

**MOTIVATION TO LEARN:
TEST OF A MODEL IN DIFFERENT TRAINING CONTEXTS**

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Thesis submitted for the degree of Doctor of Philosophy,

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תודה רבה

Summary of Thesis

At the centre of this body of research is a model of motivation to learn that expands upon previous studies by (a) conceptualising general and specific motivation to learn as separate constructs and defining them separately from valence, instrumentality, and self-efficacy, (b) extending the literature on the effect of situational variables through integration of training support variables as additional (i.e., trainer and peer support) predictors of training outcomes, and (c) assessing the generalisability of the model in two studies within the educational domain (chapter 4) and three studies in the organisational domain, all of which were conducted in naturally occurring training environments.

It was anticipated that the relationship of learning anxiety and achievement motivation with general and specific motivation to learn would be partially mediated by attitudinal variables and that general and specific motivation to learn would have a positive relationship with training outcomes. It was also predicted that training support will contribute to training outcomes, above and beyond general and specific motivation to learn. Taken together, findings provide evidence as to the importance of context and how different results are obtained when applying the same model to different training environments and with different samples of trainees. The unique conceptualisation of motivation to learn enabled an insight into the effect of learning anxiety, demonstrating that this factor matters most in contexts where a link can be explicitly perceived between training and outcomes. Achievement motivation, on the other hand, was unequivocally related to both measures of motivation to learn. Collectively, this body of research suggests that the trainer has a more important role in training success than motivation to learn. This provides the basis for integrating social support factors within the training

environment into models of motivation to learn, presenting a systematic approach to investigating the trainer-trainee interface with implications discussed for research and practice.

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CHAPTER 1

**LITERATURE REVIEW: THEORETICAL DEVELOPMENTS,
DEFINITIONS AND MEASURES OF MOTIVATION TO LEARN**

1.1 Overview

According to the National Employers Skills Survey published in 2010, 56 per cent of the UK workforce had received training in the previous 12 months. This amounts to around 12.8 million workers who had received training through their employer. Total expenditure on employee training in 2009 was £39.23 billion (Shury, Winterbotham, Davies, Oldfield, Spilbury, & Constable, 2010). Given the importance and potential impact of training on organisations and the costs associated with the development and implementation of training, it is important to gain a better understanding of the factors that are associated with training effectiveness. Examination of the training reviews papers published in the *Annual Review of Psychology* since 1971 revealed that earlier research attempting to understand why training is effective for some individuals but not for others focused on the effect of factors such as training method and design (for a review see Campbell, 1971; Goldstein, 1980; Latham, 1988; Tannenbaum & Yukl, 1992; Wexley, 1984). In later years there has been a substantial shift towards the study of characteristics and attitudes that trainees bring with them into training and their impact on training effectiveness (See reviews by Aguinis & Kraiger, 2009; Salas & Cannon-Bowers, 2001).

A key paper that marked this shift in focus was a review paper on trainees' attributes and attitudes published by Noe in 1986. Noe recognised the need to extend the

research on the determinants of training effectiveness beyond instructional methods, needs assessment, and evaluation methodology. He argued that to fully understand why training programmes are effective for some individuals and ineffective for others, researchers should examine effects beyond the immediate training programme; such as individual and situational influences, with a particular emphasis on motivation to learn. This has stimulated an increase of research into motivation to learn with researchers arguing that even if trainees possess the ability to learn the content of a course, they might fail to benefit from training because of low motivation (Colquitt, LePine & Noe, 2000; Kanfer & Ackerman, 1989). Some have even gone on to argue that trainee characteristics such as motivation and attitudes may be more important to training effectiveness than course-content variables (Fleishman & Mumford, 1989; Quinones, 1987).

The purpose of this chapter is to provide the reader with a literature review on the study of motivation to learn, through which research gaps are identified. Whilst the primary focus will be on literature from the organisational domain, literature from the educational domain will also be reviewed. This is because the thesis considers training to overlap with education, arguing that though the contexts may differ, the nature of these instructional activities is not fundamentally different. As pointed out by Patrick (1992):

“Both education and training are concerned with encouraging the development of new skills and knowledge” (p.3).

1.2 Theoretical developments

One of the first models to give a central role to motivation to learn was proposed by Noe (1986) where the primary focus was on individual and contextual variables as antecedents of motivation to learn, and motivation to learn as a key determinant of training outcomes (see Figure 1.1).

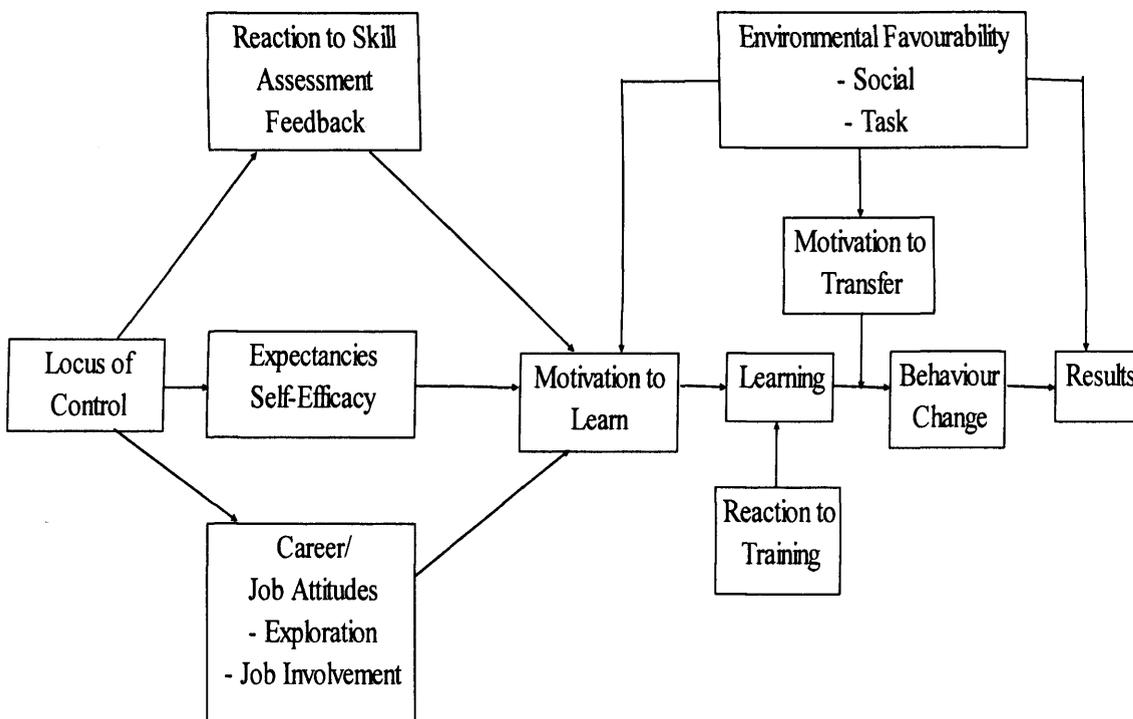


Figure 1.1: Noe's (1986) model of motivational influences on training effectiveness

Noe anticipated that the extent to which the individual is predisposed to make internal or external attributions regarding work outcomes (locus of control) directly influences (a) his or her reaction to skill assessment, (b) expectancies concerning the link between effort and mastery of training programme content and rewards resulting from

successful completion of the programme, and (c) career and job attitudes. In turn, each of these factors was hypothesised to have a direct causal impact on motivation to learn. In addition, Noe placed trainees' beliefs regarding opportunities to practise skills acquired in the training programme and the probability of receiving feedback from supervisors and peers as a predictor of motivation to learn. Trainees' perceptions regarding the extent to which technological necessities such as proper tools, equipment, materials, supplies, and monetary support (environmental favourability) were also positioned as predictors of motivation to learn. Central to the model is the proposal that the mechanism through which predictors operate on learning outcomes is motivation to learn.

To examine this model Noe and Schmitt (1986) carried out a study on a sample of 60 educators attending a training programme to improve their administrative and interpersonal skills. Though they were unable to provide support for the model, they highlighted some major shortcomings of the study (e.g., small sample size, restricted range) and urged researchers to continue this line of research and explore other individual and situational variables that may have more potent influences on training effectiveness. Indeed, since Noe's 1986 publication, an upsurge of research investigated a wide range of individual and contextual variables as antecedents of motivation to learn and learning outcomes (Ackerman, Kanfer & Goff, 1995; Mathieu, Martineau & Tannenbaum, 1993; Saks, 1995; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991; Tannennaum & Yukl, 1992). These variables will be discussed in detail in Chapter Two. However, below is a brief description that illustrates what is meant by individual and contextual variables.

Individual variables include aspects such as trainees' personality, trainees' feelings and thoughts about their job or career, and trainees' attitudes towards training

(Mathieu & Martineau, 1997). Personality variables such as locus of control (Noe & Schmitt, 1986), learning and performance orientation (Colquitt & Simmering, 1998), achievement motivation (Carlson, Bozeman, Kacmar, Wright, & McMahan, 2000), learning anxiety (Martocchio, 1994), and conscientiousness (Colquitt & Simmering, 1998) have been examined as predictors of motivation to learn. Career and job variables such as career planning and career exploration and job involvement have also been included in a few programmes of study on motivation to learn (Mathieu, Tannenbaum, & Salas, 1992; Noe & Schmitt, 1986). Attitudes towards training such as valence, expectancy (Colquitt & Simmering, 1998; Mathieu et al., 1992; Noe & Schmitt, 1986), and self-efficacy (Mathieu et al., 1993) have been studied by most researchers and have been found to be strongly linked with motivation and important training outcomes (a more detailed discussion of these variables will follow in Chapter Two).

Contextual variables related to the working environment and the support it provides for training have also been included within models of motivation to learn (for a review see Baldwin & Magjuka, 1997). Particularly, the extent to which trainees perceive the presence of manager or peer support for participation in learning activities (Facteau, Dobbins, Russell, Ladd, & Kudisch, 1995) and the organisation's climate for transfer and organisational culture for training have often been reported to predict motivation to learn (Tracey, Tannenbaum, & Kavanagh, 1995).

Moreover, some researchers have continued to investigate Noe's claim for motivation to learn to be the mechanism through which individual and contextual variables impact upon learning outcomes (Mathieu et al., 1992; Colquitt & Simmering, 1998); utilising need-motive-value theories and the valence-expectancy framework to

conceptualise the process by which motivation to learn is developed (Colquitt & Simmering, 1998; Mathieu et al., 1993; Maurer, Weiss & Francisco, 2003).

For example, Mathieu et al. (1992) suggested that individual (career planning and job involvement) and situational characteristics (situational constraints) influence the motivation of participants in a training programme, which in turn was hypothesised to influence the extent to which they learned the content of a course. Similarly, Colquitt & Simmering (1998) proposed that the relationship between personality (conscientiousness, learning and performance orientation) and motivation to learn is mediated by expectancy and valence, and that their relationship with learning is mediated by motivation to learn.

Although this upsurge of research into motivation to learn contributed to the accumulation of empirical evidence in the area, the resulting body of literature was fragmented and in need of integration and clarification. Efforts to rectify this situation came from Colquitt et al. (2000) who reviewed 20 years of research, meta-analysed the findings and proposed an integrative model of motivation to learn. Through the process of a narrative review they extracted the factors that were most frequently studied in relation to motivation to learn and learning outcomes. These were then grouped into individual characteristics and situational characteristics. Individual characteristics included personality variables (locus of control, learning anxiety, achievement motivation, and conscientiousness) and job/career variables (job involvement, organisational commitment, career commitment, career exploration, and career planning). Self-efficacy, valence, age and cognitive ability were also included in the individual characteristics category. Within the category of situational characteristics variables such as climate for transfer, manager and peer support for training activities were included.

Declarative knowledge, skill acquisition, post-training self-efficacy, and reactions were classified as training outcome variables.

Based on the combination of need-value theories and expectancy theory, Colquitt et al. (2000) proposed an integrative model of motivation to learn that set out to examine two competing models. One model suggested that the effect of individual variables on motivation to learn is completely mediated by attitudinal variables such as valence, job/career variables and self-efficacy, and that the relationship between individual variables and learning outcomes is completely mediated by motivation to learn (see Figure 1.2- the completely mediated model). The second model suggested that the effect of individual and situational variables on motivation to learn and learning outcomes is partially mediated (see Figure 1.3- the partially mediated model).

With few exceptions, Colquitt et al. found that individual and situational variables had independent relationships with pre-training self-efficacy, valence and job involvement. As a set, they explained 35% of the variance in pre-training self-efficacy, 41% of the variance in valence, and 36% of the variance in job involvement. In addition, although attitudinal variables (self-efficacy, valence, and job involvement) explained 46% of the variance in motivation to learn, the more distal individual and situational variables (e.g., personality, age, climate, and cognitive ability) explained an additional 27% of the variance. The strongest predictors of motivation to learn were found to be valence (.54), locus of control (-.42) and learning anxiety (-.35).

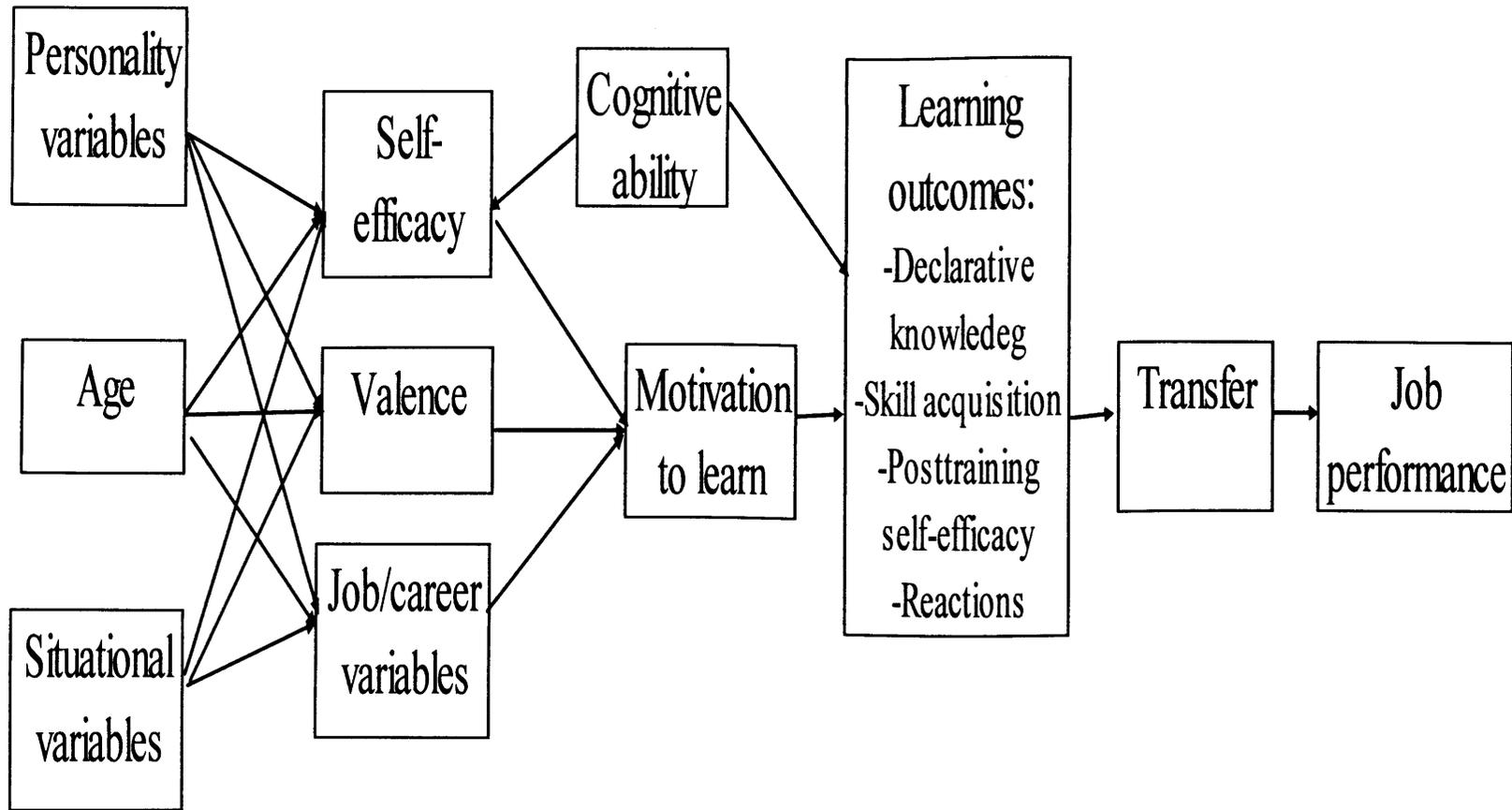


Figure 1.2 : Colquitt et al.'s (2000) completely mediated model of training motivation

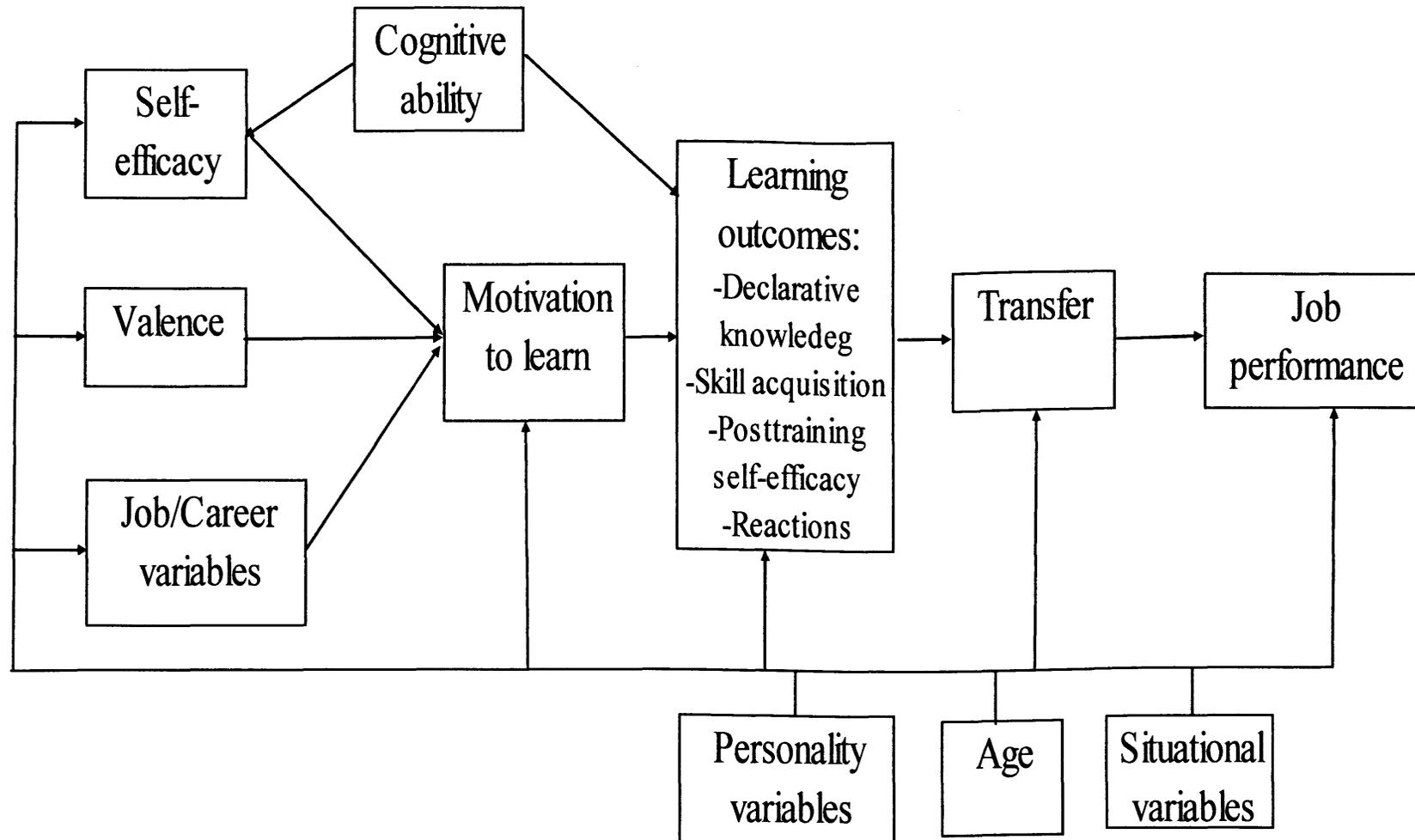


Figure 1.3: Colquitt et al.'s (2000) partially mediated model of motivation to learn

Colquitt et al. also found that motivation to learn was a significant predictor of all four training outcomes with a particularly strong link with reactions to training (.45). Cognitive ability was a stronger predictor of declarative knowledge and skill acquisition, but did not predict reactions. Post-training self-efficacy was equally predicted by motivation to learn and cognitive ability. As a set, motivation to learn and cognitive ability explained some of the variance in learning outcomes, however, individual variables were able to explain additional variance. Locus of control was a particularly strong and significant predictor of all learning outcomes apart from skill acquisition, and learning anxiety was a significant predictor of skill acquisition and post-training self-efficacy but not declarative knowledge and reactions. Age was a significant predictor of post-training self-efficacy. Colquitt et al. concluded that the results provided support for the partially mediated model. Thus, the effect of personality, job involvement, self-efficacy, valence, and climate on learning outcomes was partially mediated by motivation to learn.

The greatest advantage of Colquitt et al.'s meta-analysis is that it provided a more comprehensive model of motivation to learn from studies with disparate results. However, one of its greatest weaknesses is the inconsistent approaches amongst the studies that formed the basis for the meta-analysis. These inconsistencies are reviewed in the following sections.

1.3 Definitions and measures of motivation to learn

1.3.1 Problems with conceptualisations of motivation to learn

Studies into motivation to learn vary greatly in their conceptualisation and measurement of the construct, the problem being that the majority of studies using the term motivation to learn have not defined it explicitly but have nevertheless designed and used measures of this construct (Baldwin, Magjuka, & Loher, 1991; Birdi, Allan & Warr, 1997; Clark, Dobbins & Ladd, 1993; Fecteau et al., 1995; Martocchio & Webster, 1992; Mathieu et al., 1992; Maurer & Tarulli, 1994; Quinones, 1995; Tannenbaum et al., 1991; Warr & Bunce, 1995; Webster & Martocchio, 1993). In such cases it is only possible to find clues as to the intended meaning of the construct from the measures used to assess it (Murphy & Alexander, 2000).

Definitions of motivation to learn broadly fall into one of four categories. These are: (a) definitions that are semantic equivalents of the term motivation to learn, (b) definitions that are process oriented, (c) definitions that are product oriented, and (d) definitions that capture attitudinal perspectives. The later two categories represent research that defines motivation to learn through Vroom's (1964) expectancy theory.

Semantically equivalent definitions are direct and include expressions that correspond with the term motivation (e.g., interest, enthusiasm, desire). An example is given by Noe (1986):

“motivation to learn is a specific desire of the trainee to learn the content of the training program” (p. 743).

Based on this definition, measures of motivation to learn include items assessing trainees' enthusiasm and desire for learning and persistence when programme material is difficult (Noe & Schmitt, 1986). Other researchers do not provide an explicit definition of motivation to learn but the items used to measure it nevertheless reflect semantic equivalence with the term motivation to learn. Examples of items include *"I am very enthusiastic about learning new things"* and *"I am keen to make use of the learning and development opportunities available to me"* (Warr & Bunce, 1995), *"I try to learn as much as I can from training courses"* (Facteau et al., 1995), and *"I am very interested in participating in development activities and in what they have to offer"* (Maurer & Tarulli, 1994).

The second group of definitions can be described as 'process oriented' in that they are concerned with the behaviours that individuals demonstrate, linked with motivation to learn. For example, Colquitt et al. (2000) defined motivation to learn as:

..."the direction, intensity, and persistence of learning-directed behaviour in training contexts" (p. 678).

Similarly, Kanfer and Ackerman (1989) defined it as:

..."the direction of attentional effort, the proportion of total attentional effort directed to the task (intensity), and the extent to which attentional effort toward the task is maintained over time (persistence)" (p.661).

The focus on the cognitive processes of motivation is also evident in the literature where researchers define motivation within a goal setting (Phillips & Gully, 1997) or learning strategies paradigms (Pintrich, Smith, Garcia, & McKeachie, 1993). The underlying argument is that motivation can be measured through the direction, duration

and intensity of learning directed or goal setting behaviours. For example, Phillips & Gully (1997) asked participants to rate their personal exam goals ('My goal is to get ___% of the items correct on this exam'). Putting motivation within a much wider context, Pintrich et al. (1993) suggest that motivation should be measured not only by the value and expectancy individuals place on learning, but also by their learning strategies and metacognitions. Within this framework they propose that motivation is associated with positive and adaptive learning behaviours.

As suggested by Pintrich (2003):

'Motivation, based on the Latin verb for "move," is the force that makes one do something. It is a process that involves goals, physical or mental activity, and is both instigated and sustained' (Pintrich & Schunk, 1996, pp 4-5).

These definitions overlap in some aspects but diverge on others. Whereas Kanfer and Ackerman (1989) specified the cognitive process involved (i.e., attention and metacognitions), Colquitt et al. (2000) merely included a general term of 'learning directed behaviour' that is open to interpretation as it is unclear what behaviours should be included.

The third group of definitions, categorised as product oriented, do not focus on behaviours associated with motivation to learn and instead include the likely outcomes of motivated behaviour. For example, becoming more skilled (e.g., "*I expect to become very proficient in the use of the WordPerfect merging feature*", Martocchio & Webster, 1992; Webster & Martocchio, 1993:), improvement in job performance or career development (e.g., "*If I am successful in recruit training it will better enable me to perform my job in the navy*", Mathieu et al., 1992; Tannenbaum et al., 1991) and general perceived benefits

(e.g., *"Attending this program is likely to help me in the future"*, Warr & Bunce, 1995).

An example of this type of definition is provided by Marshall (1987) where motivation to learn is described as:

"...the meaningfulness, value, and benefits of academic tasks to the learner, regardless of whether or not they are intrinsically interesting" (P. 136).

The problem with this group of definitions is the focus on outcomes that may in fact be influenced by other factors apart from motivation to learn. Also, given that they assess motivation to learn through measures of instrumentality and/or expectancy (Mathieu & Martineu, 1997), it is unclear to what extent they do actually measure motivation to learn.

The difficulty of disentangling motivation to learn from outcomes is also a problem with the fourth group of definitions that approach the construct from an attitudinal perspective. They include measures that cover various motivational constructs such as values (e.g., *"Generally, work-related training is worthwhile"* and *"I like learning about the sort of subjects this training program deals with"*, Warr & Bunce, 1995) and expectancy (e.g., *"I expect to learn more than the average participant in today's WordPerfect course"*, Martocchio & Webster, 1992; Webster & Martocchio, 1993). A typical definition of this type that emphasises the importance of attitudes and values is provided by Wentzel and Asher (1995) who define motivation to learn in the educational context as:

"Children's commitment to school work, interest in school, effort expended in the classroom, and concern with earning positive evaluation of work" (P. 755).

A final problem with establishing a measure of motivation to learn is linked to the fact that some measures appear to go beyond the researcher's definition of the construct. As previously mentioned, in the early model proposed by Noe (1986), motivation to learn was defined as ... "*a specific desire of the trainee to learn the content of the training program*". Based on this definition, Noe and Schmitt (1986) carried out a study to test the model. They measured motivation to learn via an eight item scale, examples of items being "*I am motivated to learn the skills emphasised in the training program*" and "*I will try to learn as much as I can from Springfield*". However, their definition does not justify the inclusion of items such as "*I will get more from this training than most people*", "*The knowledge and experience I gain in this training may advance my career*" and "*The reason I decided to attend Springfield was to learn how I can improve my skills*". These items go beyond Noe & Schmitt's definition because they include an instrumentality element through items that are product oriented. It is also important to note that changing the definition will affect the nature of the predictors that are significant.

This problem is exacerbated in a study by Noe and Wilks (1993), who also used Noe's (1986) definition in their programme of research, but went further and added nine items to Noe and Schmitt's (1986) eight item measure. In their elaborated scale of motivation to learn they included items that bridge several prominent programmes of motivation research (e.g., valence-instrumentality-expectancy perspective; Vroom, 1964) such as "*I believe I can improve my skills by participating in training programs*", "*I believe I can learn the material presented in most training programs*" and, "*I am willing to invest effort on my personal time to develop technical skills related to my job*". By including measures that extend beyond their proposed definition, researchers can be held

responsible for contributing to the state of confusion in the field, making it all the more difficult for newcomers, practitioners and students, to understand and communicate about the nature of motivation to learn (Schunk, 2000).

Therefore it is important that well-chosen and well-defined constructs form the basis of research on motivation to learn. These definitions should be made explicit so that even a reader who is not firmly grounded in the relevant literature will be able to understand the definition intended by the researcher (Murphy & Alexander, 2000). This would allow researchers to potentially explain disparate findings.

Based on Colquitt and Simmering's (1998) approach the current thesis defines motivation to learn separately from its closely related attitudinal constructs. Thus, motivation to learn is simply defined as trainees' enthusiasm and keenness to learn and is measured via a short scale that is designed to tap into trainees' eagerness to learn. Disaggregating expectancy components from motivation to learn should prove useful from a diagnostic standpoint. In other words, should trainees report low training-related motivation, examination of the association between the different measures should reveal whether this stems from (a) the fact that individuals do not value outcomes associated with successful performance in training – V, or (b) perceptions that performing well in training is not related to various job outcomes – I. Rather than measuring motivation to learn through expectancy, the current thesis posits valence and instrumentality as predictors of motivation to learn. The expected relationships will be discussed in more details in section 2.4.

1.3.2 General and specific motivation to learn

Motivation to learn has typically been studied as either a general attitude towards learning (e.g., Ames, 1990; Marshall, 1987; Warr & Bunce, 1995) or a specific attitude towards learning a particular subject or activity (Kanfer & Ackerman, 1989; Noe, 1986; Noe & Schmitt, 1986; Noe & Wilks, 1993). However, Colquitt et al. (2000) did not make a distinction between these measures, simply grouping them together in their meta-analysis.

The choice of whether to examine motivation to learn in its general or its more specific form seems to be driven by the learning outcomes researchers are interested in. Researchers who are interested in examining the impact of motivation on learning outcomes such as test results, post-training self-efficacy, skill acquisition etc. tend to include a measure that is more specific in nature and requires participants to think about their motivation to learn a specific course and/or activity (Baldwin et al., 1991; Colquitt & Simmering, 1998; Martocchio & Webster, 1992; Mathieu et al., 1992; Quinones, 1995; Webster & Martocchio, 1993). On the other hand, those who are interested in the impact of motivation to learn on trainees' participation in development activities or perception of transfer tend to use more general motivation to learn items that ask trainees to report how motivated they are to learn through training in general without mentioning a specific training course (Birdi et al., 1997; Fecteau et al., 1995; Maurer & Tarulli, 1994).

In examining the items that fall under these measures, it is possible to see the uniqueness of each. For example, items that measure general motivation to learn are concerned with the way trainees approach training in general. These include *"I am very enthusiastic about learning new things"* (Birdi et al., 1997), *"I try to learn as much as I*

can from training courses" (Fecteau et al., 1995) and *"I try to learn as much as I can from training programs"* (Noe & Wilks, 1993). Accordingly, general motivation to learn is described as a general disposition towards learning, an attitude that is likely to drive the individual in all types of learning activities, regardless of the context.

In contrast, items that fall under measures of specific motivation to learn are by definition context specific and encourage trainees to think about the way they view or feel about an upcoming training course. For example, *"I am willing to exert considerable effort in learning this module"* (Baldwin et al., 1991), *"I will exert considerable effort in learning this material"* (Colquitt & Simmering, 1998) and *"I will try to learn as much as I can from Springfield"* (Noe & Schmitt, 1986). It transpires that specific motivation to learn is confined to a specific training environment and will not necessarily transfer to other learning situations. In such cases the measures may not be correlated. On the other hand, the measures are likely to have the same values and be positively correlated when the individual scores highly on general motivation to learn, because this underlying motivation to learn is likely to drive the individual to learn in any context.

The first, and possibly the only study that made an attempt at distinguishing between general and specific motivation to learn was carried out by Warr and Bunce (1995). They argued that motivation to learn can be viewed at two levels; a distal level representing attitudes towards training as a whole, and a proximal level where those general attitudes are reflected in specific motivation about a particular set of training activities. Contrary to their study prediction, Warr and Bunce (1995) found that general training attitudes were more closely associated with learning than specific motivation. This, however, may simply be a symptom of the study design rather than accurate

evidence for the relationship between these two levels of motivation with learning outcomes.

First, Warr and Bunce's measure of specific motivation to learn focused on the programme as a whole and it is likely that module-specific measures of motivation would have yielded more substantial associations, thus the problem here is linked to lack of specificity. In addition, participants were junior managers on a relatively long open-learning programme. Both measures of motivation were taken in advance of the training programme; however, in a long training programme it is likely that motivation changes as a result of exposure to the training content and method. Had specific motivation to learn been measured at different points in time during training, different results may have emerged. Finally, it is unclear to what extent the measures indeed measured general and specific motivation and not other training related attitudes. The 'general attitudes to training' scale included five items that examined trainees' approach to training e.g., "*Generally, work-related training is worthwhile*". The 'specific motivation' scale included 12 items that assessed perceived personal gains and intrinsic interest in the training programme; for instance, "*Attending this programme is likely to help me in the future*", and "*I like learning about the sort of subjects this training programme deals with*". As previously discussed, measuring motivation to learn through items that assess perceived benefits and asking trainees whether training is a worthwhile activity taps into instrumentality more than motivation. Given these limitations and conceptual confusion, more studies are needed before conclusions are drawn.

Despite studies prior to Colquitt et al. (2000) meta-analysis indicating that general and specific motivation can have a different effects on learning, these authors did not

make a distinction between these two types of motivation to learn, and included studies in the meta-analysis that conceptualised and measured motivation to learn very differently. This is a serious shortcoming of this work, as it is possible that there are differences in the strength and type of relationships with training outcomes. It is also unclear whether these two types of measurements have the same or different sets of predictors.

For example, if general motivation to learn is more predictive of learning outcomes, then the focus at the training design stage should be on an individuals' disposition and attitude towards learning. However, if specific motivation to learn is more predictive of learning outcomes, then the focus should be on improving trainees' attitudes towards the specific training context. These are important issues to tackle, not only from a theoretical view point, but also from an applied perspective. Given the paucity of research considering general and specific motivation to learn as separate constructs, the present study sets to examine the antecedents of both general and specific motivation to learn, and the relationship of both constructs with training outcomes.

1.4 External validity of research on motivation to learn

The majority of studies on motivation to learn have been conducted in 'real' training environments, including samples of trainees on administrative training courses (Fecteau et al., 1995; Major, Turner, & Fletcher, 2006; Martocchio & Webster, 1992; Mathieu et al., 1992; Smith, Jayasuriya, Caputi, & Hammer, 2008; Switzer, Nagy, & Mullins, 2005; Tharnoue, 2001; Tracey, Hinkin, Tannenbaum, & Mathieu, 2001; Warr & Bunce, 1995; Webster & Martocchio, 1993), military training (Ford, Quinones, Seago, & Sorra, 1992; Kanfer & Ackerman, 1989; Tannenbaum et al., 1991), and technical training

courses (Guerrero & Sire, 2001; Warr, Allan, & Birdi, 1999; Warr & Downing, 2000).

Whilst the relevance of these studies is undeniable, the robustness or external validity of findings is uncertain. As pointed out by Brewer (2000), conducting research in a naturalistic context does not by itself confer external validity.

External validity refers to whether a particular finding is replicable across a variety of settings, persons, and contexts (Goldstein & Ford, 2002). In its most narrow sense, the question is whether an effect obtained in one study can be replicated in another study. More broadly, the question is whether the general effect holds up in the face of wide variations in subject populations and settings (Brewer, 2000). For instance, a finding initially demonstrated in a field experiment with trainees on a management course from a utility organisation in Scotland may later be replicated with trainees on a management course from a Public organisation in Wales and trainees from the financial sector in England. Such replication strategies have the potential advantages for theory-setting purposes. If findings do not replicate in systematically selected cases, we sometimes gain clues as to what factors may be important moderators of the effect in question (Petty & Cacioppo, 1996).

With the exception of the study by Noe & Wilks (1993), replication of studies on motivation to learn across contexts has not been attempted. Noe & Wilks (1993) conducted a large scale study on the factors that influence employees' participation in developmental activities. They examined their model in three different organisational contexts, including 343 employees at a health maintenance organisation, 196 employees from the financial service, and 496 employees from an engineering organisation and found that the results were not generalizable across the firms. In an attempt to understand

the reason for the results, Noe & Wilks suggested that it may be linked to differences in amount of mandatory development activity across firms but did not find support for this. In fact, as the choice of firms to include in the study was not based on hypotheses regarding the effects of firm-level characteristics, Noe & Wilks were only able to suggest that there may be other factors that need to be investigated in future research.

Given that no systematic attempts have been made to date to examine the external validity or robustness of models of motivation to learn, the aim of the present thesis is to expand our understanding of the issue. The strength and novelty of the current thesis lies in testing the model in ecologically valid research environments in both the organisational and educational domains. Each empirical chapter presents data collected in different contexts. By testing the variables in different settings, a more consistent view of their effects on motivation to learn and learning can be obtained.

CHAPTER 2

A MODEL OF MOTIVATION TO LEARN: THEORY AND HYPOTHESES

2.1 Overview

On the basis of an extensive review of the literature on motivation to learn (chapter 1), a model was constructed for testing in this thesis. This model builds upon previous ones by delineating more fully the role of motivation to learn. Like previous research (e.g., Colquitt et al., 2000; Noe, 1986) the model positions motivation to learn at its centre and examines the antecedents of motivation to learn (measured at Time 1) and its relationship with training outcomes (measured at Time 2). The model is based on the integration of trait theories and social cognitive theories of motivation; however, it is novel for several reasons: a) in its unique conceptualisation of motivation to learn, b) in separating the expectancy variables of valence, instrumentality, and self-efficacy from each other and positioning them as mediators between individual characteristics and motivation to learn, and c) integrating training support variables into the model. The guiding conceptual framework for this thesis is presented in Figure 2.1, which illustrates the proposed relationships between the variables. This chapter is concerned with elucidating the conceptual model adapted in this thesis and the literature and theories relating to the variables included and their anticipated relationships. At the end of each section specific hypotheses will be derived.

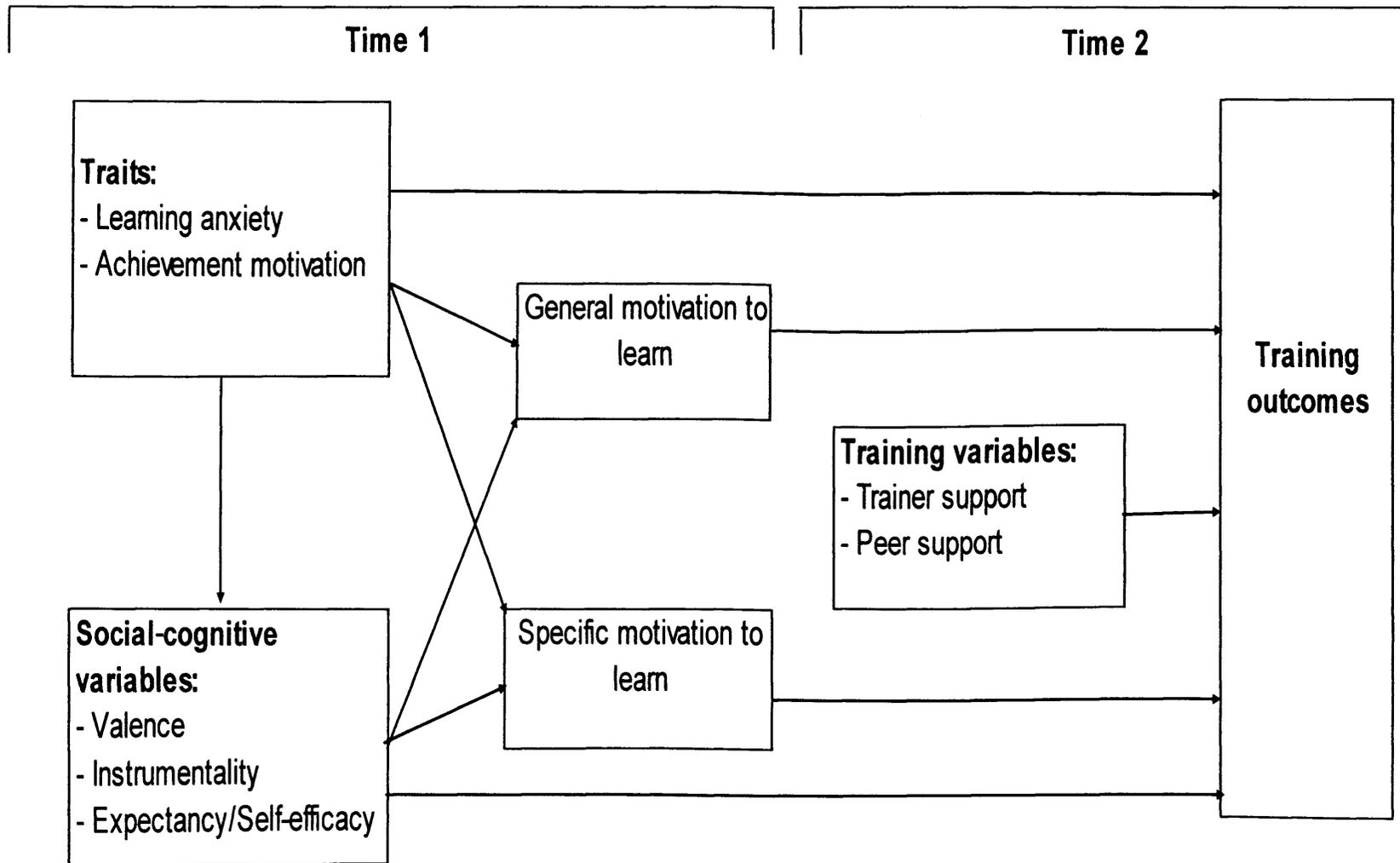


Figure 2.1: Proposed model of motivation to learn to be examined across studies

2.2 General and specific motivation to learn

As previously discussed, the novelty of the present thesis is that it conceptualises motivation to learn within two levels of measurement, including general and specific motivation to learn. To recapitulate from the previous chapter, although some studies have looked at the different relationships between general and specific motivation to learn with training outcomes (Tharenou, 2001; Warr & Bunce, 1995), there remains a need to study their predictors. For example, in a study on the effect of trainees' characteristics (e.g., learning anxiety, learning self-efficacy, and use of learning strategies) on training outcomes at an open learning programme, Warr and Bunce (1995) found that general training attitudes were more closely associated with learning than specific motivation. Similarly, Tharenou (2001) compared the effect of general motivation for learning and context specific motivation on participation in development activities and found that both appeared relevant and distinct contributors. Thus, it will be of benefit to try and understand the antecedents of these constructs. To address this gap in the literature, the present study postulates general and specific motivation to learn as separate constructs.

2.3 Traits as predictors of general and specific motivation to learn

Motivation has often been assumed to be trait-like and has accordingly been measured in terms of dispositional characteristics. The aim of trait theories is to explain consistencies in behaviour, and previous research suggests that they partly explain learning outcomes (Entwistle & Wilson, 1977). Prior to Colquitt et al.'s (2000) meta-analysis, research linking personality to training motivation and learning has examined

locus of control (Noe & Schmitt, 1986), goal orientation (Colquitt & Simmering, 1998), learning anxiety (Martocchio, 1994), achievement motivation (Mathieu et al., 1993) and conscientiousness (Colquitt & Simmering, 1998). However, since Colquitt et al.'s publication most of the research attention has been directed towards goal orientation (Bell & Ford, 2007; Chiaburu & Tekleab, 2005; Smith et al., 2008), and the Big Five personality factors (LePine, LePine & Jackson, 2004; Major et al., 2006; Naquin & Holton, 2002; Rowold, 2007a). Two variables that have received very little systematic empirical investigation with respect to their relationship with motivation to learn are learning anxiety and achievement motivation.

2.3.1 Learning anxiety

Learning anxiety is widely believed to be linked with training effectiveness. Practitioners using an American Society of Training and Development survey that assessed trainees' anxiety and performance, found that 80% of 529 respondents reported having greater than normal pre-training anxiety. When trainers were asked about their opinions on anxiety's impact on the trainees, 90% believed anxiety significantly interfered with trainees' ability to learn (Fisher, 1998). Indeed, learning anxiety in the training situation is expected to have a direct effect on learning. This may be due to individual's previous negative experiences in similar contexts, which creates a state of anxiety that affects cognitive processing and memory capacities, particularly when the training involves relatively difficult tasks (Warr & Bunce, 1995). However, research findings on the relationship between learning anxiety and training effectiveness are thus far inconsistent (Fisk & Warr, 1996; Martocchio, 1992; Warr & Bunce, 1995; Warr &

Downing, 2000). Martocchio (1992) completed a study with 87 non-academic full-time employees on a microcomputer training course, and found that post-training computer anxiety was significantly and negatively related with learning ($\beta = -.28$). In contrast, no relationship has been reported between learning anxiety and (a) performance on a computer-based associative learning task (Fisk & Warr, 1996), (b) post-training assessment of trainees completing an open learning programme of learning by tutors (Warr & Bunce, 1995), and (c) post-training self-efficacy as well as participation in development activities (Maurer et al., 2003).

The inconsistency in results may be attributed to contextual differences and disparity in conceptualisation of learning anxiety. Specifically, in Martocchio's (1992) study participants took part in an *in-situ* training programme, whereas participants in Fisk and Warr's (1996) study took part in an experimental setting. For some populations attending a course in a computer environment is likely to raise anxiety, thus the situation is likely to be more anxiety provoking. Though participants in Warr and Bunce's (1995) study also took part in a 'real' training programme, the training was very different in nature, being an open learning programme that is likely to be less anxiety provoking as it allows individuals more control over training activities. Whereas Martocchio (1992) measured anxiety towards a specific activity within the training (i.e., computer learning anxiety), Warr and Bunce (1995) measured learning anxiety towards the training programme but not to specific elements or activities within the course, and Fisk and Warr (1996) measured state anxiety, designed to tap into participants' feelings at the experimental setting (i.e., tense, uneasy, worried, calm etc). Thus, further research is needed that investigates whether learning anxiety is an important predictor of training

effectiveness in some contexts and not others, and this research should be consistent in its definition of learning anxiety in order to reach valid conclusions.

Colquitt et al. (2000) proposed that the relationship of learning anxiety with training effectiveness is not straightforward and argued that the mechanism through which learning anxiety affects learning is through motivation to learn. Incorporating studies that have looked at the relationship between learning anxiety and motivation to learn (e.g., Martocchio & Webster, 1992; Webster & Martocchio, 1993) they found that of all the dispositional variables included in their model, anxiety was negatively related to all training variables (post-training self-efficacy, declarative knowledge, skill acquisition, and reaction to training) and exhibited its strongest relationship with motivation to learn.

Despite these findings and given the importance placed upon learning anxiety, it is surprising that very little research since Colquitt et al.'s publication has attempted to further explore the link between learning anxiety and motivation to learn (Machin & Fogarty, 2004; Warr & Downing, 2000). As suggested by Birdi et al. (1997), learning anxiety (which was part of a learning confidence scale) may work to influence the level of a person's motivation. The present thesis sets out to investigate the mechanisms by which learning anxiety impacts general and specific motivation to learn and learning outcomes in different training contexts. It is anticipated that:

***Hypothesis 1:** Learning anxiety will be a significant predictor of general and specific motivation to learn, with the relationship being anticipated to be in the opposite direction. That is, lower levels of learning anxiety would be related to higher levels of motivation, and vice versa.*

2.3.2 Achievement motivation

Achievement motivation is a relatively stable individual attribute that predisposes individuals to approach situations in a particular manner and is reported to be among the strongest predictors of academic achievement (Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). High achievement motivated individuals generally prefer challenging tasks than do less achievement motivated individuals (Weiner, 1984).

Although scholars have called for investigation of the relationship of the construct in training motivation research (Ford & Noe, 1987; Tannenbaum & Yukl, 1992), achievement motivation has attracted even less research attention than that of learning anxiety. In fact, although Colquitt et al. (2000) showed a moderate relationship between achievement motivation and motivation to learn ($r_c = .35$) and a moderate relationship with reactions to training ($r_c = .20$) and post-training self-efficacy ($r_c = .22$), the item was eliminated from the path analysis because only one study was found to meet the criteria for inclusion (Mathieu et al., 1993). Indeed, in a study that was published at the same year as Colquitt et al.'s review, Carlson et al. (2000) did find support for this relationship, reporting a correlation of .66 between achievement motivation and motivation to learn in a study with 158 warehouse workers and supervisors in the manufacturing industry who were about to embark on on-the-job training. This suggests that achievement motivation might be one of the personality variables that would benefit from further investigation in order to progress towards a more complete theory of motivation to learn (Carlson et al., 2000). The present study further examines this relationship and proposes that:

Hypothesis 2: Achievement motivation will be a significant predictor of both general and specific motivation to learn, with the relationship being anticipated to be in

the same directions. That is, high scores of achievement motivation would be related to high scores of motivation to learn, and vice versa.

The problem with the research thus far on the effect of learning anxiety and achievement motivation on motivation to learn is linked to issues surrounding conceptualisation and definitions of the construct. For example, Carlson et al. (2000) proposed that the relationship between achievement motivation and motivation to learn is partially mediated by attitudes towards training. In their study they measured motivation to learn through Noe and Wilk's (1993) scale that defines the construct within an expectancy theory framework. Thus, it is unclear what it is exactly that achievement motivation predicts, is it valence, instrumentality, or expectancy? Indeed, the same question can be asked for the research findings with respect to learning anxiety, as in fact all three studies cited above (Martocchio & Webster, 1992; Warr & Bunce, 1995; Webster & Martocchio, 1993) measured motivation to learn through items that tapped into all three expectancy components of Vroom's (1964) model in one respect or another. This issue will be addressed in the following section and throughout the thesis.

2.4 Attitudes as mediators

There are situations in which dispositional motivations do not predict performance as trait theories seem to require (Ajzen, 1991; Weiner, 1992) and trait-performance relationships in general are low (Kanfer & Heggstad, 1999). Furthermore, because the key assumption of the trait approach is that motivation is stable, it is difficult to use this theory to develop recommendations that assist educators to improve the motivation of trainees. Consequently, the mediating influences of cognitive evaluations

of a situation have become a central feature of various theories including expectancy-value (Eccles et al., 1983; Vroom, 1964), self-efficacy (Bandura, 1977), self-determination theory (Deci & Ryan, 1985), and attribution theory (Weiner, 1984). In the field of organisational training, the most dominant are Vroom's (1964) expectancy-value theory and Bandura's (1977) self-efficacy theory. Positioning social-cognitive variables as mediators, the underlying argument is that personal attributes create differences in self-set goals and the cognitive construction of individuals' environments, both of which create between-person differences in behaviour (Kanfer, 1991).

Since Colquitt et al.'s paper most researchers have focused on broadening the range of predicting variables of motivation to learn (e.g., Chiaburu & Lindsay, 2008; Chiaburu & Marinove, 2005; Klein, Noe & Wang, 2006; LePine et al., 2004; Major et al., 2006; Naquim & Holton, 2002; Rowold, 2007a;b; Switzer et al., 2005), but very few have expanded on the mediating effects of attitudinal variables. Two exceptions to this are the studies by Smith et al. (2008) and Tracey et al. (2001). In a study into the effect of situational variables on training motivation, it has been found that job involvement and the work environment influence pre-training motivation through its effect on pre-training self-efficacy (Tracey et al., 2001) and valence has been found to be a significant factor that mediated the relationship between goal orientation and motivation to learn (Smith et al., 2008). However, whether learning anxiety and achievement motivation affect motivation to learn through their relationship with social-cognitive variables is still uncertain.

To address this research gap the present study expands on the mediating hypothesis and proposes that learning anxiety and achievement motivation lead to

motivation to learn through the manifestation of training attitudes such as valence, instrumentality and self-efficacy. This proposition is based on the literature where Vroom's (1964) expectancy theory and Bandura's (1977) self-efficacy theory have been studied as the mechanisms through which personal and situational characteristics impact upon motivation to learn (Colquitt et al., 2000). The conceptual relationship is that personal attributes influence attitudes, and attitudes, in turn, affect motivation, which then leads to behavioural outcomes (Naquin & Holton, 2002).

One of the greatest advantages of the current thesis is that these mediating variables are disaggregated so it will be possible to ascertain more precisely the mechanisms through which learning anxiety and achievement motivation impact motivation to learn and training effectiveness.

2.4.1 Valence and instrumentality

Vroom's (1964) Valence - Instrumentality - Expectancy (VIE) model has been the subject of numerous empirical studies in the field of work motivation (for a review see Van Eerde and Thierry, 1996). The essence of this theory is that motivation to pursue a particular course of action largely depends on the value people place on the outcomes linked with this particular course of action (V), the instrumentality of these outcomes (I), and their expectancy to obtain those outcomes (E). Typically, when the VIE model is applied, the following method is used: subjects rate the expectancy of the predicted variable and the instrumentality and valence of the outcomes of reaching the predicted variable, and then the three VIE variables are combined into a forced score. A criterion

measure is obtained, and the subjects' scores are correlated to it according to a between-subjects analysis.

The theory has been applied extensively in research into organisational training (see review by Colquitt et al., 2000; more recent studies include Chuang, Liao, & Tai, 2005; Guerrero & Sire, 2001; Rowald, 2007; Smith, Jayasuriya, Caputi, & Hammer, 2008; Switzer et al., 2005; Tai, 2006; Tharenou, 2001; Tracey et al., 2001) and this approach has been applied by some researchers. For example, Tannenbaum et al. (1991) assessed training motivation with VIE theory scales adapted from Lawler (1981) and calculated a composite VIE scores using six Expectancy items (defined as trainees' perceptions of the relationship between doing well in training and future job performance), and 12 job-related outcomes for instrumentality and valence ratings (e.g., getting good duty stations and assignments). This practice was also followed by Mathieu et al. (1992) and Tharenou (2001). However, it is important to note that this method is at odds with Vroom's (1964) idea of the model. In a meta-analytic review of Vroom's model and work-related criteria, Van Eerde and Thierry (1996) argued that many studies that use the VIE model are often performed incorrectly from the original theoretical point of view and with regard to how data are analysed. In particular, the use of a simple correlation between the sum-of-product variables of the model and the criterion variable may be problematic (Evans, 1991). They go on to suggest the use of VIE components rather than the composite score of the scales. As suggested by Mathieu and Martineau (1997), the advantage of the VIE approach is that the components can be disaggregated to help diagnosis.

One study that separated the components of valence and expectancy, but not instrumentality, was conducted by Colquitt and Simmering (1998) with 103 undergraduate students on a management course. By separating the valence and expectancy components from motivation to learn, Colquitt and Simmering (1998) were able to elucidate the underlying mechanisms that drive motivation to learn. They found that though the effect of personality on motivation to learn is partially mediated by the V and E components, the relationships amongst these variables differed. Whereas conscientiousness and learning orientation were positively correlated with expectancy, valence, and motivation to learn, performance orientation did not correlate significantly with the measure of valence. Moreover, valence correlated more strongly with motivation to learn ($r = .38$) than did expectancy (.21).

In their meta-analytic review Colquitt et al. (2000) positioned valence as one of the mediating components between personality and motivation to learn, and found that valence was one of the strongest predictors of motivation to learn. However, the studies that were included in the paper varied in their definitions and measurements of the construct, the main problem being that the majority have mixed valence with instrumentality (Mathieu et al., 1992; Noe & Wilks, 1993; Warr & Bunce, 1995) so the true relationship of these constructs with motivation to learn is unclear. This omission is serious since employees use instrumentality based calculations (i.e., ‘what will I get out of this training’) when analysing exchanges with their organisations and when thinking about training outcomes (Baruch, 2001; Chiaburu & Lindsay, 2008; Guerrero & Sire, 2001; Tharenou, 2001), which is very different from valence based evaluations. More specifically, whereas instrumentality based measures require trainees to evaluate whether

they are likely to benefit from training and the likely consequences on future outcomes, valence based evaluations centre on how much trainees want to obtain certain outcomes (e.g., grades, promotion etc). As pointed out in a meta-analytic review of Vroom's expectancy models, these constructs are conceptually distinct and should be disaggregated in order to ascertain their relationship with job related outcomes (Van Eerde and Thierry, 1996).

Similar to previous research (e.g., Mathieu et al., 1992, Guerrero & Sire, 2001; Tharenou, 2001), instrumentality is defined in the current thesis as trainees' expectations of obtaining certain outcomes as a consequence of the training course. Valence, on the other hand, is defined differently from previous research, the reason being that it was important to establish a measure that could translate easily between the educational and the organisational contexts. In an academic setting, the distinction between first- and second-order outcomes is less clear than in the organisational setting, given that grades are outcomes received because of performance and are direct measures of performance itself. Thus, valence was referenced toward desirability to obtain an outcome, like getting a good grade, doing well in the course, and achieving success in class (e.g., Colquitt & Simmering, 1998).

Although there are some recent studies that examine the effect of instrumentality on motivation to learn (Chiaburu & Lindsay, 2008; Guerrero & Sire, 2001), no study to date has empirically examined the unique effect in comparison to valence. For example, in a recent study by Chiaburu & Lindsay (2008) the relationship between training instrumentality and motivation to learn was the main focus of investigation, but valence was not included. Moreover, although Tharenou (2001) made a clear distinction between

valence and instrumentality, he did not make a systematic attempt to examine the nature of the relationship of each with motivation to learn as the focus of their investigation was on comparing their effect on participation in developmental activities and learning.

Given the conceptual confusion and lack of empirical research on the unique effect of valence and instrumentality, some questions remain. What is the unique effect of valence and instrumentality on motivation to learn and subsequent learning outcomes? Is it possible that instrumentality masks the real relationship between valence and motivation to learn? One would expect the measures of valence and instrumentality to be highly correlated. After all, they both reflect a person's attitude towards the same training activity. Although statistically a high correlation between two independent variables may make interpretation of results difficult, one would argue that if the variables are conceptually distinct, they should remain separate in subsequent analysis (Allison, 1999). Doing so is likely to help diagnose the mechanism through which the predictors impact motivation to learn (Mathieu & Martineau, 1997). Thus, the thesis clearly separates the measures of valence and instrumentality and proposes that they are distinct attitudinal variables with each having a unique impact on motivation to learn and learning.

2.4.2 Self-efficacy

The construct of self-efficacy, the belief in one's ability to learn the training material (Noe & Schmitt, 1986), has also been found to be an important predictor of individual performance in training (Gist, 1987). Noe (1986) incorporated self-efficacy into his theoretical model of training effectiveness, believing that these perceptions could influence trainees' motivation to learn. Indeed, subsequent research found support for this

relationship (Martocchio & Webster, 1992; Mathieu et al., 1992). Others have also found support for the mediating effect of self-efficacy (Colquitt et al., 2000; Mathieu et al., 1993). Mathieu et al. (1993) suggested that achievement motivation was related to training outcomes through the mechanism of self-efficacy, and Colquitt et al. (2000) have found that self-efficacy partially mediated the relationship between learning anxiety and motivation to learn. Based on Colquitt et al.'s (2000) findings of partial mediation it is proposed that:

Hypothesis 3: The relationship between learning anxiety and achievement motivation with motivation to learn will be partially mediated by valence, instrumentality, and learning self-efficacy.

2.5 Predictors of training outcomes

2.5.1 Motivation to learn

The majority of research on the effect of motivation to learn on training outcomes has used Kirkpatrick's (1976) fourfold criteria typology. This framework suggests that training should be evaluated in terms of its effects on trainees': (a) reaction to the programme and its content, (b) learning – acquisition of knowledge and / or skill, (c) behaviour – changes in the extent to which trainees can execute desired training-related behaviours, and (d) results – the extent to which job behaviours change and yield increased organisational effectiveness. More recently there has been a call for an expanded view of training effectiveness, arguing that trainees' attitudes should be investigated more thoroughly as desirable training outcomes (Tannenbaum & Yukl,

1992). Expanding Kirkpatrick's (1976) framework, Colquitt et al., (2000) have found that motivation to learn influences trainees' reactions to the training programme, performance with respect to acquired knowledge and skill acquisition, and trainees' post-training self-efficacy. Based on a similar framework, this thesis places general and specific motivation to learn as key predictors of training outcomes. Each study will include the training outcomes that are relevant to the context and this will be discussed in more detail within the chapters. The overarching hypothesis is that:

Hypothesis 4: Motivation to learn, measured through general and specific scales, will explain additional variance in training outcomes, above and beyond the effect of individual characteristics and attitudinal variables.

2.5.2 Training support variables

Research suggests that as well as trainees' personality and attitudes, contextual characteristics play a key role in influencing motivation to learn and learning outcomes (Colquitt et al., 2000). Following this line of enquiry, researchers have argued that training is an episode that occurs among many other organisational episodes experienced by employees. Viewing training as an episode draws particular attention to events and cognitions that occur prior to and during the delivery of a training intervention that are likely to affect training effectiveness (Baldwin & Magjuka, 1997).

Contextual characteristics occurring at many different organisational levels have been linked with training effectiveness, including organisational climate for transfer (Ford et al., 1992; Tracey et al., 1995), management and peer support for participation in learning activities (Birdi et al., 1997; Clark et al., 1993; Fecteau et al., 1995), and the manner in which training is introduced to trainees (Baldwin & Magjuka, 1997). However, whilst there has been an increase in research that includes contextual variables related to the work environment into models of motivation to learn (Birdi et al., 1997; Maurer et al., 2003; Scaduto, Lindsay, & Chiaburu, 2008; Tracey et al., 2001) the likely effect of factors within the training context in models of motivation to learn has largely been ignored (Klein et al., 2006; Mathieu et al., 1993; Noe & Schmitt, 1986).

More specifically, there has been very little systematic integration of research that examined the assertion that characteristics of trainees such as motivation and attitudes are more important to training effectiveness than are course-content variables (Fleishman & Mumford, 1989; Quinones, 1987). The impact of important course specific factors such as the interaction between trainer-trainee and trainee-trainee has been neglected, failing to recognise that social support within the training context may in fact have an effect on learning (Noe, 1986; Noe & Schmitt, 1986).

The thesis is therefore designed to empirically examine the relationship between: (a) trainees' perception of trainer support, and (b) trainees' perception of peers support, with training outcomes. These factors were integrated into the proposed model of motivation to learn to address the call for combining traditional theories on the effect of factors occurring within the training episode into models of motivation to learn (Colquitt et al., 2000). The present study proposes that situations that support learning should help

to enhance training outcomes (Tracey et al., 1995) above and beyond the effect of motivation to learn.

Hypothesis 5: Training support variables will have a significant and positive influence on training outcomes, above and beyond the effect of individual characteristics, attitudinal and motivational variables.

Trainer support

Research in the organisational training literature has shown that the support provided by supervisors for training is related to training effectiveness (Noe & Wilks, 1993). Typically, this has been defined by the amount of support for training provided by supervisors or line-managers, which is part of the organisation's social system (Tracey et al., 2001). With this definition in mind, measures have generally aimed at ascertaining the extent to which supervisors view training as an important aspect of an employees' job and whether they provide employees with the time they need to practice the skills learned in training (Yarnall, 1998; Chiaburu & Marinova, 2005). Scaduto et al. (2008) extended the work on the effect of supervisor support on training effectiveness by connecting the social context component (the relationship between the individual worker and his or her direct manager / leader, in the form of LMX) with training effectiveness dimensions. In a study with 495 employees attending a range of professional development training courses, they found that the quality of this exchange is important for training attitudes, including training motivation, outcome expectancy, and training transfer. These findings provide evidence for the importance of social exchanges in the workplace for training effectiveness.

In certain work environments, however, supervisors fulfil the role of a trainer and trainers perform the role of a supervisor. This is particularly prevalent in the training of new employees where they are being helped by their supervisor (or line manager) to adjust to the organisation and learn the skills required for their job without being provided formal training (i.e., on-the-job training). In other instances, new employees may be assigned to a formal off-site training course before actually being allocated to a specific work station. During this training period the trainer is also the employee's supervisor. Thus, the role of a supervisor (or leader) is often closely related to the role of an instructor (Patrick, Scrase, Ahmed, & Tombs, 2009). Given this link it is reasonable to suggest that like supervisor support, trainer/instructor support and the quality of the interaction between trainees and their trainers is an important determinant of training effectiveness.

Research shows that instructor's behaviours influence training effectiveness (Cohen, 1981; Martocchio & Webster, 1992; Sitzmann, Brown, Casper, Ely, & Zimmerman, 2008). For example, in a meta-analytic study by Sitzmann et al. (2008) it was found that an open and relaxed instructional style and the ability to make trainees feel comfortable were strongly related to positive reaction ($r = .66$). Reaction, in turn, was positively related to learning ($\beta = .22, p < .05$). In their study with 68 clerical staff on a microcomputer training programme, Martocchio and Webster (1992) found that satisfaction with trainer and satisfaction with feedback significantly and positively correlated with performance ($r = .26, r = .30$, respectively). Research in the educational domain has also shown a positive link between trainer support and learning outcomes. Meta-analyses of validity studies have demonstrated that high scores of students'

evaluation of teaching are linked with better performance on standardised final examinations. Cohen (1981), in his summary of 41 studies, demonstrated the link between students' evaluation of interaction with their teacher and provision of feedback with their level of achievement on exams. The reported mean correlations between achievement and students' evaluation of interaction were .52, with rapport .32, and with feedback .28.

The role of the trainer indeed can make the difference between a successful or unsuccessful learning experience (Goldstein & Ford, 2002). Traditionally, research on the impact of the trainer on trainees' performance centred on trainers' use of training methods (see Patrick, 1992) and trainers' characteristics (see Goldstein & Ford, 2002, p. 245), without emphasising the overlap between instruction and leadership or supervisory roles (Patrick, et al., 2009). One purpose of this thesis is to address this research gap by extending the literature of supervisor support into training research.

The current thesis builds upon the overlap of the supervisor's and trainer's role, and uses measures of supervisor support to examine the support provided to trainees by trainers during the training period. Based on Kidd and Smewing's (2001) theory of supervisor support, it is proposed that trainees who see their trainer as trusting them and giving them the authority to do the job, and whose trainers engage in feedback and goal setting, report more learning and development activities. Thus, trainer support is examined through trainees' evaluation of their interaction with the trainer and of their provision of learning support (e.g., time provided by the trainer for one to one discussion of learning, discussions of goals and feedback).

Hypothesis 5a: Trainer support will be positively related with training outcomes.

Peer support

Similarly to the work on supervisor support, studies on the effect of peer support on training effectiveness have largely focused on trainees' co-workers within the work environment (Chiaburu & Marinova, 2005; Noe, 1986). Defined in this manner, research has shown that trainees who report higher levels of peer support also reported higher levels of pre-training motivation and training transfer (Facteau et al., 1995). However, there are other social networks that are likely to impact training outcomes, including other trainees that attend the training course.

Trainees bring with them attitudes and expectations which may covertly impact on other trainees attitudes and subsequently on training outcomes. For example, a group of unmotivated and disengaged trainees may influence each other and interrupt the learning process. On the other hand, a group of trainees that interact effectively and help each other through tasks and activities may actually contribute towards training effectiveness. Indeed, most instructors argue for the value of learning from each other and helping one another learn (Latham & Crandall, 1991), and research in the educational domain generally shows that such support is important for students' achievement (Johnson, Maruyama, Johnson, Nelson, & Skon; 1981; Lookatch, 1989; Slavin, 1983). As pointed out by Baldwin and Magjuka (1997), much more work in industrial training contexts is needed to build an understanding of group dynamics and how they affect motivation and learning outcomes, thus, this line of enquiry remains to be explored within the organisational domain. The present study therefore sets to examine the impact of peer support within the training context on training effectiveness. Based on Ladd and Henry's (2000) co-workers' support theory, peer support is defined through the quality of

the learning/working relationship with other trainees and it is proposed that a supportive working relationship between trainees will be related to training outcomes. It is proposed that trainees who perceive their peers on the training course to be supportive of them are more likely to benefit from training and have more positive training outcomes.

Hypothesis 5b: Peer support will be positively related to training outcomes.

In order to examine the thesis' hypotheses it was necessary to identify suitable measures that will assess the model variables. In the following chapter the process by which the measures were developed is described. A pilot study to examine the relevance of this organisational model in the educational domain is also presented.

CHAPTER 3

PILOT STUDY AND DEVELOPMENT OF MEASURES

3.1 Overview

One of the main objectives of this thesis is to examine the external validity of the model in various educational and organisational contexts. To this end, it was essential to develop measures of each of the variables. Careful consideration had to be given to the fact that the same scale had to be examined in different contexts; therefore items within the scale had to be easily translated to different contexts without adversely changing the underlying definition of the variable. The scale development process was undertaken in a number of stages, starting with an extensive review of the empirical research on motivation to learn in the organisational domain as well as a review of the educational literature. Based on this literature review, it was established that the studies contained within the thesis need to be quantitative in nature. The reason for this is two fold: (a) this is the preferred method for conducting such research and (b) qualitative analysis would limit the sample size and the number of variables that can be examined.

Given that the model was based on research in the organisational domain the scales were organisationally orientated so in some cases did not translate easily to the educational domain. The proposed scale was therefore discussed and piloted in the educational field. This chapter is divided into four sections. Section 3.1 provides the background and explains the procedure followed in the pilot study, in section 3.2 issues surrounding scale development are discussed; and section 3.3 provides a summary of the

results and modifications made to the questionnaire. Section 3.4 summarises the study design that was adapted in the subsequent empirical chapters.

3.2 The pilot study

In order to examine the theoretical model in the educational context it was necessary to undertake a pilot study. This allowed the researcher to examine the relevance of variables as well as to establish the internal consistency of the measures.

3.2.1 Background

As part of a collaborative initiative between the School of Psychology and the School of Medicine, the researcher offered the opportunity to all Departments within the School of Medicine to take part in a study into students' motivation to learn. The researcher was then contacted by the Head of Studies at the Department of Obstetrics & Gynaecology, who identified students' motivation to learn as problematic in this particular field. This was then followed by further formal discussions, in which a research proposal was established as well as discussions of relevant variables. Subsequently the questionnaire was further refined. It was then agreed that a pilot study will be undertaken with medical students in their fourth year of study at the Obstetrics & Gynaecology clinical attachment. The pilot study included administration of a pre- and post- clinical attachment questionnaires to students, as well as a focus group.

3.2.2 Procedure

The pilot study was undertaken with a cohort of 40 medical students in their fourth year of study, about to attend a seven week Obstetrics & Gynaecology clinical attachment. The sample included 16 males and 24 females with a mean age of 23.45 (SD = 3.05). All students completed a questionnaire during the introduction session of the course and were invited to take part in a focus group the following day. This questionnaire included items related to demographics, general level of support (tutor and other medics in their year of study), individual characteristics (e.g., learning anxiety, achievement motivation), attitudes (valence, instrumentality, and self-efficacy) and motivations (general and specific motivation to learn). A second questionnaire was then administered on their return from the clinical attachment to assess the level of support they perceive to have received from the consultant and their peers during the attachment. This questionnaire was accompanied with an anonymised course satisfaction survey that was used by the institution for evaluation of their teaching. Another section that was not included in the current thesis included measures of post-training attitudes that were identical to pre-training attitudes.

3.3 Scale development

The following section provides a description of the scale development that was undertaken during the literature review stage, combining both the organisational and educational domains. Unless specified, the scales were designed so all responses were made on a 7-point scale ranging from 1=strongly disagree to 7=strongly agree. A score was derived by a simple addition of all items concerning this source.

3.3.1 Measures of learning anxiety and achievement motivation

Learning anxiety

The difficulty in establishing an appropriate measure of learning anxiety was linked to the problems of disparity of definitions and measures of the construct discussed in the previous chapter. Whereby some researchers examined learning anxiety that is general across different learning situations (Maurer et al., 2003; Warr & Bunce, 1995) others examined participants' present state in the experimental setting (Fisk & Warr, 1996) or more context specific measures (Martocchio, 1994; Martocchio & Webster, 1992; Webster & Martocchio, 1993).

In the pilot study both approaches have been utilised. Three items from Fisk and Warr's (1996) measure of learning anxiety were used in order to examine how tense, uneasy, and worried students felt about learning the course material. An example item is "*I feel worried about learning the course materials*". To measure general learning anxiety, questions were adapted from a Mental Health Inventory that assesses anxiety in challenging learning situations (see Maurer et al., 2003). Respondents were asked to

indicate their levels of agreement about the way they feel about learning situations, for example, *“I feel anxious and worried in challenging situations where something new has to be learned or I have to ‘stretch’ my skills”* and *“In challenging situations where something new has to be learned I feel restless, fidgety, or impatient”*.

Achievement motivation

Various measures of the construct can be found in the literature. Whilst some researchers have cited Jackson’s (1974) scale, (see Carlson et al., 2000; Phillips & Gully, 1997; Robbins et al., 2004), the specific study cited in Colquitt et al. is that of Mathieu et al.’s (1993). For this reason Mathieu et al.’s 10-item scale was used to measure achievement motivation. The scale measures the extent to which participants (a) prefer challenging situations, (b) are comfortable with making decisions or being in high-pressure situations, and (c) would work hard rather than take it easy. Example items include *“I really enjoy a class or assignment that involves overcoming obstacles”* and *“I only work as hard as I have to”*.

3.3.2 Measures of valence, instrumentality, and learning self-efficacy

Valence and instrumentality

Finding appropriate measures of valence and instrumentality has been one of the greatest challenges in scale development. This is partly due to the existence of many definitions and measures of the constructs, within and between the organisational and educational domains, but also due to the difficulty in finding a measure that will translate

well across the contexts. To recapitulate, whilst some researchers defined and assessed valence as only a component of desirability, therefore measuring how desirable it is for respondents to obtain certain outcomes (Colquitt & Simmering, 1998), others have mixed with it the instrumentality component of the VIE model (Mathieu et al., 1992), for example, asking respondents to rate whether attending the programme is likely to help them in any way (Warr & Bunce, 1995) or lead to specific personal benefits (Noe & Wilks, 1993).

Vroom's conceptualisation of valence differentiated the valence of the first-order outcome, performance, and second-order outcomes tied to performance (e.g., pay or promotions). In an academic setting, the distinction between first- and second-order outcomes is less clear, given that grades are outcomes received because of performance and are direct measures of performance itself. Thus, valence was referenced toward getting a good grade, doing well in the course, and achieving success in class (e.g., Colquitt & Simmering, 1998). Three items adapted from Colquitt and Simmering (1998) were used to assess valence. Example items include *"It is desirable for me to do well during (name of training course) training"* and *"It is desirable for me to get a good grade at the end of (name of training course) training"*.

In the educational context modern expectancy-value theories define valence in terms of four components – intrinsic interest, utility, importance, and cost (Eccles & Wigfield, 1995; 2002). In this model, utility is similar to the instrumentality component and is defined in terms of *"individuals' perceptions of the usefulness of the content or task to them, a more extrinsic orientation to the task"* (Pintrich, 2003, p.675). In line with Eccles and Wigfield's (2002) work, two instrumentality items were worded to reflect the

utility construct including *“Studying Obstetrics and Gynaecology is likely to help me with other aspects of my studies”* and *“This clinical attachment helps develop students’ skills that are necessary for success in the medical profession”*.

Self-efficacy

An issue that arises out of research is the distinction between measures of learning self-efficacy and measures of self-efficacy that are context specific. For example, whereby some researchers have measured the construct through items that tap into participants’ belief in their ability to learn (Fisk & Warr, 1996; Noe & Wilks, 1993; Warr & Bunce, 1995) others have included more specific measures that assess participants’ belief in attaining specific targets related to learning the training material (Ackerman et al., 1995; Mathieu et al., 1993).

In order to develop a measure of self-efficacy that is easily translated across contexts, it was decided to focus on learning self-efficacy rather than context specific self-efficacy. In line with Fisk and Warr’s (1996) work, the learning self-efficacy measure included in the study asked respondents to compare themselves to others in terms of ability to learn. Three items were designed to tap into self-efficacy (e.g., *“In comparison to other students I expect to learn the material during this clinical attachment much quicker”*).

3.3.3 Measures of motivation to learn

As was demonstrated in Chapter 1, examination of the literature quickly reveals the wide range of scales used by researchers, making it all the more difficult for one to replicate and examine previous models. Following Mathieu and Martineau's (1997) advice that... "*perhaps the clearest lessons to be learned are that (a) researchers should choose an approach based on the criteria they are most interested in predicting, and (b) the simultaneous use of multiple approaches should prove fruitful for both research and practice*" (p. 198), the measures of motivation to learn in this thesis were designed to have relevance to the research context.

Given that the thesis conceptualises motivation to learn separately from the closely related constructs of valence and instrumentality, similar to Colquitt & Simmering's (1998) study, a short scale that includes three items was used for each measure, i.e., three items were designed to tap into general motivation to learn and three items were designed to tap into specific motivation to learn. In contrast to Warr and Bunce's (1995) study where general and specific motivation to learn were assessed through a different set of items, in the present thesis the measures differed simply by rewording the items to reflect either general enthusiasm to learn or eagerness to learn the material that is going to be taught on a forthcoming course. This approach was taken because Warr & Bunce's measure of specific motivation to learn was deemed inappropriate as it contained items related to perceived personal gains and intrinsic interest in the training programme, which are closely related to instrumentality and valence.

The distinction between the measures can be seen in the items below:

General motivation to learn

1. I am always keen to make use of the learning and development opportunities available to me.
2. I am always motivated to learn new things.
3. I always try to learn as much as I can.

Specific motivation to learn

1. I am keen to make use of the learning and development opportunities during (name of a specific course) training
2. I am motivated to learn the material during (name of a specific course) training
3. I will try to learn as much as I can during (name of a specific course)

3.3.4 Measures of training support variables

Given that the thesis' model is based on the organisational literature, the majority of studies that were initially reviewed defined training support within the framework of the work environment. In such cases, trainer support is usually examined through the extent to which supervisors: (1) provide opportunities for participants to utilize trained skills; (2) are supportive of their efforts to apply trained skills back on the job; and (3) reinforce efforts to transfer skills to their own situation (Ford et al., 1992). Similarly, peer support has been studied within the context of coworker support for attending training and applying the newly acquired knowledge and skills to the job (Birdi et al., 1997; Facteu et al., 1995; Maurer & Tarulli, 1994; Noe & Wilks, 1993). The problem with this

approach is that these definitions of supervisor and peer support do not translate well into the educational context. Nevertheless, the availability of such support remains important, though in a different framework (Berger & Milem, 1999; Solberg et al., 1998).

Supervisor/Trainer support

In order to develop a measure of trainer support that could translate well between the organisational and educational domains, it was necessary to examine the educational literature. On the basis of this review a list of items was extracted and was discussed with the course co-ordinator where the pilot study took place. It was established that two possible supervisors existed, one was an academic member of staff whom the students have contact with throughout their studies (personal tutor), and the other was the consultant who supervised their work during a specific clinical attachment. The course co-ordinator asked for both to be included in the study as she wanted to examine the possibility that each has a unique role in influencing students' academic achievement.

The duties and students' expectations from these supervisors are very different. To begin with, students do not expect to have much contact with their personal tutor and they understand that the primary role of the personal tutor is pastoral care rather than training. On the other hand, students expect a great deal of contact time and interaction with the consultant during a clinical attachment. These consultants are perceived as experts in their subject area and their role is to train and create learning opportunities in hands on, rather than a lecturing, learning environment.

Two scales were therefore included, one measured personal tutor support and the other measured trainer support. The personal tutor scale asked respondents how often

their personal tutor could be *'relied on'*, *'would listen to problems'* and *'can be counted on when the situation gets tough'*. For example, *"How much can your personal tutor be relied on for support during your studies?"* All responses were made on a 5-point scale ranging from 'never' to 'always'. This scale was adapted from a measure of General Level of Support (Dressler, 1991). Items were scored from 1 to 5 where a higher score represented higher levels of supervisor support.

Support from the consultant during the period of training itself (clinical attachment) was measured via a 7-item scale which was adapted from Kidd and Smewing's (2001) measure of supervisor support. This scale focuses on evaluation of the extent to which the consultant provided an environment that encouraged learning opportunities, availability of guidance and feedback, availability of the consultant for learning time, and how comfortable they felt asking the consultant questions related to learning. Example items included *"the consultant gave me specific guidance as to how I could improve"* and *"I felt comfortable asking the consultant/lecturer questions related to my learning"*.

Peer support

Through examination of the educational literature and discussions with the course co-ordinator, a list was extracted of the components of peer support relevant to the context. As a result, two possible sources of peer support were identified, one from other medical students generally, and the other from the students they attend the attachment with. Therefore, two measures of peer support were designed. To measure support from other students throughout their study of medicine a scale was adapted from Dressler's

(1991) measure of General Level of Support. The scale was designed to tap into how often their peers during their years of studying could be '*relied on*', '*would listen to problems*' and '*can be counted on when the situation gets tough*'. Scores ranged from 1 to 5, with 1 = never, and 5 = always.

With regard to support from their peers during the clinical attachment, a 5-items measure adapted from Ladd and Henry's (2000) measure of co-workers support was included in the questionnaire that was administered upon their return from the attachment. This measure focuses on participants' rating of the extent to which their peers (with whom they have attended the clinical attachment) were available to help, were willing to offer assistance, showed concern if they struggled with their studies, and whether their peers took notice of any suggestions they made. It also included a measure that tapped into whether they tended to work together as a group (Ford et al., 1992). Example items include "*as a group of students attending the obstetrics & Gynaecology clinical attachment we tended to study together and support each other*" and "*help was available from other students when I had a problem related to the studies*".

3.4 Results

3.4.1 Internal consistency

Table 3.1 displays the results of the reliability analysis of the scales. As can be seen, most scales have reached acceptable levels of internal consistency for research purposes (i.e. $>.65$, Aiken, 1997) with a couple of exception (instrumentality and general peer support). Figures must be interpreted with caution due to the small sample size.

Table 3.1: *Alpha reliabilities of scales*

	Scale	Number of items	Alpha reliability
General level of support	-Supervisor/personal tutor	3	.73
	-Peers	3	.58
Individual characteristics	-Specific Learning anxiety	3	.87
	-General Learning anxiety	5	.89
	-Achievement motivation	10	.79
Attitudinal variables	-Learning self-efficacy	3	.93
	-Valence	3	.86
	-Utility / instrumentality	2	.52
Motivation to learn	-General	3	.67
	-Specific	3	.78
Training support	-Trainer support	7	.78
	-Peers support	5	.82

Some changes were made in light of the results. The low reliability of the instrumentality/utility scale was examined and two additional items were introduced in

order to improve reliability (Kline, 1999), increasing the number of items from two to four. The two additional items were adapted from Noe & Wilk's (1993) questionnaire and were as follow: *'Studying Obstetrics & Gynaecology will give me a better idea of the career path I want to pursue'*, and *'Studying Obstetrics & Gynaecology will result in more opportunities to pursue different career paths'*. Moreover, further inspection of the items revealed that one possible cause of the low reliability was the wording of one of the items. Whereby one item asked students whether studying Obstetrics & Gynaecology is likely to have the benefit of helping with other aspects of their studies (*'studying Obstetrics & Gynaecology is likely to help me with other aspects of my studies'*) the other item was somewhat more problematic as it required students' to appraise the ability of the attachment to develop their skills and to contribute towards their success (*'this clinical attachment helps develop students' skills that are necessary for success in the medical profession'*). The later item was therefore reworded to reflect the definition of instrumentality that is linked to students' perceptions as to the usefulness and the likely benefits from attending the attachment (*'this clinical attachment will help me develop skills that are useful for a range of careers in medicine'*).

3.4.2 Focus group

The purpose of the focus group was to discuss definitions and to further examine the relevance of variables. Eight medical students, three males and five females, volunteered to participate in the focus group. Financial incentives were given as well as a light lunch. The session lasted for two hours, during which students ranked the variables

in order of importance for motivation to learn and learning and were given the opportunity to discuss their rankings.

In general, participants thought that demographic variables were likely to have the least impact, whilst variables such as self-efficacy, valence, instrumentality and motivation to learn were likely to be most important for academic success. Quite a lot of discussion time was spent on the variables of supervisor and peer support, as students discussed among themselves who exactly they perceived as their supervisor, and who their peers were. Students felt that in general they did not expect much support from their tutors, but did expect supervision during the clinical attachment from the consultant. Students also commented that they define peers as other students they attended the attachment with. Based on this information, and on the basis of the theory underpinning this thesis, it was decided not to include separate levels of support at the analysis stage. Instead, training support variables were defined in terms of supervisor/trainer and peer support within the context of the clinical attachment.

Finally, students felt that general learning anxiety was not relevant in this context. They commented that students enter higher education with the knowledge that they are going to be learning, so if they were anxious about learning situations they would not be applying in the first place. For them, feeling anxious about the subject was more important, especially if they know that they will be asked to perform duties they may not be comfortable with (e.g., gynaecological procedures). Coupled with the fact that the majority of the research to date on learning anxiety centred on the relationship between context and content specific learning anxiety with motivation to learn, it was decided to exclude general learning anxiety from the analysis in the main studies.

In summary, results suggest that the theoretical framework proposed in this study is relevant in the context of students' learning. The final measures used across the studies can be found in Appendix A.

3.5 Summary of study design and analysis

The overarching purpose of this thesis was to examine a model of motivation to learn in various training contexts (see Figure 2.1, p.24). Based on the issues outlined in the introductory chapters the aim was to obtain access to different types of training cohorts where all model variables could be examined. The majority of previous work in this field has been conducted with either students in higher education (Baldwin et al., 1991; Chuang, Liao, & Tai, 2005; Colquitt & Simmering, 1998; LePine et al., 2004; Mathieu et al., 1993; Quinones, 1995) or organisational samples (Facteau et al., 1995; Major et al., 2006; Martocchio & Webster, 1992; Mathieu et al., 1992; Smith et al., 2008; Switzer et al., 2005; Tharnoue, 2001; Tracey et al., 2001; Warr & Bunce, 1995; Webster & Martocchio, 1993). Thus, the model was examined in both contexts.

In addition, similar to previous literature, the study design was longitudinal so access to trainees was required at different points in time. However, applied research can be quite difficult. Not only are subjects difficult to access, but organisations are not usually willing to allow experimentation. The studies were therefore opportunistic. Various organisations and educational institutions were contacted with a brief description of the study. Meetings took place with the organisations who expressed interest in the study, until a research programme was finalised and access to appropriate training

programmes was granted. The methodological problems associated with this method of recruitment will be discussed in detail in the concluding chapter of this thesis (Chapter 6).

The following empirical chapters report examination of the complete model in the educational (Chapter 4) and organisational (Chapter 5) domains. The chapters are similar with respect to study design, procedure and measures etc, but differ on some fundamental aspects such as the training environment and sample characteristics. The studies in the educational domain examined the model in two different disciplines within higher education, and the chapter in the organisational domain includes three studies in two law enforcement organisations. The studies also differ in the measures of training outcomes obtained. In the educational domain, declarative knowledge was included as a training outcome, but in the organisational domain the focus was on trainees' reactions to the training programme and post-training self-efficacy (the reason for this difference will be discussed in great detail in the empirical chapter).

The principle of analytical parsimony was used throughout the thesis, meaning that the simplest methodology that was necessary to meet the research objective was adopted (Spector, 2001). There are four reasons for adopting this principle. First, the simplest methods tend to have the fewest and least restrictive assumptions. Often complex methods are used with little attention given to important but untested assumptions. Second, simpler analyses are less prone to error. A correlation is quite easy to run with a number of statistical programmes. Structural Equation Modeling (SEM), however, requires considerable expertise to run the model hypothesised, and it is quite easy to run the wrong model without realising it. Third, results of simple analyses are

easier to communicate and fourth, though some might suggest the use of a variety of different strategies, this often proves unnecessary as the same results emerge.

Prior to analysis all study variables were examined for accuracy of data entry, missing values, and fit between their distribution and the assumptions of multivariate analysis. All analyses were carried out using SPSS version 12. Descriptive statistics were computed for all variables, followed by internal consistency reliability estimates and inter-scale correlations, as well as examination of multicollinearity. Similar to previous studies, the bivariate correlations were used to assess whether the measures were functioning effectively (Chuang et al., 2005; Liao & Tai, 2006; Martocchio & Webster, 1992; Noe & Wilks, 1993; Tai, 2006; Tannenbaum et al., 1991; Tsai & Tai, 2003; Webster & Martocchio, 1993). Examination of the proposed model was conducted using a series of standard and hierarchical simple and multiple regression analyses. This method allowed the testing of mediation as well as the significance of R-square change to assess the impact of groups of variables.

CHAPTER 4

MOTIVATION TO LEARN IN HIGHER EDUCATION

4.1 Introduction

Chapter Four examined the proposed model of motivation to learn in educational settings. The chapter constitutes two studies that were conducted with two different educational samples in a large UK university. One study included a sample of students in the final year of their medical studies, and the other study included a sample of students in the final year of their study for a degree in civil/structural engineering. Although the samples were similar with respect to the educational context (i.e., students are from the same university), not only did they differ in terms of subject, but also in terms of the nature of training and the training environments. The medical students attended a hands-on clinical attachment during which learning took place not only through lectures, but also through observations and practice. Students attended these attachments with a small group of other medical students, during which they were exposed to the day-to-day running of a hospital. In comparison, the engineering students mainly learnt by attending lectures as one large group of students. For them, the learning experiences varied little, with learning that developed through reading and researching and completion of assignments in the traditional form. Given these differences it was reasonable to suggest that these two samples of students have had different experiences and expectations and were therefore deemed suitable for a comparison of the study model.

The theoretical background and hypotheses that drive the empirical chapters were described extensively in the introductory chapters of the thesis. This chapter will therefore focus on describing the study and the results in relation to the proposed model. Nevertheless, the chapter is written in a way that will remind the reader of theoretical and methodological issues so to prevent the need to refer back to previous pages.

The present study makes a number of contributions to extant research on motivation to learn. First, while previous research has shed light on the effect of individual characteristics on motivation to learn, little is known about the mechanisms through which these variables operate. Based on social-cognitive theories (Bandura, 1977; Vroom, 1964), it was argued that learning anxiety and achievement motivation will be predictive of motivation to learn partially via the mediation of pre-training attitudes including valence, instrumentality, and self-efficacy (Hypotheses 1, 2 and 3). Second, to further enhance the knowledge base on the differences and similarities between general and specific motivation to learn (Warr & Bunce, 1995), the study positioned both constructs at the centre of the model so to examine the relationship with the predicting variables and learning (hypotheses 1, 2 and 4). Third, and based on theories of supervisor support (Kidd & Smewing, 2001), and co-worker support perceptions (Ladd & Henry, 2000), it was proposed that the contextual factors, trainer support and peer support, will have a significant effect on learning, above and beyond that of individual characteristics and motivation to learn (hypotheses 5a and 5b). Finally, while past research mainly investigated training models in a single setting, this study was replicated with two qualitatively different cohorts in an educational setting.

The proposed model was measured and analysed using longitudinal data to improve our understanding of the impact of the training context. Figure 4.1 depicts the research framework that was addressed in the study. Given that the main focus of the studies was on determining the factors that influence students' performance at the end of the course, data related to their performance at the end of attachment/module exam (declarative knowledge) was utilised as the training outcome in these studies. This is consistent with previous research where evaluation of learning is typically undertaken immediately after a training programme, in terms of the amount of post-test learning (e.g., Alliger, Tannenbaum, Bennet, Traver, & Shortland, 1997; Kubeck, Delp, Haslett & McDaniel, 1996).

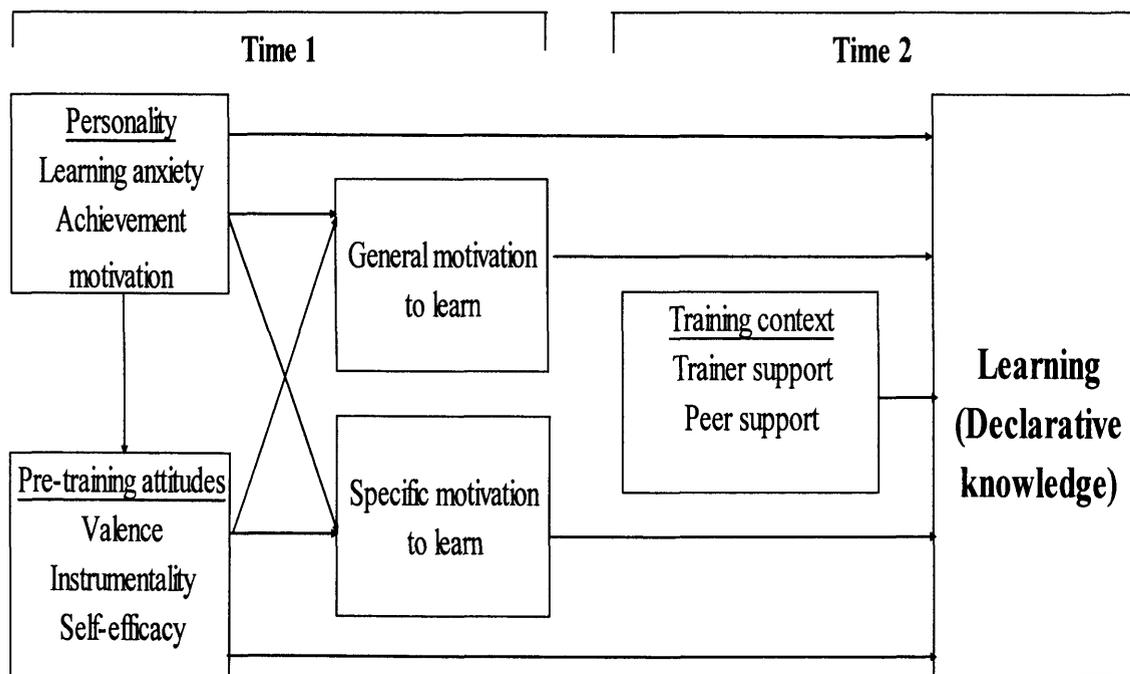


Figure 4.1: Proposed model of motivation to learn

4.2 Method

4.2.1 Background and samples

Collecting data from two departments at a large university in South Wales allowed the researcher to examine a large number of variables in two different samples and also to examine the differences between them. Tabachnick and Fidell's (2001) formula for calculating sample size requirements ($N > 50 + 8m$ (where m = number of independent variables), with both samples being larger than 130 ($50 + 8 \times 10 = 130$), it was possible to ascertain that the sample size in both studies was adequate for multivariate analyses. Below is a detailed description of each sample.

School of medicine

The initial sample included 423 students, including 221 fourth year medical students attending a seven week Obstetrics & Gynaecology clinical attachment, and 180 fifth year medical students attending an eight week Secondary Referral Practice. The sample was reduced because 45 students did not complete the pre-test but did complete the post test, and 101 completed only the pre-test and not the post-test. The final sample was therefore reduced from 423 to 277, consisting of 189 students from the Obstetrics & Gynaecology attachment and 88 students from the Secondary Referral Practice. The average age of this complete sample was 22.60 (SD = 1.48), with the larger proportion being females (177) and 52 described themselves as non-white.

The Obstetrics & Gynaecology clinical attachment is carried out over a seven week period, starting with a lecturing week, followed by five weeks of practical

placement in one of the hospitals across the region, and ending up with a consolidating study week before taking the exam. Each block involves a more or less equal number of students (approximately 50). Throughout the clinical attachment students were attached to a hospital in small groups or pairs with a consultant being designated to provide learning opportunities. During the attachment they were involved in practical learning; they completed a log book of their experiences and a case study that was monitored by a consultant in their place of practice. The Secondary Referral Practice module was designed to expose the students to the important day to day work of the hospital. Particular emphasis was given to the teaching of more acute issues of medicine, with attachment to Accident & Emergency and Fracture Clinics. During the module, students spent 50% of their time attached to General Medicine, and 50% of their time attached to General Surgery/A&E. The exact way the attachments worked depended on the local circumstances within each hospital. The Secondary Referral Practice section of the degree course took place in District General Hospitals in Wales. Approximately one third of the students attended this module at any time (approx 60-70 students). The rotation was repeated three times during one academic year.

School of engineering

The initial sample included 277 students, however, 31 did not complete the pre-test but did complete the post-test and 110 completed only the pre-test and not the post-test and were therefore excluded from the main sample. Complete data were available from 136 (49%), which comprised the study sample. Average age was 21.39 years (SD = 1.43), 110 were male and 26 were females, 47 attended the Professional Engineering

Studies (PES) module, and 89 attended the Structural Analysis (SA) module. All final year BEng students about to commence the SA module and final year MEng students about to commence the PES module were approached. Both were mandatory components for the Civil / Structural Engineering degree programmes. Students on the SA module learnt the theory and application of mathematical principles in Civil / Structural Engineering, whereas students on the PES module learnt the theory and application of management and administration. In contrast to medical student, the teaching of these modules was largely done through the mode of lecturing, and a small group tutorial once a week. Teaching was completed in the autumn semester (an average of 10 weeks) with an examination at the start of the following semester. Assessment of learning was also done through completion of group projects and assignments.

4.2.2 Procedure

Upon their arrival in the introductory session of the forthcoming study block / module, all students were asked to provide demographic data and to complete a pre-training questionnaire that assessed a range of variables. Participation was voluntary, and names appeared on a separate sheet on the questionnaire in order to be able to link the participants' performance. Participants were assured of confidentiality, and no individual responses were revealed. The researcher was given a course attendance list prior to the start of each course, which allowed her to assign participants with an ID number. This ID number remained with them for the duration of the study. Participants were informed that this information would be kept confidential and only seen by the researcher, and after all data had been entered onto the computer it would be anonymised. On their return from

the attachment to the consolidating study week, students completed a questionnaire that measured their experiences during the attachment as well as values and attitudes towards the subject.

4.2.3 Measures

The pre - and post - training questionnaires were designed to examine the range of variables described in Chapter 3. To recapitulate, these include individual characteristics, attitudinal variables, motivation to learn, and training support variables. All items asked participants to indicate on a scale from 1 to 7 how much they agreed or disagreed with statements (1 = *strongly disagree* to 7 = *strongly agree*). A copy of the questionnaire can be found in Appendix B.

The pre-training questionnaire asked respondents for information about *age*, gender, ethnic background, educational background, and first language. Given previous findings on the effect of age on learning outcomes (Colquitt et al., 2000), only age was included in the analysis. The measures of *learning anxiety* and *achievement motivation* were also included in the pre-training questionnaire, as well as attitudinal variables and motivation to learn. The attitudinal variables and specific motivation to learn were written to reflect the studies' context. *Valence* was measured with three items adapted from Colquitt and Simmering (1998) scale, e.g., "*It is desirable for me to do well during (name of training course) training*" and "*It is desirable for me to get a good grade at the end of (name of training course) training*". The *instrumentality* scale included four items that were based on Mathieu et al.'s (1992) and Eccles et al.'s (1983) definition of utility value. The items were written to reflect the extent to which attending the clinical

attachment or course module relates to current and future goals, such as career goals.

Example items include “*this clinical attachment/module will help me develop skills that are useful for a range of careers in medicine/engineering*”, and “*Studying (subject) is likely to help me with other aspects of my studies*”. Similarly, the measure of *Learning Self-efficacy* required respondents to compare themselves to other students attending the attachment or module in terms of ability to learn, for example, “*In comparison to others on this clinical attachment /module I expect to learn course material much quicker*”. In addition, the measure of specific motivation to learn was written to reflect students’ motivation to learn the material associated with the attachment / module, for example, “*I am motivated to learn the material during (name of training course) training*”.

The post-training questionnaire included measures of training support in which the students were asked to evaluate the extent to which they felt that their consultant (school of medicine) or lecturer (school of engineering) and fellow students supported them during the study period. To recapitulate, *trainer support* focused on aspects of feedback, guidance, and one to one learning opportunities, and *peer support* focused on help from fellow students during the study period with respect to learning activities.

Data related to students’ performance at the end of attachment/module exam (declarative knowledge) was utilised as the *training outcome* in these studies. Although exam content differed between the samples, the marking scheme followed the same rules of using the full marking scale from 0 - 100. The Structural Analysis module was assessed by a formal two-hour examination scheduled during the Autumn Semester Examination Period. The formal examination consisted of four questions, covering all the material taught, of which students were expected to attempt three. This ensured that the

students could demonstrate that they had met the learning outcomes. An example of an exam question is '*Assuming $L=20m$, $E=210\,000\text{ N/mm}^2$, $I=4000\text{ cm}^4$ and $p=200\text{kg/m}$, determine the lowest natural frequency of vibration in cycles per second*'. The written examination contributed 100 % towards the final mark of the module. The Professional Engineering Studies ES examination was a subject chosen from one of those covered in the module. Students were expected to write an essay on the chosen subject. An example of an exam question is '*Discuss the opportunities for civil, architectural, or environmental engineers at all levels to influence local, national, and international political decisions*'. The examination contributed 85 % towards the final mark of the module.

In the medical context attainment of knowledge regarding the related clinicopathological conditions was assessed in an Extended Matching Question (EMQ) paper at the end of the clinical attachments. The EMQ is widely used for the assessment of medical students. Each question addresses a theme that may be a symptom, sign, investigation, diagnosis or a management decision, and the stems are clinical vignettes relevant to clerkship and application of knowledge to clinical practice. With each question there was an option list from which the reader chose the most likely or the correct answer. For example, '*A married woman has right sided tubulo ovarian abscess which was removed in a surgery had an iucd placed before, causative organism:*
a)Chlamydia, b)gardenella, c)tuberculous, d)bacteroides, e)gonococcus, and '*Simple columnar epithelium is the lining of: (a) epithelium lining the ducts, (b)cornea, (c)testis, (d)uterine tubese.*

4.3 Results

4.3.1 Data treatment and analysis

The scores for each of the individual and attitudinal variables were calculated. The data were tested for normality and outliers. No violation of assumptions was identified and all variables were normally distributed. A few missing values were identified and were replaced by the mean for all cases in order to avoid a reduction in sample size. This method was selected because the proportion of missing values was random and very small (less than 5% of cases, Tabachnick & Fidell, 2001).

Descriptive statistics were computed for all variables, followed by internal consistency reliability estimates and inter-scale correlations, as well as examination of multicollinearity. Examination of the proposed model was conducted using a series of standard and hierarchical regression analyses. This method allows the testing of mediation as well as the significance of R-square change to examine the relative contribution of the sets of variables to the model (e.g., individual variables, attitudes, motivation, and training support) when these are entered in steps.

4.3.2 Descriptive statistics and group differences

Scale means, standard deviations, and Cronbach's alpha coefficients for the scales used in this study can be found in Table 4.1. Internal consistency coefficients (Cronbach alphas) ranged from .56 to .92, indicating acceptable levels of reliability for research purposes (Pallant, 2005).

Table 4.1: *Whole group scale reliabilities, and means and standard deviations on variables by study*

Variable	n	range	Mid point		Medicine N=277	Engineering N=136
Age				M	22.60	21.39
				SD	1.48	1.43
Learning anxiety	3	3-21	12	M	10.40	11.55
				SD	4.16	4.26
				α	.92	.87
Achievement motivation	10	10-70	40	M	42.68	42.35
				SD	7.12	7.32
				α	.72	.71
Valence	3	3-21	12	M	17.97	18.06
				SD	2.06	2.34
				α	.84	.80
Instrumentality	4	4-28	16	M	20.11	18.92
				SD	3.29	3.50
				α	.76	.69
Learning self-efficacy	3	3-21	12	M	10.33	11.53
				SD	3.33	3.33
				α	.91	.86
General motivation to learn	3	3-21	12	M	16.19	15.70
				SD	2.77	2.51
				α	.76	.56
Specific motivation to learn	3	3-21	20	M	17.47	16.21
				SD	2.29	2.67
				α	.81	.73
Trainer support	6	7-49	20	M	28.39	26.40
				SD	7.34	5.15
				α	.85	.72
Peer support	5	5-35	20	M	21.07	20.88
				SD	4.10	3.62
				α	.79	.67
Learning			12	M	61.00	58.27
				SD	13.45	15.49

With a mid point of 12 and a range of 3 to 21, it can be seen that both medical and engineering students reported above average levels of valence ($\bar{x} = 17.97$, $\bar{x} = 18.06$), as well as general motivation to learn ($\bar{x} = 16.19$, $\bar{x} = 15.70$) and specific motivation to learn ($\bar{x} = 17.47$, $\bar{x} = 16.21$). A between group comparison was conducted and revealed that the mean difference on four of the subscales were significantly different (learning self-efficacy, instrumentality, specific motivation to learn and trainer support), albeit with a small to moderate effect size (Cohen, 1988). This provides support for keeping these two samples distinct.

4.3.3 Correlations with general and specific motivation to learn

The discussion of the inter-scale relationships will centre on examination of the relationship between the model variables with general and specific motivation to learn and declarative learning. The results are reported in Tables 4.2 and 4.3.

To begin with, although general motivation to learn and specific motivation to learn were highly correlated (.59 and .54, respectively), this level of significance justifies keeping the constructs separate ($r^2 = .35$, $.29$, respectively). In both studies, age did not correlate significantly with either measure of motivation to learn, but learning anxiety and achievement motivation did emerge as significant correlates. Learning anxiety correlated negatively with both general and specific motivation to learn in the study with medical students ($r = -.12$, $p < .05$, $r = -.24$, $p < .01$, respectively) and in the study with engineering students ($r = -.25$, $p < .01$, $r = -.20$, $p < .05$, respectively). As expected, achievement motivation correlated positively and moderately with both measures in both studies ($r = .39$, $.28$, and $r = .43$, $.40$, $p < .01$, respectively). Given the specificity of the

measures, it is not surprising that in both studies valence ($r = .64$, and $.46$, $p < .01$) and instrumentality ($r = .44$, and $.32$, $p < .01$) correlated more strongly with specific motivation to learn, in comparison to general motivation to learn (valence: $r = .36$, $p < .01$ and $r = .20$, $p < .05$, instrumentality: $r = .22$, $p < .01$ for both studies). In contrast, in both studies learning self-efficacy correlated more strongly with general motivation to learn ($r = .24$, $p < .01$, $r = .29$, $p < .01$, respectively) than with specific motivation to learn ($r = .15$, $p < .05$, $r = .11$, $p > .05$). Thus, a similar pattern of relationship emerged between the studies.

The most puzzling result was that in contrast to the study prediction, motivation to learn (both general and specific) did not correlate significantly with learning in both studies. In fact, the only significant relationship was between learning self-efficacy and learning, and only for the engineering sample ($r = .27$, $p < .01$). Thus, though the level of relationship between general and specific motivation to learn justifies maintaining them as separate constructs, in contrast to the study prediction their associations with the model variables was similar between the studies. The regression analyses allowed further investigation of these relationships.

Table 4.2: Medical students - Intercorrelations of study variables (N = 277)

	1	2	3	4	5	6	7	8	9	10
1. Age	1									
2. Learning anxiety	-.02	1								
3. Achievement motivation	-.01	-.29**	1							
4. Valence	-.06	-.09	.22**	1						
5. Instrumentality	.01	-.11	.11	.42**	1					
6. Learning Self-efficacy	.07	-.22**	.29**	.18**	.13*	1				
7. General motivation to learn	.01	-.12*	.39**	.36**	.22**	.24**	1			
8. Specific motivation to learn	.01	-.24**	.28**	.64**	.44**	.15*	.59**	1		
9. Trainer Support	-.01	.00	.00	.09**	.02	-.07	.12	.06	1	
10. Peers Support	-.05	.12*	.06	.03	.09	-.05	.13*	.04	.21**	1
11. Learning	.19**	-.10	-.13*	-.05	.06	-.02	-.09	.01	-.13*	.06

* p < .05; ** p < .01.

Table 4.3: Engineering students - Intercorrelations of study variables (N = 136)

	1	2	3	4	5	6	7	8	9	10
1. Age	1									
2. Learning anxiety	.12	1								
3. Achievement motivation	-.01	.33**	1							
4. Valence	-.10	-.12	.17*	1						
5. Instrumentality	.09	-.19*	.14	.21*	1					
6. Learning Self-efficacy	.06	-.37**	.29**	.01	.24**	1				
7. General motivation to learn	.11	-.25**	.43**	.20*	.22**	.29**	1			
8. Specific motivation to learn	.10	-.20*	.40**	.46**	.32**	.11	.54**	1		
9. Trainer Support	.29**	-.36**	.23**	.08	.27**	.21*	.26**	.29**	1	
10. Peers Support	.03	-.07	.11	.08	.16	.23**	.20*	.03	.14	1
11. Learning	-.01	-.35**	.04	-.06	-.01	.27**	.07	-.09	.11	.06

* p < .05; ** p < .01.

4.3.4 Multicollinearity

The attitudinal and motivational variables included in the studies were expected, on the basis of theory, to be intercorrelated. Zero-order correlation matrices confirmed this expectation. In order to be sure that the degree of multicollinearity introduced into the regression analyses was not excessive, tolerance indices and condition indices with associated variance proportions for variables in the regression equation were inspected. This was done separately for each study. Among the medical students, tolerance coefficients ranged from .38 to .84. These values are sufficiently high to indicate a lack of problematic multicollinearity (Field, 2005). Condition indices ranged from 18.43 to 34.36. Belsely, Kuh and Welsch (1980) advise that condition indices greater than 30 only indicate multicollinearity problems if they co-occur with two variance proportions in excess of .50. Variance proportions for the medical sample ranged from .01 to .31 for the root in question, indicating a lack of problematic multicollinearity. For the engineering students, tolerance ranged from .49 to .79. Condition indices ranged from 20.17 to 32.33, but variance proportions for the roots greater than 30 did not exceed 50. These indicate that the regression analyses were not being affected by excessive multicollinearity.

4.3.5 Tests of hypotheses – multiple regressions

Hypotheses 1 -3 (see chapter 2) proposed that learning anxiety and achievement motivation will be significant predictors of general and specific motivation to learn; and that attitudinal variables (valence, instrumentality, and self-efficacy) would partially mediate these relationships. The hypotheses were tested using Baron and Kenny's (1986) three-part regression procedure (standardised beta weights are shown in all regression results). Baron and Kenny specified that for a complete mediation effect to occur; the predictor must correlate with the proposed mediator; the predictor must correlate with the outcome variable; and the predictor must become not correlated with the outcome variable when the mediator is also included in the regression equation. To test whether attitudes mediated the relationship between the predictors and motivation to learn, the relationship of learning anxiety and achievement motivation with valence, instrumentality and self-efficacy was first examined (step 1), then the relationship of learning anxiety and achievement motivation with general and specific motivation to learn (step 2), and finally the relationship of learning anxiety and achievement motivation with general and specific motivation to learn when valence, instrumentality, and self-efficacy were also included in the equation (step 3). The analyses for the mediation between the predictors and motivation to learn are shown in Tables 4.4 (medical students) and 4.5 (engineering students).

Table 4.4: *Medical students - Analysis of attitudes as mediating variables between the predictors and the measures of motivation to learn*

Predictors	Criterion variables						
	Step 1		Step 2			Step 3	
	General motivation to learn	Specific motivation to learn	Valence	Instrumentality	Learning self-efficacy	General motivation to learn	Specific motivation to learn
Learning anxiety	-.01	-.18**	-.03	-.09	-.14*	.02	-.15**
Achievement motivation	.39***	.23***	.21***	.08	.25***	.30***	.11**
Valence						.25***	.53***
Instrumentality						.07	.19***
Learning self-efficacy						.10	-.03
R^2	.15***	.11***	.05***	.02	.10***	.24***	.49***
ΔR^2						.09*	.38***

Note: Standardised beta weights are shown ^a $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.5: *Engineering students - Analysis of attitudes as mediating variables between the predictors and the measures of motivation to learn*

Predictors	Criterion variables						
	Step 1		Step 2			Step 3	
	General motivation to learn	Specific motivation to learn	Valence	Instrumentality	Learning self-efficacy	General motivation to learn	Specific motivation to learn
Learning anxiety	-.12	-.08	-.07	-.16	-.31***	-.05	-.04
Achievement motivation	.39***	.37***	.15	.09	.19*	.34***	.31***
Valence						.11	.36***
Instrumentality						.10	.21**
Learning self-efficacy						.15	-.05
R^2	.20***	.16***	.03	.04*	.17***	.25***	.35***
ΔR^2						.05	.19***

Note: Standardised beta weights are shown * $p < .05$. ** $p < .01$. *** $p < .001$.

1. The effect of learning anxiety on general and specific motivation to learn

School of medicine: Learning anxiety did not emerge as a significant predictor of general motivation to learn ($\beta = -.01, p > .05$) and although subsequent analyses showed that learning anxiety was significantly related to learning self-efficacy ($\beta = -.14, p < .05$), learning self-efficacy was not a significant predictor of general motivation to learn ($\beta = .10, p > .05$). In contrast, learning anxiety emerged as a significant predictor of specific motivation to learn ($\beta = -.15, p < .01$), and this relationship was not found to be mediated by any of the attitudinal variables. This is because learning anxiety was only significantly related to self-efficacy, but self-efficacy was not a significant predictor of specific motivation to learn ($\beta = -.03, p > .05$), which violates the basic assumption of mediation - that the mediator should be correlated with the outcome variable. Thus, as predicted in hypothesis 2, learning anxiety was a significant predictor of specific motivation to learn, but not general motivation to learn. The partial mediation hypothesis was not supported (hypothesis 3), because the relationship with specific motivation to learn was direct.

School of engineering: Learning anxiety did not emerge as a significant predictor of both general motivation to learn ($\beta = -.12, p > .05$) and specific motivation to learn ($\beta = -.08, p > .05$) so no further tests of partial mediation were necessary. Thus, the thesis' hypotheses were not supported.

2. The effect of achievement motivation on general and specific motivation to learn

School of medicine: The effect of achievement motivation on general motivation to learn was found to be partially mediated by valence, as achievement motivation was a significant predictor of valence ($\beta = .21, p < .001$) and valence was a significant predictor

of general motivation to learn ($\beta = .25, p < .001$). Moreover, when all the variables were included in the analysis, though the relationship between achievement motivation and general motivation to learn reduced from $\beta = .39 (p < .001)$ to $\beta = .30 (p < .001)$, and the reduction in beta was statistically significant ($t = 2.62, p < .01$) using Sobel's (1982) formula, the relationship remained strong. Similarly, the relationship between achievement motivation and specific motivation to learn was also found to be partially mediated by valence, as valence was a significant predictor of specific motivation to learn ($\beta = .53, p < .001$) and the reduction in the relationship between achievement motivation and specific motivation to learn when valence was also included in the equation from $\beta = .23 (p < .001)$ to $\beta = .11 (p < .01)$ was statistically significant ($t = 3.23, p < .001$) and the relationship remained significant. Therefore the study prediction is supported as the relationship between achievement motivation with both general and specific motivation to learn was partially mediated by valence.

School of engineering: The effect of achievement motivation on both specific and general motivation to learn was found to be direct, rather than mediated by attitudes. The lack of association between achievement motivation with valence ($\beta = .15, p > .05$) and instrumentality ($\beta = .09, p > .05$) violates the basic requirement of mediation that the predictor must be related with the mediator, and although achievement motivation significantly predicted self-efficacy ($\beta = .19, p < .05$), self-efficacy was not a significant predictor of neither general ($\beta = .15, p > .05$) nor specific motivation to learn ($\beta = -.05, p > .05$), which again violates the requirement that the mediator must be correlated with the outcome variable. This provides support for the prediction that achievement motivation will have an effect on both general and specific motivation to learn (hypothesis 2).

However, the hypothesis of partial mediation (hypothesis 3) was not supported because this relationship was direct and was not mediated by any of the attitudinal variables.

3. Predictors of learning

Hypotheses 4 and 5 (5a & 5b) were concerned with the effect of the model variables on learning. The main focus was on the relationship of general and specific motivation to learn with learning and on the proposition that training support variables will explain additional variance in learning outcomes, above and beyond that of motivation to learn and the other predicting variables. These propositions were tested using hierarchical multiple regression analyses. Age, learning anxiety, achievement motivation, valence, instrumentality, and self-efficacy were entered in step 1, general and specific motivation to learn were added to the equation in step 2, and trainer and peer support were added in step 3. Results for both samples are reported in Table 4.6. The table indicates proportion of variance accounted for in outcome measures at each step (adjusted R square change) and beta weights for each variable in the final equation after all variables were entered into the equation.

Table 4.6: Hierarchical Regressions for Learning

Statistic	Declarative knowledge	
	Medical	Engineering
Step 1		
R^2	.08***	.18***
β		
Age	.18**	.02
Learning Anxiety	-.15**	-.35***
Achievement motivation	-.15**	-.08
Valence	-.06	-.03
Instrumentality	.06	-.09
Self-efficacy	-.02	.17
Step 2		
ΔR^2	.01	.01
R^2	.09**	.19***
β		
General motivation to learn	-.09	.08
Specific motivation to learn	.08	-.13
Step 3		
ΔR^2	.03*	.00
R^2	.11***	.19**
β		
Supervisor support	-.14*	.01
Peer support	.12*	.00

* $p < .05$. ** $p < .01$. *** $p < .001$.

As can be seen in Table 4.6, there are some similarities and differences in the pattern of results between the studies. Unexpectedly, and in contrast to the thesis' prediction, neither general nor specific motivation to learn explained additional variance in learning in both studies ($\Delta R^2 = .01$, $p > .05$, $\Delta R^2 = .01$, $p > .05$, respectively). Moreover, in both studies none of the attitudinal variables (valence, instrumentality, and learning self-efficacy) emerged as significant predictors of learning. Differences between the studies did emerge with respect to the influence of training support variables. More specifically, although training support variables failed to explain additional variance in

engineering students' performance on the final exam ($\Delta R^2 = .00$, $p > .05$), for medical students they explained a significant portion, albeit only 3% ($p < .05$), with a negative relationship between trainer support ($\beta = -.14$, $p < .05$) and a positive relationship with peer support ($\beta = .12$, $p < .05$). This indicates that students who reported lower levels of trainer support performed better at the final exam, and students who reported higher levels of peer support achieved a higher grade. Thus, the thesis' prediction is only partly supported because training support variables explained additional variance in learning in only one of the studies, and in one case the relationship found was in the opposite direction to the study prediction.

Overall, the model explained 11% of the variance in learning in the study with medical students, and 19% in learning in the study with engineering students. As a group, individual characteristics explained the most significant amount of variance in learning ($R^2 = .08$, $p < .001$, $R^2 = .18$, $p < .001$, respectively), with more variables having a significant impact on learning for the medical sample than engineering. More precisely, whereas age ($\beta = .18$, $p < .01$), learning anxiety ($\beta = -.15$, $p < .01$)*, and achievement motivation ($\beta = -.15$, $p < .01$) all emerged as significant predictors of learning for the medical sample, for the engineering sample, students' performance on the exam was only influenced by their level of anxiety about learning the subject ($\beta = -.35$, $p < .001$).

* *This relationship must be interpreted with caution as the finding may indicate a suppression effect (Cohen & Cohen, 1983). More specifically, the zero-order correlation between learning anxiety and learning in this study was not significant, but the regression path was significant when entered with all other predicting variables. Thus, the suppressor variable enhances the effect of learning anxiety on learning.*

The reader may choose to consult Figures 4.2 and 4.3 in order to get a complete picture of the results. These figures show the results of a post-hoc analysis where (1) the relationship of all the study variables with learning was examined (see Table 4.6 above), (2) the relationship of all the predicting variables with general motivation to learn and specific motivation to learn (examined separately) was examined. This step was different to the one carried out in the mediation analysis (Tables 4.4 and 4.5), as age was also included in the equation as a predictor of motivation to learn. The final stage of this analysis examined the relationship of the study variables with valence, instrumentality, and self-efficacy (also examined separately). Again, this was different to the mediation analyses as it included age as a predicting variable of these attitudes. The figures show the paths where significant results were found.

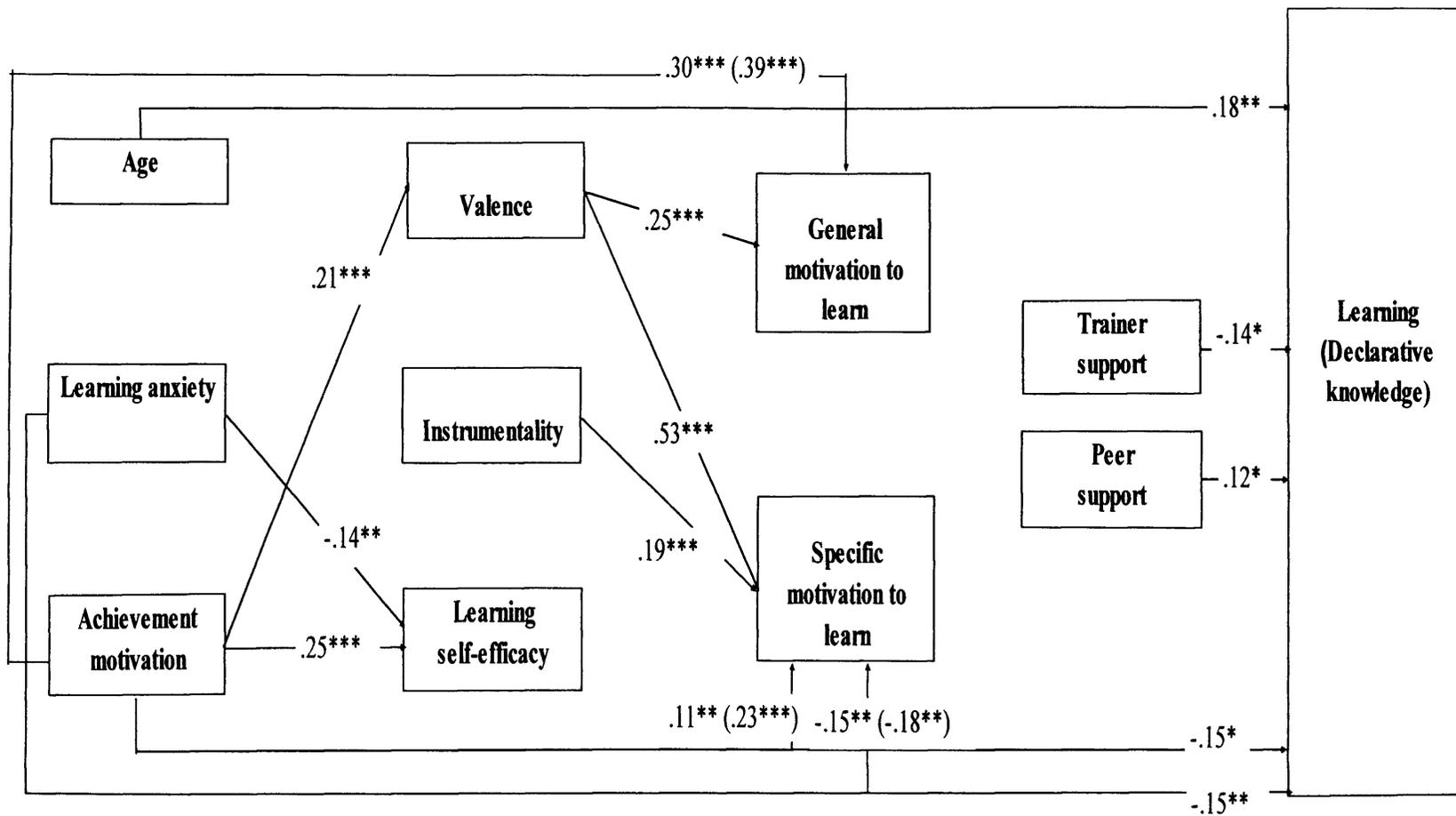


Figure 4.2: School of Medicine - Path coefficients for the tested model
 In paranthesis are the results before the mediators (attitudes) were entered into the equation

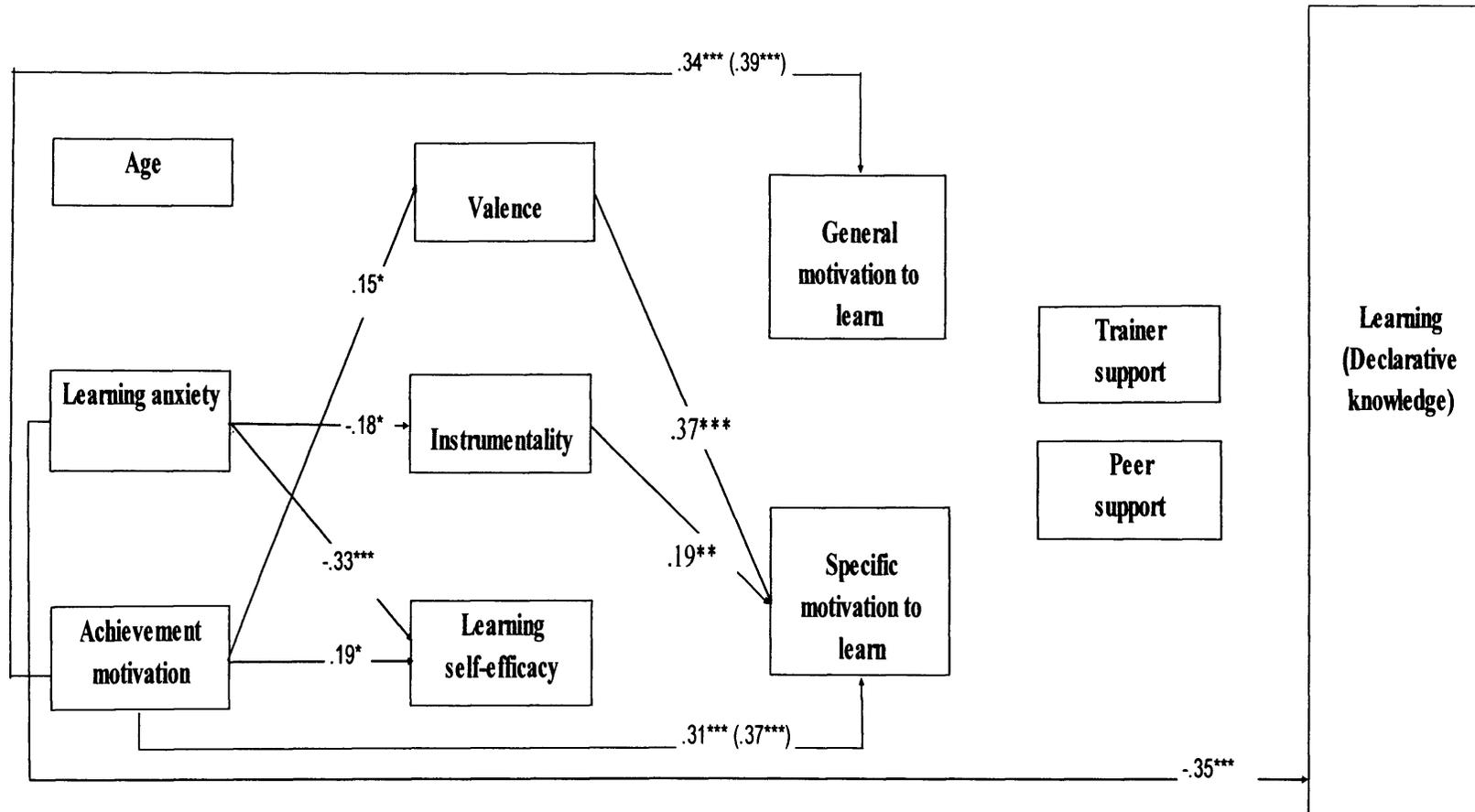


Figure 4.3: School of Engineering - Path coefficients for the tested model

4.4 Discussion

The purpose of this chapter was to examine the thesis' model in two different training environments in the educational domain in order to ascertain its generalisability across contexts. The model was examined through a series of regression analyses. The first stage of the analyses looked at the relationship between learning anxiety and achievement motivation with both general and specific motivation to learn. Second, the relationship of the model variables with students' performance, as measured through declarative learning, was examined. This discussion provides a summary of the results with a focus on study comparison. Study limitations and suggestions for future research will be discussed extensively in Chapter 6.

4.4.1 Predictors of general and specific motivation to learn

Table 4.7 provides a summary of the mediation analyses for each study. In contrast to the study prediction, learning anxiety was only predictive of specific motivation to learn in the study with medical students, and unexpectedly this effect was direct and not mediated by any of the attitudinal variables. This suggests that the more anxious medical students felt about learning the material in the forthcoming attachment, the less motivated they were to learn the course materials. Moreover, the lack of association between learning anxiety with valence and instrumentality provide some new insights. By disaggregating specific motivation to learn from its closely related expectancy components, this study shows that learning anxiety is predictive of specific motivation to learn, rather than valence or instrumentality. In addition, though not directly related to the study hypotheses, by disaggregating these attitudinal and

motivational constructs, the study provided some evidence on the different relationship with specific and general motivation to learn.

Table 4.7: *Summary of the mediation analyses for each study*

	General motivation to learn		Specific motivation to learn	
	School of Medicine	School of Engineering	School of Medicine	School of Engineering
Learning anxiety	No effect	No effect	Direct effect	No effect
Achievement motivation	Partially mediated by valence	Direct effect	Partially mediated by valence	Direct effect

Learning anxiety was found to be positively related with learning self-efficacy, suggesting the more anxious medical students felt about the subject, the less confident they were in their ability to learn the course material in comparison to others (self-efficacy). The same results were found in the study with the engineering students, and in both studies self-efficacy did not function as a mediator as it was not a significant predictor of the measures of motivation to learn. In fact, contrary to the study with medical students, learning anxiety was not related to either measures of motivation to learn in the study with the engineering students. Thus, like medical students, engineering students who feel anxious about the training course are likely to feel less confident in their ability to learn the course materials, because self-efficacy failed to explain motivation to learn as well as learning, this has no significant bearing on the thesis' model.

As expected, achievement motivation was predictive of both measures of motivation to learn in both studies; however, whereby for medical students the effect of achievement motivation on general and specific motivation was partially mediated by valence, the same relationships for engineering students were direct. Regardless of these differences, however, these results contribute to the literature on the effect of achievement motivation on both general and specific motivation to learn (Carlson et al., 2000; Colquitt et al., 2000), indicating that this personality variable should be included as one of the important predictors in such models. It shows that one's motivation to achieve success, enjoyment of surmounting obstacles and completing tasks undertaken, and the drive to strive for success and excellence (Robbins et al., 2004) are strongly linked to a person's motivation to learn, in the educational contexts examined in this thesis.

In comparison to the mediating effects of valence and self-efficacy, instrumentality was found to be positively related with specific motivation to learn in both studies, but the variable did not function as a mediator between any of the individual variables and the measures of motivation to learn. Instead, the findings provide evidence for the importance of the variable and its inclusion as a separate construct from valence and self-efficacy (Chiaburu & Lindsay, 2008), showing that students who are able to see the link between studying the attachment / module content and how it will benefit other aspects of their studies and future career prospects, are likely to be more motivated to learn the course content. These findings clarify and expand previous work in several ways. First, by extending prior work that examined self-efficacy and valence predictors of motivation to learn (Carlson et al., 2000; Colquitt & Simmering, 1998; Colquitt et al., 2000), it demonstrates that different components of social cognition are differentially

related to specific types of motivation. Instrumentality is thus positioned as an important predictor of specific motivation to learn, but not general motivation to learn.

4.4.2 Predictors of learning

Results are difficult to interpret with respect to the associations of general and specific motivation to learn with learning, given that in both studies both measures failed to explain any of the variance in learning (see Table 4.8). However, it is premature to conclude that motivation to learn is not important for academic achievement as there can be a number of explanations for this finding including disparity in measurement, differences in training contexts and in sample characteristics. Not only was the measure of motivation to learn defined differently from previous research in the educational context (e.g., Deci & Ryan, 1985; Eccles et al., 1983; Weiner, 1984), but comparisons with previous research in the organisational domain are inappropriate due to differences in the learning criterion. The written exam (learning outcome) was undertaken several months after training. Though this does not have implications for the more permanent variables of personality (Barrick & Mount, 1991) and background variables (e.g., age) it may be that the effect of motivation to learn and support variables on learning would have been more prominent had students been examined soon after completion of training, which is usually the case in the context of organisational training. Future research should examine whether students' performance on the written exam would differ had students been examined earlier and whether any of the study variables would have predicted this difference. Finally, is it likely that our results do not support previous findings due to the context in which the research was undertaken? One possibility is that by the nature of the

learning context, students need to pass the exams in order to gain other related outcomes (e.g., needing to get a certain grade in order to enter a particular speciality or further academic training, or for future jobs). Thus, their performance on the exam may have nothing to do with how they feel or what they think about the subject; context specific attitudes and motivation may not drive the effort and the resulting performance, but rather their overall desire to complete the degree course successfully.

To add to this predicament, the attitudinal variables that are often utilised as a framework for measuring motivation to learn (e.g., valence, instrumentality, and self-efficacy) did not emerge as significant predictors of learning. This is rather puzzling, given that previous research has tended to report a positive relationship between Vroom's valence-expectancy framework (Tannenbaum et al., 1991; Quinones, 1995) and self-efficacy measures (Chuang et al., 2005; Tai, 2006) with learning. Given the robust evidence for the link between self-efficacy and competence perceptions (Bandura, 1997;

Table 4.8: Summary of the predictors of learning – A between studies comparison

Predictor	Learning	
	School of Medicine	School of Engineering
Age	+	ns
Learning anxiety	-	-
Achievement motivation	-	ns
Valence	ns	ns
Instrumentality	ns	ns
Learning self-efficacy	ns	ns
General motivation to learn	ns	ns
Specific motivation to learn	ns	ns
Trainer support	-	ns
Peer support	+	ns

Note: The +/- indicates a statistically significant effect of the predictor on the outcome variable. ns = not significant

Pintrich & Schunk, 2002), and motivational beliefs, values, and goals (Eccles & Wigfield, 2002) with academic achievement (Meece, Wigfield, & Eccles, 1990; Wigfield, 1994), this rather puzzling finding must be interpreted with caution. It may not be the case that valence, instrumentality, and self-efficacy are not important, but rather that this finding is context specific and may be linked to restricted range. Participants in both studies were students attending the more vocational type courses (i.e., medicine and engineering), and were also towards the final stages of their studies. Had the study included a wider range of courses that represented students from a range of disciplines at different stages of their studies, different results may have emerged. Indeed, research

does suggest that the power of theoretical models to predict students' performance differ between disciplines (Breen & Lindsay, 2002).

One of the greatest contributions of this work is the integration of training support variables into the model, and here is where the contextual differences are most pronounced. Particularly the findings that trainer and peer support had a unique effect on students' performance at the exam, above and beyond the predicting variables in the study of medical students, whereas training support variables had no effect on exam performance for engineering students. These differences have likely to have occurred due to the dissimilar nature of the training programmes.

In the medical context, the items in the scale that measured *Trainer support* required students to reflect back on their interaction with a *consultant*, whereby trainer support in the engineering context required students to think about the *lecturer's* input. Although the role of a consultant and the role of a lecturer are both concerned with teaching, the expectations of students with respect to support may differ. During a medical attachment, consultants, whose primary role is not teaching, are expected to teach the students through discussions of learning and feedback in a 'hands on' hospital environment. These attachments are similar to vocational placements, in which students receive practical training and experience that is required under, and is an assessable part of their course, leading to the issuing of a qualification or statement of attainment. In comparison, the items in the engineering study were worded to reflect student's perception of *lecturer support*, whom in contrast to the consultant; the main role is to do with teaching. Whereby teaching during medical attachments is more practical in nature, teaching in the engineering environment is primarily done in formal lecturing theatres



and tutorials, and students may expect very little apart from the lecturer to simply provide them with knowledge with no expectations of feedback or discussion of learning.

Given these contextual differences, is it possible to conclude that trainer (or consultant) support is an important predictor of exam results in the study of medicine and that trainer (or lecturer) support is not an important predictor of exam results in the study of engineering? The answer is not clear cut. First, the negative relationship between trainer support and declarative knowledge in the medical students' study must be explored. Is it indeed the case that the less support students are given by the consultant during these attachments the better they perform on exams, or is it possible that students who report lower levels of consultant support are also those who require less support? As suggested by previous research into mentoring (Larose, Cyrenne, Garceau, Harvey, Guay, & Deschenes, 2009), support may be more attractive to students who have or anticipate having difficulty on the academic front. Further exploration of this relationship is required before conclusions about the impact of trainer support on exam results of medical students are made. Though one might be inclined to conclude that the academic achievements of engineering students has little to do with trainer support, this finding should not be read as evidence for the lack of importance of lecturer's support. Instead, this may tell us that trainer support, as measured in the present study, has no impact on performance. The items required students to reflect upon issues such as whether the lecturer provided them with specific guidance as to how they could improve, and whether the lecturer was available to discuss learning when needed. The lack of associations between this scale and learning in this context may simply be a case that other types of trainer support may be important, for example, lecturer's consideration and care (Gloria

& Robinson Kurpius, 1996), feeling comfortable asking the trainer questions during and outside class (Solberg et al., 1998) and lecturer's immediacy (Allan, Witt & Wheelless, 2006). Further research that expands upon the thesis' definition of trainer support may lead to more encouraging results about the role of trainer support in improving learning.

Similarly, is it appropriate to conclude that peer support is important for the exam performance of medical students, but not for engineering students? Again, these results should be interpreted with caution. Students attend medical attachments in pairs or small groups of students, and the *peer support* scale was designed to tap into the support provided by these peers. In the engineering study, the *peer support* scale was designed to tap into the support provided by all other students who attend the lectures with them. Thus, whilst the positive relationship in the medical study between peer support and exam performance indicates that students who felt supported by other students during the attachment obtained better grades on the exam, at this stage it is premature to conclude that peer support is not important in the study of engineering. Had peer support been measured with a more specific activity in mind in which students had the need to rely on each other support for studies (as the case was for medical students), results may have been similar. By asking students to think about their peers as 'other students attending the lecture', the results may be diluted by lack of specificity.

One feature of the findings reported in this chapter stands out above all others. Given the number of potential predictors of learning, quite a small portion of the model actually predicted learning (11% for medical students and 19% for engineering students). As previously discussed, a particularly surprising finding was that students' attitudes and motivation had no impact on their exam grades. Rather, medical students' performance

was largely predicted by their characteristics and to some extent by training support variables, whereas out of all possible predicting variables, engineering students' performance was only affected by levels of learning anxiety. Thus results support the notion of trait theorists who advocate that academic performance is largely predicted by individuals' dispositions and characteristics (Furnham, Chamorro-Premuzic, & Mcdougall, 2003; Kanfer, 1991).

The current study is not without limitations, e.g., the use of self-reports and common method bias. As these limitations are common to all the studies in the current thesis, they will be discussed in great detail in the concluding chapter of this thesis (chapter 6).

4.4.3 Summary

From a practical perspective, this study highlights the importance of context and how models can translate differently in different training programmes (e.g., Breen & Lindsay, 2002). Although in both studies individual characteristics emerged as the most influential of learning, the differences between the studies show that what's important in one setting, may not be as important in another. More specifically, whereby being older, feeling less anxious, and scoring low on achievement motivation is linked to higher exam grades of medical students, these variables do not appear as important in the engineering context, with only learning anxiety having a significant effect. Moreover, whereby training support, in the form of trainer and peer support, as measured in the current studies, play an important role in medical students' performance, this was not the case with engineering students. Thus, to improve medical students' performance on exams,

educators should pay attention to the effect of age and may consider providing additional support to older students, looking at issues that may place them at risk of gaining lower grades (e.g., financial and family responsibilities). With respect to achievement motivation, this issue can be tackled at the recruitment stage and effective instruments can be developed to assess whether potential students will be successful on the medical course. In both the engineering and medical contexts, consideration should be given to the impact of learning anxiety, and educators should explore ways to reduce levels of anxiety towards the taught subject in order to improve exam grades. Such interventions can include aspects of support from previous students who can testify that their levels of anxiety were unwarranted, or the school may even decide to explore the underlying cause of such anxieties in order to establish what it is that they need to target in order to tackle the issue.

Before conclusions are drawn, applications of this model in domains other than medicine and engineering will elaborate our understanding of the stability of the relationships among the variables in the proposed motivation to learn model. The following chapter therefore further examine the external validity of the thesis' conceptual model in three qualitatively different training environments within the organisational domain, where the study design was identical across the studies.

CHAPTER 5

MOTIVATION TO LEARN IN ORGANISATIONAL TRAINING

5.1 Introduction

This chapter examined the model of motivation to learn proposed in this thesis with three qualitatively different training cohorts in law enforcement organisations. This training environment is markedly different from studies carried out thus far in the field of motivation to learn. More specifically, apart from one recent study with a Police Service in Australia (Machin & Fogarty, 2004), previous research has been carried out with administrative (Faction et al., 1995; Major et al., 2006; Martocchio & Webster, 1992; Mathieu et al., 1992; Smith et al., 2008; Switzer et al., 2005; Tharnoue, 2001; Tracey et al., 2001; Warr & Bunce, 1995; Webster & Martocchio, 1993), military organisations (Kanfer & Ackerman, 1989; Ford et al., 1992; Tannenbaum et al., 1991) or student populations (Baldwin et al., 1991; Chuang et al., 2005; Colquitt & Simmering, 1998; LePine et al., 2004; Mathieu et al., 1993; Quinones, 1995).

The chapter consists of three studies that were conducted with two law enforcement organisations in the UK. Although the samples were similar with respect to the organisational context (i.e., employees of law enforcement organisations), they differed considerably in terms of characteristics as well as the objectives, nature and methods of training. The first two studies were conducted in a single law enforcement organisation in Wales. The first study included a sample of newly recruited Police Community Support Officers (PCSOs) on an initial training programme. Trainees were at

the start of their career with the organisation and the training was largely classroom based with a focus on learning organisational policies and procedures. The second study was conducted two years later and included a sample of police officers on various driving courses. Trainees were at a more advanced stage of their career with the organisation and the training was skill based with a focus on the practice of driving. The third study differed from the previous two not only because it was conducted in a different organisation altogether, but also because trainees were uniformed and non-uniformed employees on a wide range of initial and further development training courses. Trainees were at various stages of their career with the organisation and similarly to the first study, the courses were mainly classroom based and were undertaken at the organisation's training college. Thus, it was reasonable to suggest that these three samples of trainees had different experiences and expectations and were therefore deemed suitable for a comparison of the study model.

Like the previous chapter, the model in the current chapter was based on the literature reviewed in Chapter 2. Thus, the studies presented here were designed to address the thesis' hypotheses. These were: (a) the relationship of the predicting variables (learning anxiety and achievement motivation) with general and specific motivation to learn was proposed to be partially mediated by attitudinal variables (valence, instrumentality, and / or learning self-efficacy), (b) specific motivation to learn and general motivation to learn were proposed to be predictive of training outcomes, and (c) it was proposed that trainer and peer support will explain additional variance in training outcomes, above and beyond motivation to learn, pre-training attitudes, and individual characteristics.

Unfortunately, although consent was given to access trainees' performance on various achievement tests, in reality, such data were not available. There were two main reasons for this shortfall. First, some trainers chose not to administer the tests altogether so a substantial number of trainees did not take the tests at all, and second, folders containing results were often impossible to locate. Therefore, unlike the studies in the educational domain, learning was not included as an outcome variable in the current chapter and the focus instead was on the strength of the variables to predict post-training self-efficacy and affective reactions to training. Research consistently shows the importance of these variables for subsequent behavioural outcomes such as transfer of training and job performance (Colquitt et al., 2000; Tracey et al., 2001; Sitzmann et al., 2008). For example, Colquitt et al. (2000) found that post-training self-efficacy is predictive of transfer, which in turn was predictive of job performance, and Tracey et al. (2001) found that affective reaction significantly impacts upon utility reactions, which in turn is predictive of declarative and application based knowledge.

Utilising reaction measures as a training outcome variable is a common practice in research (Sitzmann et al., 2008). Trainees' reactions refer to subjective evaluations learners make about their training experiences and are typically measured with post-training surveys (Kirkpatrick, 1996). Most researchers would agree that reaction is a multi-dimensional construct. For example, Alliger et al. (1997) distinguished between affective and utility reactions, and Warr & Bunce (1995) provided support for a tri-dimensional model, including reported enjoyment of training, perceived usefulness, and perceived difficulty. Adding a fourth dimension to Warr & Bunce (1995) model, Warr et al. (1999) proposed that motivation to transfer is also a dimension of post-training

reaction to training. Common to these models is the recognition that satisfaction or enjoyment with the training course is a unique dimension of reaction to the training course. Thus, in this thesis, affective reactions to training are concerned with trainees' satisfaction with the manner in which the training course was organised and delivered. This reflects trainees' reported satisfaction with the quality of the materials and assignments, the daily schedules, and communications regarding activities during training (Noe & Schmitt, 1986).

Figure 5.1 depicts the research framework that was addressed in the chapter. The model was examined and compared between the three studies to ascertain its relevance and applicability across contexts.

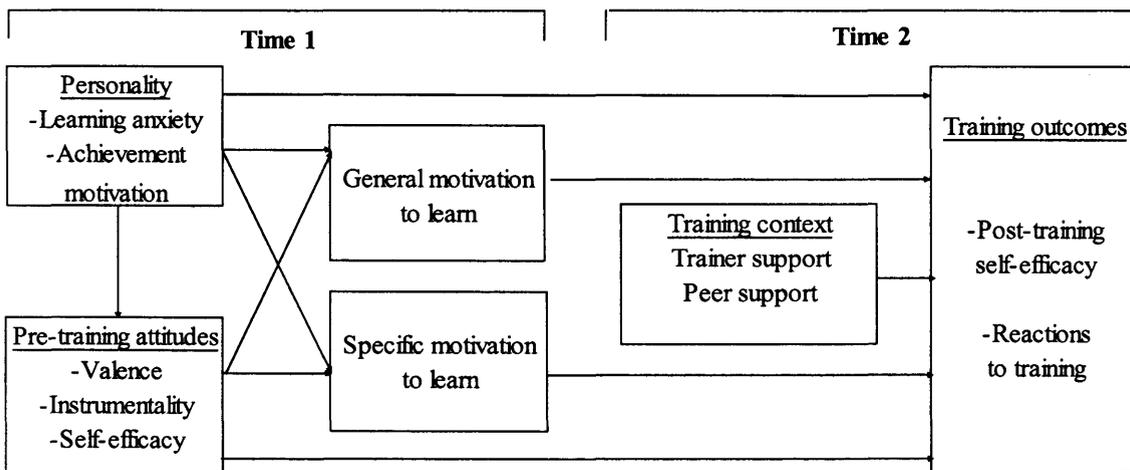


Figure 5.1: Proposed model of motivation to learn

5.2 Method

5.2.1 Background and samples

The aim was to collect as large a sample as possible in each study in order to meet the requirements for regression analyses. Following Green's (1991) rule of thumb for the required ratio of cases to independent variables in regression analysis ($N \geq 50 + 8m$), each study needed to contain at least 122 participants. Whilst one study contained a large enough sample ($n = 148$) and another was very close to the required ratio ($n = 117$), one study contained a small sample size ($n = 93$). Given the thesis' design (i.e., model comparison) it was impractical to overcome this problem by reducing the number of variables. Implications for interpretations will be considered in the discussion of this chapter.

Police Community Support Officers (PCSOs)

This study was conducted in collaboration with the Training & Development Division of a Police Force in Wales. Data from a sample of newly recruited PCSOs were collected during a larger project involving the evaluation of a training programme. PCSOs are members of police staff whose main function is to provide an additional uniformed presence within communities. They work from police stations and are managed by police supervisory officers. Due to successful introduction of this role, police forces across the UK were allocated additional funding in order to substantially increase the number of PCSOs in their force by 2008. This has inevitably meant an increase in

resources related to selection and training, resulting in an intake and training of 36 newly recruited PCSO every 6 weeks from September 2006 to April 2007.

The training of PCSOs is a compulsory initial training programme designed to introduce new recruits to the organisation and their role. The training is carried out in three phases within a 16 weeks period. Phase 1 is referred to as 'the initial training phase' and is based in a classroom environment. The focus of this phase is on rules, procedures, and duties. Trainees then move on to Phase 2, which is referred to as 'the tutoring phase'. Here they are placed in a police station and under the supervision of an assigned mentor they are trained to deal with 'real' cases and interact with the public. This phase is seven weeks long, with six weeks in the station and one week leave. Phase 3 is then the final phase of official training where PCSOs return to the classroom environment in order to integrate their newly acquired knowledge and skills.

Data collection was undertaken from December 2006 to November 2007, at the start and end of each training course. A total of 5 training cohorts participated in the study, with a breakdown of 37, 36, 37, 36 and 13 participants in each cohort. Though trainees attended the classroom based training in the same facilities, the training was not facilitated by the same trainers and the second phase of training was completed in various police stations.

The sample included 159 newly recruited PCSOs attending a sixteen week initial training. Forty trainees did not complete the pre-training questionnaire but did complete the post-training questionnaire and two completed only the pre-training questionnaire and not the post-training questionnaire and were therefore excluded from the main sample. Complete data were available from 117 (74%) participants and these 117 constituted the

study sample. Average age was 27 (SD = 8.02; range 19-51), 63 were men and all but one of the trainees described themselves as white. The majority of trainees joined the organisation because they wanted to eventually become Police Constables (n = 92), whereby only 25 were primarily interested in the role they were actually training for.

Driving School

This study was conducted in collaboration with the Driver Training Unit at the same organisation as the study with PCSOs. Participants were police officers who attended training between May to July 2008 at the Unit where all driving courses are completed for the region. The common thread of the training courses was that the objective of training was either to develop or to improve police driving skills. In contrast to the study with PCSOs, participants attended a diverse range of courses, varying with respect to content, type and length including: Advanced Driving course; Advanced Refresher Driving; Van Driving; Motorcycle Advanced Driving; Motorcycle Refresher Driving; Standard Motorcycle; Standard driving; Standard Improver Driving; Pursuit Driving; Van Driving; and 4x4 Driving. Courses ranged also in terms of duration, with some being a two day course, whilst others lasted four weeks. The average length of training was 9 days.

The original sample included 106 trainees who were recruited on a voluntary basis whilst attending training. The sample was reduced to 95 as one participant did not complete the pre-training questionnaire and ten participants did not complete the post-training questionnaire. In addition, as two participants systematically failed to respond to some items that compose the study variables the sample was further reduced to 93

trainees. All trainees participated in training for developmental purposes and on average had worked for South Wales Police for 11.09 years (SD = 8.78), ranging between 11 months to 30 years. The average age of participants was 36.27 years (S.D. = 7.38) ranging between 24 to 49 years old. There were 76 males and 17 females and the majority described themselves as white. The sample consisted of 77 Police Constables, eight Sergeants, one Inspector, three Police Staff and four Detectives.

Police Training College

This study was conducted with the Training College of a Police Force in England between May to July 2007. The study included a sample of participants attending courses that were varied in terms of duration and content, with trainees at different stages of their career with the organisation. This included: (1) trainees from three different Initial Police Learning Development Phase (IPLDP) courses, where trainees were training to be Police Constables, (2) trainees from an initial PCSOs training course, (3) PCSOs attending a two weeks Continuation course to learn newly enforced laws, (4) Police Constables and Sergeants transferring from other forces in the UK attending a course to become familiar with the organisation and associated issues and practices, (5) Police Constables (PCs) on a Professional Learning course, and (6) uniformed and non-uniformed trainees on a Leadership course. All but one of the courses (initial PCSOs training) lasted for two weeks.

A total of 156 trainees volunteered to participate in the study. One participant did not complete the pre-training questionnaire and seven did not complete the post-training questionnaire, and were therefore excluded from the analyses. Complete data were

available from 148 (95%), with 85 males and 63 females, with an average age of 31.80 (SD = 8.60; range 20-58). All but two participants described themselves as white. The sample included 73 participants (49%) who were new recruits and 75 participants (51%) who were employees on further development activities.

5.2.2 Procedure

Although the studies were carried out at different points in time and with different organisations and training cohorts, the study design was virtually identical. All questionnaires were completed in class time which had already been arranged with the trainers in charge. The trainers were not present in the class during the studies; however, the researcher was present at all times.

The researcher was given a course attendance list prior to the start of each course, which allowed her to assign participants with an ID number. This ID number remained with them for the duration of the study. Participants were informed that this information would be kept confidential and only seen by the researcher, and after all data had been entered onto the computer it would be anonymised. The researcher attended the training centres on the first day of each training course (or as near to the first day as possible). Each trainee was provided with an envelope containing an information sheet, consent form and the pre-training questionnaire with their ID number. The researcher then read out the information sheet to the class, thus, all information was standardised. Those who decided to participate in the study then completed the consent form and the questionnaire. On completion of the questionnaire, trainees placed all documents back into the envelope, sealed it and placed it in the box marked 'Training Study'. Trainees who did not wish to

participate, were advised at the beginning of the study to still place their envelope in the box along with the uncompleted contents, so that no-one would know if they had participated or not. Participants took approximately 20 minutes to complete the first part of the study.

The researcher returned to the training centre at the end or near to the end of each of the training programmes. Each participant received an envelope containing the post-training questionnaire with their assigned ID number. Trainees who did not complete the pre-training questionnaire but wanted to complete the post-training questionnaire were provided with an information sheet, consent form and the post-training questionnaire. The researcher advised participants to complete the questionnaire, place it back in the envelope, seal-it and then return it to the box marked 'Training Study'. On completion of the second questionnaire, each trainee received a debriefing sheet. The post-training questionnaire took approximately 15 minutes to complete.

5.2.3 Measures

The questionnaires used in all three studies were the same as the questionnaires used in the previous chapter (Appendix B). To recapitulate, the pre-training questionnaire included measures of achievement motivation and learning anxiety (individual characteristics), valence, instrumentality, and learning self-efficacy (attitudinal variables), and motivation to learn (general and specific). Items on the scales of valence and specific motivation to learn had to be re-worded to reflect the context, i.e., instead of asking about a clinical attachment or a module, the questions referred to the specific training course. The *instrumentality* scale was changed slightly to reflect the

organisational context but in its core was based on the same definition as the educational context (e.g., Mathieu et al.'s, 1992 definition). Like the educational context, the scale included four items that assessed the relationship between completing the course and perceived benefits, e.g., *“this course will help me develop skills that are useful for a range of similar jobs”*, and *“the knowledge and experience I gain during (name of course) training will help advance my career”*. Otherwise the variables were identical to the previous chapter.

The post-training questionnaire examined training support variables (trainer and peer support), post-training self-efficacy and trainees' affective reactions to training (training outcomes). The measures of training support were identical to the previous chapter. *Post-training self-efficacy* was measured using three items from Martocchio and Judge's (1997) measure that focuses on how capable trainees feel about using the knowledge and skills they acquired during the course (e.g., *“I feel confident about using the techniques taught on this course”*). The *Reactions* scale included eleven items from Noe and Schmitt's (1986) reaction criteria. The scale is concerned with the extent to which trainees were satisfied with the manner in which the course was organised, e.g., *“Communications concerning the activities in the training centre were clear and adequate”*, *“The daily schedule of activities at the training centre was too demanding”*, and *“The quality of materials and assignments used at the training centre were satisfactory”*.

5.3 Results

5.3.1 Data screening

In all three studies a few random missing values were identified and were replaced by the mean for all cases in order to avoid a reduction in sample size (Tabachnick & Fidell, 2001). An examination of the trimmed means indicated that the effect of outliers was negligible (Pallant, 2007), and therefore, they were included. Kline (2005) suggests that variables with absolute values of the skew index greater than 3.0 can be described as “extremely” skewed and that absolute values from about 8.0 to over 20.0 can be described as indicating “extreme” kurtosis (p.50). With this criterion in mind, no violation of assumptions was identified and all variables were normally distributed in all three studies. The absolute value of general motivation to learn in the study at the driving school fell into the criteria of extreme kurtosis (8.58), however, transformation made interpretations meaningless as the sign of the relationship between general motivation to learn and the other study variables became negative. Indeed, the use of transformations may alter the meaning and interpretation of data (Field, 2009) and research has found that in the absence of heterogeneity of variance and very unequal sample sizes violation of normality has little effect on the accuracy of results (Tabachnick & Fidell, 2001). Analyses were therefore carried out on the non-transformed data.

5.3.2 Descriptive statistics and group difference

Table 5.1 presents the means and standard deviations for each study as well as Cronbach alpha coefficients for the scales used. As can be seen, most scales reached adequate reliability ($\alpha \geq .60$; Aiken, 1997), except specific motivation to learn ($*\alpha = .55$) and peer support ($*\alpha = .53$). However, Kline (1999) noted that when dealing with psychological constructs, such low values can be expected because of the diversity of the constructs being measured and that these levels are acceptable for research purposes. With a mid point of 12 and a range of 3 to 21, it can be seen that all three groups of trainees had relatively high means on valence ($\bar{x} = 19.63$, $\bar{x} = 19.30$, $\bar{x} = 18.24$), instrumentality ($\bar{x} = 25.57$, $\bar{x} = 23.80$, $\bar{x} = 22.95$), and both general motivation to learn ($\bar{x} = 19.23$, $\bar{x} = 18.06$, $\bar{x} = 17.74$), and specific motivation to learn ($\bar{x} = 20.00$, $\bar{x} = 19.33$, $\bar{x} = 18.88$). This has implications for a ceiling effect and will be discussed further in the discussion section.

Table 5.1: Descriptive statistics of the variables examined in each study (M = Mean, SD = Standard Deviation, α = Cronbach alpha coefficient)

Variable	n	range	Mid point		PCSOs N=116	Driving School N=93	Police Training College N=148
Age				M	27.52	36.27	31.89
				SD	8.04	7.38	8.60
Learning anxiety	3	3-21	12	M	10.21	10.34	9.64
				SD	4.01	4.56	4.10
				α	.84	.85	.90
Achievement motivation	10	10-70	40	M	50.77	50.68	48.32
				SD	6.52	7.36	6.83
				α	.70	.73	.70
Valence	3	3-21	12	M	19.63	19.30	18.24
				SD	1.73	1.94	2.29
				α	.67	.75	.67
Instrumentality	4	4-28	16	M	25.57	23.80	22.95
				SD	2.31	3.61	3.17
				α	.76	.73	.74
Learning self-efficacy	3	3-21	12	M	10.94	10.70	11.19
				SD	3.00	3.22	3.24
				α	.89	.92	.91
General motivation to learn	3	3-21	12	M	19.23	18.06	17.74
				SD	1.65	3.16	2.31
				α	.70	.70	.71
Specific motivation to learn	3	3-21	12	M	20.00	19.33	18.88
				SD	1.31	1.87	1.90
				α	*.55	.72	.78
Trainer support	7	7-49	29	M	38.35	43.03	37.25
				SD	5.30	4.54	5.84
				α	.71	.78	.74
Peer support	5	5-35	20	M	28.22	28.15	26.80
				SD	3.85	4.03	4.05
				α	.67	*.53	.69
Post-training self-efficacy	3	3-21	12	M	17.91	19.13	17.05
				SD	2.14	1.55	2.78
				α	.86	.73	.83
Reactions	11	11-77	44	M	51.45	55.42	51.02
				SD	6.24	5.15	7.35
				α	.80	.80	.85

5.3.3 Correlations with general and specific motivation to learn

To begin with, examination of the tables revealed that although general motivation to learn and specific motivation to learn were strongly correlated (r ranged between .44 to .48, $p < .01$), this level of relationship does not raise concern over multicollinearity (Tabachnick & Fidell, 2001). Correlations between the model variables with general and specific motivation to learn were examined and are presented in Tables 5.2 – 5.4. As can be seen, the correlations were very similar between the studies. Learning anxiety did not correlate significantly with either general or specific motivation across all studies, and age only correlated significantly with specific motivation to learn in the study at the Police Training College ($r = -.18$, $p < .05$). In contrast, achievement motivation correlated significantly with general motivation to learn in all studies ($r = .22$, $.30$, and $.34$, respectively) and with specific motivation to learn in two of the studies ($r = .36$ and $.33$, $p < .01$). Instrumentality correlated significantly with both general ($r = .25$, $.27$, and $.27$, respectively) and specific motivation to learn ($r = .64$, $.61$, and $.54$, respectively, $p < .01$) and valence also correlated significantly with specific motivation to learn in all three studies ($r = .54$, $.63$, and $.70$, respectively, $p < .01$) but with general motivation to learn in only two of the studies ($r = .26$, and $.32$, respectively). Taken together, the level of associations between valence and instrumentality with specific motivation to learn was much greater than the associations with general motivation to learn. In comparison, apart from the study with PCSOs where a significant association was found between learning self-efficacy and general motivation to learn ($r = -.20$, $p < .05$), learning self-efficacy did not correlate significantly with either general or specific motivation to learn in any of the studies.

Table 5.2: PCSOs - *Intercorrelations of study variables with general and specific motivation to learn* (N=116)

	1	2	3	4	5	6	7	8	9	10	11
1. Age	1										
2. Learning anxiety	-.10	1									
3. Achievement motivation	.21*	-.44**	1								
4. Valence	-.11	-.11	.17	1							
5. Instrumentality	-.13	-.05	.22*	.48**	1						
6. Learning Self-efficacy	.19*	-.14	.14	-.03	-.12	1					
7. General motivation to learn	.05	-.09	.22*	.14	.25**	-.20*	1				
8. Specific motivation to learn	-.06	-.09	.18	.54**	.64**	-.18	.44**	1			
9. Trainer Support	-.10	.04	.03	.00	.05	-.13	.28**	.17	1		
10. Peers Support	-.09	-.04	.22*	.19*	.26**	-.01	.30**	.29**	.49**	1	
11. Posttraining self-efficacy	-.04	-.21*	.20*	.09	.13	.21*	.24*	.24*	.47**	.30**	1
12. Reactions	-.08	-.05	.15	-.05	.08	-.04	.36**	.12	.58**	.40**	.45**

* $p < .05$; ** $p < .01$.

Table 5.3: Driving School - *Intercorrelations of study variables with general and specific motivation to learn* (N=93)

	1	2	3	4	5	6	7	8	9	10	11
1. Age	1										
2. Learning anxiety	-.03	1									
3. Achievement motivation	-.23*	-.25*	1								
4. Valence	-.07	.03	.10	1							
5. Instrumentality	-.37**	.18	.31**	.46**	1						
6. Learning Self-efficacy	-.23*	-.37**	.23*	.07	.06	1					
7. General motivation to learn	-.06	-.09	.30**	.26*	.27*	.02	1				
8. Specific motivation to learn	-.12	-.17	.36**	.63**	.61**	.14	.48**	1			
9. Trainer Support	-.11	.07	.02	.43**	.28**	.04	.18	.37**	1		
10. Peers Support	-.13	.15	.14	.37**	.43**	.02	.25*	.40**	.63**	1	
11. Posttraining self-efficacy	-.07	.07	.21*	.37**	.45**	-.07	.33**	.43**	.57**	.46**	1
12. Reactions	-.34**	.02	.33**	.21*	.50**	-.06	.27*	.45**	.42**	.41**	.47**

* p < .05; ** p < .01.

Table 5.4: Police Training College - *Intercorrelations of study variables with general and specific motivation to learn* (N=148)

	1	2	3	4	5	6	7	8	9	10	11
1. Age	1										
2. Learning anxiety	.09	1									
3. Achievement motivation	-.15	-.30**	1								
4. Valence	-.36**	-.02	.20*	1							
5. Instrumentality	-.23**	.03	.23**	.48**	1						
6. Learning Self-efficacy	-.15	-.14	.06	-.02	-.05	1					
7. General motivation to learn	-.06	-.08	.34**	.32**	.27**	.02	1				
8. Specific motivation to learn	-.18*	-.11	.33**	.70**	.54**	-.12	.47**	1			
9. Trainer Support	-.14	-.06	.20*	.24**	.21*	-.16*	.08	.20*	1		
10. Peers Support	-.00	-.04	.16*)	.06	.10	-.06	.14	.17*	.45**	1	
11. Posttraining self-efficacy	-.18*	-.15	.15	.23**	.27**	-.05	.08	.21*	.52**	.24**	1
12. Reactions	-.21*	-.07	.24**	.23**	.29**	-.18*	.23*	.24**	.66**	.29**	.50**

* $p < .05$; ** $p < .01$.

The correlations of general and specific motivation to learn with the outcome variables were also similar between the studies. General motivation to learn correlated significantly with post-training self-efficacy in the study with PCSOs and at the Driving School ($r = .24$ and $.33$, $p < .01$), and with affective reaction to training in all three studies ($r = .36$, $.27$, and $.23$, respectively). Similarly, specific motivation to learn correlated significantly with post-training self-efficacy in all three studies ($r = .24$, $.43$, and $.21$, respectively) and with affective reaction to training in the studies at the Driving School and the Police Training College ($r = .45$, and $.24$, respectively).

5.3.4 Multicollinearity

The attitudinal and motivational variables included in this study were expected, on the basis of theory, to be intercorrelated. Zero-order correlation matrices confirmed this expectation (see Tables 5.2 – 5.4). In order to be sure that the degree of multicollinearity introduced into the regression analyses by this situation was not excessive, tolerance indices and condition indices with associated variance proportions for variables in the regression equation (SPSS output) were inspected. This was done separately for each study. Problematic multicollinearity is associated with tolerances below $.40$ and a VIF above 2.50 (Allison, 1999). Moreover, Belsely, Kuh & Welsch (1980) advise that condition indices greater than 30 indicate multicollinearity problems if they co-occur with two variance proportions in excess of $.50$. In the study with PCSOs, tolerance coefficients ranged from $.42$ to $.92$. Variance proportions exceeded $.50$ on only one of the variance proportions for the root in question (specific motivation to learn), indicating a lack of problematic multicollinearity. In the second study (driving school),

the tolerance for specific motivation to learn was .34, with a corresponding VIF of 2.96. This raises concern over multicollinearity (Allison, 1999). However, examination of the condition indices revealed that although specific motivation to learn and valence loaded on a single dimension, variance proportions exceeded .50 on only one of the variance proportions, indicating a lack of problematic multicollinearity. Similarly, in the study at the Police Training College, the tolerance for specific motivation to learn was .36, with a corresponding VIF of 2.79. Again, this raises some concern over multicollinearity (Allison, 1999). Very similar findings to the study at the Driving School emerged, with the variables of specific motivation to learn and valence loading on a single dimension, however, variance proportions exceeded .50 on only one of the variance proportions for the root in question, again, indicating a lack of problematic multicollinearity.

5.3.5 Tests of hypotheses – multiple regressions

To further explore the inter-relationships between the predicting variables with the measures of motivation to learn, the same procedure as the previous chapter was followed, i.e., Baron and Kenny's (1986) three-part regression procedure. This procedure enables the researcher (a) to establish the predictors of general and specific motivation to learn, and (b) to test whether valence, instrumentality, and/or self-efficacy mediate the relationship between the antecedent variables with either measures of motivation to learn.

Tables 5.5 – 5.7 show the results of the regression analyses with general motivation to learn and specific motivation to learn as the dependent variables for each of the studies. The tables indicate proportion of variance accounted for in outcome measures at each step (R squared) and beta weights for each variable in the final equation. In addition, the regression analyses results are shown in Figures 5.2 - 5.4.

Table 5.5: PCSOs - Analysis of attitudes as mediating variables between the predictors and the measures of motivation to learn

Predictors	Criterion variables						
	Step 1		Step 2			Step 3	
	General motivation to learn	Specific motivation to learn	Valence	Instrumentality	Learning self-efficacy	General motivation to learn	Specific motivation to learn
Learning anxiety	.01	-.02	-.04	.05	-.10	-.02	-.04
Achievement motivation	.23*	.18 ^a	.16	.24*	.09	.21*	.03
Valence						.01	.30***
Instrumentality						.17	.48***
Learning self-efficacy						-.21*	-.12
<i>R</i> ²	.05*	.03	.03	.05	.03	.13**	.50***
ΔR^2						.08*	.47***

Note: Standardised beta weights are shown ^a $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5.6: *Driving School - Analysis of attitudes as mediating variables between the predictors and the measures of motivation to learn*

Predictors	Criterion variables						
	Step 1		Step 2			Step 3	
	General motivation to learn	Specific motivation to learn	Valence	Instrumentality	Learning self-efficacy	General motivation to learn	Specific motivation to learn
Learning anxiety	-.01	-.09	.06	.28**	-.33***	-.09	-.24**
Achievement motivation	.30**	.34***	.11	.38***	.14	.24*	.13
Valence						.19	.43***
Instrumentality						.13	.41***
Learning self-efficacy						-.09	-.03
R^2	.09*	.14**	.01	.17***	.16***	.16**	.61***
ΔR^2						.07	.47***

Note: Standardised beta weights are shown * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5.7: Police Training College - Analysis of attitudes as mediating variables between the predictors and the measures of motivation to learn

Predictors	Criterion variables						
	Step 1		Step 2			Step 3	
	General motivation to learn	Specific motivation to learn	Valence	Instrumentality	Learning self-efficacy	General motivation to learn	Specific motivation to learn
Learning anxiety	-.02	-.01	.05	.11	-.14	.00	-.08
Achievement motivation	.34***	.33***	.22**	.26**	-.01	.27***	.14*
Valence						.21**	.55***
Instrumentality						.10	.24***
Learning self-efficacy						.02	-.12*
R^2	.12***	.11**	.04*	.06**	.02	.19***	.59***
ΔR^2						.07**	.48***

Note: Standardised beta weights are shown * $p < .05$. ** $p < .01$. *** $p < .001$.

1. The effect of learning anxiety on general and specific motivation to learn

Hypotheses 1 - 3 (see chapter 2) proposed that learning anxiety will be predictive of general and specific motivation to learn and that this relationship will be mediated by the attitudinal variables. As can be seen in Tables 5.5 – 5.7, contrary to the study prediction, in all three studies learning anxiety did not have a significant effect on general motivation to learn. Moreover, learning anxiety only had a significant effect on specific motivation to learn in the study at the Driving School[†] (see Table 5.6). In this study, learning anxiety did not emerge as a significant predictor of specific motivation to learn in step 1 ($\beta = .09, p > .05$), but was a predictor of instrumentality ($\beta = .28, p < .01$) and learning self-efficacy ($\beta = -.33, p < .001$) in step 2. In turn, instrumentality but not learning self-efficacy was a predictor of specific motivation to learn ($\beta = .41, p < .001$), thus the effect of learning anxiety on specific motivation to learn was indirect and through its relationship with instrumentality.

2. The effect of achievement motivation on general and specific motivation to learn

Hypotheses 1 - 2 also proposed that achievement motivation will be predictive of both general and specific motivation to learn, and that these relationships will be partially mediated by training attitudes (valence, instrumentality, and self-efficacy).

PCSOs (Table 5.5): Achievement motivation emerged as a predictor of general motivation to learn ($\beta = .23, p < .05$) and had a significant effect on instrumentality ($\beta = .24, p < .05$) but not valence or learning self-efficacy. However, instrumentality was not a significant predictor of general motivation to learn ($\beta = .17, p > .05$), thus the relationship

[†]Learning anxiety only emerged as a significant predictor of specific motivation to learn when the attitudinal variables were included in the regression equation (increase from $\beta = -.09, p > .05$ to $\beta = -.24, p < .01$), which is a typical case of suppressor effect (Cohen & Cohen, 1983).

between achievement motivation and general motivation to learn was direct and was not mediated by the attitudinal variables. In contrast, the relationship of achievement motivation with specific motivation to learn was completely mediated by instrumentality, because instrumentality did emerge as a predictor of specific motivation to learn ($\beta = .48$, $p < .001$) and when the attitudinal variables were included in the regression equation the relationship between achievement motivation and specific motivation to learn diminished ($\beta = .18$, $p < .10$ to $\beta = .03$, $p > .05$, Sobel $t = 2.08$, $p < .01$)

Driving School (Table 5.6): Similar to the previous study, achievement motivation had a significant effect on general motivation to learn ($\beta = .30$, $p < .01$) and of all three possible mediators it had an impact on instrumentality ($\beta = .38$, $p < .001$). Again, instrumentality did not emerge as a significant predictor of general motivation to learn ($\beta = .13$, $p > .05$), thus the effect of achievement motivation on general motivation to learn was direct. The relationship of achievement motivation with specific motivation to learn was again completely mediated by instrumentality, because instrumentality did emerge as a predictor of specific motivation to learn ($\beta = .41$, $p < .001$) and when the attitudinal variables were included in the regression equation the relationship between achievement motivation and specific motivation to learn was reduced from $\beta = .34$, $p < .001$ to $\beta = .13$, $p > .05$, Sobel $t = 3.08$, $p < .001$.

Police Training College (Table 5.7): Like the previous two studies, the effect of achievement motivation on general motivation to learn was direct and was not mediated by any of the attitudinal variables. This is because when the attitudinal variables were entered into the regression equation, the relationship between achievement motivation and general motivation to learn did not reduce ($\beta = .34$, $p < .001$, to $\beta = .27$, $p < .001$,

Sobel $t = 1.69, p > .05$). Unlike the previous studies where the relationship between achievement motivation and specific motivation to learn was completely mediated by instrumentality, in this study this was partially mediated by both instrumentality and valence. This is because achievement motivation was a significant predictor of valence ($\beta = .22, p < .01$) and instrumentality ($\beta = .26, p < .01$), both of which had an impact on specific motivation to learn ($\beta = .55, p < .001$ and $\beta = .24, p < .001$, respectively). In addition, although the reduction in beta (from $\beta = .33, p < .001$, to $\beta = .14, p < .05$) was statistically significant when both valence ($t = 4.10, p < .001$) and instrumentality ($t = 3.22, p < .001$) were entered into the regression equation, the level of association remained statistically significant.

3. Predictors of training outcomes

Hierarchical multiple regression analyses were carried out in order to examine the effect of the model variables on the training outcomes of post-training self-efficacy and reactions to training. Age[†], learning anxiety, achievement motivation, valence, instrumentality, and self-efficacy were entered in step 1, general and specific motivation to learn were added to the equation in step 2, and trainer and peer support were added in step 3. Results for both samples are reported in Table 5.8. The table indicates proportion of variance accounted for in outcome measures at each step (adjusted R square change) and beta weights for each variable in the final equation after all variables were entered into the equation.

[†] In line with previous research (Colquitt et al., 2000) age was entered into the regression equation as a control variable

The reader may choose to consult Figures 5.2 - 5.4 in order to get a complete picture of the results. These figures show the results of a post-hoc analysis where (1) the relationship of all the study variables with learning was examined (see Table 5.8 below), (2) the relationship of all the predicting variables with general motivation to learn and specific motivation to learn (examined separately) was examined. This step was different to the one carried out in the mediation analysis (Tables 5.5-5.7), as age was also included in the equation as a predictor of motivation to learn. The final stage of this analysis examined the relationship of the study variables with valence, instrumentality, and self-efficacy (also examined separately). Again, this was different to the mediation analyses as it included age as a predicting variable of these attitudes. The figures show the paths where significant results were found.

Table 5.8: Hierarchical regressions for post-training self-efficacy and affective reactions to training

Statistic	Post-training self-efficacy			Affective reactions to training		
	PCSOs	Driving	College	PCSOs	Driving	College
Step 1 – Individual characteristics						
R^2	.07*	.06	.06*	.04	.19***	.09**
β						
Age	-.08	.09	-.05	-.07	-.20*	-.12
Learning Anxiety	-.15	.01	-.13	-.02	-.04	-.02
Achievement motivation	.06	.11	-.03	.08	.18	.04
Step 2 – Attitudinal variables						
ΔR^2	.05	.22***	.06*	.01	.16***	.09**
R^2	.11*	.27***	.12**	.05	.35***	.18***
β						
Valence	-.05	.02	.04	-.11	-.23*	-.06
Instrumentality	.00	.27*	.08	.05	.22	.12
Learning Self-efficacy	.30***	-.13	.01	.06	-.25**	-.10
Step 3 – Motivation to learn						
ΔR^2	.08**	.03	.00	.12***	.05 ^a	.02
R^2	.19**	.31***	.12*	.17**	.39***	.19***
β						
General motivation to learn	.07	.15	-.01	.23**	.00	.16*
Specific motivation to learn	.18	-.01	-.01	-.08	.26 ^a	-.02
Step 4 – Training support						
ΔR^2	.19***	.18***	.20***	.25***	.09**	.31***
R^2	.38***	.48***	.32***	.42***	.48***	.50***
β						
Trainer support	.46***	.49***	.47***	.46***	.28**	.61***
Peer support	-.01	-.02	.06	.12	.09	-.03

^a $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Post-training self-efficacy

PCSOs: Individual characteristics explained 7% of the variance in post-training self-efficacy with none of the variables making a statistically significant contribution to the model. Attitudinal variables explained an additional 5% with learning self-efficacy being a significant predictor ($\beta = .30, p < .001$). Thus, the less able trainees felt to learn the course material at the start of the course, the less confident they felt in using the new knowledge and skills after training. The measures of motivation to learn explained an additional 8% of the variance, but none of the measures were significant predictors. It was training support variables that made the most significant impact on post-training self-efficacy, explaining an additional 19% of the variance, with trainer support being a significant predictor ($\beta = .46, p < .001$), but not peer support. In total, the model explained 38% of the variance in post-training self-efficacy.

Driving School: Similar to the study with PCSOs, individual characteristics explained 6% of the variance in post-training self-efficacy with none of the variables making a significant contribution to the model. In contrast though, attitudinal variables explained a greater proportion of variance (22%) with instrumentality being a significant predictor ($\beta = .27, p < .001$). Thus, trainees who could see the benefits of attending training at the start of the course reported higher levels of confidence in their ability to use the newly acquired knowledge and skills after training. In this study, the measures of motivation to learn explained a smaller proportion of the variance (3%), with none of the measures being a significant predictor. Like the previous study, it was training support variables that made the most significant impact on post-training self-efficacy, explaining

an additional 18%, with trainer support being a significant predictor ($\beta = .49, p < .001$).

In total, the model explained 48% in post-training self-efficacy.

Police Training College: Like the previous two studies, individual characteristics explained 6% of the variance in post-training self-efficacy with none of the variables making a statistically significant contribution to the model. In comparison to the previous two studies, where at least one of the attitudinal variables emerged as a significant predictor of post-training self-efficacy, as a group of variables attitudes explained a statistically significant addition of 6%, however, none of the variables had a statistically significant effect. Moreover, whereby in the other studies motivation to learn had some effect on post-training self-efficacy (albeit a small effect), in this study the measures of motivation to learn made no contribution to the model. Like both studies, it was training support variables that made the most significant impact on post-training self-efficacy, explaining an additional 20%, with trainer support being a significant predictor ($\beta = .47, p < .001$), but not peer support. In total, the model explained 32% in post-training self-efficacy.

Affective reactions to training

PCSOs: Individual characteristics explained 4% of the variance in trainees' Affective reactions to training with none of the variables making a significant contribution to the model. Attitudinal variables explained a marginal 1% with none of the variables having a statistically significant impact. The measures of motivation to learn explained an additional and significant variance (12%) with general motivation to learn being a significant predictor ($\beta = .30, p < .001$). Thus, the more motivated trainees were to learn

new things in general at the start of training, the more positive were their reactions to the training content after the course. Training support variables explained an additional 25% of the variance, with trainer support being a significant predictor ($\beta = .46, p < .001$), but not peer support. In total, the model explained 42% in affective reactions to training.

Driving School: In contrast to the study with PCSOs, individual characteristics explained a larger proportion of the variance in reactions to training (19%) with age being a significant predictor. The negative relationship suggests that younger trainees reported more positive reactions to the training course. Unlike PCSOs, for trainees on driving courses attitudinal variables explained a significant proportion of variance in reactions to training (16%), with both valence ($\beta = -.23, p < .05$) and learning self-efficacy ($\beta = -.25, p < .01$) emerging as significant predictors. However, with regards to valence results must be interpreted with caution as valence had a nonsignificant zero-order effect but a significant effect when the measures of motivation to learn were controlled. This may have been the result of a suppression effect (Cohen & Cohen, 1983).

In this study, the measures of motivation to learn explained a smaller proportion of the variance (5%), with specific motivation to learn being the significant predictor (it was general motivation to learn in study with PCSOs). Thus, the more trainees were motivated to learn the course content at the start of training, the more positive were their affective reactions to training upon completion of the course. Training support variables explained an additional 9% of the variance, with trainer support being a significant predictor ($\beta = .28, p < .001$), but not peer support. In total, the model explained 48% in reactions to training.

Police Training College: Individual characteristics explained 9% of the variance in post-training self-efficacy with none of the variables having a significant contribution to the model. In this study, attitudinal variables explained a significant addition of 9%, though none of the variables was a statistically significant predictor. The measures of motivation to learn explained an additional 2% of the variance in reactions to training, and like the study with PCSOs, it was general motivation to learn that was a statistically significant predictor ($\beta = .16, p < .05$), but not specific motivation to learn. Like both previous studies, training support variables made a significant impact on post-training self-efficacy, explaining an additional 31%, with trainer support being a significant predictor ($\beta = .61, p < .001$), but not peer support. In total, the model explained 50% in affective reactions to training.

In summary, in all three studies individual characteristics and motivation to learn had little effect on post-training self-efficacy. In all three studies it was training support variables that had the most pronounced effect, with trainer support being the strongest predictor. With respect to affective reactions to training, individual characteristics and attitudinal variables contributed more to the model in the study at the Driving School than the studies with PCSOs and the Training College. In all three studies the measures of motivation to learn explained a significant addition in affective reactions, and in all three studies training support variables explained additional variance in trainees' affective reactions to training with trainer support emerging as a strong significant predictor. Thus, in contrast to the study prediction the measures of motivation to learn predicted affective reactions to training but not post-training self-efficacy. On the other hand, as predicted, in all studies training support variables explained additional variance in post-training self-

efficacy and affective reactions to training, above and beyond the effect of the other predicting variables.

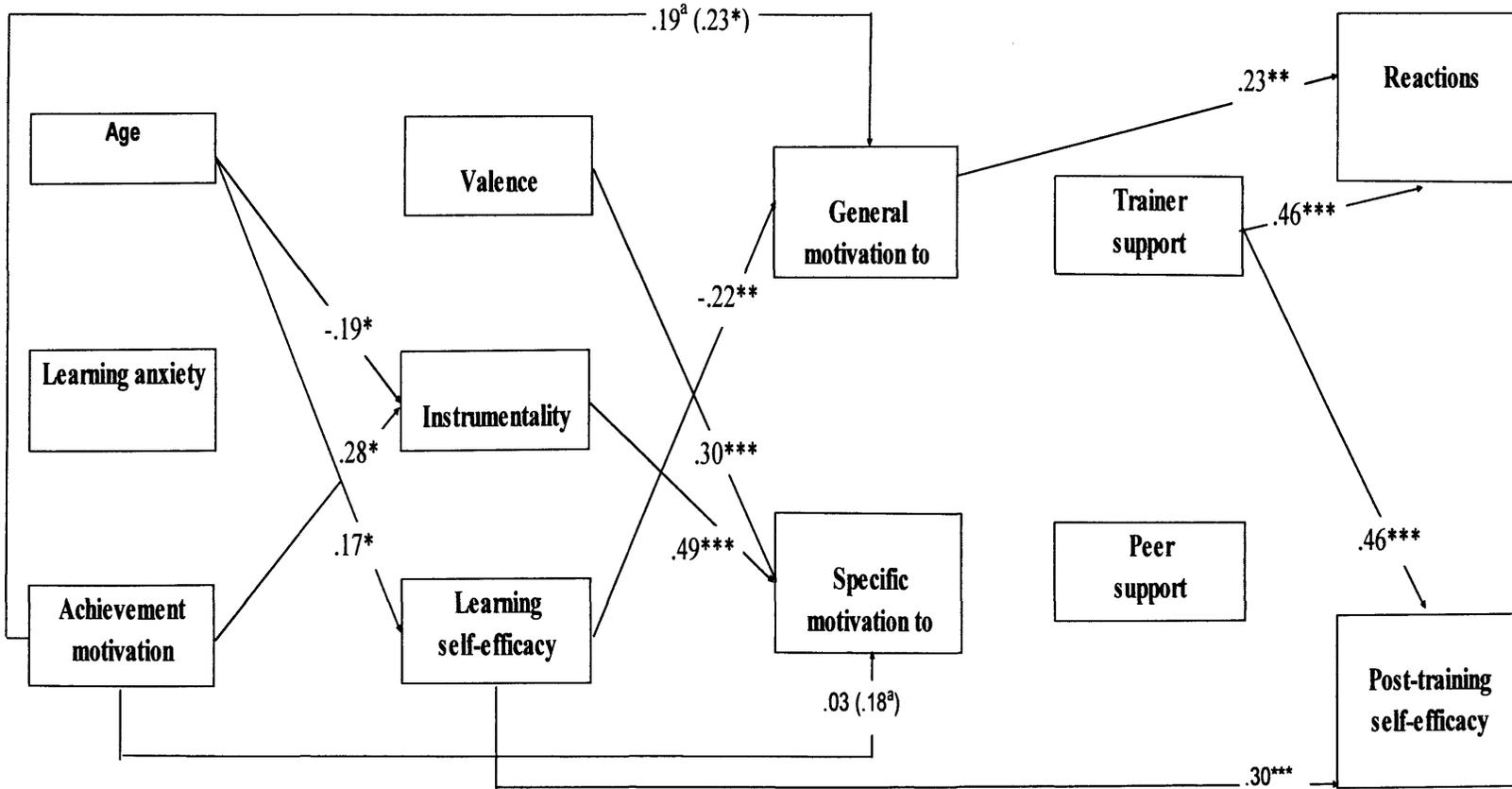


Figure 5.2: PCSOs - Path coefficients for the tested model
 In paranthesis are the results before the mediators (attitudes) were entered into the equation

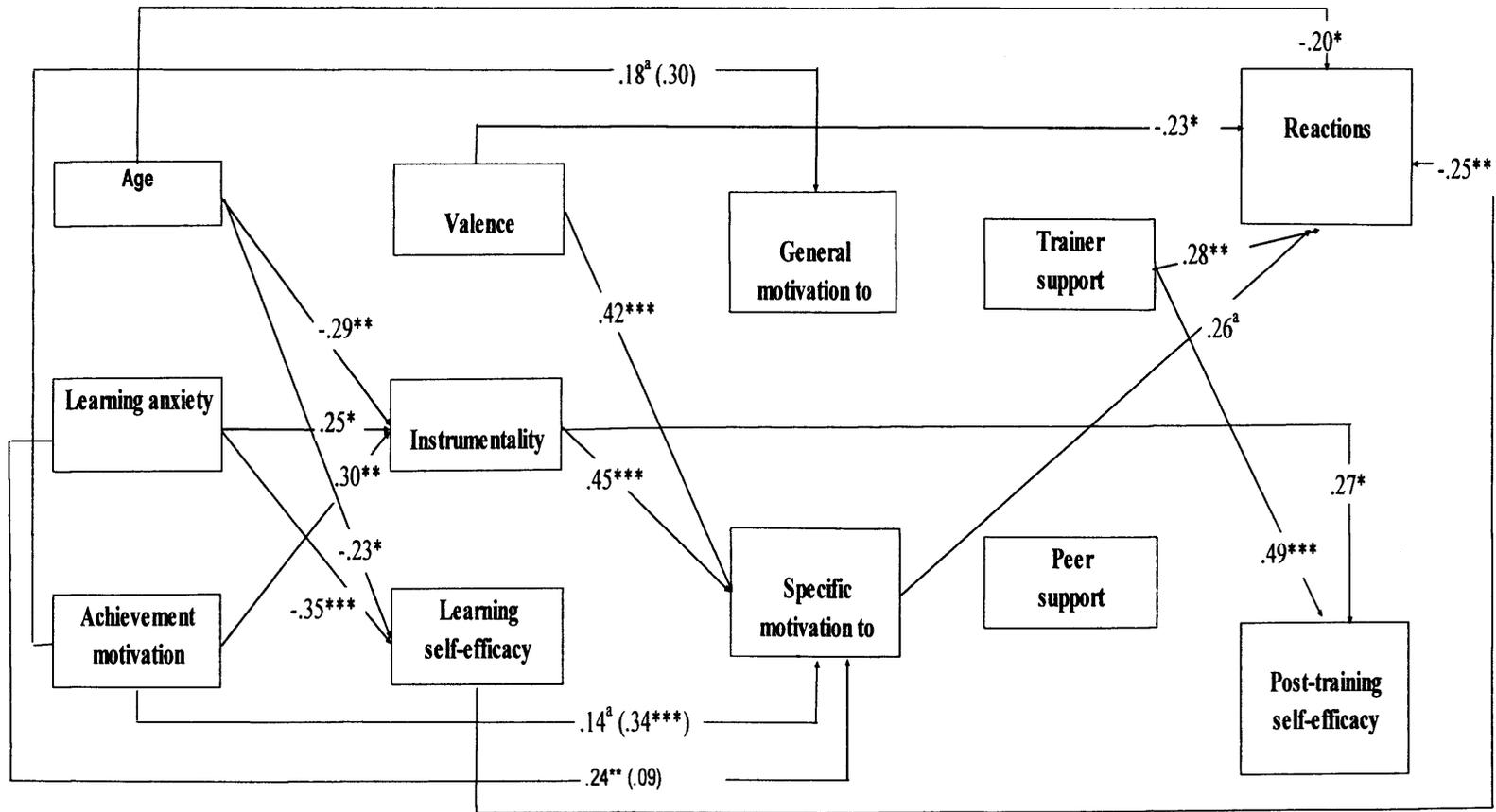


Figure 5.3: Driving School - Path coefficients for the tested model
 In paranthesis are the results before the mediators (attitudes) were entered into the equation

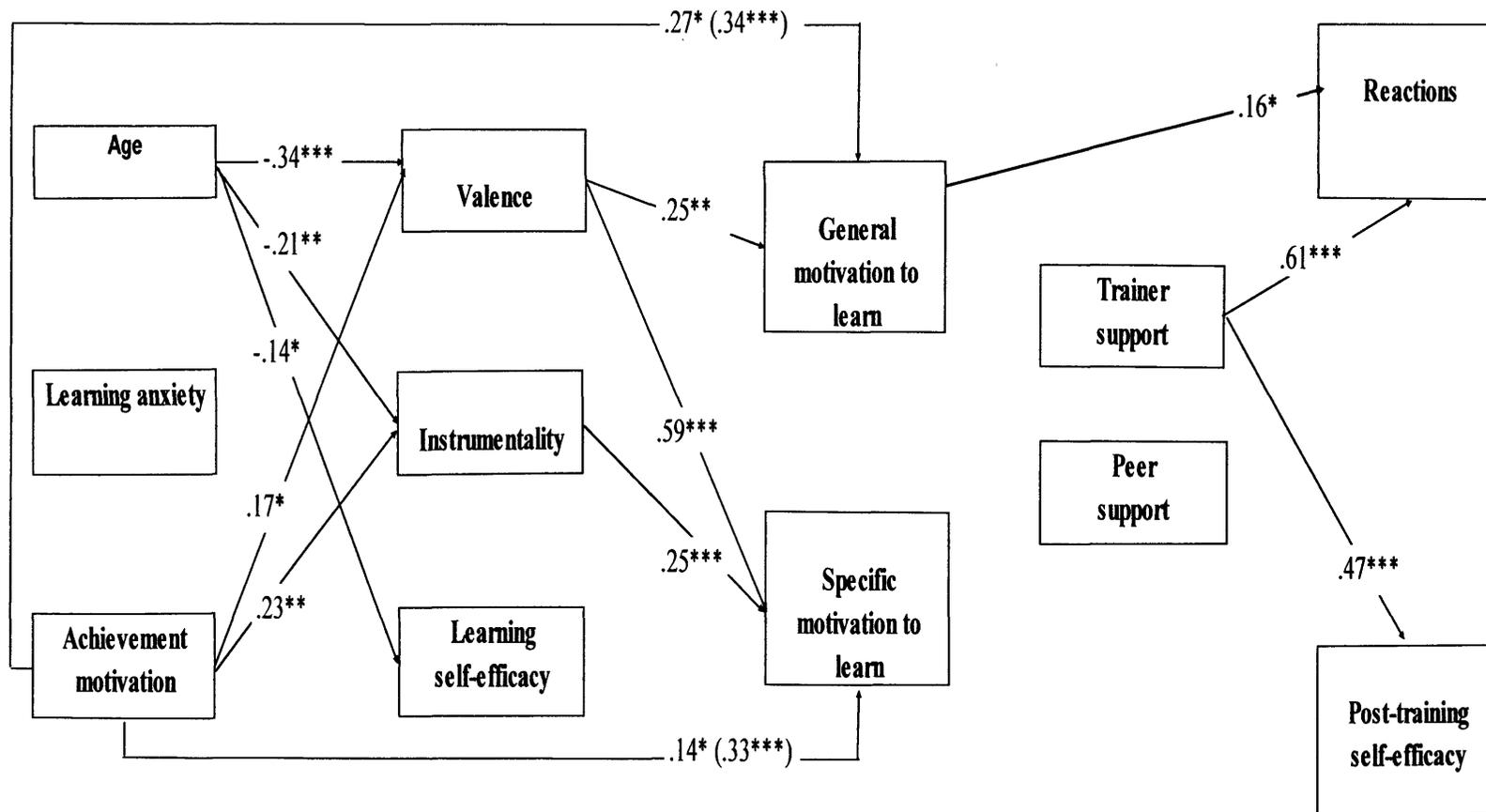


Figure 5.4: Police Training College - Path coefficients for the tested model
 In paranthesis are the results before the mediators (attitudes) were entered into the equation

5.4 Discussion

The purpose of this chapter was to examine the thesis' model in three different training environments in order to ascertain its generalisability across contexts. The model was examined through a series of regression analyses. The first stage of the analyses looked at the relationship between learning anxiety and achievement motivation with both general and specific motivation to learn. Second, the relationship of the model variables with post-training self-efficacy and affective reactions to training was examined. This discussion provides a summary of the results with a focus on study comparison. Study limitations and suggestions for future research will be discussed extensively in Chapter 6.

5.4.1 Predictors of general and specific motivation to learn

The mediation analyses are summarised in Table 5.9. In contrast to the study prediction, learning anxiety did not have a significant effect on general motivation to learn in any of the studies. Moreover, it only had an effect on specific motivation to learn in the study at the driving school, where the relationship was indirect and through instrumentality. These findings extend previous research (Colquitt et al., 2000; Martocchio, 1992; Martocchio & Webster, 1992; Warr & Bunce, 1995) by showing that in these training contexts content specific learning anxiety is not predictive of general motivation to learn and is only predictive of specific motivation to learn when trainees can see the link between attending training and outcomes that are of benefits to them (instrumentality). This further emphasises the importance of including a measure of instrumentality within models of motivation to learn (Chiaburu & Lindsay, 2008).

Table 5.9: Summary of the mediation analyses for each study

	General motivation to learn			Specific motivation to learn		
	PCSOs	Driving School	Police Training College	PCSOs	Driving School	Police Training College
Learning Anxiety	No effect	No effect	No effect	No effect	Indirect effect through instrumentality	No effect
Achievement motivation	Direct effect	Direct effect	Direct effect	Completely mediated by instrumentality	Completely mediated by instrumentality	Partially mediated by instrumentality and valence

It is difficult to ascertain whether this finding is due to the differences in training methods, training environments, or sample characteristics, but one potential explanation for the findings may lie in the differences between the training contexts. Training at the driving school involved the learning and acquisition of skills, whereas the majority of training in the other two studies involved learning rules and procedures related to trainees' role at the organisation. Trainees were aware that performance was linked to job outcomes with performance being tested through observations by trainers. Specifically, trainees had to attain a certain level of performance in order to either obtain or maintain a driving license that enabled them to drive a police car. In contrast, performance in the other two studies was not explicitly linked to job outcomes so the training activity was less likely to cause anxiety to learn the course content.

As expected, achievement motivation was predictive of both measures of motivation to learn, which provides further evidence for the importance of achievement motivation for training effectiveness (Carlson et al., 2000; Colquitt et al., 2000; Mathieu et al., 1993). In all three studies the relationship between achievement motivation and general motivation to learn was found to be direct, and was not mediated by any of the attitudinal variables. In comparison, in all three studies the relationship between achievement motivation and specific motivation to learn was found to be mediated by valence and/or instrumentality. This supports the argument that one's motivation to achieve success, enjoyment of surmounting obstacles and completing tasks undertaken, and the drive to strive for success and excellence (Robbins et al., 2004) are strongly linked to a person's desire to do well during training and perception of likely benefits of

attending training. These, in turn, have a positive impact on motivation to learn the course content.

5.4.2 Predictors of training outcomes

The effect of the model variables on training outcomes is summarised in Table 5.10.

Based on the findings by Colquitt et al. (2000), it was expected that trainees who were more motivated to learn (general and specific) would report higher levels of post-training self-efficacy and would react more positively to training. However, as can be seen, results only partly support this proposition. First, the measures of motivation to learn were predictive of trainees' affective reactions towards training but not post-training self-efficacy. Although this contradicts previous findings on the relationship between motivation to learn and post-training self-efficacy, it is important to note that the divergence in findings may be the result of many different factors, including differences in samples, context, and the fact that the thesis examined different aspects of motivation to learn and training outcomes. Future research that examines the same model in similar contexts is required to ascertain whether this supposition is valid.

Table 5.10: Summary of the predictors of training outcomes – A between studies comparison

Predictor	Training outcomes					
	Affective Reactions			Post-training Self-efficacy		
	PCSOs	Driving School	Police Training College	PCSOs	Driving School	Police Training College
Age	ns	-	ns	ns	ns	ns
Learning anxiety	ns	ns	ns	ns	ns	ns
Achievement motivation	ns	ns	ns	ns	ns	ns
Valence	ns	ns	ns	ns	ns	ns
Instrumentality	ns	ns	ns	ns	ns	ns
Learning self-efficacy	ns	-	ns	-	ns	ns
General motivation to learn	+	ns	+	ns	ns	ns
Specific motivation to learn	ns	+	ns	ns	ns	ns
Trainer support	+	+	+	+	+	+
Peer support	ns	ns	ns	ns	ns	ns

Note: The +/- indicates a statistically significant effect of the predictor on the outcome variable. ns = not significant

Second, whereas general motivation to learn was predictive of trainees' affective reactions to training in the study with PCSOs and the study at the Police Training College, in the study at the Driving School it was specific motivation to learn. Again, given the complexity and the nature of the current research, it is impossible to unambiguously identify a specific explanation for these results, but potentially this difference may stem from the disparity between the training courses. When job related outcomes (i.e., driving a police car) depend on performance attainment, specific motivation and attitudes are more likely to influence trainees' affective reactions. In

comparison, when trainees do not need to attain a certain level of performance, it is general motivation that is more likely to be predictive of trainees' affective reactions.

Possibly the greatest contribution of this work is the finding on the unique and substantial effect of training support variables on training outcomes in comparison to individual, attitudinal, and motivational variables. In all three studies training support increased the explained variance in post-training self-efficacy and affective reactions to training in around 20% to 30%. Moreover, in all three studies trainer support, but not peer support, emerged as the strongest and most significant predictor of the training outcomes. These findings extend previous literature on the predictors of training outcomes (Colquitt et al., 2000) by demonstrating that whilst trainees' characteristics are important predictors for training effectiveness (as measured by reactions and post-training self-efficacy), the training environment is important across different training contexts. More specifically, the support provided by the trainer in the way of feedback and the provision of learning opportunities is imperative for the development of positive training outcomes. This supports previous findings on the potency of the trainer's role in the traditional instruction literature (see Patrick, 1992) and in more recent organisational literature (Sitzmann et al., 2008). From a practical perspective, this suggests that the trainer-trainee interactions during the training period are important and that trainers should pay more attention to the role they play in improving training outcomes, rather than focusing only on trainees pre-training attitudes and characteristics. This point will be discussed further in the concluding chapter of this thesis.

Several limitations of the study are worth noting, including the use of self-reports, and difficulty in interpreting causality. These will be discussed in greater detail in

Chapter 6 as they are common to both empirical chapters. However, specific to the studies contained within this chapter is the problem of sample size. The study conducted at the Driving School contained 93 trainees, however, following Green's (1991) rule of thumb for the required ratio of cases to independent variables in regression analysis, a sample equal or larger than 122 was required. Thus, the path coefficients generated for the model are unlikely to remain stable in future samples and results must be interpreted with caution.

5.4.3 Summary

Three studies were presented in this chapter, each conducted in different training contexts in order to assess the generalisability of the model proposed in Chapter 2. In this respect, one feature of the findings stands out above all others. That is that despite the contextual differences, results are actually consistent. In all three studies:

- Learning anxiety had no effect on general motivation to learn and only an indirect effect on specific motivation to learn in one of the studies.
- The effect of achievement motivation to learn on general motivation to learn was direct and the effect on specific motivation to learn was mediated by instrumentality and/or valence.
- The measures of motivation to learn failed to predict post-training self-efficacy
- At least one of the measures of motivation to learn predicted trainees' affective reactions to the training course.

- Trainer support emerged as the most important predictor for both post-training self-efficacy and trainees' reactions to the training course.

In fact, the only apparent difference was the finding that trainees' individual characteristics and attitudinal variables mattered most for post-training self-efficacy and affective reactions in training of driving skills than in the other two studies. Again, given the differences between the courses and the samples it is difficult to ascertain an exact reason for this difference in finding. However, one possible explanation may lie in the fact that the nature of the training context in this study was remarkably different from the other two studies. The training of PCSOs and the courses at the training college aimed at equipping trainees with knowledge and skills related to procedures and policies where trainees were aware that their performance would have very little impact on training or job outcomes. In comparison, the training courses at the driving school consisted of a more practical element with trainees entering training with the knowledge that they had to attain a certain level of performance in order to undertake driving duties in their job. With a clearer view of the consequences of training, trainees at the driving school were more likely to enter training with expectations and attitudes that were driven by these perceptions (Tsai & Tai, 2003).

Another potential reason may be that trainees in this study were older and for the majority of them it was not the first driving course they had taken at the training centre. Consequently they were more likely to have pre-determined expectation that were affected by their previous experiences and were reflected in their attitudes towards training (Facteau et al, 1995; Switzer et al., 2005). In comparison, all PCSOs and half of

the trainees at the police training college attended training for the first time with the organisation. The remaining half of trainees at the training college attended training courses that were new to them. Thus, trainees on driving courses may have had a more realistic view of the likely impact of training on job outcomes through previous experiences at the driving centre. For trainees in the other two studies, cognitions and motivation towards training may change during the training period as they develop a more realistic belief about the training course (Cole & Field, 2004; Harris & Cole, 2007; Tannenbaum et al., 1991).

Indeed, further investigations into the effect of age on trainees' motivation to learn should attempt to understand the nature of this relationship (Colquitt et al., 2000; Warr & Birdi, 1998). In the current thesis, age was included in the post-hoc path analysis as a predicting variable. In all three studies, age negatively and significantly correlated with some if not all the attitudinal variables (valence, instrumentality and learning self-efficacy). Although no support was found for the mediating hypothesis it may be that the relationship of age with motivation to learn is indirect and may interact with other factors not measured in the current thesis. This may include factors related to prior experiences, course reputation (Facteau et al, 1995), and voluntary vs compulsory training provisions (Clark et al., 1993). Future research would benefit from measuring the development of these attitudes and their interaction with age throughout training before drawing final conclusions.

The discussion of the findings in the current empirical chapter, and the previous one, is rather brief as the main discussion points are examined and elaborated upon in the concluding chapter of this thesis. Accordingly, in the following concluding chapter a

within and between chapters summary is provided with an overview of the findings across the two contexts in relation to the thesis' hypotheses. Although theoretical and practical implications, study limitations, and suggestions for future research were briefly mentioned in the empirical chapters, a more comprehensive discussion under each of these headings is included in the following chapter.

CHAPTER 6

SUMMARY OF FINDINGS AND DISCUSSION

This chapter is divided into two broad sections. The first section includes a summary of findings where the focus is on comparing and contrasting the results within and between the two empirical chapters. The second section includes a discussion of theoretical and practical implications of the complete thesis, thesis' limitations and suggestions for future research.

6.1 Summary of findings

The purpose of the current thesis was to investigate two issues related to motivation to learn. Based on previous literature (Colquitt et al., 2000; Noe, 1986) a model was developed that specified antecedents and effects of both general and specific motivation to learn. First, it was proposed that individual characteristics and attitudinal variables would influence the motivation of participants in a training programme, which in turn would influence training outcomes. Second, to advance the literature on motivation to learn, training support variables were integrated into the model to examine their impact on training outcomes in comparison to individual predictors, attitudes, and motivation. To ascertain whether the model generalises across contexts it was examined in both the educational and organisational contexts, with two studies in the educational domain (chapter 4), and three studies in the organisational domain (chapter 5). Tables 6.1 and 6.2 present the results obtained for all the studies in relation to the thesis' hypotheses, as highlighted in chapter 2.

Table 6.1: *Predictors of general and specific motivation to learn - summary of findings for all studies*

Hypotheses 1-3	Chapter 4 – Higher Education		Chapter 5 - Organisational		
	Medicine N=277	Engineering N=136	PCSOs N=117	Driving school N=93	Training centre N=148
1. Learning anxiety will be a significant predictor of general and specific motivation to learn	Yes, predicted specific motivation to learn	No, Did not predict either	No, Did not predict either	No	No, Did not predict either
2. Achievement motivation will be a significant predictor of general and specific motivation to learn	Yes	Yes	Yes	Yes	Yes
3. The relationship between learning anxiety and achievement motivation with motivation to learn will be partially mediated by attitudinal variables					
Learning anxiety & general motivation to learn	No relationship	No relationship	No relationship	No relationship	No relationship
Learning anxiety & specific motivation to learn	Direct effect	No relationship	No relationship	Indirect effect through Instrumentality	No relationship
Achievement motivation & general motivation to learn	Partially mediated by valence	Direct effect	Direct effect	Direct effect	Direct effect
Achievement motivation & specific motivation to learn	Partially mediated by valence	Direct effect	Completely mediated by instrumentality	Completely mediated by instrumentality	Partially mediated by instrumentality and valence

6.1.1 Learning anxiety and achievement motivation (hypotheses 1 – 3)

To begin with, the relationship of learning anxiety and achievement motivation with the measures of motivation to learn was assessed. It was proposed that learning anxiety and achievement motivation would be significant predictors of general and specific motivation to learn. Driving the thesis was the assumption that the relationship between learning anxiety and achievement motivation with motivation to learn would be partially mediated by attitudinal variables (Colquitt et al., 2000). The findings partially support these assumptions.

As can be seen in table 6.1, in all the studies within both the educational and the organisational domains learning anxiety did not have a significant effect on general motivation to learn. Moreover, learning anxiety emerged as a significant predictor of specific motivation to learn in only one study in the educational domain and one study in the organisational domain. More specifically, in the study with medical students, participants who were more anxious about learning the content associated with the attachment were less motivated to learn the subject. In contrast to the study prediction, this relationship was direct and was not mediated by any of the attitudinal variables. On the other hand, the relationship between learning anxiety and specific motivation to learn in the study with trainees on the police force's driving courses was indirect and through instrumentality. This suggests that more anxious trainees were those who were more likely to perceive the link between training and job outcomes. It is difficult to ascertain whether this finding is due to the differences in training methods, training environments, or sample characteristics, but one potential explanation may be that these two training

contexts had more of a practical element than the other three studies and performance was implicitly linked to future outcomes. The following illustrates this point.

Medical students spent the majority of the training period at a hospital. They were attached to a clinical team where, under supervision, they shared all the activities including: clerking, follow-up, filling up laboratory forms, case presentation, and assisting in procedures. They completed a log book of their experiences and a case study that was monitored by a consultant. During these clinical attachments students were expected to continuously consolidate their learning in preparation for the end of module exam and clinical observation, which they needed to pass satisfactorily. Failure would result in having to re-sit the exam at a later date. In comparison, the teaching of engineering students was achieved through the mode of lecturing and one small-scale group tutorial conducted once a week. Assessment of learning was achieved through an end of module exam and completion of assignments. Although results support previous research on the relationship between students' learning anxiety and exam results (Seipp, 1991), in this context learning anxiety may not have been linked to specific motivation to learn because it was not implicitly linked to future outcomes (beyond passing the exam results). Indeed perceived lack of real-world connection and hands-on experience that is relevant to the work of engineers is a well-documented barrier to student learning (Shull, 2008). Given the importance placed on the effect of content specific learning anxiety on motivation to learn (Effandi & Norazah, 2008) this finding need to be interpreted with caution as it may be specific to this particular sample.

Similar to the educational cohort, trainees on the driving courses had to pass a test to ensure they fulfilled the highest level of driving competency possible. All trainees who

were required to carry out response duties or exercise police driving had to be trained to the nationally agreed response driving competencies and thus needed to complete all mandatory modules and elements of the agreed course in order to be authorised. There was also a requirement to undertake a nationally approved written examination for all courses. Trainees who did not achieve the pass mark had to continue with their driving/riding course and were given the opportunity to re-sit the theory examination. Trainees could not be authorised until the theory examination had been passed. For some, attending the training was linked with a desired job enhancement, for others it meant being able to continue performing their job. Much of this training was conducted on public roads, and not in simulated environments.

In comparison, the training environment in the other two organisational studies was mainly classroom-based. Very little emphasis was placed upon attainment of certain standards, and trainees were aware that performance was not necessarily linked to job outcomes (e.g., passing the probation period). Given that the perceived utility or instrumentality of training is a central aspect in the decision to devote effort to learn the task at hand (Keith, Richter, & Naumann, 2009), in the absence of such link trainees are not likely to feel anxious about learning the subject. Moreover, trainees in these studies were younger than trainees at the driving school, reflecting the fact that the majority were new recruits to the organisations. No research to date has systematically examined the relationship between new recruits' learning anxiety and motivation to learn and subsequent training outcomes. Although Warr and Downing (2000) studied new recruits on an introductory course for work as vehicle technicians and reported a bivariate correlation of $-.21$ ($p < .01$) between learning anxiety and specific motivation to learn,

this relationship was not explored further as it was not the main focus of their study. To date, research into this relationship comes from studies with employees engaged in further development activities (Maurer et al., 2003). As a tentative explanation for the present finding, one might suggest that new recruits' learning anxiety did not predict specific motivation to learn because at the start of initial training new recruits have very little knowledge of the course ahead and their perceptions of the training is not likely to be associated with previous experiences of training with the organisation (Facteau et al., 1995). As suggested by Tannenbaum et al. (1991), new recruits' cognitions and motivation may change during the training period as they develop a more realistic belief about the training course (e.g., Boswell, Shipp, Payne, & Culberton, 2009). Future research into this relationship would benefit from extending these findings by (a) examining the relationship of learning anxiety with specific motivation to learn at different stages of the training course and (b) examining these relationships in a variety of naturally occurring training environments in order to ascertain the contexts in which learning anxiety matters most for trainees' motivation to learn.

Findings confirm the thesis' assumption concerning the relationship between achievement motivation and the measures of motivation to learn. In all but one study, the relationship between achievement motivation and general motivation to learn was direct, and in all but one study the relationship between achievement motivation and specific motivation to learn was either partially or completely mediated by attitudinal variables. Thus, whereas achievement motivation drives general motivation directly, the relationship with specific motivation to learn occurs through its relationship with attitudes (Carlson et al., 2000).

The link between achievement motivation and general motivation to learn is not surprising. By definition, one's motivation to achieve success, enjoyment of surmounting obstacles and completing tasks undertaken, and the drive to strive for success and excellence (Robbins et al., 2004) should be strongly linked to a person's general motivation to learn new things. Moreover, one would expect this disposition to be linked to a person's attitudes towards training. By disaggregating specific motivation to learn from its closely related expectancy components, this study shows that the relationship between achievement motivation and specific motivation to learn is mediated by valence and instrumentality, and not learning self-efficacy, as has been suggested previously (Colquitt et al., 2000; Mathieu et al., 1993). However, previous research on this relationship used a task-specific measure of self-efficacy (Colquitt et al., 2000; Mathieu et al., 1993), whereas the measure in the current thesis focused on learning self-efficacy (see also Fisk & Warr, 1996; Noe & Wilks, 1993; Warr & Bunce, 1995). Thus, results may not be directly comparable to previous findings.

6.1.2 General and specific motivation to learn (Hypothesis 4)

Following the assessment of the relationship between the predictors with general and specific motivation to learn, analyses were carried out to examine the relationship of the model variables with training outcomes, with a focus on general and specific motivation to learn. Based on previous literature (Colquitt et al., 2000; Mathieu & Martineu, 1997; Noe, 1986) it was proposed that motivation to learn would explain additional variance in training outcomes, above and beyond the effect of individual characteristics and attitudinal variables. Results are difficult to interpret with respect to

this objective because different outcome variables were included in the studies (i.e., exam results in the educational domain, and post-training self-efficacy and affective reactions in the organisational domain). The findings will therefore be discussed in turn, starting with the relationship of the model variables with learning. Results are summarised in table 6.2.

Contrary to expectations, general and specific motivation to learn were not significantly related to students' performance on the end of module exam. Although this is not the first study in which motivation to learn failed to predict learning (Baldwin et al., 1991; Mathieu et al., 1992; Noe & Schmitt, 1986), an association with learning scores is typically expected (Warr & Bunce, 1995; Warr et al., 1999). Again, given the nature of the research design there are many potential reasons for this finding, one of which may lie in the learning criterion. The written exam was undertaken several months after training. Though this does not have implications for the more permanent variables of personality (Barrick & Mount, 1991; Furnham et al., 2003) and demographic variables (e.g., age) it may be that the effect of motivation to learn and support variables on learning would have been more prominent had students been examined soon after completion of training, which is often the case in the context of organisational training (e.g., Liao & Tai, 2006; Rowold, 2007a; Tai, 2006; Tracy et al., 2001). Findings would have been more comparable if the time lag between the measures was similar to previous research. However, this was practically impossible in the current studies as the exam timetable was dictated by University regulations and procedures.

Table 6.2: *The effect of motivation to learn and training support on training outcomes - summary of findings for all studies*

Hypotheses 4 & 5	Chapter 4 – Higher Education		Chapter 5 – Organisational		
	Outcome measure: Learning		Outcome measures: Post-training self-efficacy and affective reactions		
	Medicine	Engineering	PCSOs	Driving School	Training College
4. Motivation to learn will explain additional variance in training outcomes, above and beyond the effect of individual characteristics and attitudinal variables	No	No	Partially supported	Partially supported	Partially supported
General motivation to learn	No	No	Yes, Predictor of affective reactions	No	Yes, Predictor of affective reactions
Specific motivation to learn	No	No	No	Yes, Predictor of affective reactions	No
5. Training support variables will have a significant influence on training outcomes, above and beyond the effect of motivation to learn	Yes	No	Yes	Yes	Yes
5a. Trainer support	Yes	No	Yes, Predictor of both outcomes	Yes, Predictor of both outcomes	Yes, Predictor of both outcomes
5b. Peer support	Yes	No	No	No	No

Another possibility is that our findings reflect differences in the thesis' conceptualisation of the motivation to learn variables, which differed from previous research. Support for this relationship in the organisational domain often comes from studies where motivation to learn has been operationalised through expectancy theories (e.g., Liao & Tai, 2006; Tai, 2006; Tracy et al., 2001) rather than a simple and direct measure of motivation (e.g., Colquitt & Simmering, 1998). In addition, in the educational domain motivation to learn is typically defined and measured through broad social-cognitive frameworks (Bandura, 1977; Deci & Ryan, 1985, Eccles, 1983; Pinrich, Smith, Garcia & McKeachie, 1993; Weiner, 1984). Given the unique conceptualisation of motivation to learn in the current thesis, results cannot be compared to previous research and all that can be concluded is that motivation to learn, as defined in the current thesis, was not predictive of declarative learning in these particular contexts.

Whereas the relationship between motivation to learn and affective reactions to training was largely supported, the studies failed to provide support for the link between motivation to learn and post-training self-efficacy (Colquitt et al., 2000). This finding is perhaps unsurprising given the differences not only in conceptualisation of motivation to learn but also in the conceptualisation of post-training self-efficacy. In order that the measure could easily transfer between contexts, post-training self-efficacy was conceptualised in the current thesis in terms of how capable trainees felt about using the knowledge and skills they acquired during the course, thus the items were quite generic in their wording. However, examination of the literature revealed that most researchers included self-efficacy items that were task specific (e.g., Ford et al., 1992; 1998; Gist, Schwoerer, & Rosen, 1989; Saks, 1995). The assumption is that self-efficacy is a task-

specific construct and that measures of self-efficacy should be tailored to the domain of psychological functioning being explored (Bandura, 1986). Therefore results may not be comparable to previous research and all that can be concluded at this stage is that the model variables did not predict post-training self-efficacy as was defined in the current thesis.

As previously mentioned, the relationship between motivation to learn and affective reactions to training was largely supported, however; some differences emerged between the studies. In the classroom based training environments (i.e., the PCSO study and the study at the police training college) general motivation to learn was predictive of trainees' affective reactions to the training course. In the more practically oriented training environment (i.e., driving courses), specific motivation to learn was the predictive factor. As was the case for learning anxiety, this may be because the majority of trainees on these courses were new recruits to the organisations. New recruits' attitudes may change during the training period as they develop a more realistic belief about the training course (Tannenbaum et al., 1991). Future research into this relationship would benefit from extending these findings by examining the relationship of specific motivation to learn with training outcomes at different stages of new recruit's training.

6.1.3 Training support variables (Hypotheses 5, 5a, & 5b)

The final stage of the analysis involved the integration of trainer and peer support into the model in order to examine their impact on training outcomes in comparison to individual characteristics, attitudinal and motivational variables. As can be seen in Table 6.2, results provide overwhelming support for the effect of training support variables.

Again, because different outcome variables were included in the studies the findings will be discussed separately for declarative learning (chapter 4) and affective training outcomes (chapter 5).

In the study with medical students both trainer and peer support had a substantial impact on students' exam results. In comparison, in the study with engineering students training support variables did not explain any of the variance in students' declarative learning. As previously discussed, the differences between the training programmes under investigation may explain the dissimilarity between the findings. The training of medical students during the clinical attachment required most students to move away from the main training hospital for this time period. Consequently, they were confronted with a new learning environment in which the consultant had an important role in providing learning opportunities related to the subject. In some respects, the consultant had similar responsibilities to a supervisor in the organisational context, in terms of provision of guidance and feedback. During this time, students were expected to appreciate the teamwork necessary for the day-to-day running of a hospital and patient care. They were also likely to expect support from their peers who attended the attachment with them because they were all in the same unfamiliar setting and shared a common goal.

In comparison, the learning environment of engineering students was very different. Students attended lectures and tutorials in a classroom setting and as such may have expected very little from the lecturer in terms of support as defined in the current thesis (e.g., one-to-one interaction and guidance). In addition, they may not have needed to rely so much on other students who attended the same module. Unlike the medical

students, they were not required to move away from their usual support mechanisms during the study period (e.g., other students and friends, library and IT facilities) and teamwork was not conveyed as an essential component of the learning process. However, previous literature in the educational domain suggests that lecturer's consideration and care (Gloria et al., 1996) and social support (Solberg et al., 1998) are important factors in students' learning experiences. Thus, the findings do not provide a definitive conclusion as to the effect of training support on learning and more research is needed with different samples of students in similar context in order to ascertain the effect of lecturer's and peers support on learning in comparison to motivation to learn.

In chapter 5 results are more comparable because in all three studies trainees were required to reflect upon a similar source of support when completing the questionnaire. All courses were off-the-job training programmes, with training taking place at a local training centre and trainees coming from various police stations across the region. In all three studies in chapter 5 it was trainer but not peer support that had a substantial impact on trainees' post-training self-efficacy and affective reactions to training. This suggests that trainers play an important role in influencing the effectiveness of training (as measured by post-training self-efficacy and affective reactions to training). During this training period, the trainer is likely to take the role of a supervisor or leader (Patrick et al., 2009). The expectations form a trainer overlap with expectations from a supervisor, in so much as both are expected to provide support for newcomers in adjusting to the organisation, acting as mentors to more experienced employees, and in providing feedback and assessment (Kidd & Smewing, 2001). In contrast, trainees may not expect their peers to provide support because the training context does not demand such reliance.

Like the engineering students, trainees can continue to rely on their normal support networks (e.g., family members, colleagues) during this period.

6.1.4 Summary

One of the advantages of the current thesis is that the model was tested in a variety of contexts that differed greatly in terms of training content and sample characteristics. This was deemed important in order to examine the external validity of the model. Collectively, results provide a tentative insight into this aspect. The reason that this insight is only tentative is that the research design and analyses used in this thesis have some shortcomings and limitations that overshadow the interpretations of results (these will be discussed in sub-section 6.2.2).

Across all studies the variables of learning anxiety and achievement motivation explained far greater variance in general motivation to learn than did valence, instrumentality, and learning self-efficacy. In both contexts the model explained far greater variance in specific motivation to learn than in general motivation to learn. This suggests that the development of general motivation to learn is largely dependent on trainees' dispositions, rather than their attitudes towards learning the taught subject. Content specific motivation to learn, in comparison, is not only affected by such dispositions, but also by attitudes. In all studies when a mediation relationship was found, it was valence and instrumentality that were the mediators, but not learning self-efficacy. Thus, as a whole, and despite the contextual differences, results with respect to predictors of general and specific motivation to learn were similar between the educational and organisational contexts, suggesting that the model generalises well.

In terms of the ability of the model to predict training outcomes, results are not comparable between the chapters as different measures of outcomes were included. In the educational context, where a measure of learning was available, results suggest that students' performance has very little to do with their motivation to learn or their attitudes towards the taught subject and more to do with background and dispositions. Of the ten model variables, only learning anxiety had an effect on the exam grades of engineering students, and in the study with medical students, five variables had a significant impact on students' performance: specifically, age, learning anxiety, achievement motivation, trainer and peer support. This suggests that what is predictive of students' performance in one training context may not be predictive of students' performance in another, indicating to the importance of understanding context when researching models (John, 2001).

In the organisational context the measures of motivation to learn were predictive of trainees' affective reactions to training but not post-training self-efficacy. Despite some differences, overall the findings generalised well between the studies. Whereby specific motivation to learn was predictive of reactions in the study where training was implicitly linked with job outcomes (driving school), it was general motivation to learn that was related to reactions in the other two studies. In all three studies trainer support (and not peer support) was related to post-training self-efficacy and affective reactions to training.

These findings, however, must be interpreted with caution due to limitations of the research design and analysis. These will be discussed in detail in the following section, as well as theoretical and practical implications and suggestions for future research.

6.2 Discussion

6.2.1 Theoretical and practical implications

This thesis has several theoretical and practical implications that extend previous research on motivation to learn (Colquitt et al., 2000; Noe, 1986). First, it demonstrates that specific motivation to learn differs from general motivation to learn in terms of its context and its correlates. Second, it adds to the existing knowledge base on the relationship of achievement motivation and learning anxiety with motivation to learn. Third, integration of training support variables proved that trainees' perceptions of support during the training period provide an additional and considerable explanation in training outcomes. Finally, the thesis highlights the importance of context and how models can be interpreted differently in disparate training programmes (e.g., Breen & Lindsay, 2002).

The relationship of learning anxiety and motivation to learn attracted very little research attention since Colquitt et al.'s meta-analysis (Warr & Downing, 2000), with some literature exploring the link of affect (Machin & Fogarty, 2004), stress (LePine et al., 2004) and self-esteem (Carlson et al., 2000). Responding to Colquitt et al.'s (2000) call for further research on the effect of personality (distal factors) on motivation to learn, there has been a steady rise of studies that include the 'Big Five' in their models (LePine et al., 2004; Major et al., 2006; Naquin & Holton, 2002; Rowold, 2007b). The 'Big Five' taxonomy of personality places five broad categories at the top of the personality trait hierarchy: neuroticism-emotional stability, extraversion, openness to experience, agreeableness, and conscientiousness (Barrick & Mount, 1991). From a practitioner perspective though understanding the link between the 'Big Five' and motivation to learn

maybe less valuable than understanding the link between learning anxiety and motivation to learn, as the 'Big Five' are not malleable dispositions (Kanfer, 1991). Thus, further research should continue to strive towards achieving a more comprehensive understanding of the link between learning anxiety and motivation to learn and the factors that determine learning anxiety.

Colquitt et al.'s conclusions on the link between learning anxiety and specific motivation to learn was largely based on literature from the Information Technology (IT) training environment (Martocchio, 1994; Martocchio & Webster, 1992). However, one would argue that these environments by virtue are anxiety provoking for certain groups of employees (Igarria & Chakrabarti, 1990). Findings of the current thesis extend previous research by demonstrating that context specific learning anxiety is predictive of context specific motivation to learn in other training environments, but only when the training course has an implicit link to performance and where training is largely hands-on. This suggests that learning anxiety is likely to be manifested when trainees perceive the possible consequences of training that are linked to job outcomes. Feelings of anxiety are likely to derive in part from a person's previous experience in similar situations (Warr & Bunce, 1995) or even by comments made by colleagues or fellow students who had already completed the training (Faction et al., 1995). Future research would benefit from investigating the causal pathways of these relationships further to ascertain the contexts in which learning anxiety matters most for motivation to learn. This line of enquiry is important, as reducing learning anxiety would be a desirable outcome for organisations that aim at increasing trainees' specific motivation to learn.

The relationship between achievement motivation with motivation to learn also attracted very little research attention since Colquitt et al.'s meta-analysis (Carlson et al., 2000), with some literature exploring the link of goal orientation (Chiaburu & Marinova, 2005; Chiaburu & Tekleab, 2005; Klein et al., 2006; Smith et al., 2008). Goal orientation describes the approach individuals adopt within achievement situations and conceptualises goals as learning oriented and performance oriented (Button et al., 1996). Research has demonstrated that individuals who are goal oriented have increased motivation to learn (Colquitt & Simmering, 1998; Chiaburu & Marinova, 2005; Chiaburu & Tekleab, 2005; Klein et al., 2006; Smith et al., 2008). Thus, dispositional goal orientation predisposes individuals to adopt particular response patterns across situations. However, what remains unclear is how these different dimensions of goal orientation (learning goal orientation and performance goal orientation) affect motivation to learn, as the results thus far are inconclusive (Colquitt & Simmering, 1998; Chiaburu & Marinova, 2005; Chiaburu & Tekleab, 2005; Klein et al., 2006). Achievement motivation provides a rivalry explanation to goal orientation, as it is also concerned with the needs and drives of individuals that are likely to influence a particular response pattern across situations. Extending the literature on the relationship of achievement motivation with motivation to learn (Carlson et al., 2000; Colquitt et al., 2000), the findings of the current thesis demonstrate that achievement motivation is an important predictor in such models. The findings show that a person's desire to successfully meet challenges and attain personal goal are strongly linked to a person's motivation to learn, regardless of context. For practitioners this suggests that this factor should be assessed at the selection stage if employees are expected to continue and develop throughout their tenure with the

organisation. This is particularly important in the current global economy climate, where organisations strive to compete is based on the skills, knowledge, and motivation of their workforce (Aguinis & Kraiger, 2009). By recruiting individuals who score highly on achievement motivation, organisations are likely to benefit from a highly motivated workforce with positive attitudes towards training (Carlson et al., 2000).

By extending prior work that examined valence and self-efficacy as predictors of motivation to learn (Colquitt & Simmering, 1998; Colquitt et al., 2000), the studies contained within this thesis demonstrate that when instrumentality is introduced into the equation as a separate construct, it is through valence and/or instrumentality that the predicting variables impact motivation to learn and not learning self-efficacy. Thus, the present thesis provides further support to the argument that the perceived utility or instrumentality of training (Keith et al., 2009) and the desirability to obtain training related outcomes (Colquitt & Simmering, 1998) are central aspects in the decision to devote effort to learn the task at hand. From a practical view point, interventions aimed at improving trainees' instrumentality and valence can be devised. This can be done, for example, through aligning the content of the training with the strategic direction of the organisation and making the alignment visible and salient to employees preparing for and attending training. For example, trainers need to make sure that trainees are aware of the instrumentality (performance-outcome relationship) of learning and transfer for their outcomes of interest. One way to create this link is to ensure the reward structure of the organisation is consistent with trainee performance and visible to the trainees. Specific statements outlining the performance-outcome link (e.g., employees who completed and were successful in these training programmes obtained desired career outcomes) can be

effective (Chiaburu & Lindsay, 2008). Future research should also continue to examine the unique effect of valence and instrumentality. Though tests of multicollinearity revealed no violation of assumptions in this respect, high correlations between items often make interpretations of results difficult (Tabachnick & Fidell, 2001). Conceptual clarification of these constructs is imperative in order to ascertain the theoretical and practical value of treating them as unique predictors of motivation to learn.

The unique integrative nature of the model extends current literature that favours the amalgamation of the individual approach (e.g., Kanfer, Wolf, Kantrowitz, & Ackerman, 2010) and the contextual approach (e.g., Roulier & Goldstein, 1993; Tracey et al., 1995) in the study of motivation to learn (Pintrich, 2003). Notwithstanding the importance of individual and motivational variables, the thesis highlights the importance of training support variables. Building upon the literature on supervisor/trainer support (Chiaburu & Marinova, 2005; Cohen, 1981; Noe & Wilks, 1993; Patrick, et al., 2009; Tracey et al., 2001; Yarnall, 1998), it shows that the trainer has a pivotal role in influencing the success of training, above and beyond the effect of motivation to learn. From a practical perspective, interventions aimed at improving trainees' perceptions of trainer support can be devised. This can be done, for example, through equipping trainers with the necessary skills and resources to provide trainees with clear guidance and plenty of opportunities for discussion of feedback. These provisions are likely to reduce performance anxieties and evaluation uncertainties (DeRue & Wellman, 2009). More generally, trainers need to recognise not only the important role they play in influencing trainees' affective training outcomes (e.g., post-training self-efficacy, and affective reactions), but also in influencing learning. As literature suggests, the more positive

trainees feel about the training course and the more confident they feel in their ability to apply the newly trained skills, the more likely they are to learn (Tracey et al., 2001) and to apply their newly trained skills in the workplace (Colquitt et al., 2000).

The present thesis also emphasises the importance of peer support in contexts where trainees are expected to work together and interact with each other throughout the learning process (e.g., medical students, O'Connell & Pascoe, 2004). This extends previous literature on the value of learning from each other and helping one another learn (Johnson et al., 1981; Latham & Crandall, 1991; Lookatch, 1989; Slavin, 1983). It implies that when the training design involves an element of working collectively to complete academic tasks (Hancock, 2004), trainees would benefit from being aware of the positive effect of this support mechanism on learning. The training design in such instances should allow for this support to occur by creating opportunities for interactions, in which trainees are encouraged to work together and help each other if they experience study related problems (Saxe, 1988).

6.2.2 Limitations of the thesis

Field research can be quite difficult. Not only are subjects difficult to access, but organisations are often reluctant to allow experimentation. The studies were therefore opportunistic, which produces some methodological problems (Spector, 2001). A particular weakness of the current research design is the use of different training outcomes across contexts. In the educational domain, learning was the only training outcome included in the analyses, whereas post-training self-efficacy and affective reactions to training were included in the organisational domain. The lack of a declarative

learning outcome in the organisational context is a particular weakness as affective outcomes may be important and should be taken notice of, but are rarely the most relevant criterion for evaluation (Patrick, 1992). Although the difficulty to obtain such information was due to practical problems, these were likely to reflect one or all of the following organisational issues proposed by Goldstein and Ford (2002): (1) failure of top management to emphasise training evaluation, (2) trainers not having the skills to conduct evaluation, (3) lack of awareness on what should be evaluated and what questions should be answered by an evaluation, and (4) fear that an evaluation may indicate that a publicly endorsed training programme is not meeting its objectives. Regardless of the reason for this shortcoming though, results cannot be compared between studies and the external validity of the model in this respect cannot be established. Future research would benefit from using multiple training outcomes in different contexts, including cognitive, skill-based, and affective outcomes (e.g., Warr et al., 1999; Colquitt et al., 2000).

In common with other studies on motivation to learn, self-reports were used for most of the variables under investigation. This is due partly to constraints of a field study and to the specific training programmes under investigation. Thus, it is possible that the observed relationships are influenced by this besides the content of the scales. However, the potential effect of method bias is problematic and unavoidable in many applied studies (Schmitt, 1994). To overcome the problems associated with common method bias, future research should consider obtaining data from a variety of sources. For example, in the field of children's academic achievement, research often relies on parents and teachers to report children's motivation to learn through measures of effort and enthusiasm (Beghetto, 2004). In the current context, work colleagues and supervisors

who have known the individual for quite some time may be able to accurately report attitudes and motivation (Eichinger, 2004). Indeed, research has shown that supervisors' and colleagues' reports of work-related attitudes and motivations correlate with an individual's self-reports on the same measures (e.g. 360° feedback, Harris & Schaubroeck, 1988). One interesting line of inquiry for future research should involve examining the relationship of self and others' reports of motivation to learn.

Another limitation is that the data on the relationship between the predicting variables and motivation to learn was collected at the same point in time, so results of this part of the model are based on a cross-sectional design. The problem with the cross-sectional design is that it does not allow for causal conclusions concerning the directionality between cause and effect variables (Spector, 2001). However, this is a relatively common practice in the area of training effectiveness, where cross-sectional designs are used to increase the knowledge base before attempting longitudinal studies (Carlson et al., 2000; Fecteau et al., 1995). In addition, one must be careful not to over-interpret results from multiple regressions. Finding that a variable becomes non-significant in the presence of another when entered into the analyses tells us that a certain causal pattern is possible, but not that it is certain. Additional variables not considered by the analysis might have had a stronger causal influence. Although some may argue that this shortcoming can be overcome by a statistical remedy (e.g., structural equation modelling (SEM); Spector & Brannick, 1995; Tharenou, 2001), others have pointed out that it is not an ideal solution (Donaldson & Grant-Vallone, 2002; Posakoff, McKenzie & Posakoff, 2003)). More specifically, although this technique controls for any systematic error variance among the items, it does not permit the researcher to identify the specific

cause of the method bias. Indeed, the factor may reflect not only different types of common method variance but also variance due to relationships between the constructs other than the one hypothesised (Posakoff et al., 2003).

One way of enhancing the interpretation of causality and guarding against the problems of reverse causation and the influence of third variables (Kenny, Kashy, & Bolger, 1998) is to use a longitudinal design (which was the case in the current thesis with respect to the effect of the model variables on training outcomes). However, merely finding that a variable measured in time 1 and a variable measured in time 2 are related (even in a longitudinal study) tells us little about causality, as such a relation can be caused by either one variable causing the other as well as by a 'third' variable causing both. It is possible to conclude that one causes the other if there is a relation over time (Spector, 2001). However, it was not possible to control for learning in time 1 for two reasons. First, the criterion variable for the studies in the educational domain was end of module examination results. This examination only occurs once in a student's study period, at the end of the specific attachment or module. Therefore, it was not possible to control for students' scores on this specific measure at an earlier time point. Second, assessing affective reactions prior to training is not likely to yield meaningful data. Trainees cannot fully or accurately appraise the course content and delivery prior to the training period. On the other hand, self-efficacy could in fact be measured prior to the training period and the measure of change could be used as an index (Gist, 1987). Thus, future research should not only continue to use the longitudinal method of investigation, but change over time should be used as the criterion outcome (e.g., pre-post learning, pre-

post self-efficacy, Warr et al., 1999). This should improve the interpretations of causal pathways in the model.

This thesis broadens the range of populations across which results can be generalized. Previous studies have measured their models of motivation to learn in either an organizational context (Fecteau et al., 1995; Major et al., 2006; Martocchio & Webster, 1992; Mathieu et al., 1992; Smith et al., 2008; Switzer et al., 2005; Tharnoue, 2001; Tracey et al., 2001; Warr & Bunce, 1995; Webster & Martocchio, 1993) or with student populations (Baldwin et al., 1991; Chuang et al., 2005; Colquitt & Simmering, 1998; LePine et al., 2004; Mathieu et al., 1993; Quinones, 1995). The advantage of the current thesis is that the model has been examined in both contexts. However, although within each of these contexts the model has been examined in at least two different training environments, there remains the problem of truncated range. Within the educational context (chapter 4), the studies were restricted to a particular sample of students, from a particular set of disciplines in a particular university in a particular cultural setting. Participants were students attending the more vocationally focused courses (e.g., medicine and engineering), and were all close to the final stages of their studies. In the organisational context (chapter 5), the generalisability of the results may also be limited because the studies were conducted in a particular organisational context. All participants were employees at law enforcement organisations who work under similar sets of rules and regulations that govern the way they behave. The effects of truncated range on correlations are well documented in the literature (Sackett, Lievens, Berry, & Landers, 2007). Applications of this model in other types of training environments within both the educational and organisational domains will elaborate our

understanding of the stability of the relationships among the variables in the proposed motivation to learn model.

6.2.3 Directions for future research

The novelty of the current thesis lies in its conceptualisation of motivation to learn as two distinct constructs. General motivation to learn is conceived as the broad attitude towards learning new things, in contrast to one's motivation for learning a specific subject. Although the thesis does not provide a definitive conclusion as to the unique effect of each on training outcomes, it adds to the existing knowledge base (Tharenou, 2001; Warr & Bunce, 1995). Further research is needed in achievement situations (see Eccles & Wigfield, 2002) in order to establish the theoretical and practical value of this conceptual distinction.

In the current thesis training outcomes were defined narrowly as either learning (chapter 4) or affective outcomes (chapter 5). However, researchers often conceptualise training effectiveness within a multiple training outcomes perspective (Kirkpatrick, 1976; Kraiger, Ford, & Salas, 1993). Indeed, Colquitt et al. (2000) used Kraiger et al.'s model and included cognitive, skill-based, and affective outcomes as well as Kirkpatrick's model in the form of transfer of training and job performance. More recent research, however, argues that a broader perspective on types of outcomes beyond individual learning of knowledge and skills, work behaviour and organisational performance is needed if training and development effectiveness is to be accurately assessed (Birdi, 2010). In the Taxonomy of Training and Development Outcomes (TOTADO) Birdi (2010) proposes that outcomes can be measured at four basic levels: individual, team (or

work group), organisational and societal. Within each level a variety of outcomes can be assessed. Individual-level outcomes include affective, cognitive, behavioural, physical, and instrumental outcomes, whilst team-level outcomes are also defined as affective, cognitive, behavioural, and instrumental, but not physical. Organisational-level outcomes include financial outputs, processes and resources, and societal-level outcomes are considered in terms of economic, health, educational, law and order and environmental. Indeed, the recent review of the training literature published by Aguinis & Kraiger (2009) demonstrates that training and development does not only benefit the individual, but also teams, organisations, and society. Thus, research into models of motivation to learn would benefit from expanding the number of outcome variables to reflect a wider range of evaluation criteria. Researchers and practitioners would benefit from using Birdi's (2010) taxonomy as a guide during the early stages of developing an evaluation strategy so they are aware of the variety of outcome criteria that may need to be measured.

In addition to broadening the range of learning outcomes, future research on motivation to learn would benefit from integrative work with research on motivation to transfer. In his original paper on motivation to learn, Noe (1986) included motivation to transfer as a predictor of training effectiveness. Defined as 'trainees' desire to use the knowledge and skills mastered in the training programme on the job' (Noe, 1986, p.743), Noe argued that trainees' motivation to transfer the newly acquired skills to the job is likely to mediate the relationship between learning and behaviour change. Similarly to the upsurge of research on motivation to learn, subsequent to this paper there has been an influx of interest in research into the predictors of motivation to transfer (for a review see Cheng & Hampson, 2008; Yamnill & McLean, 2001). A more recent line of enquiry

argues that motivation to learn is an important predictor of motivation to transfer (Axtell, Maitlis, Yearta, 1997; Rowald, 2007a; Smith et al., 2008; Tai, 2006), which in turn impacts upon actual transfer (Chiaburu & Lindsay, 2008).

One interesting result of the thesis was the relationship of trainer support with training outcomes in four out of the five studies. What distinguishes these studies is the fact that the trainer in these contexts was also a supervisor (Patrick et al., 2009) in so much as he or she had the responsibility during the training period to act as a mentor and provide trainees with guidance and feedback in relation to performance in the same way as employees would expect from a supervisor in the workplace (Tracey et al., 2001). The findings of the current thesis thus extend the literature on the effect of supervisor/trainer support on training outcomes. However, the causal link between trainer support, motivation to learn, and training outcomes remains to be established.

Since Colquitt et al.'s, (2000) publication, increasingly more researchers have included aspects of the training context into models of motivation to learn (Keith et al., 2010; Klein et al., 2006). Keith et al. (2010) examined the effect of different training approaches (active/exploratory vs. guided) and Klein et al. (2006) examined the effect of delivery mode (classroom vs. blended learning). Both studies provided evidence for the importance of these factors as they impact and/or interact with motivation to learn, which in turn affects learning. Following this line of enquiry and linking with research in the educational domain (Montalvo, Mansfield, & Miller, 2007) it is reasonable to suggest that trainer support impacts or interacts with motivation to learn, with subsequent effect on learning.

Research suggests that supervisor support is positively linked with training motivation. In a study involving several organisations, Cohen (1990) found that trainees with more supportive supervisors attended training programmes with stronger beliefs in the programme's usefulness, which is an important factor in employee motivation (Tharenou, 2001). Similar results were also found by other researchers (Chiaburu & Telkab, 2005; Clark et al., 1993; Fecteau et al., 1995). Chiaburu and Telkab (2005) suggest that supervisors cue the implications of training participation to employees through performance evaluations and discussions, which has a positive impact on training motivation. Most commonly, motivation to learn is positioned as a mediator of the relationship between supervisor support and training outcomes (Chiaburu & Telkab, 2005; Colquitt et al., 2000; Tharenou, 2001). However, factoring this into the current thesis would have made no practical or theoretical sense because trainer support was measured at time 2, whereas motivation to learn was measured at time 1. This contradicts the basic premises upon which mediation theory is based that states that the predictor must be assessed prior or at the same time point as the mediator (Baron & Kenny, 1986).

It is possible that during the training period, motivation to learn interacts with trainer support and this interaction impacts training outcomes. Indeed, the identification of important moderators of relations between predictors and outcomes indicates the maturity and sophistication of a field of inquiry (Frazier, Tix, & Baron, 2004). It will therefore be useful to attempt to understand the multiple pathways through research that examines how different training support variables and motivation interact to generate different patterns of motivated behaviour (Pintrich, 2003). To examine these multiple pathways, studies should be designed to explore whether (a) trainers that provide

feedback and create a positive learning atmosphere (i.e., trainer support) influence trainees' motivation learn and (b) trainers that provide feedback and create a positive learning atmosphere affect the relationship between pre-training motivation to learn and motivated behaviours such as transfer motivation (Chiaburu & Lindsay, 2008), allocation of attentional resources and effort (Kanfer & Ackerman, 1989) and adaptation of goals (Pintrich et al., 1993).

For example, it is reasonable to consider that trainees who enter training with low levels of motivation to learn are more likely to report higher levels of motivation to learn post-training if they receive feedback and have opportunities to discuss their learning objectives and goals with the trainer (Martocchio & Webster, 1992). On the other hand, trainees who are motivated to learn at the start of training who then receive very little support from the trainer during training are more likely to report lower post training motivation. In such a study, trainees' should complete a measure of motivation to learn pre- and post- training in order to gauge change (Harris & Cole, 2007), as well as a measure of perception of trainer support upon completion of training. The interaction between trainer support and pre-training motivation to learn should be examined through a test of moderation (Baron & Kenny, 1986). Similarly, to study the predicted interaction of trainer support and motivation to learn on different patterns of motivated behaviour (Pintrich, 2003), a study should measure pre-training motivation to learn and post measures of motivated behaviours (e.g., transfer motivation, allocation of attentional resources and effort, and adaptation of goals). In this study the proposition that motivation is likely to have a positive effect on motivated behaviour when participants receive support from trainers should be examined (Montalvo et al., 2007).

Although peer support emerged as an important predictor of learning in only one of the studies (medical students), much more work in industrial training contexts is needed in order to build an understanding of group dynamics and how they affect motivation and learning outcomes (Baldwin & Magjuka, 1997). Learner-learner interaction may be an important aspect of the learning process (Sitzmann et al., 2008) as trainees may be a source of informal feedback for each other (DeRue & Wellman, 2009). This feedback is an information resource that allows individuals to cope with challenging situations, especially when there is a high degree of uncertainty about how to act and how those actions will be evaluated by others (Ashford, 1986). Moreover, future research may want to extend this work by examining models of prediction that explore aspects of support in more detail. For example, research should be assessing trainees' needs and expectations of support at the start of the training programme to establish its link with actual perceptions of support upon completion of training (Hancock, 2004). These two factors may be related, and this relationship may shed light on the effect of trainer support on training outcomes.

Other sources of influence within the training environment should also be integrated into models of motivation to learn and training effectiveness, including factors related to situational constraints (Mathieu et al., 1993) or environmental favourability (Noe, 1986). These would assess whether elements of the training environment such as availability of equipment, time allocated for assignments, adequacy of facilities and so on are predictive of training outcomes and may even act as moderators in such models. It might be the case that trainees who enter the training course highly motivated to learn the course content but are confronted with environmental obstacles may react less favourably

to training and learn less than trainees who are not only highly motivated but are also given adequate resources and time for training. With this moderating hypothesis in mind, the predicting variable would be pre-motivation to learn, the outcome variable would be a measure of change between pre- and post- learning (Warr et al., 1999), and the moderating variable would be the training environment (e.g., Noe & Schmitt, 1986). In this study the proposition that motivation is likely to have a positive effect on learning when trainees are provided with adequate resources and facilities should be examined (Montalvo et al., 2007).

The wider context in which trainees learn may also be considered, including university support (Gloria et al., 1996), organisational learning culture (Chiaburu & Telkab, 2005; Colquitt et al., 2000; Tracey et al., 1995), and family support (Maurer et al., 2003; Solberg & Villarrel, 1997).

Colquitt et al.'s (2000) meta-analytic research formed the basis upon which the thesis' model was developed. The meta-analytic method is useful, as it allows individual study results to be aggregated while correcting for various artefacts that can bias relationship estimates (Hunter & Schmidt, 1990), such as different sample sizes. Being meta-analytic, it has the advantage of combining all the research on motivation to learn into one large study with many participants even if the construct in question has been measured using different instruments across a range of different people. As discussed extensively in the introductory chapters of this thesis, the problem with this technique is that in amalgamating a large set of different studies the construct definitions become imprecise and the results difficult to interpret meaningfully (Shuttleworth, 2009). In the decade since Colquitt et al.'s (2000) publication, no clear attempt has been made to

overcome the conceptual confusion of the construct of motivation to learn. In fact, more recent publications continue to develop different models of motivation to learn using a wide range of definitions and measures (Blau et al., 2008; Carlson et al., 2000; Chiaburu & Telkab, 2005; Guerrero & Sire, 2001; LePine et al., 2004; Machin & Fogarty, 2004; Naquin & Holton, 2002; Smith et al., 2008; Tharenou, 2001). Calls for convergence and clarity of motivation to learn should be made so further theoretical integration can be interpreted with confidence.

Another problem of meta-analytic research is the potential for publication bias and skewed data. Research generating results not refuting a hypothesis may tend to remain unpublished, or risks not being entered into the database. If the meta-analysis is restricted to the research with positive results, then the validity is compromised (Bushman & Wells, 2001). With this in mind, researchers should be encouraged to publish studies even when results do not support the predicted relationships. Moreover, the researcher compiling the data must make sure that the data is comparable across the various research programs, allowing a more valid statistical analysis. A key advantage of the current thesis is the attempt to overcome this limitation by examining the same model in different training programmes and different trainees.

6.3 Summary and conclusions

Overall the current thesis makes important advances in understanding the concept of motivation to learn:-

1. By conceptualising motivation to learn at both general and specific levels and by disaggregating them from their closely related constructs of valence, instrumentality, and self-efficacy, it was possible to gain insight on the importance of each of the variables for training outcomes. Most interesting is the finding that valence and instrumentality play a much more significant role in mediating the relationship between learning anxiety and achievement motivation with the measures of motivation to learn than learning self-efficacy. From a practical view point this is an important finding as it informs practitioners that these attitudinal variables should be targeted in order to improve trainees' motivation to learn. Moreover, the finding regarding different relationship of general and specific motivation to learn suggests that motivation is dependant on context (Pintrich & Schunk, 2002).
2. Further evidence is provided on the effect of learning anxiety and achievement motivation on motivation to learn. The unique conceptualisation of motivation to learn enabled an insight into the effect of learning anxiety, demonstrating that this factor matters most in contexts where a link can be explicitly perceived between training and outcomes. Achievement motivation, on the other hand, was unequivocally related to both measures of motivation to learn across all studies, with one important similarity. In the majority of studies, the relationship with general motivation to learn was direct whereby the relationship with specific

motivation to learn was mediated by valence and/or instrumentality. For practitioners this has important implications. First, organisations who promote a culture of learning should aim to employ a workforce that is highly motivated to learn across a variety of context. The current thesis suggests that this can be obtained by recruiting individuals who score highly on achievement motivation. For trainers, the current thesis demonstrates that this personality variable is likely to be manifested when trainees hold positive attitudes towards training such as valence and instrumentality.

3. The unique and significant contribution of training support variables above and beyond the well researched individual and attitudinal variables is evidence of the importance of the training context and the training environment. More specifically, the finding on the substantial impact the trainer has on trainees' performance and affective training outcomes confirms that the trainer has an important role in leveraging training success. To fully understand what makes for effective training, future integrative work should include variables related to the training environment (Arthur, Bennett, Edens, & Bell, 2003). This should provide practitioners with an insight into how the social environments they create contribute to training effectiveness.
4. The findings provide evidence of the importance of context and how different results are obtained when applying the same model to different training environments and to different samples of trainees. Empirical research on motivation to learn should continue to examine motivation to learn in a variety of

training environments in order that further integrative work can be more conclusive.

5. Future research into motivation to learn should strive towards theoretical coherence. As pointed out by Pintrich (2003), it is important to avoid the proliferation of similar constructs with different labels that serve the same motivational function. It is also important to maintain distinction in constructs and labels when they reflect important and real difference in the terms, theories, and supporting empirical data. Calls for convergence and clarity of motivation to learn should be made so further theoretical integration can be interpreted with confidence.

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APPENDICES

Appendix A – Measures

A.1 Pre-training questionnaire

A.2 Post-training questionnaire

Appendix B - Pre- and Post - training questionnaires

B.1 Pre- training questionnaire / School of Medicine

B.2 Post-training questionnaire – School of Medicine

B.3 Pre-training questionnaire – PCSOs

B.4 Post- training questionnaire – PCSOs

APPENDIX A – MEASURES

A.1 Pre-training questionnaire

Demographic information

1. Age
2. Gender
3. Race
4. Education

Learning Anxiety - Fisk & Warr (1996)

Educational

1. I feel worried about learning ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)
2. I feel tense about learning ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)
3. I feel uneasy about learning ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)

Organisational

1. I feel worried about learning the course materials
2. I feel uneasy about learning the material in this course
3. I feel tense about learning the course materials

Achieving motivation - Mehrabian & Bank (1978) from Mathieu al. (1992)

1. I am hesitant about making important decisions - R
2. I don't work well under pressure - R
3. I really enjoy a class or assignment that involves overcoming obstacles
4. I only work as hard as I have to - R
5. I like situations that don't require me to make risky decisions - R
6. I more often take difficult courses that I am not sure that I can handle, than easier ones that I believe I can do well in easily
7. I don't like to have the responsibility of handling a difficult situations - R
8. I prefer my classes to be filled with challenging assignments
9. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult - R
10. The idea of climbing my was to the top does not appeal to me - R

Self-efficacy - Adapted from Fisk and Warr (1996)

Educational

1. In comparison to other students I expect to learn the material during this clinical attachment/module much quicker
2. In comparison to other students I am likely to be better at remembering the material at the end of the clinical attachment/module
3. In comparison to other students I expect to do much better at the final exam in... (specific subject)

Organisational

1. In comparison to other trainees I am likely to be better at remembering the material at the end of the course
2. In comparison to other trainees I expect to learn the material during this course much quicker
3. In comparison to other trainees I expect to do much better at any of the tests that will be given during training

Valence - Colquitt & Simmering (1998)

Educational

1. It is desirable for me to do well during the...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)
2. It is desirable for me to get a good grade at the end of ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)
3. It is desirable for me to achieve success in the ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module)

Organisational

1. It is desirable for me to do well during...(name of specific training, e.g., PCSO, Driving) training
2. It is desirable for me to get good grades on tests given to us during...(name of specific training, e.g., PCSO, Driving) training
3. It is desirable for me to achieve success during...(name of specific training, e.g., PCSO, Driving) training

Instrumentality

Educational - Eccles and Wigfield (2002)

1. Studying ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module) is likely to help me with other aspects of my studies
2. This clinical attachment/module will help me develop skills that are useful for a range of careers in medicine/engineering

3. Studying ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module) will give me a better idea of the career path I want to pursue
4. Studying ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module) will result in more opportunities to pursue different career path

Organisational - Mathieu et al. (1992)

1. This course will help me develop skills that are useful for a range of similar jobs
2. The course is likely to help me with other aspects of my job
3. Participation in ...(name of specific training, e.g., PCSO, Driving) training will help me improve the skills necessary for my job
4. The knowledge and experience I gain during ...(name of specific training, e.g., PCSO, Driving) training will help advance my career

General motivation to learn - Adapted from Noe & Schmitt (1986)

1. I am always keen to make use of the learning and development opportunities available to me
2. I always try to learn as much as I can
3. I am always motivated to learn new things

Specific motivation to learn - Adapted from Noe & Schmitt (1986)

Educational

1. I am keen to make use of the learning and development opportunities during this clinical attachment/module
2. I will try to learn as much as I can during the ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module) attachment/module
3. I am motivated to learn the material during the ...(name of specific training, e.g., Obstetrics & Gynaecology attachment, or Structural Analysis module) attachment/module

Organisational

1. I am keen to make use of the learning and development opportunities during ...(name of specific training, e.g., PCSO, Driving) training
2. I will try to learn as much as I can during the course
3. I am motivated to learn the material during ...(name of specific training, e.g., PCSO, Driving) training

A.2 Post-training questionnaire

Trainer support - Kidd & Smewing (2001)

Educational

1. I felt comfortable asking the consultant/lecturer questions related to my learning
2. The consultant/lecturer made me feel that teaching was not an important part of his or her job and that he or she is far too busy
3. The consultant/lecturer gave me the authority I needed to learn and perform relevant skills
4. The consultant/lecturer assessed my performance with regard to goals and objectives
5. The consultant/lecturer gave me specific guidance as to how I could improve
6. The consultant/lecturer arranged uninterrupted time to talk with me
7. The consultant/lecturer was available to discuss learning when I needed

Organisational

1. There were very few opportunities for me to learn from the trainer
2. The trainer gave me specific guidance as to how I could improve
3. The trainer was available to discuss learning when I needed
4. The trainer made me feel that training was not an important part of his or her job and that he or she was far too busy
5. I felt comfortable asking the trainer questions related to my training
6. The trainer assessed my performance with regard to goals and objectives
7. The trainer arranged uninterrupted time to talk with me

Peer support - Ladd and Henry (2000)

Educational

1. Help was available from other students when I had a problem related to the studies
2. Other students were willing to offer assistance to help me learn and perform to the best of my ability
3. Other students showed very little concern for me if I struggled with my studies
4. Other students took notice when I made suggestions related to the studies
5. As a group of students we tended to study together and support each other

Organisational

1. Help was available from other trainees when I had a problem related to the course
2. Other trainees were willing to offer assistance to help me learn and perform to the best of my ability
3. Other trainees showed very little concern for me if I struggled with the training material
4. Other trainees took notice when I made suggestions related to the training
5. As a group of trainees we tended to study together and support each other

Training outcomes –Organisational

Post training self-efficacy - Martocchio & Judge (1997)

1. I have the ability to use the knowledge and skills taught at the training centre
2. I feel capable of using the skills developed at the training course in the forthcoming tutoring period
3. I feel confident about using the techniques taught on this course

Reactions - Noe & Schmitt (1986) and discussions

1. The course content built up my understanding of the role of a PCSO
2. The course content was relevant to my future role
3. The duration of the course was adequate to deliver the stated objectives
4. The course was coherent and clearly structured
5. My training was delivered at an appropriate pace
6. The training staff were knowledgeable
7. The training staff maintained my interest
8. The training staff involved the whole group in the learning
9. The training staff were approachable and helpful

APPENDIX B – SAMPLE QUESTIONNAIRES

B.1 Pre- training questionnaire / School of Medicine

RESEARCH INTO THE EFFECT OF ATTITUDES AND MOTIVATION ON LEARNING OUTCOMES

Description of the research

The following questionnaire is the first part of a project being conducted in collaboration between the School of Medicine and the School of Psychology, XXX. The overall aim of the research is to assess the impact of attitudes and motivation on learning outcomes. It is hoped that the results of this study will contribute greatly towards the School of Medicine's future improvement and development of its teaching practices.

Participation in this project is divided into two sessions, one at the beginning of the clinical attachment and one at the end. The first session will require half an hour of your time and will be asking you questions related to your expectations from the clinical attachment, attitudes toward learning, and the way you have been feeling lately as well as a measure of general intellectual ability. The second session will require 10 minutes of your time in which you will be asked questions related to the experiences you have had during the clinical attachment.

In order to examine the relationship between expectations, attitudes and learning outcomes, we will need to obtain information related to your performance at the end of the attachment. To ensure confidentiality, **please write your name on this page which will be discarded when anonymous methods of data entry have been introduced.**

The information provided by you will be kept under strict confidentiality, so that it is impossible to trace it back to you. In accordance with the Data Protection Act, this information may be retained indefinitely.

Participation in this study is entirely voluntary and you can withdraw from the study at any time without giving a reason. Should you wish to withdraw, the information provided by you will be discarded. You are also free to ask any questions at any time. If for any reason you experience discomfort during participation in this study, you are free to withdraw or discuss your concerns with the researcher, Michal Tombs.

Please read the enclosed consent form carefully and complete it before answering the questionnaire.

Name:

Many thanks for participating.

Michal Tombs, PhD student
School of Psychology

PART 1: GENERAL LEVEL OF SUPPORT

Below are questions concerned with the level of support you are having during your studies at the School of Medicine. Peers are your fellow medical students. Please circle the number which best corresponds to how you are feeling about your level of support from these individuals. If any of the following categories of individuals are inappropriate to your situation please leave these rows blank.

1	2	3	4	5
NEVER	RARELY	QUITE OFTEN	OFTEN	ALWAYS

1. How much can the following individuals be relied on for support during your studies?

Your friends	1	2	3	4	5
Your parents	1	2	3	4	5
Your partner	1	2	3	4	5
Your relatives	1	2	3	4	5
Your personal tutor	1	2	3	4	5
Your peers	1	2	3	4	5

2. How often do the following individuals listen to your study problems?

Your friends	1	2	3	4	5
Your parents	1	2	3	4	5
Your partner	1	2	3	4	5
Your relatives	1	2	3	4	5
Your personal tutor	1	2	3	4	5
Your peers	1	2	3	4	5

3. How much can you count on the following individuals when a situation concerned with studying gets tough?

Your friends	1	2	3	4	5
Your parents	1	2	3	4	5
Your partner	1	2	3	4	5
Your relatives	1	2	3	4	5
Your personal tutor	1	2	3	4	5
Your peers	1	2	3	4	5

PART 2: ATTITUDES AND EXPECTATIONS

Below are questions concerned with your attitudes and expectations related to learning. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree

1. I am always keen to make use of the learning and development opportunities available to me	1	2	3	4	5	6	7
2. Trying hard usually leads to learning the material	1	2	3	4	5	6	7
3. In comparison with others I expect to learn course material much quicker	1	2	3	4	5	6	7
4. I am always motivated to learn new things	1	2	3	4	5	6	7
5. In comparison to others I am better at remembering course material	1	2	3	4	5	6	7

6. I always try to learn as much as I can	1	2	3	4	5	6	7
7. In comparison to others I expect to do much better at exams	1	2	3	4	5	6	7
8. Putting in effort usually leads to an understanding of the material	1	2	3	4	5	6	7

PART 3: ATTITUDES TOWARDS WALES COLLEGE OF MEDICINE AND CAREER PLANNING

The following are some questions about your attitudes towards the College of Medicine and your level of involvement and planning in a career in medicine. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

	1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree
9. I am sometimes dissatisfied with my choice of career in medicine	1	2	3	4	5	6	7
10. I change my career objectives frequently	1	2	3	4	5	6	7
11. For me Wales College of Medicine is the best of all possible institutions to study at	1	2	3	4	5	6	7
12. I get a sense of pride from a career in medicine	1	2	3	4	5	6	7
13. I have not really decided what my career objectives should be yet	1	2	3	4	5	6	7
14. Sometimes I wish I have chosen a different career field	1	2	3	4	5	6	7
15. I am extremely glad that I chose this institution to study at, over others I was considering at the time I joined	1	2	3	4	5	6	7
16. Compared to other areas of my life, a career in medicine is <u>not</u> very important to me	1	2	3	4	5	6	7
17. I know what I need to do to reach my career goals	1	2	3	4	5	6	7
18. I identify strongly with a career in medicine	1	2	3	4	5	6	7
19. Deciding to come and study at this college was a definite mistake on my part	1	2	3	4	5	6	7
20. If I were to describe myself to someone, I would probably begin by stating that I study medicine	1	2	3	4	5	6	7
21. I talk about the College of Medicine with my friends as a great place to study at	1	2	3	4	5	6	7
22. I have a strategy for achieving my career goals	1	2	3	4	5	6	7
23. I could study at a different institution as long as the type of studying was similar	1	2	3	4	5	6	7
24. If I were to rank (in order of importance to me) all the things that I do, those things related to a career in medicine would be at the near top	1	2	3	4	5	6	7

25. The College of Medicine really inspires the very best in me in the way of studying	1	2	3	4	5	6	7
26. My career objectives are not clear	1	2	3	4	5	6	7
27. I am proud to tell others that I study at the Wales College of Medicine	1	2	3	4	5	6	7
28. I have a plan for my career	1	2	3	4	5	6	7
29. A career in medicine gives me a sense of well-being	1	2	3	4	5	6	7

PART 4: INDIVIDUAL PREFERENCES

The following statements measure various aspects of your internal dispositions, preferences and beliefs. Please use the scale to rate the extent to which you agree or disagree with each item.

	1	2	3	4	5	6	7
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
30. In the long run, people get the respect they deserve in this world	1	2	3	4	5	6	7
31. The opportunity to do challenging work is important to me	1	2	3	4	5	6	7
32. I am able to relax without difficulty in challenging situations where something new has to be learned or where I have to 'stretch' my skills	1	2	3	4	5	6	7
33. What happens to me is of my own doing	1	2	3	4	5	6	7
34. I don't work well under pressure	1	2	3	4	5	6	7
35. In my case, getting what I want has little to do with luck	1	2	3	4	5	6	7
36. I seldom notice the moods or feelings that different environments produce	1	2	3	4	5	6	7
37. Given the choice, I more often take difficult courses that I am not sure that I can handle, than easier ones that I believe I can do well in easily	1	2	3	4	5	6	7
38. I feel smart when I do something without making any mistakes	1	2	3	4	5	6	7
39. Becoming a success is a matter of hard work; luck has little or nothing to do with it	1	2	3	4	5	6	7
40. I prefer to do things that I can do well rather than things that I do poorly	1	2	3	4	5	6	7
41. I only work as hard as I have to	1	2	3	4	5	6	7
42. The things I enjoy the most are the things I do the best	1	2	3	4	5	6	7
43. Many of the unhappy things in peoples' lives are partly due to bad luck	1	2	3	4	5	6	7

44. I like to be fairly confident that I can successfully perform a task before I attempt it	1	2	3	4	5	6	7
45. The idea of climbing my way to the top does not appeal to me	1	2	3	4	5	6	7
46. I feel anxious and worried in challenging situations where something new has to be learned or I have to 'stretch' my skills	1	2	3	4	5	6	7
47. I often try new and foreign foods	1	2	3	4	5	6	7
48. I feel smart when I can do something better than most other people	1	2	3	4	5	6	7
49. Most people don't realize the extent to which their lives are controlled by accidental happenings	1	2	3	4	5	6	7
50. I try hard to improve on my past performance	1	2	3	4	5	6	7
51. Once I find the right way to do something, I stick to it	1	2	3	4	5	6	7
52. Without the right breaks, one cannot be a good leader	1	2	3	4	5	6	7
53. The opportunity to learn new things is important to me	1	2	3	4	5	6	7
54. Who gets promoted often depends on who was lucky enough to be in the right place first	1	2	3	4	5	6	7
55. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work	1	2	3	4	5	6	7
56. I don't like to waste my time daydreaming	1	2	3	4	5	6	7
57. In the long run, the bad things that happen to us are balanced by the good ones	1	2	3	4	5	6	7
58. I am intrigued by the patterns I find in art and nature	1	2	3	4	5	6	7
59. I'm happiest when I perform tasks on which I know that I won't make any errors	1	2	3	4	5	6	7
60. I like situations that don't require me to make risky decisions	1	2	3	4	5	6	7
61. I believe letting students hear controversial speakers can only confuse and mislead them	1	2	3	4	5	6	7
62. When I fail to complete a difficult task, I plan to try harder the next time I work on it	1	2	3	4	5	6	7
63. I believe we should look at our religious authorities for decisions on moral issues	1	2	3	4	5	6	7
64. I do my best when I'm working on a fairly difficult task	1	2	3	4	5	6	7
65. I have little interest in speculating on the nature of the universe or the human condition	1	2	3	4	5	6	7
66. When I make plans, I am almost certain I can make them work	1	2	3	4	5	6	7
67. I like to work on tasks that I have done well on in the past	1	2	3	4	5	6	7

68. I have a lot of intellectual curiosity	1	2	3	4	5	6	7
69. I am hesitant about making important decisions	1	2	3	4	5	6	7
70. I prefer to work on tasks that force me to learn new things	1	2	3	4	5	6	7
71. Challenging situations where something new has to be learned make me feel very nervous	1	2	3	4	5	6	7
72. Sometimes when I'm reading poetry or looking at a work of art, I feel a chill or wave of excitement	1	2	3	4	5	6	7
73. I really enjoy a class or assignment that involves overcoming obstacles	1	2	3	4	5	6	7
74. The opinions others have about how well I can do certain things are important to me	1	2	3	4	5	6	7
75. Many times I feel I have little influence over those things that happen to me	1	2	3	4	5	6	7
76. I don't like to have the responsibility of handling difficult situations	1	2	3	4	5	6	7
77. I often enjoy playing with theories or abstract ideas	1	2	3	4	5	6	7
78. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult	1	2	3	4	5	6	7
79. I feel tense or highly-strung in challenging situations where something new has to be learned or I have to 'stretch' my skills	1	2	3	4	5	6	7
80. The opportunity to extend the range of my abilities is important to me	1	2	3	4	5	6	7
81. I prefer my classes to be filled with challenging assignments	1	2	3	4	5	6	7
82. Poetry has little or no effect on me	1	2	3	4	5	6	7
83. In challenging situations where something new has to be learned I feel restless, fidgety, or impatient	1	2	3	4	5	6	7

PART 5: GENERAL HEALTH

We would like to know if you have had any medical complaints, and how your health has been in general, over the past few weeks. Please answer ALL the questions simply by circling the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

HAVE YOU RECENTLY:

84. been able to concentrate on whatever you are doing?	Better than usual	Same as usual	Less than usual	Much less than usual
85. lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual

86. felt that you are playing a useful part of things?	More so than usual	Same as usual	Less useful than usual	Much less than usual
87. felt capable of making decisions about things?	More so than usual	Same as usual	Less useful than usual	Much less than usual
88. felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
89. felt that you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
90. been able to enjoy your normal day-to-day activities?	Not at all	No more than usual	Rather more than usual	Much more than usual
91. been able to face up to your problems?	More so than usual	Same as usual	Less useful than usual	Much less than usual
92. been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
93. been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
94. been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
95. been feeling reasonably happy, all things considered?	More so than usual	Same as usual	Less useful than usual	Much less than usual

PART 6: PERSONAL CONSTRAINTS

Questions in this section ask about various experiences you may have had during your studies. Read each question carefully and indicate, using the scale placed below, to what extent each statement applies to your study settings. Please circle the number on the scale to indicate how strongly you agree or disagree with each item.

	1	2	3	4	5	6	7			
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree			
96. I often do not have enough time to carry out my studies				1	2	3	4	5	6	7
97. I often cannot meet all the conflicting demands made on my time				1	2	3	4	5	6	7
98. I never finish assignments feeling I have completed everything I should				1	2	3	4	5	6	7

99. I have difficulty coping with the workload due to extracurricular activities	1	2	3	4	5	6	7
100. I have difficulty coping with the workload due to responsibilities and pressure from my family	1	2	3	4	5	6	7
101. I have difficulty coping with the workload due to personal problems	1	2	3	4	5	6	7
102. I experience financial difficulties that impinge on the time I can dedicate for learning	1	2	3	4	5	6	7

PART 7: ATTITUDES TOWARDS LEARNING OBSTETRICS AND GYNAECOLOGY

Below are questions concerned with your attitudes and expectancies towards the Obstetrics and Gynaecology clinical attachment. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree	
103. I am keen to make use of the learning and development opportunities during this clinical attachment	1	2	3	4	5	6	7
104. The reputation of the quality of the O&G attachment is high	1	2	3	4	5	6	7
105. I feel worried about learning Obstetrics &Gynaecology	1	2	3	4	5	6	7
106. The subjects O&G deal with are of great value to me	1	2	3	4	5	6	7
107. I feel uneasy about learning Obstetrics &Gynaecology	1	2	3	4	5	6	7
108. I only take O&G because it is mandated by the curriculum	1	2	3	4	5	6	7
109. It is desirable for me to do well during the O&G attachment	1	2	3	4	5	6	7
110. In comparison to other students I am likely to be better at remembering the material at the end of the attachment	1	2	3	4	5	6	7
111. I will try to learn as much as I can during the O&G attachment	1	2	3	4	5	6	7
112. Trying hard will lead to learning the material during this clinical attachment	1	2	3	4	5	6	7
113. This clinical attachment will help me develop skills that are useful for a range of careers in medicine	1	2	3	4	5	6	7
114. It is desirable for me to get a good grade at the end of O&G	1	2	3	4	5	6	7
115. I am motivated to learn the material during the O&G attachment	1	2	3	4	5	6	7
116. The subjects O&G deal with are of great value to society	1	2	3	4	5	6	7
117. In comparison to other students I expect to learn the material during this clinical attachment much quicker	1	2	3	4	5	6	7

118. Studying O&G is likely to help me with other aspects of my studies	1	2	3	4	5	6	7
119. I feel tense about learning Obstetrics &Gynaecology	1	2	3	4	5	6	7
120. Studying O&G will give me a better idea of the career path I want to pursue	1	2	3	4	5	6	7
121. In comparison to other students I expect to do much better at the final exam in O&G	1	2	3	4	5	6	7
122. Studying O&G will result in more opportunities to pursue different career paths	1	2	3	4	5	6	7
123. I am seriously considering a career in Obstetrics &Gynaecology	1	2	3	4	5	6	7
124. Putting in effort will lead to an understanding of the material during this clinical attachment	1	2	3	4	5	6	7
125. I like learning about the sort of subjects O&G deal with	1	2	3	4	5	6	7
126. It is desirable for me to achieve success in the O&G attachment	1	2	3	4	5	6	7
127. This clinical attachment has been recommended to me by other students	1	2	3	4	5	6	7

Many thanks for your time and effort

B.2 Post-training questionnaire – School of Medicine

**RESEARCH INTO THE EFFECT OF ATTITUDES AND MOTIVATION
ON LEARNING OUTCOMES**

A QUESTIONNAIRE INTO STUDENTS' EXPERIENCES DURING THE CLINICAL ATTACHMENT

STRICTLY CONFIDENTIAL

At the beginning of this clinical attachment you completed a questionnaire aimed at looking into students' attitudes and motives in the context of learning. To remind you, your involvement is invaluable as it will contribute greatly towards the School of Medicine's future improvement and development of its training practices. As mentioned previously, the research is being conducted in collaboration between the School of Medicine and the School of Psychology, XXX.

The questionnaire you are about to complete is the second part of the study, aimed at looking into your experiences during the clinical attachment as well as your attitudes towards the subject. The questionnaire will take approximately 10 minutes to complete.

Please attempt to answer all the questions as uncompleted questionnaires may have to be discarded.

In order to examine the relationship between expectations, attitudes and learning outcomes, we will need to obtain information related to your performance at the end of the course. To ensure confidentiality, please place your student number on this page which will be discarded when anonymous methods of data entry have been introduced.

Please note that the questionnaire is completely confidential and there is no personal information requested that could be used to identify you. Also, your completed questionnaire will not be seen by anyone at the School of Medicine.

The data from all questions will be generalised in a large sample and statistically analysed from which general recommendations will be made.

Many thanks for participating.

Name:

Michal Tombs
PhD student
School of Psychology

BACKGROUND INFORMATION

1. Date:

2. Age

3. Gender (please circle) Male Female

4. Ethnic origin (please tick the one that applies to you)

White Black/African Pakistani Asian
 Irish Black Other Bangladeshi Other _____
 Black/Caribbean Indian East African

5. Please write the name of the hospital you were at during the clinical attachment: _____

6. How many other medical students were attached to the same hospital (your peers)?

7. Were you assigned a midwife mentor? (please circle) YES NO

8. Having completed your O&G attachment, please indicate how much you enjoyed it on a scale from 1-10.

1 2 3 4 5 6 7 8 9 10
 (Not at all, worse thing so far) (Fantastic! best thing so far)

9. What things about the attachment influenced your score above?

PART 1: EXPERIENCES DURING THE ATTACHMENT

The following questions refer to your experiences during the Obstetrics and Gynaecology clinical attachment. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

	1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree
1. As a group of students attending the same hospital for an attachment we tended to study together and support each other	1	2	3	4	5	6	7
2. There were very few opportunities for me to learn from the consultant	1	2	3	4	5	6	7
3. The consultant gave me specific guidance as to how I could improve	1	2	3	4	5	6	7
4. The midwives were available to discuss learning when I needed	1	2	3	4	5	6	7
5. I was asked to undertake assignments without adequate resources to complete them	1	2	3	4	5	6	7
6. The consultant was available to discuss learning when I needed	1	2	3	4	5	6	7
7. I was required to do basic tasks which prevented me completing more important ones	1	2	3	4	5	6	7

8. The consultant made me feel that teaching was not an important part of his or her job and that he or she was far too busy	1	2	3	4	5	6	7
9. An effort was made to ensure that I had as many opportunities to learn as possible	1	2	3	4	5	6	7
10. Help was available from other students when I had a problem related to the studies	1	2	3	4	5	6	7
11. There were very few opportunities for me to learn from the midwives	1	2	3	4	5	6	7
12. Other students were willing to offer assistance to help me learn and perform to the best of my ability	1	2	3	4	5	6	7
13. There were too many of us in this one particular hospital	1	2	3	4	5	6	7
14. Other students showed very little concern for me if I struggled with my studies	1	2	3	4	5	6	7
15. I was unable to learn as much as I should have due to overstretched resources	1	2	3	4	5	6	7
16. I felt comfortable asking the consultant questions related to my learning	1	2	3	4	5	6	7
17. I knew exactly what was expected of me and where I was supposed to be each day	1	2	3	4	5	6	7
18. Other students took notice when I made suggestions related to the studies	1	2	3	4	5	6	7
19. I felt comfortable asking the midwives questions related to my learning	1	2	3	4	5	6	7
20. There was not an appropriate place for me to consolidate learning	1	2	3	4	5	6	7
21. The midwives gave me the authority I needed to learn and perform relevant skills	1	2	3	4	5	6	7
22. I did not have enough time to carry out all that was required of me	1	2	3	4	5	6	7
23. The consultant assessed my performance with regard to goals and objectives	1	2	3	4	5	6	7
24. I was prevented from observing and learning due to conflicting demands from other disciplines (e.g. midwives)	1	2	3	4	5	6	7
25. The consultant arranged uninterrupted time to talk with me	1	2	3	4	5	6	7
26. The midwives made me feel that teaching was not an important part of their job and that they were far too busy	1	2	3	4	5	6	7

27. The consultant gave me the authority I needed to learn and perform relevant skills

1 2 3 4 5 6 7

PART 2: ATTITUDES TOWARDS OBSTETRICS AND GYNAECOLOGY

Below are questions concerned with your level of interest and general attitudes towards Obstetrics and Gynaecology. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree
28. It was desirable for me to achieve success in the Obstetrics and Gynaecology attachment						
1	2	3	4	5	6	7
29. Studying Obstetrics and Gynaecology will result in more opportunities to pursue different career paths						
1	2	3	4	5	6	7
30. I only took Obstetrics and Gynaecology because it was mandated by the curriculum						
1	2	3	4	5	6	7
31. I am likely to recommend this clinical attachment to other students						
1	2	3	4	5	6	7
32. The subjects Obstetrics and Gynaecology deal with are of great value to me						
1	2	3	4	5	6	7
33. Studying Obstetrics and Gynaecology is likely to help me with other aspects of my studies						
1	2	3	4	5	6	7
34. The subjects Obstetrics and Gynaecology deal with are of great value to society						
1	2	3	4	5	6	7
35. I would like to learn more about the sort of subjects Obstetrics and Gynaecology deal with						
1	2	3	4	5	6	7
36. Studying Obstetrics and Gynaecology had helped me develop skills that are useful for a range of careers in medicine						
1	2	3	4	5	6	7
37. I am seriously considering a career in Obstetrics and Gynaecology						
1	2	3	4	5	6	7
38. It was desirable for me to do well during the Obstetrics and Gynaecology attachment						
1	2	3	4	5	6	7
39. Studying Obstetrics and Gynaecology has given me a better idea of the career path I want to pursue						
1	2	3	4	5	6	7
40. The quality of the Obstetrics and Gynaecology attachment is better than its reputation						
1	2	3	4	5	6	7
41. It is desirable for me to get a good grade at the end of Obstetrics and Gynaecology						
1	2	3	4	5	6	7

Many thanks for your time and effort

B.3 Pre-training questionnaire – PCSOs

RESEARCH INTO THE EFFECT OF ATTITUDES AND MOTIVATION ON LEARNING OUTCOMES

Description of the research

The following questionnaire is the first part of a project being conducted in collaboration between XXX and the School of Psychology, Cardiff University. The overall aim of the research is to assess the impact of attitudes and motivation on training outcomes. It is hoped that the results of this study will contribute greatly towards South Wales Police's future improvement and development of its training practices.

Participation in this project is divided into three sessions, one at the beginning of the course, another at the end of the course, and a final one six months into your probationary period. The first session will require half an hour of your time and will be asking you questions related to your expectations from the course, attitudes toward learning, and the way you have been feeling lately as well as a measure of general intellectual ability. The second session will require 10 minutes of your time in which you will be asked questions related to the experiences you have had during the training course. The third questionnaire will be sent to you at your workplace to complete and will be asking you questions related to the training support you are having on the job.

In order to examine the relationship between expectations, attitudes and training outcomes, we will need to obtain information related to your performance at the end of the course. To ensure confidentiality, please place your name on this page which will be discarded when anonymous methods of data entry have been introduced. You will be assigned an ID number that will be used throughout the length of the project.

The information provided by you will be kept under strict confidentiality, so that it is impossible to trace it back to you. In accordance with the Data Protection Act, this information may be retained indefinitely.

Participation in this study is entirely voluntary and you can withdraw from the study at any time without giving a reason. Should you wish to withdraw, the information provided by you will be discarded. You are also free to ask any questions at any time. If for any reason you experience discomfort during participation in this study, you are free to withdraw or discuss your concerns with the researcher, Michal Tombs.

Please provide your name here:

Many thanks for participating.

Michal Tombs
School of Psychology
Cardiff University

PART 1: ATTITUDES AND EXPECTATIONS

Below are questions concerned with your attitudes and expectations related to learning. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree	

1. I am always keen to make use of the learning and development opportunities available to me	1	2	3	4	5	6	7
2. Trying hard usually leads to learning the material	1	2	3	4	5	6	7
3. In comparison with others I expect to learn course material much quicker	1	2	3	4	5	6	7
4. I am always motivated to learn new things	1	2	3	4	5	6	7
5. In comparison to others I am better at remembering course material	1	2	3	4	5	6	7
6. I always try to learn as much as I can	1	2	3	4	5	6	7
7. In comparison to others I expect to do much better at exams	1	2	3	4	5	6	7
8. Putting effort usually leads to an understanding of the material	1	2	3	4	5	6	7

PART 2: ATTITUDES TOWARDS YOUR JOB AND SOUTH WALES POLICE

The following are some questions about your attitudes towards South Wales Police and your level of involvement and planning in you job. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree	

9. I change my career objectives frequently	1	2	3	4	5	6	7
10. I have not really decided what my career objectives should be yet	1	2	3	4	5	6	7
11. I feel very little loyalty to this organisation	1	2	3	4	5	6	7
12. I know what I need to do to reach my career goals	1	2	3	4	5	6	7
13. I would accept almost any type of job assignment in order to keep working for this organisation	1	2	3	4	5	6	7
14. I could just as well be working for a different organisation as long as the type of work was similar	1	2	3	4	5	6	7
15. I have a strategy for achieving my career goals	1	2	3	4	5	6	7
16. I am proud to tell others that I am part of this organisation	1	2	3	4	5	6	7
17. It would take very little change in my present circumstances to cause me to leave this organization	1	2	3	4	5	6	7

18. I am extremely glad that I chose this organisation to work for over others I was considering at the time I joined	1	2	3	4	5	6	7
19. My career objectives are not clear	1	2	3	4	5	6	7
20. There is not too much to be gained by sticking with this organisation indefinitely	1	2	3	4	5	6	7
21. I have a plan for my career	1	2	3	4	5	6	7
22. I really care about the fate of this organization	1	2	3	4	5	6	7
23. For me this is the best of all possible organizations for which to work	1	2	3	4	5	6	7
24. Deciding to work for this organisation was a definite mistake on my part	1	2	3	4	5	6	7

PART 3: INDIVIDUAL PREFERENCES

The following statements measure various aspects of your internal dispositions, preferences and beliefs. Please use the scale to rate the extent to which you agree or disagree with each item.

	1	2	3	4	5	6	7
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
25. The opportunity to do challenging work is important to me	1	2	3	4	5	6	7
26. I am able to relax without difficulty in challenging situations where something new has to be learned or where I have to 'stretch' my skills	1	2	3	4	5	6	7
27. I don't work well under pressure	1	2	3	4	5	6	7
28. Given the choice I am more likely to take difficult courses that I am not sure that I can handle, than easier ones that I believe I can do well in easily	1	2	3	4	5	6	7
29. I feel smart when I do something without making any mistakes	1	2	3	4	5	6	7
30. I prefer to do things that I can do well rather than things that I do poorly	1	2	3	4	5	6	7
31. I only work as hard as I have to	1	2	3	4	5	6	7
32. The things I enjoy the most are the things I do the best	1	2	3	4	5	6	7
33. I like to be fairly confident that I can successfully perform a task before I attempt it	1	2	3	4	5	6	7
34. The idea of climbing my way to the top does not appeal to me	1	2	3	4	5	6	7
35. I feel anxious and worried in challenging situations where something new has to be learned or I have to 'stretch' my skills	1	2	3	4	5	6	7
36. I feel smart when I can do something better than most other people	1	2	3	4	5	6	7

37. I try hard to improve on my past performance	1	2	3	4	5	6	7
38. The opportunity to learn new things is important to me	1	2	3	4	5	6	7
39. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work	1	2	3	4	5	6	7
40. I'm happiest when I perform tasks on which I know that I won't make any errors	1	2	3	4	5	6	7
41. I like situations that don't require me to make risky decisions	1	2	3	4	5	6	7
42. When I fail to complete a difficult task, I plan to try harder the next time I work on it	1	2	3	4	5	6	7
43. I do my best when I'm working on a fairly difficult task	1	2	3	4	5	6	7
44. I like to work on tasks that I have done well on in the past	1	2	3	4	5	6	7
45. I am hesitant about making important decisions	1	2	3	4	5	6	7
46. I prefer to work on tasks that force me to learn new things	1	2	3	4	5	6	7
47. Challenging situations where something new has to be learned make me feel very nervous	1	2	3	4	5	6	7
48. I really enjoy a class or assignment that involves overcoming obstacles	1	2	3	4	5	6	7
49. The opinions others have about how well I can do certain things are important to me	1	2	3	4	5	6	7
50. I don't like to have the responsibility of handling difficult situations	1	2	3	4	5	6	7
51. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult	1	2	3	4	5	6	7
52. I feel tense or highly-strung in challenging situations where something new has to be learned or I have to 'stretch' my skills	1	2	3	4	5	6	7
53. The opportunity to extend the range of my abilities is important to me	1	2	3	4	5	6	7
54. I prefer my classes to be filled with challenging assignments	1	2	3	4	5	6	7
55. In challenging situations where something new has to be learned I feel restless, fidgety, or impatient	1	2	3	4	5	6	7

How much do you agree with each of the following statements? Circle your response using the scale below.

	1	2	3	4
	Strongly agree	agree	disagree	Strongly disagree
56. Becoming a success is a matter of hard work; luck has little or nothing to do with it	1	2	3	4
57. In the long run, people get the respect they deserve in this world	1	2	3	4
58. When I make plans, I am almost certain I can make them work	1	2	3	4
59. What happens to me is of my own doing	1	2	3	4
60. Without the right breaks, one cannot be a good leader	1	2	3	4
61. Many of the unhappy things in peoples' lives are partly due to bad luck	1	2	3	4
62. In my case, getting what I want has little to do with luck	1	2	3	4
63. Who gets promoted often depends on who was lucky enough to be in the right place first	1	2	3	4
64. Most people don't realize the extent to which their lives are controlled by accidental happenings	1	2	3	4
65. Many times I feel I have little influence over those things that happen to me	1	2	3	4
66. In the long run, the bad things that happen to us are balanced by the good ones	1	2	3	4

PART 6: ATTITUDES TOWARDS THE PCSOs TRAINING COURSE

Below are questions concerned with your attitudes and expectancies towards the PCSOs training course. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

	1	2	3	4	5	6	7
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
67. I am keen to make use of the learning and development opportunities during this phase of my PCSO training	1	2	3	4	5	6	7
68. I feel worried about learning the course materials	1	2	3	4	5	6	7
69. I feel uneasy about learning the material in this course	1	2	3	4	5	6	7
70. It is desirable for me to do well during this phase of PCSOs training	1	2	3	4	5	6	7
71. In comparison to other trainees I am likely to be better at remembering the material at the end of the course	1	2	3	4	5	6	7

72. I will try to learn as much as I can during the course	1	2	3	4	5	6	7
73. Trying hard will lead to learning the material during this training course	1	2	3	4	5	6	7
74. This course will help me develop skills that are useful for a range of similar jobs	1	2	3	4	5	6	7
75. It is desirable for me to get good grades on tests given to us during the initial PCSO training	1	2	3	4	5	6	7
76. I am motivated to learn the material during the initial training	1	2	3	4	5	6	7
77. In comparison to other trainees I expect to learn the material during this course much quicker	1	2	3	4	5	6	7
78. The course is likely to help me with other aspects of my job	1	2	3	4	5	6	7
79. I feel tense about learning the course materials	1	2	3	4	5	6	7
80. Participation in this course will help me improve the skills necessary for my job	1	2	3	4	5	6	7
81. In comparison to other trainees I expect to do much better at any of the tests that will be given during the course	1	2	3	4	5	6	7
82. The knowledge and experience I gain in this phase of PCSO training will help advance my career	1	2	3	4	5	6	7
83. Putting effort will lead to an understanding of the material during this course	1	2	3	4	5	6	7
84. It is desirable for me to achieve success in the initial phase of PCSO training	1	2	3	4	5	6	7

Many thanks for your time and effort

B.4 Post-training questionnaire – PCSOs

RESEARCH INTO THE EFFECT OF ATTITUDES AND MOTIVATION ON LEARNING OUTCOMES

A QUESTIONNAIRE INTO TRAINEES' EXPERIENCES DURING TRAINING

STRICTLY CONFIDENTIAL

At the beginning of this training phase you completed a questionnaire aimed at looking into your attitudes and motives in the context of training. To remind you, your involvement is invaluable as it will contribute greatly towards South Wales Police's future improvement and development of its training practices. As mentioned previously, the research is being conducted in collaboration between XXX and the School of Psychology, Cardiff University.

The questionnaire you are about to complete is the second part of the study, aimed at looking into your experiences during the training course. The questionnaire will take approximately 10 minutes to complete.

Please attempt to answer all the questions as uncompleted questionnaires may have to be discarded.

In order to examine the relationship between expectations, attitudes and learning outcomes, we will need to obtain information related to your performance at the end of the course. To ensure confidentiality, please place your student number on this page which will be discarded when anonymous methods of data entry have been introduced.

Please note that the questionnaire is completely confidential and there is no personal information requested that could be used to identify you. Also, your completed questionnaire will not be seen by anyone at XXX.

The data from all questions will be generalised in a large sample and statistically analysed from which general recommendations will be made.

Many thanks for participating.

Name:

Michal Tombs
School of Psychology
Cardiff University

BACKGROUND INFORMATION

1. Date:

2. Age

3. Gender (please circle) Male/ Female

4. Ethnic origin (please tick the one that applies to you)

White	<input type="checkbox"/>	Black Other	<input type="checkbox"/>	Bangladeshi	<input type="checkbox"/>	Other	<input type="checkbox"/>
Black/Caribbean	<input type="checkbox"/>	Indian	<input type="checkbox"/>	East African	<input type="checkbox"/>		<input type="checkbox"/>
Black/African	<input type="checkbox"/>	Pakistani	<input type="checkbox"/>	Asian	<input type="checkbox"/>		<input type="checkbox"/>

PART 1: EXPERIENCES DURING THE COURSE

The following questions refer to your experiences during the initial phase of PCSO training. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Neither agree or disagree	5 Slightly agree	6 Agree	7 Strongly agree			

1. As a group of trainees we tended to study together and support each other			1	2	3	4	5	6	7
2. There were very few opportunities for me to learn from the trainer			1	2	3	4	5	6	7
3. The trainer gave me specific guidance as to how I could improve			1	2	3	4	5	6	7
6. The trainer was available to discuss learning when I needed 1			2	3	4	5	6	7	
8. The trainer made me feel that teaching was not an important part of his or her job and that he or she was far too busy			1	2	3	4	5	6	7
10. Help was available from other trainees when I had a problem related to the course			1	2	3	4	5	6	7
12. Other trainees were willing to offer assistance to help me learn and perform to the best of my ability			1	2	3	4	5	6	7
14. Other trainees showed very little concern for me if I struggled with the training material			1	2	3	4	5	6	7
16. I felt comfortable asking the trainer questions related to my training			1	2	3	4	5	6	7
18. Other students took notice when I made suggestions related to the studies			1	2	3	4	5	6	7
23. The trainer assessed my performance with regard to goals and objectives			1	2	3	4	5	6	7
25. The trainer arranged uninterrupted time to talk with me			1	2	3	4	5	6	7

PART 2: ATTITUDES TOWARDS THE PCSOs COURSE

Below are questions concerned with your level of interest and general attitudes towards the initial phase of PCSOs training. Please circle the number on the scale that shows how strongly you agree or disagree with each statement.

	1	2	3	4	5	6	7
	Strongly disagree	Disagree	Slightly disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
28. It was desirable for me to achieve success in the first phase of PCSOs training	1	2	3	4	5	6	7
29. The knowledge and experiences I gained in the initial phase of PCSOs training is likely to advance my career	1	2	3	4	5	6	7
30. I only attended the training course because it is a compulsory element of PCSOs training	1	2	3	4	5	6	7
33. The initial phase of PCSOs training will equip me with the knowledge and skills necessary for successful completion of my probationary period	1	2	3	4	5	6	7
35. I would like to learn more about the subjects Taught at the initial phase of the PCSO training course	1	2	3	4	5	6	7
36. The training course was useful for my developmental needs	1	2	3	4	5	6	7
37. I am keen to complete the full PCSOs training course	1	2	3	4	5	6	7
38. It was desirable for me to do well during initial phase of PCSO Training	1	2	3	4	5	6	7
39. Completing the initial phase of PCSOs training will help me obtain the position I desire	1	2	3	4	5	6	7
41. It was desirable for me to successfully pass all the modules at the initial phase of PCSO Training	1	2	3	4	5	6	7
42. The initial phase of PCSO training will provide me with skills and knowledge that will be useful for a career in the Police Force	1	2	3	4	5	6	7
43. The initial phase of PCSO training will help me perform my job better	1	2	3	4	5	6	7

Many thanks for your time and effort

