Hong Kong to shift schooling practices to be less transmission-oriented in teaching and require less memory-based learning. However, these reform efforts have been largely undone by the retention of the high-stakes public examination system (Kennedy, Chan, & Fok, 2011; Morris, Chan, & Lo, 2003). Because of the high social and personal stakes associated with assessment in Hong Kong, it seems plausible that Hong Kong university students would have a largely negative emotional response to assessment. At the same time, we adopt an 'agentic' perspective of the social cognitive theory which considers people as proactive, self-reflecting, and self-regulating agents or organisms (Bandura, 2001). In this case, consistent with the literature on effort in Chinese learning, we expect students to exhibit strong agentic efforts in response to these powerful pressures instead of simply reacting to the environmental forces. A further consequence of this study is that it may draw our attention to the need for a broader range of conceptions than the four conceptions described earlier to capture the complexity of Chinese students' thinking about assessment.

Method

This study aims to identify patterns in Hong Kong students' conceptions of assessment from a sample of students who have successfully overcome the selective processes used to admit students into higher education. In a non-experimental design, students drew pictures of assessment that were subsequently content analysed.

Drawing Assessment

Getting students to draw pictures of assessment, a free response technique, has proven to be effective in getting at the inner thoughts, feelings, perceptions, and understandings students have about this important educational practice (Clarebout et al., 2007; Haney, Russell, & Bebell, 2004; Harris, Harnett, & Brown, 2009; McKillop, 2006; Picker & Berry, 2000). Wheelock, Bebell, and Haney's (2000a, 2000b) analysis of grade 4, 8, and 10 students' drawings of their experiences of the Massachusetts Comprehensive Assessment System (MCAS) testing found older students were more negative than younger ones, in part due to increased awareness of the personal implications their test results had (i.e., tracking, retention, graduation). High school students were three times more likely than primary students to draw negative representations of the MCAS and seldom included images showing diligence in response to the test. A New Zealand study with primary and high school students showed that high school students were increasingly negative about the impact and value of assessment as compared to primary school students (Harris, Harnett, & Brown, 2009). McKillop (2006) reported, in a study of higher education art students, that assessment was portrayed largely as formal, summative evaluations with strongly negative overtones.

Hence, we agree with other researchers about the potential virtues of using free response drawings as a way of understanding student conceptions of assessment. Diem-Wille (2001, p. 119) suggested that, "pictures, drawings, and metaphors show a person's emotional state of mind much better than verbal definitions or descriptors". Clarebout et al. (2007) argued that drawings can be used to identify nuances and ambivalences within a person's belief system, indicating they would be useful when studying pupil conceptions. Even though the Chinese writing is distinctive from the Western alphabetic system of writing in terms of the image iconicity (Hu, 2009), there is little evidence that this generates any difference in visual perception relative to westerners (Hoosain, 2008). Indeed, a contrastive study of UK and Chinese children's (ages 6-13) drawings found no statistically significant differences in the quality of pencil and fibre-tip pen drawings (Cox, Perara, & Fan, 1999). Hence, it is unlikely that cultural factors related to drawing skills interfere with the interpretations given to the drawings in this study.

The visual elements (e.g., symbols and images) of the drawings themselves can be analysed independently of what students have to say for themselves. For example, Bracher (2003) reported that first-year university students' posters of life at university were predominated by images of social rather than academic content. McKillop (2006, Figures 5 to 7) inferred that students had a negative attitude towards assessment by referring to painful, oppressive imagery in drawings (e.g., a student crying with pain, a darkened room with a chair in the corner, a student cringing in the corner and looking very small, and a student with a gun in his mouth). Hence, this article restricts itself to a content classification of the imagery and symbolism of the drawings to reach conclusions about Hong Kong university student assessment careers and conceptions. Details of the student focus group discussions are addressed in a separate manuscript due to length considerations (Wang & Brown, 2011).

Participants

Since the drawings and the focus group discussions were intended to expose highly personal responses to assessment, it was decided to use convenience sampling to recruit participants who were likely to know at least one other person in each group and, thus, be more likely to engage fully in the study. Students ($n=26$; half women; Table 1) known personally to the research team were invited to one of the six focus groups. Each group consisted of 4- 6 people, who were from the same institution and knew at least one person in the group. The interviews were held on their home campuses. The participants' fifth form public examination (HKCEE) scores ranged from 1 to 29 with a mean of 16.92 ($SD=8.11$), indicating a relatively high means with a wide variation in academic performance. The students were enrolled in three major types of university education programs (i.e., pre-degree, bachelor's degree, and post-graduate study). The four enrolled in pre-degree diploma programs were all men (students 6J, 6H, 5Y, and 5P), with low HKCEE academic scores requiring them to take this pre-degree foundation program before potentially going on to a bachelor's degree. The remaining 22 (13 women and 9 men) had moderate to good HKCEE scores. Three students were taking postgraduate study programs. The students were enrolled in a wide variety of discipline areas, with 11 in the strongly mathematic/scientific fields (e.g., architecture, engineering, science, etc.), 12 were in a social science field (i.e., business, education, social sciences), and three were in humanities subjects (i.e, arts, communication, theology). Hence, we conclude that the participants, notwithstanding the purposive sampling, were reasonably representative of the diversity of higher education students in Hong Kong.

Table 1. Participant Demographic Characteristics

	Current Enrolment			Total
	Pre-degree Diploma	Bachelor's Degree	Postgraduate Study	
Sex				
Woman	0	11	2	13
Man	4	8	1	13
Discipline area				
Architecture/ Engineering/ Medicine/ Science/ Automobile Mechanics	1	9	1	11
Arts/ Communication/ Theology	1	2	0	3
Business/ Tourism/ Education/ Social Science	2	8	2	12
Total	4	19	3	26

Procedures

At the start of each focus group, students were instructed to draw on a blank A4 page, a picture of what assessment meant to them. The instructions, made available in both English and Chinese, were:

Draw a picture of assessment. This picture should be based on your **PERSONAL** understandings of, or your experiences of, or your responses to, or your attitudes towards assessment as a **LEARNER**. Your drawing should show your **STRONGEST** ideas, feelings, or experiences about assessment. It can be based on your experiences at school, at university, or in any other context like club, team, hobbies or performing arts etc., where you have been assessed. Assessment means any act of collecting and interpreting evidence of student learning in terms of knowledge, skills, values and attitudes.

[bold and capital formatting in original]

Participants were given about 10 minutes to draw their pictures, with the reminder that this was not an 'art' exercise. Then, each participant discussed their drawing with the group and, for about an hour, a moderated discussion was held in Cantonese. The interviews were transcribed and translated into English; details of the interview discussions will be reported separately. Note that students were free to draw pictures of assessment based on either their experience of schooling or university proper; hence, the results do not necessarily reflect current practices of assessment in higher education, but rather illustrate the assessment careers and conceptions of students enrolled at university.

Analysis

Once the interviews were completed, all student drawings were labeled with a 2 character alphanumeric code (Number=focus group; Alphabet=person in group). The image features of the student drawings were analysed using content analysis (Bell, 2001, p. 13), which is "an empirical (observational) and objective procedure for quantifying recorded 'audio-visual' (including verbal) representation using reliable, explicitly defined categories". In this study, content analysis was used to establish the frequencies of images within the drawings thought to convey significant meaning about the students' conceptions of assessment and its purposes.

To classify the drawings, the first author and research assistant displayed all the pictures on a large table and identified visual elements (e.g., facial expressions, portrayals of people, metaphors, and symbols) that were used in more than one drawing. Once a category of visual elements was identified (e.g., burdens or marks), a detailed search of all pictures

was carried out to identify those with similar image elements. Where the images in a drawing were ambiguous, the caption or text in the picture, not the focus group discussion transcript, was used to classify images. Independent classification was undertaken by the second author after the categories were established and defined by the first author and the Hong Kong Chinese research assistant who had facilitated all focus groups.

Results

The 26 images were classified into eight major categories using the procedure described above (Table 2). These were pride and pleasure (i.e., positive affect in relation to achievement), negative emotions (i.e., emotions such as fear or anxiety), being monitored (i.e., a sense of being watched or controlled), competitive images (i.e., athletic images to do with persistence, effort, and exertion), lifelong (i.e., the experience that assessment begins at an early age and continues throughout the life-course), marks (i.e., the use of numeric scores to indicate proficiency), inaccuracy (i.e., the inability of assessment to accurately evaluate a person), and burden (i.e., the pressure of assessment upon the learner). Table 2 also provides the HKCEE mean score of all students whose drawings were agreed as belonging to the category. This permitted an exploration of the possibility that negative imagery of assessment was related to relatively weak academic achievement.

Inter-rater agreement for the classification of drawings to image categories was determined between the two authors by calculating the kappa coefficient for agreement of assigning a picture to the same categories. A total of 56 and 79 assignments were made by the two authors respectively, of which 59% were identical, resulting in a kappa coefficient of $\kappa=.56$; a value considered moderately better than chance (Cohen, 1960). To ascertain whether discrepancies between raters were a function of specific categories, the Pearson correlation coefficient between raters was calculated for each category across all 26 pictures, treating assignment as 1 and absence as 0. High agreement was seen for competitive images ($r=.84$), pride and pleasure ($r=.83$), lifelong ($r=.80$), and monitored ($r=.76$). Moderate to weak inter-correlations were seen for the other four categories; that is, marks ($r=.67$), inaccuracy ($r=.46$), burden ($r=.46$), and negative emotions ($r=.46$). After discussion between the authors, a total of 58 classifications were agreed upon with the frequency for each sub-category ranging from 3 to 13 ($M=7.25$; $SD=3.41$). The number of classifications per student averaged 2.19 ($SD=1.36$, mode=1), with a range of 1 to 5. Only 8 students drew pictures that were classified into more than two categories. Hence, most students drew relatively simple pictures with only one or two dominant categories. Concerning emotions in the imagery, two students drew only positive emotions, five drew both positive and negative emotions, and 8 drew only negative emotions.

Table 2. Imagery Categories and Frequencies

Category	Frequency	HKCEE statistics	
		<i>M</i>	<i>SD</i>
Negative Emotions	13	16.31	8.98
Monitored	11	17.55	9.79
Competitive	8	18.30	5.68
Lifelong	7	21.43	7.50
Pride & Pleasure	7	18.29	6.05
Marks	5	15.60	2.19
Inaccuracy	4	19.50	6.95
Burden	3	15.70	9.50
Total	58		

Negative emotions

Visual elements indicative of negative emotion included downturned mouths, jagged mouth, squinted eyes and/or eyebrows slanted downwards to the nose, vibration lines for fear or anxiety, dark shading, and rain clouds. Four images out of 13 have been selected to illustrate the intensity of student negative emotional responses towards assessment. Note that three of the four students with lowest HKCEE scores are in this group (i.e., 6J, 6H, and 5Y). Student 1H drew a report card with four assessment results (scores ranging from 90% to 95% and rank in class of 9th). The parent, with downturned mouth, speaks to the child blaming her, also with downturned mouth, for being only 9th in class, rather than in the top three. As an aside, the Chinese text makes it clear the student is accused of not being smart for being ranked 9th, despite having grades above 90%. The picture from 5F also showed negative emotion in response to a test paper and a score of 30/100. Student 2B drew a student facing a test paper, with one self-corrected with an X, showing negative emotion as jagged lines indicating nervousness, shaking, and possibly, sweating. Finally, student 1W depicted a student carrying out research, studying, an examination, and a practical skills demonstration each time with facial appearances expressing negative emotions.

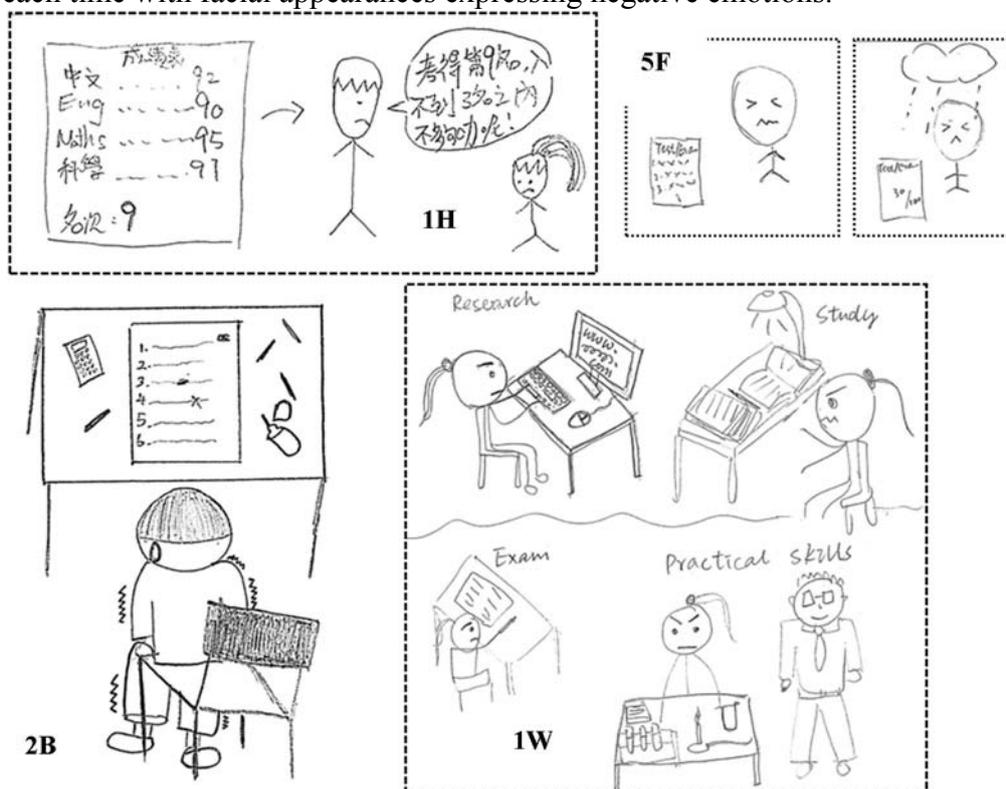


Figure 1. Sample Images for Negative Emotions

Monitoring

The 11 images grouped as monitoring reflected a common theme of surveillance and control of students by teachers and society through the examination system. Visual elements included the presence of eyes or spectators watching the student, the teacher standing over the student during assessment, and a businessman overseeing the educational system. Note that two of the four students with lowest HKCEE scores are in this group (i.e., 6H and 5Y). Student 6B illustrated the educational system as a closely monitored system (akin to a prison) in which a wealthy businessman (lounging with cigars and dollar signs) controls education while a few students manage to tunnel to freedom. Similarly, Student 2J drew assessment as the bull-fighter taunting the student (a bleeding bull), while all of society is entertained by the torment of the student. Student 3B had students sitting examinations at their individual desks

while the teacher invigilates their performance; a striking element of the drawing is the deep shading surrounding the students reflecting a negative aspect of surveillance. Student 6K drew a student under the system's spotlight and being placed on pedestals of varying height as society deemed appropriate. Together this group of images portrayed assessment as a strongly controlling force which monitors student lives and futures. Furthermore, the monitoring is done with the connivance of society as a whole, and possibly, for the pleasure of the controlling classes. Generally, students did not have the agency to escape this powerful monitoring and these disempowering images added further to the conception that assessment is negative.

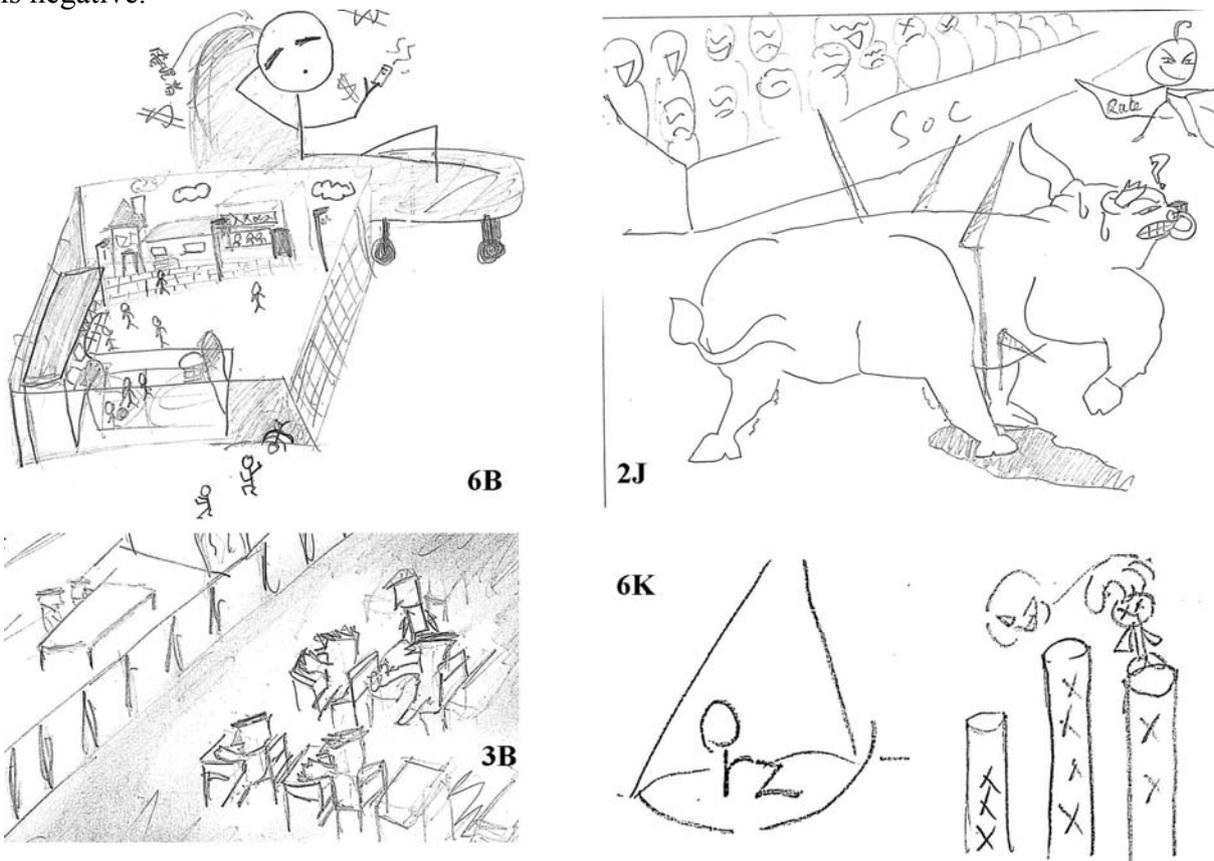


Figure 2. Sample Images for Monitoring

Competition

Eight images made use of competitive or athletic images (e.g., sweat beads, running, weight lifting, sports head bands, prize-winners' podium) (Figure 3). These images communicate the idea of competitive effort and persistence by the Chinese learner in response to being assessed. Sweat and muscular effort are seen in both 1K and 4K (weight lifting and running respectively). Student 2S pictured the results of athletic effort by showing the public praise given to the three medal winners standing on the podium. While it is completely consistent with self-regulation and Confucian obligation constructs for students to make great effort towards a valued goal, these images are silent about the simple fact that very few students can be winners—only three stand on the winner's podium. So, notwithstanding the positive aspect of effort, the elitist effect of assessment is evident.



Figure 3. Sample Images for Competitive

Lifelong

Seven of the drawings had visual elements indicating that assessment processes were continuous throughout the life span (e.g., timeline, people drawn at different life stages including infancy, repetition of elements) (Figure 4). For example, assessment was portrayed by Students 1P and 5F as beginning in infancy and continuing into adult-hood. Student 4W identified assessments in kindergarten, primary, secondary, and university levels of education. Student 1P also introduced the metaphor of a seedling being cultivated into a full-grown bloom, reinforcing the longevity of assessment. This continuous and seemingly endless activity may require the competitive response seen in Figure 3 and may contribute to the negative emotion and sense of monitoring reflected earlier.



Figure 4. Sample Images for Lifelong

Pride & Pleasure

Positive emotions were inferred from visual symbols such as smiles, lines suggesting cheers or radiance, clapping hands, and sunshine (Figure 5). Six of the seven positive emotions were responses of pride and pleasure for academic success (e.g., 1H drew positive affirmation for getting 100% and 2S drew clapping hands for smiling students standing on the winner's podium). In contrast, student 3S drew positive emotions (e.g., smiles, cheering) despite not getting 100% (i.e., two items were marked wrong with x). This student explained assessment is a happy process because it leads to improvement actions. Hence, generally students experienced a very strong positive affect when their academic success and achievement was recognised. It would appear that pride and pleasure are natural consequences for success after competitive effort during the lifelong process of being assessed. It seems the hope of this emotion sustains the student despite the negative, monitoring function of assessment in Hong Kong society.

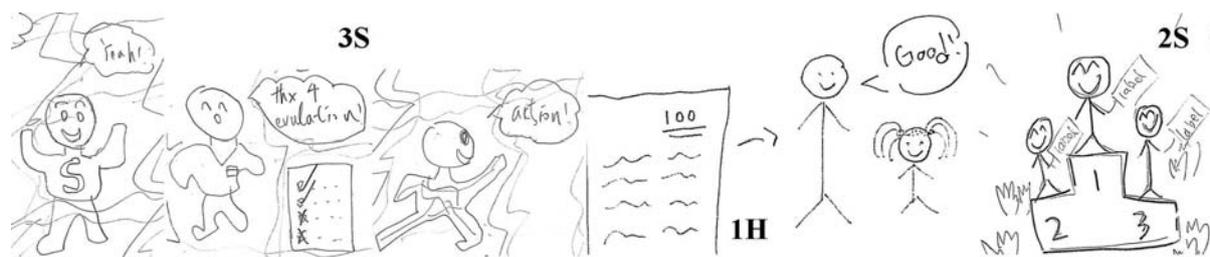


Figure 5. Sample Pride & Pleasure

Marks

Surprisingly, given the long tradition of examinations and tests, only five of the 26 students drew pictures that contained score images (e.g., percentage, letter grade, ticks or crosses, or rank order) (Figure 6). Two of these images (i.e., 5F and 1H) associated the marks with negative emotions. Student 2T drew a bull's eye target with only the score 100 in the centre shown, reflecting the reality of how difficult it is to obtain the top mark. Student 3W drew a test paper in which individual items are marked right or wrong leading to a total percentage score for which interpretations are given according to the grade band the student earned. Hence, for this small group, assessment appeared to be largely reduced to a set of scores with the purpose being to obtain the top mark.

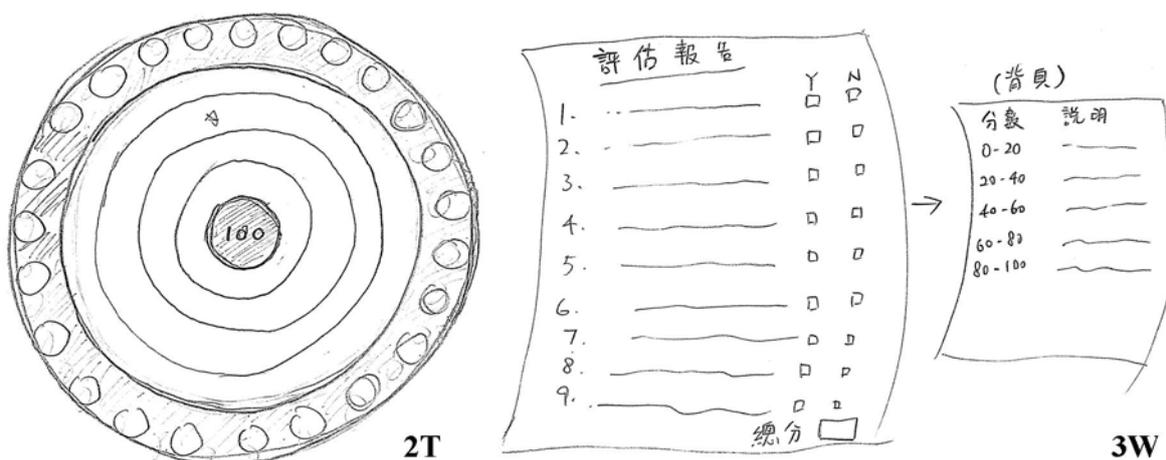


Figure 6. Sample Images for Marks

Inaccuracy

Four drawings were identified as having images that raised doubts as to the accuracy or fairness of assessments and whether assessments could reflect the true reality of a student's learning. Images used included uneven balance scales, inaccurate labels, and discrepancy between facial emotion and that portrayed upon the heart area of the person (Figure 7). Picture 6K shows a Small shirt falsely labelled XL, just as an assessment grade gives a false picture of a student's value or learning. Student 4M indicated that assessment results are always biased just as the scales were unbalanced. Student 2H drew a series of boxes inside circles, suggesting square pegs being forced artificially to fit into round holes. Together, these images reflected, perhaps, a more agentic response of blaming the assessment system, rather than internalising the results of assessment as being an accurate indicator of a person's worth or value.

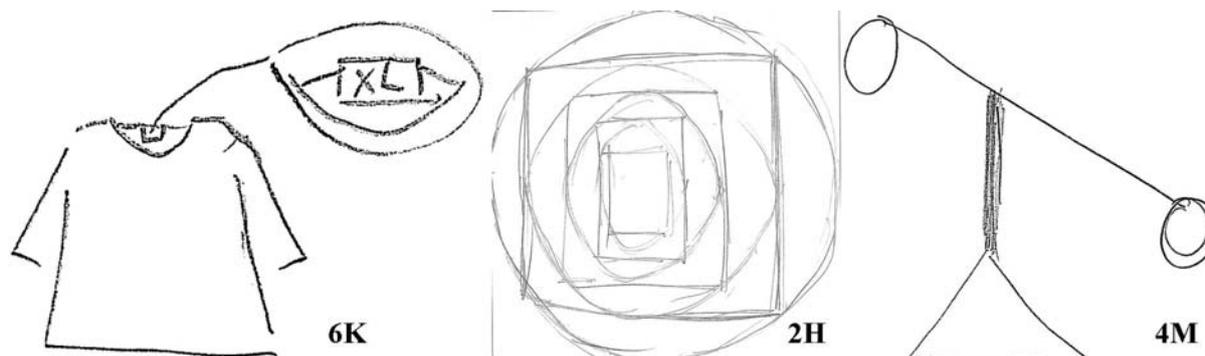


Figure 7. Sample Images for Inaccuracy

Burden

Three of the drawings reflected assessment as a burden or pressure by using downward arrows on the shoulders, objects piled up on the shoulders, or heavy objects being carried (Figure 8). Student 1P portrayed books and evaluations as heavy pressure on the learner whose legs shook under the weight. Student 3H drew assessments as stones on the shoulder with pressure from the system and from familial expectations weighing the learner down. Student 6J, one of the lowest achieving students on the HKCEE, drew assessment as a school bag weighing the student down.

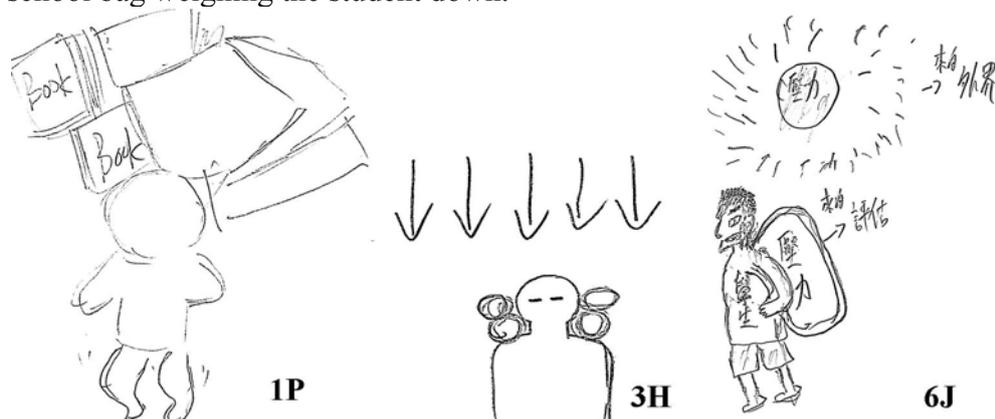


Figure 8. Sample Images for Burden

Relationship of Images to Academic Performance

To investigate the relationship of the image categories among each other and with the academic performance score (HKCEE), dummy variables (0=drawing not in this category, 1=drawing in this category) were created for each image category. Only two statistically significant correlations were found among the image categories (i.e., inaccuracy—negative emotions $r=-.46$; life-long—pride & pleasure $r=.41$). The drawings of the students with the lowest HKCEE scores and the mean HKCEE scores per drawing category in Table 2 suggested that students with different levels of academic achievement used different imagery to express their understanding of assessment. However, there were no statistically significant relationships between the eight imagery categories and HKCEE scores (i.e., multivariate $F_{(8,25)}=.44, p=.88$). Hence, we conclude that, in this small sample of students, images used to depict their conceptions of assessment were not related to previous levels of academic performance, nor systematically among the various categories of imagery.

Discussion

The most frequent images for assessment were drawings of negative emotions, being monitored, and competition. These suggest that assessment tended to be seen as a negative and oppressive process that requires vigorous competitive responses. The student drawings

showed strong awareness of the evaluative, controlling role that assessment plays or has played in their lives. Such pictures include images of athletic contests (e.g., races and even a bull-fight), surveillance by assessors, and entrapment or oppression by the high-stakes consequences of the system. Both competitive self-regulation and doubts as to assessment's accuracy and effectiveness seemed to reflect the Hong Kong students' agentic response to assessment as a negative, lifelong burden. Student resilience is reflected in both the active and the passive responses. On the one hand, students strive to keep their heads up and fight the oppressive assessment system; on the other hand, they rationalize the situation by casting doubts on the legitimacy of the system. The pattern of results appears to be ecologically rational (Rieskamp & Reimer, 2007); that is, the drawings reflect a rational response to the pressures higher education students face from society, education, and families through the examination system for selection in Hong Kong.

It is disturbing that these largely negative images were provided by students who were relatively successful (i.e., they were all enrolled in higher education, including a few in the most elite of Hong Kong's universities). How might young adults who are not in higher education, perhaps through lesser academic performance or lack of economic resources, perceive assessment itself is not known. Indeed, much of what we know about the Chinese learner is based on studies with the academic elite. While we might logically expect failing students to be even more intensely negative about assessment, it is equally possible that such students would take up views that rationalize their failure in terms of lack of sufficient effort or to insufficient personal worth, rather than to deficiencies of the teacher or system.

Learning is lifelong, virtuous, and leads to moral perfection in traditional Chinese philosophy under the Confucius influence (Li, 2002; 2009). The Chinese learner is normally portrayed as persistent, effortful, and internally attributive from the point of view of learning approaches (Biggs & Watkins, 2001; Watkins & Biggs, 2001b). However, when Chinese learners reflect on assessment, they have quite a different response which appears consistent with the powerful consequences of assessment practices in Hong Kong. The relentless emphasis, as Biggs and Watkins (2001) put it, on selection, norm-referenced comparisons, academic material, and rewards for those who learn faster and more accurately than others creates quite a different image of the Chinese learner. Being monitored by assessment engenders a sense of powerlessness, in contrast to a sense of empowerment in response to learning. Furthermore, in contrast to the life changing social mobility associated with scholarly learning, assessment is associated with life changing negative consequences in the event of failure. Evidence was also seen for the evaluation of an individual's worth as a consequence of assessment, a characteristic associated with even contemporary Chinese societies. Students' conception of assessment seen in this study revealed a much darker side of the Chinese learner that seems to have been ignored by research into the Chinese learner.

Conclusion

This study has shown that valuable insights can be gained from asking students to draw their conception of assessment. While questionnaires require strong theoretical assumptions about likely hypotheses and interviews can suffer from reflexive effects through the presence of the interviewer, the image drawing component of this study was done fully independently and without any verbal interaction after the instructions were understood. This meant that, while conformity to the known views of authorities are a recognized phenomenon within collectivist societies (Lerner & Tetlock, 1999), the method allowed students to express their individuality unfettered by pressure to conform to either the researcher or the other group members. Additionally, the quality of the focus group was enhanced greatly because each individual not only had something to contribute (i.e., a drawing) but also the right to participate from having created a unique drawing. As an exploratory technique the drawing method allows participants the freedom to contribute based on their individual experience of

a phenomenon and, with the addition of the caption and discussion, the method gives researchers triangulation for understanding the thinking of participants. While the method has allowed the identification of new insights into how Chinese learners understand assessment, it cannot lead to generalizations or tests of those insights. Hence, large scale survey studies are necessary to test whether the hypotheses generated by the drawing technique exist beyond the sample in the study. Nevertheless, as an exploratory technique there is much to commend the method.

While this study and previous studies of student conceptions of assessment identified similar beliefs or responses to assessment (e.g., negative and positive emotional responses to assessment, focus on marks, doubts as to the accuracy of assessment, and the need to make an effort), the images in this study also introduce new ideas. The most dramatic of these, at least to the Western researcher involved in this study, was the clear sense students had of their personal worth and value being determined by their academic achievement on assessments and examinations. This must place Hong Kong and, potentially all Chinese students, under a great burden to perform (i.e., the threat of being deemed unworthy by one's own family must have great psychological impact) and may contribute to strategic practices aimed at maximising rank order. Additionally, given the globalisation of higher education students, western institutions may find that East Asian and Chinese ethnicity students do not place as much value on helping students to learn as attaining a high rank (Lee, 2009). Further, academic staff who seek to use formative assessment may need support in dealing with students who prioritise rank order over modest grades with rich feedback. At the same time, most academics would be happy if the persistent, effortful diligence seen in these images was exhibited by all students in place of lackadaisical effort often seen by students who seem content with the adage '*Cs get degrees*'. A second, somewhat surprising conception was the cynicism and outrage around the use of assessment as a means of social control, despite the age-long emphasis in Chinese societies that used assessment (especially the Imperial examination system) as a way to reward talent and bring social mobility. That the dominant discourse around assessment was challenged and viewed suspiciously by even a few students indicates the probability that there is considerable disenchantment with the status quo of Hong Kong. Nonetheless, it is disturbing to see education portrayed not as the conscience and critic of society, but rather as a limiting force -upon individual futures, freedoms, and well-being. Hong Kong education may well be in for a bumpy ride in the next few decades if more and more students perceive education as a handicap rather than a help.

This study began in light of previous studies with a survey inventory that had demonstrated validity and robust psychometric properties in at least two different jurisdictions and age levels. However, this study has identified at least two major conceptions of assessment, just from examining a set of pictures let alone whatever may be additionally discovered in the analysis of the focus group discussions, which are not present in that survey inventory. This clearly points out the importance of cross-cultural research as a basis for understanding how students might understand their lives in higher education. Previous studies with the SCoA have suggested that some of the beliefs were statistically significant predictors of attitudes and outcomes for students. Given the forcefulness of the imagery in this study, it is expected that the beliefs found among the Hong Kong Chinese students will also be strongly associated with certain behaviours and outcomes. It is highly likely that reduced academic outcomes will be associated with strong endorsement of 'negative emotions', 'monitored', and 'inaccuracy', while increased outcomes will probably be associated with endorsement of 'competitive', 'lifelong', 'pride and pleasure'. Nonetheless, the implication is clear: evaluating Hong Kong higher education students' understandings of assessment with just a Chinese version of the SCoA inventory would miss important constructs. Cross-cultural researchers would do well to make more use of exploratory techniques such as this as a

precursor to surveys and as an adjunct to translation of extant instruments. A future survey study into Hong Kong higher education student conceptions, taking advantage of insights in this article, is currently being undertaken. Nonetheless, the pictures drawn here reflect the assessment careers of a small group of Hong Kong higher education students.

References

- Ajzen, I. (2005). *Attitudes, personality and behavior* (2nd ed.). New York: Open University Press.
- Assessment Reform Group. (2002). *Testing, motivation and learning*. Cambridge, UK: Faculty of Education, University of Cambridge.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual review of psychology*, 52, 1–26.
- Bell, P. (2001). Content analysis of visual images. In T. Van Leeuwen, & C. Jewitt (Eds.), *Handbook of visual analysis* (pp. 10-34). Los Angeles: Sage.
- Biggs, J. B., & Watkins, D. A. (2001). Insights into teaching the Chinese learner. In D. A. Watkins & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp. 277-300). Hong Kong: University of Hong Kong, Comparative Education Research Centre.
- Bracher, E. R. (2003). *An investigation of the efficacy of analyzing student drawings as an adjunct to interviews aimed at researching the contexts of student life*. Unpublished doctoral dissertation, Boston College, Boston, MA.
- Brookhart, S. M., & Bronowicz, D. L. (2003). 'I don't like writing. It makes my fingers hurt': Students talk about their classroom assessments. *Assessment in Education: Principles, Policy & Practice*, 10(2), 221-242.
- Brown, G. T. L. (2008). *Conceptions of assessment: Understanding what assessment means to teachers and students*. New York: Nova Science Publishers.
- Brown, G. T. L., & Hirschfeld, G. H. F. (2007). Students' conceptions of assessment and mathematics achievement: Evidence for the power of self-regulation. *Australian Journal of Educational and Developmental Psychology*, 7, 63-74.
- Brown, G. T. L., & Hirschfeld, G. H. F. (2008). Students' conceptions of assessment: Links to outcomes. *Assessment in Education: Principles, Policy and Practice*, 15(1), 3-17.
- Brown, G. T. L., & Ngan, M. Y. (2010). *Contemporary educational assessment: Practices, principles, and policies*. Singapore: Pearson Education South Asia.
- Brown, G. T. L., Irving, S. E., Peterson, E. R., & Hirschfeld, G. H. F. (2009). Use of interactive-informal assessment practices: New Zealand secondary students' conceptions of assessment. *Learning & Instruction*, 19(2), 97-111.
- Brown, G. T. L., Peterson, E. R., & Irving, S. E. (2009). Self-regulatory beliefs about assessment predict mathematics achievement. In D. M. McInerney, G. T. L. Brown, & G. A. D. Liem (Eds.) *Student perspectives on assessment: What students can tell us about assessment for learning* (pp. 159-186). Charlotte, NC: Information Age Publishing.
- Chan, C. K. K., & Rao, N. (Eds.). (2009). *Revisiting the Chinese learner: Changing contexts, changing education*. Hong Kong: Springer/The University of Hong Kong, Comparative Education Research Centre.
- Cheung, T. K.-Y. (2008). An assessment blueprint in curriculum reform. *Journal of Quality School Education*, 5, 23-37.
- China Civilisation Centre (2007). *China: Five thousand years of history and civilization*. Hong Kong: City University of Hong Kong Press.

- Choi, C. C. (1999). Public examinations in Hong Kong. *Assessment in Education: Principles, Policy & Practice*, 6(3), 405-417.
- Clarebout, G., Depaepe, F., Elen, J., & Briell, J. (2007). *The use of drawings to assess students' epistemological beliefs*. Paper presented at the Biannual Conference of the European Association for Research on Learning and Instruction, Budapest, Hungary, August.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20, 37-46.
- Cox, M., Perara, J., & Fan, X. (1999). Children's drawing in the UK and China. *Journal of Art & Design Education*, 18(2), 173-181.
- Dahlin, B., Watkins, D. A., & Ekholm, M. (2001). The role of assessment in student learning: The views of Hong Kong and Swedish lecturers. In D. A. Watkins, & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives*. (pp. 47-74). Hong Kong: University of Hong Kong, Comparative Education Research Centre.
- Diem-Wille, G. (2001). A therapeutic perspective: The use of drawings in child psychoanalysis and social science. In T. V. Leeuwen, & C. Jewitt (Eds.), *Handbook of visual analysis* (pp. 119-133). London: Sage.
- Ecclestone, K., & Pryor, J. (2003). 'Learning careers' or 'Assessment careers'? The impact of assessment systems on learning. *British Educational Research Journal*, 29(4), 471-488.
- Gao, L., & Watkins, D. A. (2001). Towards a model of teaching conceptions of Chinese secondary school teachers of physics. In D. A. Watkins, & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp. 27-45). Hong Kong: University of Hong Kong, Comparative Education Research Centre.
- Haney, W., Russell, M., & Bebell, D. (2004). Drawing on Education: Using drawings to document schooling and support changes. *Harvard Educational Review*, 74(3), 241-271.
- Harris, L. R., Harnett, J., & Brown, G. T. L. (2009). "Drawing" out student conceptions of assessment: Using pupils' pictures to examine their conceptions of assessment. In D. M. McInerney, G. T. L. Brown, & G. A. D. Liem (Eds.) *Student perspectives on assessment: What students can tell us about assessment for learning* (pp. 53-83). Charlotte, NC: Information Age Publishing.
- Hirschfeld, G. H. F., & von Brachel, R. (2008). *Students' conceptions of assessment predict learning strategy-use in higher education*. Paper presented at the Biannual Conference of the International Test Commission (ITC), Liverpool, UK, July.
- Ho, D. Y. F. (1986). Chinese patterns of socialization: A critical review. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 1-37). Hong Kong: The Chinese University of Hong Kong.
- Hoosain, R. (2008). Perceptual processes of the Chinese. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 38-72). Hong Kong: The Chinese University Press. [Reprint of 1986 version published by Oxford University Press]
- Hu, Z. (2009, June). The image iconicity in the Chinese language. *Seventh Biennial Symposium on Iconicity in Language and Literature*, Toronto. Retrieved August, 2011 from http://www.semioticon.com/virtuals/iconicity/hu_1.pdf.
- Kennedy, K. J., Chan, J. K. S., & Fok, P. K. (2011). Holding policy-makers to account: exploring 'soft' and 'hard' policy and the implications for curriculum reform. *London Review of Education*, 9(1), 41-54. doi: 10.1080/14748460.2011.550433

- Lee, B. (2009). *Psychological barriers to successful learning among East Asian international visa students*. Unpublished master's thesis, The University of Auckland, Auckland, NZ.
- Lee, W. O. (1996). The cultural context for Chinese learners: Conceptions of learning in the Confucian tradition. In D. Watkins, & J. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences* (pp. 25–42). Hong Kong: Comparative Education Research Centre and Australian Council for Educational Research.
- Lerner, J. S., & Tetlock, P. E. (1999). Accounting for the effects of accountability. *Psychological Bulletin*, 125(2), 255-275.
- Li, J. (2002). A cultural model of learning: Chinese “heart and mind for wanting to learn” *Journal of Cross-Cultural Psychology*, 33(3), 248-269.
- Li, J. (2009). Learning to self-perfect: Chinese beliefs about learning. In C. K. K. Chan, & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 35-69). Hong Kong: Springer/The University of Hong Kong, Comparative Education Research Centre.
- Marton, F., Dall'alba, G., & Beaty, E. (1993). Conceptions of learning. *International Journal of Educational Research*, 19(3), 277-300.
- Matos, D. A. S. (2010). *A avaliação no ensino superior: Concepções múltiplas de estudantes brasileiros [Assessment in higher education: Multiple conceptions of Brazilian Students]*. doctoral dissertation, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.
- McKillop, C. (2006). Drawing on assessment: Using visual representations to understand students' experiences of assessment in art and design. *Art, Design & Communication in Higher Education*, 5(2), 131–144, doi:10.1386/adch.5.2.131/6.
- Moni, K. B., van Kraayenoord, C. E., & Baker, C. D. (2002). Students' perceptions of literacy assessment. *Assessment in Education: Principles, Policy & Practice*, 9(3), 319-342.
- Morris, P., Chan, K. K., & Lo, M. L. (2003). Changing primary schools in Hong Kong: Perspectives on policy and its impact. In P. Stimpson, P. Morris, Y. Fung, & R. Carr (Eds.), *Curriculum, learning and assessment: The Hong Kong experience* (pp. 77-96). Hong Kong: Open University of Hong Kong Press.
- Paul, A. M. (2011). The roar of the Tiger Mom. *Time (Asia)*, 177(4), 24-30.
- Pekrun, R., Elliot, A. J., & Maier, M. A. (2006). Achievement goals and discrete achievement emotions: A theoretical model and prospective test. *Journal of Educational Psychology*, 98(3), 583-597, doi: 10.1037/0022-0663.98.3.583.
- Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, 37(2), 91-105.
- Picker, S., & Berry, J. (2000). Investigating pupils' images of mathematicians. *Educational Studies in Mathematics*, 43, 65-94.
- Pong, W. Y., & Chow, J. C. S. (2002). On the pedagogy of examinations in Hong Kong. *Teaching & Teacher Education*, 18(2), 139-149.
- Rieskamp, J., & Reimer, T. (2007). Ecological rationality. In R. F. Baumeister, & K. D. Vohs (Eds.), *Encyclopedia of Social Psychology* (pp. 273-275). Thousand Oaks, CA: Sage.
- Salili, F. (2001). Teacher-student interaction: Attributional implications and effectiveness of teachers' evaluative feedback. In D. A. Watkins, & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp. 77-98). Hong Kong: University of Hong Kong, Comparative Education Research Centre.
- Segers, M., Nijhuis, J., & Gijssels, W. (2006). Redesigning a learning and assessment environment: the influence on students' perceptions of assessment demands and their learning strategies. *Studies in Educational Evaluation*, 32(3), 223-242.

- Struyven, K., Dochy, F., & Janssens, S. (2005). Students' perceptions about evaluation and assessment in higher education: A review. *Assessment & Evaluation in Higher Education*, 30(4), 325-341.
- Thompson, A. G. (1992). Teachers' beliefs and conceptions: A synthesis of the research. In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 127-146). New York: MacMillan.
- Tsui, A. B. M., & Wong, J. L. N. (2009). In search of a third space: Teacher development in mainland China. In C. K. K. Chan, & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 281-311). Hong Kong: Springer/The University of Hong Kong, Comparative Education Research Centre.
- Wang, Z., & Brown, G. T. L. (2011, August). *Assessment careers in Hong Kong: Tertiary students' conceptions of assessment*. Manuscript submitted for publication.
- Watkins, D. A., & Biggs, J. B. (2001a). The paradox of the Chinese learner and beyond. In D. A. Watkins, & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp. 3-23). Hong Kong: University of Hong Kong, Comparative Education Research Centre.
- Watkins, D. A., & Biggs, J. B. (Eds.). (1996). *The Chinese learner: Cultural, psychological and contextual influences*. Hong Kong: Comparative Education Research Centre.
- Watkins, D. A., & Biggs, J. B. (Eds.). (2001b). *Teaching the Chinese learner: Psychological and pedagogical perspectives*. Hong Kong: Comparative Education Research Centre & ACER.
- Wheelock, A., Bebell, D., & Haney, W. (2000a). Student self-portraits as test-takers: Variations, contextual differences, and assumptions about motivation. *Teachers College Record*, November 02, 2000; ID Number: 10635. Retrieved August 18, 2011, from <http://www.tcrecord.org/Content.asp?ContentId=10635>
- Wheelock, A., Bebell, D., & Haney, W. (2000b). What can student drawings tell us about high-stakes testing in Massachusetts? *Teachers College Record*, November 02, 2000, ID Number: 10634. Retrieved August 18, 2011, from <http://www.tcrecord.org/Content.asp?contentid=10634>
- Wise, S. L., & Cotten, M. R. (2009). Test-taking effort and score validity: The influence of the students' conceptions of assessment. In D. M. McInerney, G. T. L. Brown, & G. A. D. Liem (Eds.), *Student perspectives on assessment: What students can tell us about assessment for learning* (pp. 187-205). Charlotte, NC: Information Age Publishing.
- Zilberberg, A., Brown, A. R., Harmes, J. C., & Anderson, R. D. (2009). How can we increase student motivation during low-stakes testing? Understanding the student perspective. In D. M. McInerney, G. T. L. Brown, & G. A. D. Liem (Eds.), *Student perspectives on assessment: What students can tell us about assessment for learning* (pp. 255-278). Charlotte, NC: Information Age Publishing.