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UNIVERSITY STUDENT AND TEACHER PERCEPTIONS OF EMOTIONS AND LEARNING: A QUALITATIVE STUDY

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Abstract

Traditionally, psychologists have differentiated three aspects of human learning: cognition, motivation and emotion. Research to date has tended to study these processes in isolation, and the role of emotions in learning has been regarded as a less significant factor in affecting successful learning outcomes than cognition or motivation. More recently the importance of emotion is being emphasised, particularly in higher education. Building on a previous research project in the area of university student perceptions of feedback this paper reports preliminary findings from an exploratory study intended to further investigate university student and academic staff perceptions of emotions and their associated cognitive appraisals in the learning and teaching context.

Keywords: Cognitive appraisals, Emotions, Higher Education, Learning, Student and teacher perceptions

1 INTRODUCTION

1.1 Emotions and learning

Until recently, educational research has paid little attention to the role of emotions in learning. However, a growing body of literature is highlighting the importance of emotional and social aspects of learning in higher education [1,2]. Indeed, it has been argued that 'learning itself is an intrinsically emotional business' [3]. As noted by Mortiboys the dynamics between teachers and students and the prospect of success or failure creates the potential for strong feelings; hence it is important for teachers and students to recognise the emotional dimension of learning and work adaptively with it [4]. The relative neglect of research on the emotional aspects of learning may be partly attributable to a lack of agreement about how the term 'emotion' is to be understood. Consistent with contemporary cognitive appraisal models, we argue that emotions arise as a function of people's appraisals, or interpretations, of particular stimuli and events, such as success, failure, or perceived criticism [5,6]. A brief discussion of this approach is presented in the following section.

1.2 Cognitive appraisals and emotions

Cognitive appraisal theorists propose that emotions do not occur without an antecedent appraisal, and that it is the appraisal (not the event itself) that elicits the emotion. Further, emotions are characterised by various response tendencies, along with subjective experiences, facial expressions, physiological changes, and ongoing cognitive processing [7]. Appraisal theory has gained substantial empirical support and there is a high degree of consensus about the kinds of appraisals that underpin emotions such as fear, anger, and sadness [8]. In general, the various appraisal dimensions include the following categories: the intrinsic characteristics of objects or events (positive or negative), the significance of an event to an individual's needs/goals, the individual's ability to cope with the event and control its consequences; and the compatibility of the event with social or personal standards, norms or values [9]. Other, more specific models have also been proposed; e.g., Roseman argues that different combinations of seven specified appraisal types determine which of 17 emotions might occur in response to an event [10]. These appraisal dimensions are presented in Table 1 (adapted from Roseman, 2001).

Table 1. Appraisal dimensions and values

Appraisal dimension	Appraisal values	Thought processes involved
Unexpectedness	Not unexpected / Unexpected	Is the event unexpected or not unexpected?
Situational state	Motive-inconsistent / Motive-consistent	Is the event consistent with the person's motivations? Is the event unwanted or wanted by the person?
Motivational state	Minimise punishment / Maximise reward	Is the event related to a desire to get less of something punishing or a desire to get more of something rewarding?
Probability	Uncertain / Certain	Is the occurrence of the event likely or unlikely to occur?
Control potential	Low / High	Is there anything that one can do about the motive inconsistent (unwanted) aspects of the event?
Problem type	Instrumental / Intrinsic	Is the event unwanted because it blocks attainment of a goal or because of some inherent characteristic?
Agency	Circumstances / Other person / Self	Is the event perceived to be caused by oneself, another person or circumstances?

An example of cognitive appraisal-generated emotions within the learning and teaching context is as follows. Roseman found that when people appraise an outcome as less positive than they believed they deserved, they experience anger. In contrast, people who appraise a negative outcome as deserved experience feelings of guilt [11]. This suggests that students who hold themselves responsible for a motive-inconsistent outcome such as performing poorly in an exam (e.g. because they did not study hard enough) are likely to experience guilt, whereas students who hold someone else responsible for the grade (e.g. the teacher) are likely to experience anger. In both cases, the actual event is the same, but different emotions are elicited depending on how the individual appraises the cause and controllability of the event. Further, depending on the emotion experienced, different motivations and behaviours (some more adaptive than others) may follow. For example, angry students may be motivated to punish the perceived cause of their failure instead of taking responsibility for improving their outcomes, while students feeling guilt may resolve to work harder in the future.

1.3 The current study

The purpose of the current, qualitative study was to explore university student and academic staff perceptions of the role and functionality of emotions in learning. While there has been a growth of research on cognitions and emotions in general, little is known about the cognitive antecedents, features and consequences of emotions within specific learning contexts. Pekrun and colleagues have drawn attention to the importance of considering both positive and negative emotions within academic contexts, identifying nine achievement emotions (emotions tied directly to achievement activities and achievement outcomes): enjoyment, hope, pride, relief, anger, anxiety, shame, hopelessness and boredom [12]. It is increasingly being recognised that emotions are important for learning and student wellbeing with available evidence suggesting that better emotional health leads to better academic performance and persistence in higher education [13].

Specifically, the research was designed to investigate the following questions: Which emotions are involved in learning? What kinds of cognitive appraisals are distinctive of different learning experiences, and how do they link to specific emotions? And what does the experience of learning feel like? In line with cognitive appraisal theories, it was anticipated that certain kinds of appraisals and emotional experiences would be linked. Roseman's (2001) model was used to analyse participants' recollections of various learning situations to explore appraisal-emotion links in the context of academic events such as undertaking exams, studying, teaching, giving and receiving feedback. This model has received considerable empirical support and offers a simple framework for coding participant evaluations. A qualitative study was undertaken because of the rich data such studies generate, particularly in areas that have been relatively under-researched.

1.4 Participants

Participants were 21 university students and 15 teaching staff from an Australian university. Teaching staff were included as it was anticipated that differences between students and staff in their expectations and conceptualisations may provide insight into the kinds of feelings and emotions that facilitate or obstruct the learning experience. Within the student group there were more females

($N=14$) than males ($N=7$). Staff numbers were more even (7 males and 8 females respectively). There were few international volunteers (only 19% of the student volunteers were international). The age range of students was 18-30 years with an average age of 23 years. Corresponding information was not collected for staff. Students who volunteered were enrolled in a range of discipline backgrounds including accounting and business, arts, chiropractic studies, education and science. The majority of staff participants were employed in accounting/business related disciplines and arts.

1.5 Measuring emotions

In-depth interviews are currently the preferred method of measuring subjective emotional experience, although this method of inquiry has limitations [14]. Typically respondents are asked to recall specific emotional experiences and are questioned about the outcome of their evaluation processes. Semi-structured interview questions were developed by the authors following a review of the literature, and were supplemented with the results of a previous study [15,16]. Questions were intended to encourage participants' recollections of their cognitive appraisals and emotional responses to a range of learning events. Respondents were asked about the experience and functionality of feelings and emotions within the teaching/learning context. This included questions about discrete emotions (e.g. interest, anxiety) and their relationship to dimensions of teaching and learning such as feedback, self-regulated learning and relationships. Questions for staff and students covered the same themes; however the wording was changed to accommodate each context. For example, in relation to the emotion of interest, students were asked the question, 'tell me about a time you were excited about a subject. What made it exciting?', whereas staff were asked, 'how do you generate a sense of interest or excitement in students? How do you know when you are generating such feelings in students?'

1.6 Procedure

Following ethics approval, interviews were undertaken in Semester 2 of 2008 (students) and Semester 1, 2009 (teaching staff). They were conducted on campus in a variety of locations including staff members' offices, research rooms and other areas as agreed by the participants and interviewers. Students and staff from all faculties of the university were invited, via email, to participate in the study. The study was also advertised in the student centre and via the online learning management system. Participants were offered one movie ticket for their participation in the study. Two contracted research assistants conducted the interviews, asking participants a series of open ended questions. Probes were used if initial questions did not lead to developed responses. Interviews were audio recorded and transcribed by a professional company.

2 RESULTS

2.1 Coding

Data were coded using NVivo 8 software. Emotions were coded using the participants' own words, with some grouped under the same term where there was an overlap in meaning. For example, references to 'anxiety' and 'panic' were both coded under the category 'anxiety', as the term 'panic' was used by participants to refer to a more intense level of the emotion. Appraisal dimensions were coded in line with Roseman's (2001) cognitive appraisal model, using the appraisal values listed in Table 1. Text was coded with more than one appraisal value if a number of appraisal dimensions were evident in the participant's recollections of a given situation. In addition to emotion, categories were created for the following themes: behaviour, learning, teaching, motivation and social (relationships). Under these broad headings were sub-categories of themes coded hierarchically in accordance with their relationship to the parent category.

2.2 Analysis

A thematic analysis was undertaken with NVivo to identify and explore themes and relationships between students' cognitive appraisals of their own academic experiences and associated emotions. Academic staff perceptions of student's emotions were also canvassed. This involved a number of techniques including word frequency and key term/text queries to identify themes and matrices to compare results across groups.

2.2.1 Emotions in academic learning

Participants reported a broad spectrum of feelings, with positive and negative emotions referred to at similar rates (49% and 51% respectively). Stress, anxiety, fear and frustration were the most commonly reported negative emotions (making up 33% of references to all emotions). Stress alone accounted for 25% of all references to negative emotions and 13% of all emotions. Interest was the most commonly reported positive emotion, making up 12% of references to all emotions. Excitement, happiness and joy were also frequently mentioned and when combined with interest accounted for 55-56% of references to positive emotions, and 32% of all emotions. A thematic analysis of the four most frequently reported positive and negative emotions follows, with a focus on the appraisal dimensions, differentiating them. Data has been de-identified with all participants allocated a pseudonym.

2.2.2 Negative emotions

Anxiety, stress, fear and frustration were all associated strongly with aspects of learning perceived to be inconsistent with participants' motivations. For students motive-inconsistent events included external demands (e.g. taking exams, completing assignments, presenting in class), and internal cognitive processes that interfere with learning (e.g. difficulties concentrating, anticipating failure and not meeting ones expectations). There was also a relationship between these emotions and appraisals of motivational state; all four were associated with a desire to move away from something punishing, like exams or the experience of the anxious/stressful feelings themselves. Appraisals of both unexpectedness and not-unexpectedness were evident in recollections of these four emotions and did not appear to differentiate them. The key appraisals that distinguished these emotions were agency and problem type, although probability and control potential were also important.

The terms 'anxiety', 'stress' and 'fear' were used somewhat interchangeably by participants. Their underlying appraisals revealed distinguishing features - anxiety was primarily associated with appraisals relating to the self, fear to others (and to a lesser extent self) and stress to circumstantial (impersonal) events. Anxiety was referenced to thoughts and beliefs about self, e.g. feelings of 'fraudulence' and not being 'good enough' to cope with the demands of assessment, the classroom environment, being a first year student and so on.

Anxiety is about, am I doing it well, or am I good enough to handle this? (Eia, Asian Studies Lecturer)

Stress, not often conceptualised as a discrete emotion, was coded as such on the basis that participants distinguished it from anxiety and fear on appraisals of agency and problem type. For students stress often accompanied descriptions of feeling 'overwhelmed' by excessive demands (e.g. scheduling of multiple assignments/exams at the same time, uncertainty caused by a lack of feedback from teaching staff, misunderstandings, personal and social pressures outside of university life).

When I have lots of work to do in a short period of time, that's always really stressful. I have lots of commitments outside of university, and so often although I like to put university first, it doesn't often come first because I do have lots of other commitments. So then when I have those commitments, and then university commitments on top of that, it makes it stressful because I do have high expectations as well, so trying to fulfil all those high expectations and all the different commitments I have, is often stressful. (Bridget, Early Childhood Student)

Associations between stress and self-blame were observed, but not reported as frequently. Appraisals relating to self and others were more prevalent in participants' recollections of fear, as was uncertainty. For example, both students and staff reported being fearful of what other's thought of them, of not being 'good enough' or 'asking stupid questions' in class. Fear of failure was associated with negative judgements about self.

Uncertainty, fear, regret; like maybe I thought I was better able to do this work than I am so maybe I've wasted my time and my money and her time. Yeah, doubt, total doubt. Fear, like oh my gosh, this is where I thought my career was going, this is my study, and this is the postgrad so it's kind of the culmination of my undergrad and study, and all of these years of - so has that all been wasteful. (Phoebe, Arts Student)

In contrast, frustration was associated with all three agency appraisal dimensions. When expectations were not met by teachers and/or the institution and when those factors were perceived as blocking students from achieving their goals, they described feeling frustrated. Such situations included a perceived lack of support by teaching staff, insufficient feedback on their progress and the reluctance of lecturers to teach topics outside the scope of the curriculum.

You feel like you've hit a brick wall or – either there's not a lot of – like if it was a mark that you sort of don't really have, I mean, you can go and ask the teacher, but that doesn't yeah – there's not a lot of options with that, you know. You sort of say well what about this? And they'll be like oh nah. They're not that supportive, I suppose, with it, I felt, anyway. Yeah, you just feel frustrated with it – the whole situation, I think. (Alex, Arts Student)

Teaching staff appeared to be aware of these views, as reflected in the comment below:

The biggest source of student frustration is when their expectation is set at one level and the delivery is below that level. (Paul, Law Lecturer)

Circumstances (i.e. computers breaking down) and/or appraisals of self causation where there was a perceived lack of control also accounted for feelings of frustration but to a much lesser extent. In terms of self causation, students were frustrated by not understanding course materials/topics, putting effort into assignments only to receive poor grades, and feeling they were 'not getting anywhere' with respect to their academic studies.

*You put heaps of effort into something and then you just, you still get s*** marks or you don't get it, you still can't understand, you get frustrated with, you know, not being able to understand or stressing out, or not getting good results when you've actually tried. (Alex, Arts Student)*

Students related the uncertainty associated with frustration to factors such as a lack of feedback by teaching staff, misunderstandings in communication and difficulties understanding course materials/concepts. By contrast, staff viewed frustration in a positive way, referring to the lack of understanding and confusion as integral to learning which motivates people to seek out new information.

I think frustration is part of curiosity, in a sense, that I want to know more and I can't. You have to sort of shut against a brick wall for a while before it falls down. There's a degree of frustration that's quite healthy because it fuels your own desire to push forward. You know you've got something to push against. (Michelle, English Lecturer)

This viewpoint was not shared by students, with one exception. Stress, fear and anxiety also occurred when there was a perception that an event or situation was almost certain to occur, although not to the same extent as perceptions of uncertainty. Students' convictions of impending failure and of the 'work that has to be done' on assignments left to the 'last minute' were indicative of these emotions. There were no such associations made by lecturers.

There's the time when I was just about to fail every subject and that's when I stressed about it because I knew I was going to because I hadn't done enough study and I was just very acutely aware of the fact that I was going to fail (Jiang, Accounting Student)

There was a clear association between fear, anxiety, stress, frustration and a desire to minimise punishment, that is, to move away from the situation causing these feelings. Lecturers and students shared the view that a certain amount of stress and fear could be an 'optimum learning tool' (in terms of increasing motivation, effort, productivity and performance). However, high levels of stress, anxiety (including panic) and fear were 'destructive' resulting in low engagement, impaired cognitive functions (e.g. distraction), avoidance behaviours, misunderstandings and poor performance.

Stress can be good. But I think too much stress and anxiety is detrimental to their learning. I think there needs to be a balance. Just knowing myself, because obviously I've learnt myself, I know from my own perspective that I think that a certain amount of stress is good; like not to be too relaxed. You need to be a little bit stressed to really achieve perhaps your potential. (Hilary, Accounting Lecturer)

Stress is a big motivator in terms of just kicking you into gear. Most people I know are all the same. (Kevin, International Studies Student)

Appraisals of low control were commonly associated with anxiety, stress and fear (and frustration to a lesser extent). The perception of low control associated with experiences of stress and fear were concerned primarily with circumstantial factors such as the scheduling of multiple exams and assessment due dates at the same time, and failures in IT systems.

I get really frustrated as well with stupid things like formatting, because I have no control over it and the computer just does things that you don't have any control over. That's really frustrating. I don't tend to get frustrated with things that I do control, but it's when the formatting comes in or the

computer just says, no I'm not going to print, or adds all these weird things. That's incredibly frustrating. (Carmen, Early Childhood Student)

Anxiety was experienced when students felt unable to cope or to regulate their own emotions during busy periods. First year students, in particular, were anxious because of the perceived 'pressure' to take increasing responsibility for their own learning. Many teachers held the belief that students adapted to negative emotions over the duration of their studies; while some admitted to using them as a means of motivating students, others were mindful not to overwhelm students.

2.2.3 Positive emotions

In contrast to the negative emotions discussed above, positive emotions were associated with motive consistent events – that is, events perceived to be in line with the participant's goals. The example below highlights the positive feelings experienced by a lecturer when thanked by a student for explaining a difficult concept in an uncomplicated way, thus reaffirming his teaching objectives were being met.

I felt in that sense I felt joy, I felt quite a feeling of being a very warm sort of joyous feeling, a sense of really having impacted potentially on that student's understanding. (Cameron, Business Lecturer)

Positive emotions also differed from negative ones on the motivational state appraisal dimension. Excitement, happiness, interest and joy were associated with situations where participants expressed a desire to get more of something rewarding (rather than to get less of something punishing). For students this included the desire to achieve good grades and receive positive feedback and praise from their lecturers; and for lecturers, wanting students to understand the curriculum content and show an interest in their studies.

Similar to negative emotions, appraisals of agency largely differentiated positive emotions, although control potential, probability and unexpectedness were also evident in participants' recollections. Happiness, joy, excitement (and to a lesser extent interest) were strongly associated with positive appraisals of self and other. Interest and happiness were linked to appraisals of individual academic outcomes in students' minds. These included working out the right answer to a question, achieving good grades, and meeting one's own expectations. Joy was associated with the process of learning itself, i.e. the enjoyment of learning, teaching and so on. Students reported feeling excited and motivated by external factors (e.g. the anticipation of getting marks back), particularly when the desired outcome was certain and expected (i.e. 'doing well' in assessments, understanding an aspect of the curriculum they had been struggling with). Internal factors such as seeing the application of learning to real life and the realisation there was, a 'point to it', was also associated with such feelings. While there were fewer associations between interest and appraisals of self, a strong theme of 'relevance' emerged from the associations reported; students referred to the relevance of course topics to their self interests, and attributed their motivation to the curriculum when it was interesting (and lack of motivation when it was not).

...because it [topic] was interesting to me and because it related to my interests. (Yasmin, Education Student)

Interest was also associated with academic outcomes in students' minds. This included 'better learning' (increased motivation, enhanced memory, concentration and other cognitive functions) when their interest was high and less effective learning (e.g. poor memory, avoidance of task) when their interest in the topic was low.

Excitement, happiness and interest were reported frequently in recollections where another person was perceived to be the cause of an event or situation, highlighting the importance of relationships to learning. Excitement was strongly associated to the reciprocal nature of learning by all participants:

When I see a student getting excited about something, I get excited. That's the big thing of teaching, for me, I think, is to communicate or to just be there when it happens – when somebody else gets excited about learning about, what they're discovering about, how they're putting an idea together with another idea and suddenly come up with something much bigger than both. (Michelle, English Lecturer)

If you've got someone who's really passionate about what they're teaching, then you're going to become more likely to be passionate about it, because they're excited by it. (Teresa, Chiropractic Student)

Students also felt excited when their efforts were acknowledged and/or appreciated by teaching staff. For students, teachers had the ability to make them 'feel more ready to learn [and] more willing to learn', with many attributing their motivation (or lack thereof) to their teachers. Students made reference to the extent to which teachers appeared to be passionate or excited about their discipline.

So they interest and excite and challenge me, and make me remember that how I see it is just one way but there's all these different ways to look at the same thing. So that's how they make me feel. (Phoebe, Arts Student)

Joy was rarely reported in recollections of situations involving other people. Happiness was linked to academic outcomes in line with the participants' goals. For teachers this included giving successful lectures and seeing the happiness in their students when they succeed. Gaining knowledge, making sense of a difficult problem, and realising the point or possibilities of learning a topic were some examples of situations that made students happy. Happiness was also linked to relationships and interactions with others, e.g. for students, support from their peers and feelings associated with pleasing their parents and lecturers. Both lecturers and students reported feeling happy after receiving feedback on their performance. One student contrasted happiness to fear and anxiety and discussed their differing effects on learning.

I think it's important to be happy and positive in the learning process, because if you have fear and anxiety then you're probably not going to learn and absorb as much as what you would when you're in a happy state of mind. (Yasmin, Education Student)

Several teachers reported using interest as a teaching technique (making a conscious effort to appear interested in the curriculum content), and associated the term with a wide variety of aspects relating to students, e.g. as a form of feedback from students whereby a students' level of interest reflected the teacher's success in teaching), engagement, communication, and the extent to which students remained motivated and persisted in the face of difficulty. Students strongly emphasised the quality of teaching staff who they believed would largely determine their learning outcomes; where 'interested' teachers were perceived as facilitating a 'better' and more 'accessible' learning environment. This was particularly important when a student's interest in the topic was low.

She made mundane stuff interesting which made it accessible to me. 'Cause like I said, if I'm not interested in it, I can't learn really. (Kevin, International Studies Student)

If the best way for kids to learn is to be interested in something they're learning, then if they're not interested you've got to have good teaching staff. (Nadine, Science Student)

A theme of 'relating' also emerged in students' recollections of excitement and interest; relating to others, 'the relation between studying and real life', relating knowledge to contemporary issues and personal interests were some examples. Lecturers appear to be aware of this association in students' minds with several commenting that they used it as a teaching strategy to generate students' interest and excitement in the curriculum.

Accounting, I would say, is dry to a certain extent if we go by the content and the knowledge. I realise that to stimulate them [students] and make them excited and interested, I have to go beyond that by relating it. I even tell them you know what these guys are making outside. If you're an accountant, we're talking about big money here and now and I say and of course if all you know is the debit and credit and record transactions, you're not about to get that kind of money. You must be able to relate. You must be able to this, that and the other. That's how we pump the excitement. (Rose, Accounting Lecturer)

There was a strong association in all participants' minds between interest and appraisals of non-personal situations such as the content of curriculum. For many students this was a deciding factor as to whether they would be interested in a course or not.

Joy was the only positive emotion associated with appraisals of control potential. Students experienced joy at having control over the course choice within their degree, in contrast to high school where there was little flexibility. When students felt certain of a positive outcome in line with their goals (e.g. they were going to receive good grades, or feeling sure that their grades had been allocated correctly), they reported feeling excited and happy.

Excitement and just content I guess because you know it's going to work out well. (Teresa, Chiropractic Student)

Neither students nor lecturers associated positive emotions with uncertainty of outcome. Interest was associated with appraisals of unexpectedness, although there were less links than anticipated. Available comments related to the novelty aspects of learning. Few associations were found between unexpectedness and other positive emotions. An interesting comment made by one lecturer connected unexpectedness to happiness in relation to students' expectations:

If their [students] expectations are set low and you deliver slightly above low, they'll be happy. (Paul, Law Lecturer)

3 CONCLUSION

3.1 General discussion

This paper reported on a study into university student and academic staff perceptions about the role and functionality of emotions in learning. Positive and negative emotions were differentiated by appraisals of motivational and situational state. Negative emotions were generally associated with events inconsistent with participants' goals, a desire to get less of (or move away from) something punishing. By contrast, positive emotions were associated with events consistent with participants' goals and a motivation to get more of something rewarding. Within each emotion group appraisals of agency most clearly differentiated the kinds of emotions likely to be experienced, although probability and control potential were also important evaluation measures. The results were consistent with Pekrun et al's findings with participants describing a 'rich diversity' of emotions in academic settings [17]. Both positive and negative emotions were referred to equally often, and anxiety was the most frequently reported emotion. Appraisal patterns identified support Roseman's model of differentiating emotional experiences. A brief discussion of these findings follows.

There was considerable overlap in participants' use of the terms 'stress', 'anxiety' and 'fear'. In support of Roseman's model, fear was associated with uncertain events that were inconsistent with a person's motivations, where there was a perception of having little control over the outcome of an event and a desire to move away from the source of the experience. In contrast to Roseman's model the majority of participants in this study attributed fear to self and other causation, rather than impersonal circumstances. Anxiety shared the same appraisals as fear with the exception of agency, where it was associated primarily with self-causation. The term 'stress' is not an emotion per se, however was used extensively by participants to refer to feelings of being overwhelmed. Such descriptions match Lazarus's widely cited definition of stress which occurs when the demands on a person exceed the personal and social resources they are able to mobilise to cope with it [18]. According to Lazarus emotions such as anxiety can be considered stress emotions [19]. Similar results were obtained in participants' appraisals relating to stress compared to appraisals predicting distress in Roseman's model, e.g. low control, high certainty, circumstantial causation, motive inconsistency. Interestingly the term 'distress' refers to stress which has negative consequences (as opposed to positive stress which can be useful) [20]. Both students and lecturers held the view that while negative emotions such as anxiety could be beneficial to learning, the effect was 'disabling' if levels were too high.

Frustration was associated with all three agency appraisal dimensions as well as the following: uncertainty, unexpectedness, a desire to move away from something punishing and in some instances low control. This finding is in contrast to Roseman's predictions where frustration is more likely to occur when an event is deemed to be circumstantial (instrumental), there is a high level of control, and a desire to get more of something rewarding.

As with negative emotions, positive emotions also differed primarily on appraisals of agency. There was considerable overlap between excitement and happiness; both were associated with agency appraisals of self (e.g. sense of achievement), others (e.g. shared experience of learning) in addition to high levels of certainty. Joy differed in that it was mainly associated with self and other causation combined with high control (e.g. having the flexibility to choose which courses to study). Results generally support Roseman's model with the exception of the agency appraisal – joy has been found to occur in situations where circumstances are perceived to be the cause [21]. Neither Roseman's nor Pekrun's models include the emotion of interest. Indeed, many theories do not include interest as a basic emotion as it is often conceptualised as a motivational state [22]. More recently Silvia has argued for the inclusion of interest as a stand-alone emotion [23]. In the present study interest was found to be associated with external situations where causal attributions were related to people and circumstances. While some appraisals referred to the unexpectedness of situations, there were fewer than anticipated. This is surprising because the novelty or unexpected dimension of interest is

considered one of the key appraisals in differentiating it from other emotions (another is the comprehensibility or coping potential - trying to understand unexpected and complex events) [24].

3.2 Implications

These findings contribute to our understanding of how particular kinds of emotional experiences and affective responses relate to learning outcomes for students, as perceived by both students and teaching staff. Preliminary findings support appraisal theory as a useful framework for differentiating emotional experiences linked to academic situations. Understanding the emotions of students and teachers is an important area of educational research in a time when theorists are calling for new paradigms to support an increasingly diverse student population [25]. Such findings can assist students and lecturers identify and monitor stress, build learning communities and assist retention particularly in first year.

3.3 Limitations

There are a number of limitations in using in-depth interviews to measure subjective emotional experience. These include a reliance on participants' willingness to disclose their emotions, the difficulties faced by many people in describing the inner phenomenological detail of their emotions and inaccurate recollections of emotional events due to social desirability effects, memory bias and other factors [26,27]. Another limitation is that although a balance of domestic and international students was sought, few international students volunteered in the study. This could be attributed to cultural reasons; some Asian cultures, for example, highly value emotion control and discourage emotional expression [28]. Participating in a study which encourages the expression and articulation of feelings may be uncomfortable and create conflict for these students. The reluctance to participate may also be due in part to the English language ability of these students (most of whom were from culturally and linguistically diverse backgrounds), and their confidence in articulating emotional experiences.

3.4 Future research

The next step is to undertake a comprehensive content and thematic analysis of the broader range of emotions reported, with a view to identifying the appraisals and emotions that contribute to a wider range of factors including motivation and behaviours. Results suggest there are some areas where students and teachers conceptualise emotions and learning differently and this avenue will also be explored. This research could contribute to the growing body of literature on supporting first year students where there is a strong emphasis on emotional and social factors [29].

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