Emotions, Learning and Achievement from an Educational-Psychological Perspective

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Outline

"A wise teacher makes learning a joy" (traditional proverb). This phrase raises a number of intriguing questions: Can learning be enjoyed? What actually is enjoyment, or more generally, what is an emotion? Why would it be wise to make learning a joy, or in other words, is it actually beneficial for students to enjoy learning? Should students not rather experience a certain level of anxiety in order to make an effort to avoid poor performance? How can we "measure" the extent of students' learning-related enjoyment? What about emotions other than enjoyment and anxiety in the context of learning and achievement? And last but not least: What can a teacher do in order to make learning a joy? Depending on what perspective one takes, be it economical, philosophical, educational, or psychological, the answers may be quite different.

In this chapter, we will highlight the importance of emotions in learning and achievement settings from an educational-psychological perspective. After defining what emotions are, and academic emotions in particular, we focus on taxonomies of emotions, their frequency of occurrence, their domain-specificity, and measurement issues. By means of a social-cognitive, control-value model of emotions, learning, and achievement, we describe the main antecedents of emotions and their impact on learning and achievement. In sum, this chapter illustrates the significance of learning-related emotions in educational settings, and attempts to provide meaningful answers to some of the questions raised above from an educational-psychological perspective.

A Hierarchy of Emotions

As the study of emotions in psychology is still in its infancy, there is little consensus concerning the operational definitions of its main research focus, namely, emotions. Instead of the word "emotion", the term "affect" is frequently used (Schwarz & Clore, 1996). However, this term usually describes only the valence of an emotion and does not adequately reflect the complexity of emotional experiences. Rosenberg (1998) suggests a hierarchical model of affect in which affective traits, moods, and emotions are differentiated (cf. Shavelson

et al, 1976, for a hierarchical structure of self-concepts). In this section, we present a model which is based on that proposed by Rosenberg (1998) but expands it by adding the distinction between individual versus collective emotions.

As higher-order constructs (e.g. affective traits) are presumed to be antecedents of lower-level concepts (e.g. moods), Rosenberg's model is hierarchical in nature (see Figure 1). At the same time, higher-order levels may very often be the result of experiences on lower-order levels (cf. Marsh & Yeung, 1998). Thus, we can assume that the relationships between these higher- and lower-order levels of emotion are in fact reciprocal. A similar conceptualization was suggested by Shavelson et al. (1976) concerning the hierarchical structure of self-concepts. A further dimension along which our model is hierarchical is the duration and intensity of the concepts. Specifically, as one proceeds from higher- to lower-order levels (i.e. top to bottom), the intensity of the emotional experience increases, whereas duration of affective experience decreases.

In our model (see Figure 1), affective traits are on top of the hierarchy and represent relatively stable emotional dispositions. Moods and emotions are at levels two and three of the model. Traditionally, research on mood and emotion have followed separate paths, as evidenced in a clear differentiation in the research literature between these concepts in terms of duration, intensity, causal attributions, and clarity. Moods are typically viewed as longer lasting than emotions and considered less intense (e.g. Rosenberg, 1998). Furthermore, emotions are usually directed towards an object, whereas moods are not (Averill, 1980). Finally, moods are considered more diffuse and of a more unfocused quality than emotions (c.f. Schwarz & Clore, 1996). In the present context, we concentrate on emotions rather than moods.

A fact which has only rarely been considered in the psychology of emotion is that emotions may not only occur within individuals, but also within entire groups (Andersen & Guerrero, 1998; cf. Raudenbush & Bryk, 2002 for theoretical deliberations concerning individuals nested within groups). We call such emotional experiences "collective emotions". They can be very intense, as may be observed within peer groups or religious sects. Obviously, an individual's emotional experience will be largely determined by the surrounding emotional atmosphere. Conversely, collective emotions can be formed by the predominant emotions of the individuals within a group. We assume that individual and collective effects exist and interact on each of the hierarchical levels presented in our model.
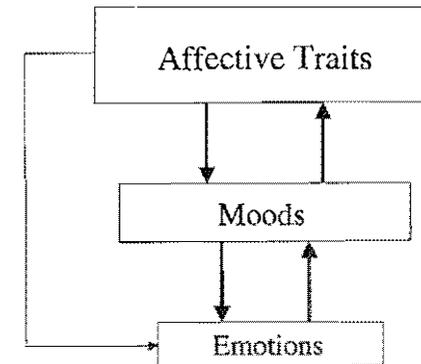

Individual ⇌ Collective

Figure 1: Hierarchical organization of affective traits, moods, and emotions

Academic Emotions

Having presented a broad definition of affect and related constructs, we now focus on emotions in the academic domain. We will define academic emotions, show criteria for building taxonomies, describe their frequency of occurrence, outline a model for building levels of domain-specificity, and discuss the issues involved in measuring emotions. A social-cognitive, control-value model of emotions, learning and achievement will depict both the main antecedents of emotions and the impact of emotions on learning and achievement.

Definition

Generally, academic emotions are emotions which are experienced in an academic context. We identified five situations typically associated with academic achievement: (1) attending class, (2) taking tests and exams, (3) studying or doing homework by oneself, (4) studying or doing homework in a learning group, and (5) other situations in which one is cognitively occupied with academic achievement (e.g. talking about an upcoming exam with a peer). In these circumstances, emotions can arise either due to the nature of the tasks to

be completed (task-related or intrinsic emotions, e.g. enjoying solving a mathematics problem) or due to the expected outcome (outcome-related or extrinsic emotions, e.g. looking forward to getting a good grade, cf. Pekrun, Goetz, Titz & Perry, 2002a). Further, academic emotions can be classified as social (due to competition, e.g. feeling ashamed to make less progress than one's classmates) or individual in nature (self-related emotions, e.g. disappointment about not meeting one's goal).

It is interesting to note that meta-emotions (feelings about one's emotions) also occur in academic situations (cf. levels of communication, Watzlawick, 1980). For example, students report anger about their test anxiety (a level-two emotion, cf. Pekrun et al., 2002a). Likewise, level-three emotions (meta-meta-emotions) may occur. For instance, a student may feel happy concerning his anger about test anxiety, knowing that this anger will prompt efforts to manage this test anxiety in the future. Theoretically, we could think of an infinitive number of levels. However, beyond level three, these higher-order concepts may no longer be relevant in "real life" situations.

Taxonomy

Building taxonomies is a necessary method of reducing complexity both in theory and empirical research. Criteria that have been used to categorize emotions are quantitative aspects such as intensity, duration, and frequency of occurrence, and qualitative criteria such as mood versus emotion. Taxonomies of emotions largely depend on the culture in which they were developed (Russell, 1991).

As a result of various theoretical approaches, research traditions, and cultural conditions, many taxonomies of emotions have been suggested. For example, Plutchik (1980) differentiated between primary (basic or fundamental) and secondary emotions. He proposed pairs of opposing primary emotions, which lead to a circumplex-model of primary emotions. Another potential categorization of emotions involves "families" of related emotions grouped according to their valence, expression, and physiological activity (cf. Ekman & Davidson, 1994), or their cognitive appraisal (Smith & Ellsworth, 1985).

A categorization of emotions which is suitable in the context of learning and achievement situations differentiates along the dimensions of valence and activation (Pekrun et al., 2002a). Accordingly, we can distinguish between emotions that are positive-activating (e.g. enjoyment, hope), positive-

deactivating (e.g. relaxation, relief), negative-activating (e.g. anxiety, anger), and negative-deactivating (e.g. hopelessness, boredom). In terms of achievement, one would mainly expect positive consequences from positive-activating emotions. However, it remains unclear how negative-activating and positive-deactivating emotions influence learning and achievement. Thus, we cannot assume a trivial positive effect of positive emotions (cf. Aspinwall, 1998) or a simple negative effect of negative emotions.

A detailed categorization of emotions in the context of learning and achievement was suggested by Pekrun et al. (2002a). In this taxonomy, emotions are categorized according to the valence of the emotion (positive vs. negative) and aspects of the situation (task- and self-related vs. social). Furthermore, task-related emotions are separated into process-related, prospective, and retrospective emotions (Table 1).

	Positive	Negative
Task- and Self-Related		
Process	Enjoyment	Boredom
Prospective	Hope Anticipatory Joy	Anxiety Hopelessness
Retrospective	Joy of Success Satisfaction Pride Relief	Sadness Disappointment Shame/Guilt
Social		
	Gratitude Empathy Admiration Sympathy/Love	Anger Jealousy/Envy Contempt Antipathy/Hate

Table 1: Taxonomy of academic emotions

One can also taxonomize emotions hierarchically, starting with a broad, dichotomous differentiation (positive vs. negative) that applies to various situations, and proceeding downward to a lower-level cluster of detailed situation- and emotion-specific reactions. Top-down, the different levels are derived by differentiation, and bottom-up, by inclusion (aggregation, see figure 2).

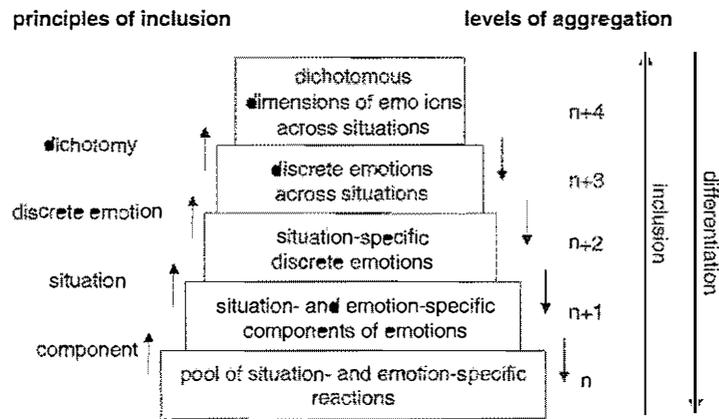noneprinciples of inclusion   levels of aggregation

Figure 2: Aggregation of emotional reactions on the basis of principles of inclusion

To understand the levels of aggregation, consider the following example. Suppose you interview a student about his or her emotions in the context of scholastic learning. As such, you obtain various statements pertaining to the student's emotional experiences in different situations. For instance, the student may feel tense when attending class (physiological aspect), and when thinking about failure and/or its consequences while taking an exam (cognitive aspect). Level n, the lowest level, represents this pool of diverse situation- and emotion-specific reactions the student describes. If we are interested in the situation- and emotion-specific components (e.g. affective, cognitive, motivational, or physiological components, cf. Kleinginna & Kleinginna, 1981) of the student's emotional reactions, we aggregate corresponding subsets of level n to level n+1, which in our example would involve adding all statements concerning the physiological component of the emotional experience. Next, one can summarize the various components resulting in a discrete emotion. The result is an aggregation level of n+2 which includes situation-specific, discrete emotions such as test anxiety, boredom when doing homework, or enjoyment of a class. One can further aggregate across the specific situations (e.g. studying, attending class, taking exams) arriving at level n+3 which represents discrete emotions across these situations (e.g. pride about academic achievement). In the final step, one can aggregate subsets of level n+3 based on the valence of the emotions. The combination of these levels results in level n+4, which represents

dichotomous dimensions of emotions across specific situations, such as overall positive affect in an academic context.

Frequency of occurrence

Little is known about the frequency of the emotions which are experienced in academic settings. This is partly due to the fact that most of the studies involving emotions in academic settings have concentrated only on test anxiety (Zeidner, 1998). Further, studies often conceptualize emotions in a domain-unspecific way, neglecting the fact that emotions are conceptually organized primarily in a domain-specific manner (cf. section below). For example, a literature search on emotions in the context of mathematics (Goetz, 2002, studies from 1977 to 2001) produced 501 hits on anxiety, 9 studies on enjoyment/happiness, and only a single study each on flow, satisfaction, relief and disappointment. Thus, there is also a lack of research on specific emotions in different academic subjects (e.g. languages, engineering).

In an exploratory study (retrospective interviews, N=56, class level 11-13) on the phenomenology of emotions in single-learning situations, group-learning situations (mainly lessons), and testing situations, Pekrun (1992) investigated central learning- and test-related emotions of school students in a domain-unspecific manner. Arranged by the frequency of their proportional occurrence, students reported experiencing positive emotions: enjoyment (15%), relief (14%), pride (4%), hope (4%), curiosity/interest (3%), and contentment (2%), as well as negative emotions: anxiety (16%), anger (9%), discontent (6%), disappointment (4%), boredom (4%), shame/guilt (1%), and hopelessness (1%).

Titz (2001) conducted a study on the occurrence of university students' emotions in single-learning situations and in university courses. Subjects were presented a list of 17 potential emotions and were asked whether they had experienced each of these emotions in their respective situations (single-learning and actual university course). Table 2 depicts the proportional frequency of answering "yes" for each emotion, with the emotions ordered according to valence.

positive emotions			negative emotions		
	single-learning	course		single-learning	course
enjoyment	52	65	anxiety	43	17
relief	42	24	anger	27	14
certainty	52	48	hopelessness	18	11
pride	66	42	disappointment	9	16
hope	69	42	sadness	28	16
admiration	22	41	listlessness	43	34
gratitude	22	18	boredom	45	42
surprise	13	23	shame	7	5
			envy	9	3

Table 2: Occurrence of emotions: proportional frequencies (Titz, 2001)

Both in single-learning situations and in their courses, students reported more positive than negative emotions. Most often reported were the positive emotions of enjoyment, hope, certainty, and pride, and the negative emotions of boredom, listlessness, and anxiety.

Overall, these studies show that students experience many different emotions in the context of learning and achievement. By no means is anxiety the dominant emotion in an academic context, despite having been investigated most intensively (cf. Zeidner, 1998).

Domain-specificity

The manner in which academic emotions are organized in terms of domain-specificity is theoretically relevant and of practical importance with regard to research designs. In the past, many researchers appeared to assume that psychosocial constructs assessed in the context of learning and achievement, such as emotion, motivation, cognition, self-concept, and attributions, are experienced in a domain-unspecific manner. Consequently, these concepts were often assessed without reference to specific domains (e.g. academic subjects). One exception concerns Bandura's concept of self-efficacy which is explicitly defined as domain-specific (e.g. Bandura, 1997). More recently, it has also been suggested that motivation, self-concepts, and emotions should be considered in a domain-specific context (e.g. Abu-Hilal & Bahri, 2000; Bong, 1998, 2000; Goetz, 2002; Möller & Köller, 2001).

As for emotions, there are few studies concerning domain-specificity (e.g. Everson et al., 1993; Faber, 1995; Goetz, 2002; Helmke, Kleine & Schmitz,

1999; Lukesch, 1982; Marsh & Yeung, 1996; Stipek & Mason, 1987). Generally, most of these studies indicate a domain-specific organization of emotions (cf. Pekrun, Goetz, Titz & Perry, 2002b) and use a variety of different approaches to investigate the extent to which an emotion is experienced domain-specifically. One possibility is to directly ask students how much enjoyment, pride, boredom, anxiety, etc. they experience in different subjects. Indeed, the resulting correlations between the reported emotional experiences in different domains (e.g. science vs. languages) are rather small. Consider, for example, that a student may experience anxiety in learning mathematics, but not English (or vice versa). Table 3 shows the correlations between students' levels of enjoyment in different subject areas (N=196, class level 7-10; Schieler, 2003). Another possible way of providing empirical support for the assumed domain-specificity of emotions is to relate emotions with external criteria (e.g. achievement) assessed in both a domain-specific and domain-unspecific context. Nonetheless, there is growing evidence to suggest that the most accurate predictions can be made with a systematically domain-specific approach (e.g. Marsh & Yeung, 1996, for self-concepts).

	German (mother tongue)	English (first foreign language)	Mathematics	Music
English	.24**			
Mathematics	-.04	.04		
Music	.30**	.15*	.14*	
Sports	.03	-.10	-.11	-.13

* p < .05
** p < .01

Table 3: Correlation of enjoyment in different subjects

These findings imply that interventions (e.g. for the reduction of anxiety) should also be conceptualized domain-specifically (cf. Everson et al., 1993). However, interventions such as autogenic training and progressive muscle-relaxation have been practiced almost exclusively without reference to any specific academic subjects. One can imagine that mathematics anxiety, for example, can be tackled much better when the domain is integrated in the intervention plan.

Measurement

Aside from the complexities involved in the conceptualization of emotions, it is equally challenging to operationalize and measure emotions. Various methodological approaches have been pursued in the context of assessing emotions, including questionnaires, observations, interviews, physiological measurements, projective techniques, and analysis of documents. In the following section, we first provide an overview of issues we consider relevant in terms of the measurement of emotions, followed by a discussion of some of the problems involved in assessing emotions. We conclude this section with the description of how we operationalized emotions in one of our current studies (a longitudinal study on the development of achievement in mathematics, called "PALMA", Hofe, Pekrun, Kleine & Goetz, 2002).

The following seven points should be considered when attempting to measure academic emotions, as they will largely determine which methodological approach is chosen.

(1) Probably the most important question to ask is which emotions should be investigated. One can concentrate on specific emotions considered relevant in the context of the investigation, or one can try to include any emotions that may potentially be experienced (e.g. using open-ended questions). If it is known that specific emotions are predominant in a particular academic setting, it may be economical to limit the number of emotions assessed. For instance, students experience little if any boredom in test-related situations (Pekrun et al., 2002a), thus, one could justifiably not assess this emotion in an evaluation context. On the other hand, an open-ended format may facilitate the detection of theoretically or intuitively unexpected emotions in specific circumstances. A study by Molfenter (1999), for example, showed that students experienced enjoyment to an unforeseeable extent in test-related situations.

(2) As one can assess emotions on different hierarchical levels (see Figure 1, hierarchical organization of affective traits, moods, and emotions), one has to decide whether affective traits, moods, or emotions should be investigated. Of course, one may also assess different levels simultaneously (e.g. Goetz, 2002). This approach is of significant benefit in that it provides a comprehensive picture of an emotional experience on different levels and can illuminate the relationships between these different levels.

(3) The way we measure emotions depends primarily on how emotion is defined. For example, if an emotion is defined as consisting of different components, this will affect the generation of items for a questionnaire and the procedures for developing and coding interview questions or observations. Alternatively, if one defines emotions according to their physiological correlates (e.g. cortisol levels for anxiety), one may choose physiological measurements as the most appropriate technique. The most insightful model will most likely result from cumulative empirical data and repeated inductive-deductive loops, modifying both theory and measurement.

(4) As stated earlier, different academic situations (such as doing homework, attending class, taking exams) have to be taken into account when measuring academic emotions. Occasionally, a situation-specific assessment may be transformed into a situation-general assessment by aggregating across the various settings. However, it is important to note that such an aggregation is reliable and valid only if adequate intercorrelations exist between students' emotional experiences across situations. On the other hand, if the measurement is designed in such a way that different situations are not considered separately, we do not learn anything about the potentially differential contribution of each situational factor to the overall emotional experience. For example, if we know about a student's overall school anxiety level, we cannot judge whether this anxiety is due primarily to enhanced test anxiety or increased anxiety levels during instruction.

(5) One also has to decide as to the domain-specificity of the emotions to be assessed (see above). The method of observation, for example, is domain-specific by design in that it necessarily focuses on one specific setting. However, one could also infer a person's overall affective trait from a larger sum of situation-specific observations. Through the use of a questionnaire, one can cover a broad continuum ranging from general (e.g. "How much do you enjoy our classes") to specific emotional experiences (e.g. "How much do you enjoy our *mathematics* classes").

(6) In terms of measurement, deciding whether one is interested in individual or collective emotions is of critical importance (see above). For measuring collective emotions, such as a class's overall level of listlessness, one can use observations provided by the individuals involved (e.g. teacher, students) or by external raters. Alternatively, in a quantitative approach, one can aggregate individual judgments by calculating the arithmetic mean of scores from individuals or entire classes (cf. research on educational climate, Fraser, 1994).

(7) We should further consider that emotions can be process-related, prospective, or retrospective (cf. figure 3). When creating a measurement tool, it is helpful to consider each of these perspectives ("How do you feel before.../during.../after...") to gain a complete picture of a person's emotional experience. In doing so, one should bear in mind that certain emotions may not be prevalent in all of the afore-mentioned perspectives (e.g. relief as a clearly retrospective emotion, cf. Goetz, 2002).

Having considered crucial aspects of measuring emotions, we will now draw attention to some specific problems concerning their measurement. A participating student in one of our studies on academic emotions did not complete the questionnaire, explaining: "I am no good at emotions" (Molfenter, 1999). When we assess students' emotions, we do not know whether they are able to verbalize their emotions or are even conscious of them. As such, we may be assessing a student's implicit theories on emotions rather than their "real" emotional experiences. We might also run the risk of assessing layman theories on emotions when we ask people how they feel, as scientific terms concerning emotions are often commonly used in everyday language. Another problem is that it is rather unclear what exactly is being measured in terms of emotions, with respect to the intensity and/or frequency of emotional experiences (which are not necessarily linked, cf. Larsen & Diener, 1987). For example, when assessing emotions in a questionnaire (e.g. "During tests, my hands get shaky"), intensity and frequency are most likely interweaved (very shaky or often shaky?). On the other hand, when assessing explicit emotional states ("My hands are shaky at the moment"), one can be rather sure of assessing emotional intensity. Last but not least, it is often a difficult task to separate emotions from other psychological constructs. For instance, even though emotion and motivation are theoretically clearly differentiated, when operationalizing these constructs and formulating items, they may become very similar. An example of this is seen in the item "I do mathematics because I enjoy it" which could be categorized as either an intrinsic motivation- or enjoyment-related item.

We close this section by giving an example of measurement in research on emotions. In our longitudinal study ("PALMA" study), we investigate seven emotions we considered most relevant in an academic context (enjoyment, pride, anger, anxiety, boredom, hopelessness, shame). Emotions are conceptualized in a domain-specific manner (mathematics). In defining emotions, we use a component model which describes emotions as having affective, cognitive, motivational, and physiological components. For emotions, we differentiate between specific situations in class, namely studying outside of class and taking

exams. For each situation, we developed items that assessed emotions before (prospective), during (process), and after (retrospective) the respective activities.
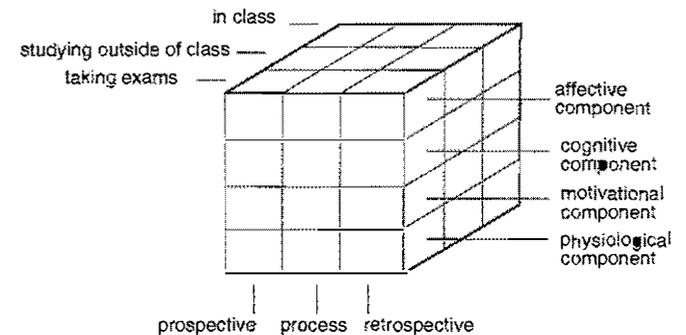

Figure 3: conceptualization of emotions in the PALMA Study

To visualize our conceptualization of the measurement of emotions, refer to our model in figure 3. According to this model, each emotion would be assessed in terms of a 3x3x4 factorial, resulting in 36 items per emotion. As the total number of items would have gone beyond the scope of our investigation, we concentrated on the most important parts of this three-dimensional matrix.

A social-cognitive, control-value model on emotions, learning and achievement

Academic emotions are embedded in a system including aspects of the scholastic, parental, and peer-related environment as well as personal appraisals of oneself, one's learning, and achievement outcomes. Further, we assume reciprocal linkages between these constructs. Consequently, all constructs are effects and antecedents at the same time (cf. Pekrun, 2000; Pekrun et al., 2002a). Figure 4 depicts the linkages between academic emotions, effects, and antecedents.

Environments	Appraisals	Emotions	Learning and Achievement

- Instruction
- Autonomy Support vs. Control
- Expectations + Goal Structures
- Feedback of Achievement
- Relatedness + Support

- Control
- Values + Goals

Academic Emotions

- Motivation
- Learning Strategies
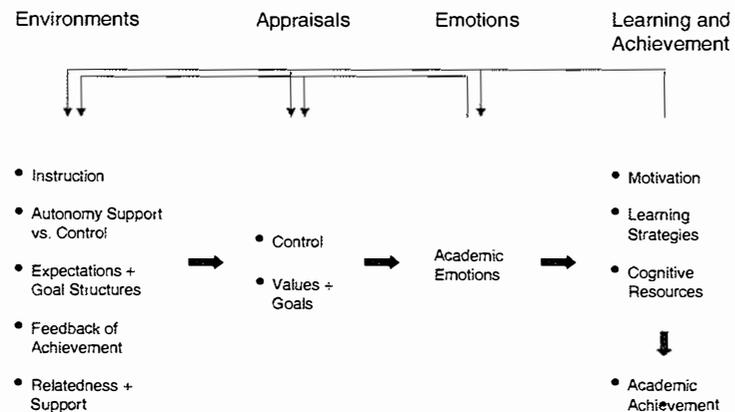- Cognitive Resources

- Academic Achievement

Figure 4: Summary of linkages between academic emotions, effects, and antecedents.

As for the *antecedents* of academic emotions, the model is based on a control-value approach. The theoretical basis for the *effects* of emotions on learning and achievement is a cognitive-motivational model. In figure 4, both models are linked and the reciprocal relationships between the included constructs are depicted. We assume that self-reports are an appropriate means of evaluating this model as, from a constructivist perspective, it is not reality that determines one's thoughts and behavior but one's perception of that reality (cf. Eccles, 1983; Linnenbrink & Pintrich, 2002). Correlative analyses have confirmed some of the theoretically assumed relationships (Goetz, 2002; Pekrun et al., 2002a; Titz, 2001). Furthermore, structural equation modeling could empirically confirm central linkages of the model (Goetz, 2002). Perceived parental expectations proved to enhance both self-efficacy (an aspect of control) and value of achievement. Whereas self-efficacy lowered anxiety, value of achievement proved to enhance it. Thus, the overall effects of parental expectations were ambivalent. Knowing about these relationships is important in order to develop adequate intervention programs. Concluding from the empirical relationships just mentioned, parental expectations should be of a kind that enhances self-efficacy while not overly increasing the value of achievement. Moderately high expectations conveying a message of trust in one's children's achievement rather than mere demand seems to be most recommendable. However, these analyses are based on cross-sectional data and should be confirmed by longitudinal studies. Earlier studies based on longitudinal data

concerning the relationship between test anxiety and achievement found that these constructs may be linked by reciprocal causation (Meece, Wigfield & Eccles, 1990; Pekrun, 1992; Schnabel, 1998). Beyond anxiety, we lack knowledge about more complex relationships between the constructs that are integrated in the model.

Emotions from an Educational-Psychological Perspective

Emotions have been investigated primarily in the discipline of general psychology, but are also discussed in many other branches of psychology. Integrating ideas from different research traditions could create a more comprehensive picture of emotion. According to Ekman and Davidson (1994), emotion "has the potential to tie different areas together and to foster interdisciplinary bridges". In this section, we describe the importance of studying emotions from an educational-psychological perspective.

The focus of educational psychology is to: (1) describe, (2) analyze, and (3) optimize psychological aspects within educational settings. Concerning emotions, educational psychologists may formulate the following major research questions: (1) Which emotions occur in educational settings? This question has been dealt with in the present chapter in the previous sections on taxonomies and frequency of emotions. In terms of analyzing emotions (2), one may inquire as to the central antecedents of these emotions and their impact on other central aspects of educational settings such as learning, achievement, and social interactions. Answers to these questions can be found in the section on the suggested social-cognitive, control-value model on emotions, learning, and achievement (Pekrun et al., 2002a). Finally, we may ask about optimization (3), namely what can be done to optimize emotional experiences in an academic environment. To answer this question, one has to define which emotional experiences are considered optimal for students, which is a subjective evaluation based largely on philosophical and ethical considerations. For example, relatively high anxiety levels may be considered beneficial for learning from an authoritarian perspective, but detrimental from a more liberal viewpoint. Different approaches have suggested various optimal emotional experiences for students, prompting the development of intervention programs aimed at creating learning environments which foster emotional well-being in the classroom (e.g. Astleitner's FEASP approach, 2000; Pekrun, 1998; Turner & Schallert, 2001).

From an educational-psychological perspective, there are three main reasons why emotions are worth investigating. First, as depicted above, emotions

influence the quality of learning and achievement in students. As educational settings are highly valued in modern societies, it is of interest to look at emotions as central antecedents of learning and academic achievement. Second, emotions are also worth investigating because they are directly linked to one's subjective well-being (cf. Diener, 2000; Ekman & Davidson, 1994; Goleman, 1997). Obviously, educators should not only be interested in how much their students learn, but also how the educational environment affects their emotions. As stated by Plato, teaching young people to find pleasure in the right things is the most important job of teachers (Eliot, 1909). From a hierarchical perspective of emotions, subjective well-being in specific educational settings will combine to influence moods, affective traits, and health. Subjective well-being and health are also of considerable interest to emotion researchers, and have been recently discussed in the context of positive psychology (cf. Seligman & Csikszentmihalyi, 2000). Finally, emotions are directly relevant to learning and academic instruction as they relate to interpersonal communication. As most educational settings are social situations (cf. Fischer & Tangney, 1995), they are largely influenced by the quality of communication among the persons involved (cf. Andersen & Guerrero, 1998). Emotions play an important role in social behavior (cf. Ekman & Davidson, 1994), in that they form the basis for social interactions and are reciprocally linked to the quality of communication. In the classroom, for example, teacher-student interaction is a crucial aspect of quality of instruction (cf. Andersen & Guerrero, 1998).

So far, we have mainly concentrated on students' emotions. However, we should not forget about educators' emotions, which warrant further investigation in their own right, and also consider their potential relationship to students' emotions (cf. Martin & Stoner, 1996). For instance, Murray (1997) found that teacher behavior was more strongly and consistently related to students' affect than to students' cognitions. If the teachers show enjoyment and enthusiasm about the subject and spontaneity in their instruction style, this may have a positive influence on students' affect (Murray, 1997).

Future Directions

We hope to have provided meaningful answers to some of the questions outlined at the beginning of this chapter. At the same time, we assume that many new questions were raised concerning the field of academic emotions which may be addressed in future research. In order to obtain a more comprehensive picture of emotions, learning, and achievement, results of other disciplines in and beyond psychology should be taken into consideration. Although the present contribution primarily took an educational-psychological perspective, we also attempted to integrate various disciplines within psychology (e.g. educational, developmental, and general psychology). Considering the interdisciplinary research focus of educational psychology in addressing issues of both academic and psychological importance, this area of research may be particularly influential in creating consensual theories of emotions as they relate to learning and academic achievement. Thus, educational psychologists are encouraged to make full use of the potential for theoretical integration in future research on emotions so as to provide a more comprehensive statement concerning how and why "wise teachers make learning a joy".

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