AN INVESTIGATION INTO THE JOB LEAVING INTENTIONS AND OCCUPATIONAL-RELATED ATTITUDES AMONG DENTAL NURSES IN SCOTLAND: THE MEDIATING ROLE OF WORK ENGAGEMENT AND PERSONAL ACCOMPLISHMENT

Gillian MacKenzie Forbes

A Thesis Submitted for the Degree of MPhil at the University of St Andrews

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An investigation into the job leaving intentions and occupational-related attitudes among dental nurses in Scotland: The mediating role of work engagement and personal accomplishment

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This thesis is submitted in partial fulfilment for the degree of MPhil at the University of St Andrews and University of Dundee (Social Dimensions of Health Institute)

April 2012
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I, Gillian Forbes, hereby certify that this thesis, which is approximately 39,000 words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

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Abstract

Background: Studies have investigated work engagement in dentistry; however dental nurse engagement is still inadequately understood. Also concerns about low retention and shortages of dental nurses in the UK have been highlighted. The purpose of this dissertation was two-fold. First is to build on the existing understanding of the mediating role of work engagement and personal accomplishment between occupational-related attitudes and leaving intentions. Secondly, to explore which of the specific occupational-related attitudes of dental nurses support and encourage a dental nursing career.

Aims: The research had 3 aims. (1) To address the lack of information on work engagement among dental nurses. (2) To understand which job resources are important in the workplace and (3) to investigate how these job resources relate to work engagement and personal accomplishment and in turn their relationship with future intentions to leave the profession.

Method: A sequential exploratory design of mixed methods was employed to collect data by first exploring the work experiences using focus groups of 24 dental nurses, either undergoing registration training or further post-registration qualification courses in 2 locations. Secondly, a newly designed cross-sectional questionnaire investigated demographics, job demands and resources, work engagement and personal accomplishment (using Utrecht Work Engagement Scale and the Maslach Burnout Inventory respectively) and an adapted measure of intention-to-leave of a sample of 269 dental nurses in Scotland (pre-registration n = 241; post registration n = 28).

Results: A major theme was opinions surrounding the introduction of registration in August 2009. Registration for pre-registration dental nurses had a personal impact whereas post-registration dental nurses expressed a benefit for the whole profession. A
common theme emerging from both groups of dental nurses was the provision of a clearer career pathway. Influences on leaving for pre-registration dental nurses were not being part of an integrated dental team and no sense of feeling valued. An uncovered underlying theme was the concept of professionalism. Pre-registration dental nurse sought support and security. This opinion contrasted with that of the post-registration group who appreciated a greater sense of independency.

In the questionnaire the overall response rate was 82% based on pre-registration dental nurses only. Pre-registration dental nurses’ work engagement scores were more dedicated (p < 0.0001), and absorbed (p < 0.007) and had less vigour (p < 0.0001) when compared to UWES manual norm values. Work engagement had a mediating role between job resources and intention-to-leave. The job resources predicting higher work engagement were positive beliefs about registration, task significance and variety, and low repetition in the daily routine.

Conclusion: There was some evidence that a professional process occurs during registration training which may be indicative of future intentions to remain in dental nursing. Contextual job resources were more salient in supporting work engagement. Work engagement is a key indicator of intention-to-leave whilst high personal accomplishment predicted high intention-to-leave. Also some evidence suggested job resources may act indirectly on intention-to-leave.
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Chapter 1 - Introduction

This chapter presents the work-related concept of work engagement and its on-going application within dentistry. It explains the importance of investigating the work-related experiences of dental nurses as a single occupational group. It outlines the importance of this research in relation to the recent changes to the profession and the concerns about the supply of qualified dental nurses in Scotland.

1.1 BACKGROUND

In the last 20 years, work engagement as a measure of a person's well-being in the workplace was a concept associated more with consultancy businesses and human resource departments rather than a topic to be examined by academic research. However, more recently, work engagement has migrated over into academia with more scientific papers on the topic emerging since the turn of the century. This increase is illustrated in Table 1.1 in a comparison between the numbers of papers containing the term ‘work engagement’, ‘job engagement’ and ‘employee engagement’ in the title published in PubMed in the 10 year period from 1991 to 2001 and the one year of 2011.

<table>
<thead>
<tr>
<th>Title includes</th>
<th>1991 - 2001</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Engagement</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Job Engagement</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Employee Engagement</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>6</strong></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>

This growth in studies about work engagement has developed from the greater attention given to human strengths as associated with positive psychology (Seligman & Csikszentmihalyi, 2000).
1.2 CONCEPT OF WORK ENGAGEMENT

Early studies focused on clarifying a definition of work engagement and establishing it as an independent and distinct concept (Bakker & Demerouti, 2008; Bakker, Schaufeli, Leiter, & Taris, 2008). Also, its relationship with other work-related factors such as job satisfaction (Rothmann, 2008), job burnout (Schaufeli & Bakker, 2004) and workaholism (Schaufeli, Taris, & Rhenen van, 2008) has been investigated.

One important aspect of work engagement is its emergence as a potentially important predictor of employee retention outcomes. Research indicates that employees who are highly work engaged are less likely to leave their job and dis-engaged employees are more likely to leave (Schaufeli & Bakker, 2004). This demonstrates that a measurement of work engagement is a potential indicator of an employee’s intention to leave. Therefore, such a measure could be utilised by employers for work planning purposes.

1.3 DIFFERENTIATION OF OCCUPATIONAL GROUPS

Already, studies have focused on a diversity of occupational groups such as medical registered nurses (Simpson, 2009b), teachers (Hakanen, Bakker, & Schaufeli, 2006), police-officers (Storm & Rothmann, 2003) and flight attendants (Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008). In dentistry, there are a small number of studies about work engagement and those have mostly concentrated on dentists (Denton, Newton, & Bower, 2008; Gorter & Freeman, 2010; Gorter, Te Brake, Hoogstraten, & Eijkman, 2008; Hakanen, Bakker, & Demerouti, 2005; te Brake, Bouman, Gorter, Hoogstraten, & Eijkman, 2007). No study to date has considered dental nurses as a single group.

1.4 FOCUSING ON DENTAL NURSES

In the literature, some occupation-related studies have considered the retention, recruitment and shortfall in the supply of dental nurses, however, these studies tended to
use questionnaires completed by one principal dentist within a practice (Allen, Newton, & Newton, 2003). The resulting data provides retention and vacancy percentages but no in depth exploration into the reasons given for leaving from a dental nurses’ perspective. The overall conclusion drawn from the literature is the presence of real concerns within dentistry about the future availability and retention of dental nurses in the UK (Allen et al., 2003; Jackson, Baird, Worthington, & Robinson, 2007; Sprod & Boyles, 2003).

1.5 RECENT CHANGES WITHIN DENTAL NURSING

In conjunction with this reported low retention and lack of availability, dental nursing over the last few years has undergone some pivotal changes. Historically, dental nurses received “on the job” training from their employer with no requirement for a recognised external qualification. However, in August 2008, this situation changed with the introduction of compulsory registration of dental nurses by the General Dental Council (GDC) in the UK. The GDC outlines in their publication - Prepare for Practice: Dental teams learning outcomes for registration - the requirement of dental nurses to demonstrate professionalism, clinical, communication, management and leadership skills to become registered (General Dental Council, 2010). The implication of how this introduction of registration by the GDC attached to the low retention will affect the supply of registered dental nurses in the UK is unknown.

1.6 GEOGRAPHICAL CONTEXT

In 2010, a strategic review of the Dental Care Professionals (DCPs) in Scotland reported limited knowledge about the “DCP’s labour market outcomes such as utilisation, activity and career patterns” p. 16 (Scottish Government, 2011). The number of reported
registered DCPs was 5798 with dental nurses accounting for over 75% of them (n = 4335). Also, this review found there to be over 900 dental nurses training towards a registration qualification. Over fifty percent of the registration training courses are offered by NHS Education for Scotland (NES) and the remaining by a combination of some NHS Health Boards (as illustrated in Figure 1) or Further Education Institutions. These providers of the registration training offer only anecdotal understanding regarding the reasons dental nurses gave for dropping out during registration training and after obtaining the registration qualification with no empirical research available on the subject.

1.7 Scope of this research

It is within this current framework of dental nursing in Scotland, that this research intends to focus on the retention of dental nurses by investigating the effects of work-related experiences among this occupational group who are currently undergoing registration qualification and further post-registration qualification training in Scotland.

This research will supplement the existing knowledge about dental nursing by adding more in-depth knowledge about the work-related factors associated with this occupational group, in particular those factors which will support, influence and encourage the continuance in the profession. In addition, it will contribute to the overall work engagement literature by investigating its applicability to the dental nursing profession.
Chapter 2 - Literature Review

Many theories have been proposed to explain what brings about a sense of well-being to an individual in the work place. Although the literature covers a wide variety of work-related factors and their relationship with work engagement, this review will concentrate on some major themes which emerge repeatedly throughout the literature. The themes pertaining to work engagement are its (1) development within positive psychology, (2) the differentiation of definitions and their operationalisation, (3) its role within one of the major models of work-related factors occurring in the literature, namely, the Job Demands and Resources Model, and (4) its relationship with intention to leave. Although the literature presents work engagement across a variety of occupational groups, this review will primarily concentrate on its application to dentistry. Finally, the review discusses personal accomplishment and intention to leave by focussing on their definition and operationalisation as it appears in the literature.

2.1 WORK ENGAGEMENT

2.1.1 DEVELOPMENT OF WORK ENGAGEMENT

At the turn of the century work engagement emerged as a field of investigation that focused on the positive affective-cognitive state of an individual in the work place. This attention on work engagement was derived from a general shift in interest within psychological research towards the work-related well-being of an individual. Until then, the negative aspects of the work place such as burnout prevailed more in occupational health as part of the overall bias towards ‘illness’ within psychology (Myers, 2000). Consequently, work engagement was categorised under the over-arching umbrella of positive psychology (Bakker et al., 2008).

This interest in the conditions and processes which lead to the optimal functioning of people addresses the imbalance of the trend previously found towards damage and disorder in psychology (Gable & Haidt, 2005). Initially, this imbalance was mirrored in
work-related studies but now by examining work engagement too, all facets of the work place are considered in research. Bakker, Schaufeli, Leiter & Taris (2008) have argued that ‘failure to recognise the positive aspects of work is inappropriate’ (p.1). and so were in agreement with Turner, Barling & Zacharatos (2002) who state “...it is time to extend our research focus and explore more fully the positive sides, so as to gain full understanding of the meaning and effects of working” (p.715).

2.1.2 DEFINITIONS OF WORK ENGAGEMENT

This increase in attention and interest about the positive aspects of an employee’s experiences within the work place has resulted in engagement becoming a popular and widely used term. Consequently, it was referred to by many interchangeable labels such as personal engagement, employee engagement and job engagement in the literature. The variety of terminology used to describe engagement comes from the differing approaches to its definition which in turn affects which measurement instrument is adopted. Initially, the term of engagement was more commonly associated with business consultants. As a result, engagement became a fashionable term to describe a range of work-related factors which included job satisfaction and organisational commitment. However, this usage of engagement in the business context was accompanied by little empirical evidence regarding its validity and reliability.

The following Sections 2.1.2.1 - 2.1.2.5 discuss the similarities and differences between 4 of the major approaches to work engagement.

2.1.2.1 BURNOUT/ENGAGEMENT

From the researchers of burnout, engagement was positioned as being the opposite to burnout on the same continuum (Maslach & Leiter, 1997) with engagement on the positive end and burnout on the negative end. Maslach et al (1997) defined burnout as a psychological syndrome characterised by exhaustion (low energy), cynicism (low involvement) and reduced personal efficacy (low efficacy) whereas, engagement was
characterised by high energy, high involvement and high efficacy. Subsequently, with burnout and work engagement being defined on the same continuum, both were measured by the one instrument, namely the Maslach Burnout Inventory (MBI) (Maslach, Jackson, & Leiter, 1996). The scores were reversed for a measurement of engagement, however, this implies a negative relationship i.e. low burnout equates to high engagement. However, later in 1999 Russell & Carroll showed that negative and positive effects are independent rather than opposites on the same continuum.

Also later, the plausibility of this negative relationship was challenged by Schaufeli, Salanova, Gonzalez-Roma & Bakker (2002) who proposed an employee with high burnout may not have experienced low engagement. Therefore the use of a single measuring instrument was problematic if a comparison between work engagement and burnout was to be made by researchers.

### 2.1.2.2 WORK ENGAGEMENT

From these developments that deliberately shift from concentrating on burnout, a second school of thought was proposed by Schaufeli et al, (2002) who advocated work engagement to be a distinct, independent concept, although related to burnout and defined as:

“A positive, fulfilling, work-related state of mind that is characterised by vigour, dedication and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behaviour.

Vigour is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one’s work, and persistence even in the face of difficulties.
Dedication refers to bring strongly involved in one’s work and experiencing a sense of significance, enthusiasm, inspiration, pride and challenge.

Absorption is characterised by being fully concentrated and happily engrossed in one’s work, whereby time passes quickly and one has difficulties with detaching oneself from work” (p. 74).

This definition considers an overlap with burnout on two of the continuums: (1) vigour and exhaustion to span a continuum of energy and (2) a continuum of identification with dedication and cynicism on opposing poles (Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006). Consequently, the third aspect of burnout (reduced personal efficiency) was omitted and replaced by absorption which is characterised by how much as person is immersed in one’s work (Schaufeli & Bakker, 2001).

Later in 2003, Schaufeli and Bakker developed the self-report questionnaire Utrecht Work Engagement Scale (UWES) which includes the three aspects of work engagement: vigour, dedication and absorption. Since the development of the UWES, a growing amount of research has implemented its use to investigate the antecedents and/or consequences of work engagement as shown in several publications (Schaufeli & Bakker, 2010; Schaufeli et al., 2002; Simpson, 2009a).

Further support of work engagement being operationalised as a discrete concept is shown in studies which examine other related work concepts such as workaholism and organisational commitment. In the research investigating workaholism, there are certain parallels that can be drawn with work engagement, namely, the recent increase in number of studies (Taris, Schaufeli, & Shimazu, 2010), a debate on understanding of the concept (Burke, 2006) and numerous definitions (McMillan & O’Driscoll, 2006). In addition, there is a descriptive overlap between the 3 dimensions of vigour, absorption and dedication within work engagement and the most common definition of workaholism as a triad consisting of work involvement, drive and work enjoyment (Spence & Robbins, 1992). This overlap is shown in an online survey of over 2000 Dutch...
employees from a range of occupations from Schaufeli, Taris & Bakker (2006) who after
distinguishing between ‘good’ and ‘bad’ workaholism found that work excessively (‘good
workaholism’) was positively related to work engagement whereas working
compulsively (‘bad workaholism’) is not related to work engagement. Later in 2008, the
akin research group (Schaufeli et al.) based in the Netherlands using a sample of nearly
600 managers and executives found when using factor analysis (a statistical method to
assist with the empirical clustering of self-reported rating scales) that absorption loaded
on to workaholism as well as work engagement. However, in the same study further
factor analysis found work engagement and workaholism are empirically different.

Likewise, job embeddedness could be potentially similar to work engagement with its
description of 3 key facets which keep a person in their job namely, links to the
organisation, fit with the job and sacrifice incurred with leaving the job and also its
negative relationship with intention to leave (Mitchell, Holtom, Lee, Sablynski, & Erez,
embeddedness to be unique constructs in a sample of over 500 US employees via
confirmatory factor analysis.

In conclusion these comparisons of work engagement with workaholism and
embeddedness substantiate the view that work engagement can be described as a
distinct and unique concept.

2.1.2.3 PERSONAL ENGAGEMENT AND DISENGAGEMENT

An alternative view came from Kahn (1990), one originator of the trend towards positive
psychology whose conceptual foundation was found in the vast majority of studies in a
review by Christian, Garza & Slaughter (2011). For Kahn, the key driver of engagement
is the behaviour derived from the work role as this behaviour results in a particular state
of mind, which in turn gives a positive outcome to the individual.
Kahn (1990) conceptualised personal engagement and personal disengagement and defines it as the:

“harnessing of organisation members’ selves to their work roles: in engagement people employ and express themselves physically, cognitively, emotionally and mentally during role performances” (p. 694).

Therefore, from this definition an engaged person would connect whereas a disengaged person would withdraw by these means whilst at work.

Further exploration by Kahn (1990) in a qualitative study found 3 psychological states characterised by ‘meaningfulness’, ‘safety’ and ‘availability’ in the work-place contributed to engagement and disengagement. Later, an instrument to measure engagement and disengagement was developed by May, Gilson & Harter (2004) and subsequent findings found all psychological states had a positive relationship with engagement. However, there has been little in the way of empirical evidence leading to operationalise Kahn’s model.

2.1.2.4 EMPLOYEE ENGAGEMENT

Another research direction from Harter, Schmidt & Hayes (2002) is referred to as employee engagement and is defined as:

“The individual’s involvement and satisfaction as well as enthusiasm for work” (p. 269).

This concept has been frequently used by businesses to assess employee engagement. It is assessed by the Gallup’s Work-place Audit (GWA) or Q12®. However, its applicability to engagement was highlighted in a meta-analysis of studies consisting of 36 organisation with nearly 200,000 employees by Harter et al (2002). In this study, where employee engagement measures both the individual's enthusiasm as well as involvement, the outcome was a high correlation between satisfaction and employee engagement, thus suggesting the GWA is not measuring engagement as a discrete
concept. Also, the focus of questioning in the GWA relates more to the organisation rather than the work role (Kahn, 1990) and the work characteristics (Schaufeli & Bakker, 2010). It is widely noted in the literature that employee engagement has suffered from little empirical research and is often described by many as faddish and called “old wine in a new bottle” (Bakker et al., 2008; Macey & Schneider, 2008; Robinson, Perryman, & Hayday, 2004).

2.1.2.5 OTHER DEFINITIONS OF WORK ENGAGEMENT

More recently, Macey and Schneider took a broader approach to a definition of work engagement which includes a range of work-related factors as:

“a desirable condition [that] has an organisational purpose, and connotes involvement, commitment, passion, enthusiasm, focussed effort and energy”

(p. 4).

This definition of engagement includes a range of work-related factors which has been criticised by Saks (2006) who states “engagement serves as an umbrella term” (p. 20). This broader approach challenges the meaning of the term work engagement.

2.1.3 THEORETICAL MODELS OF WORK ENGAGEMENT

Overall, the findings from the review of the literature were 4 main models of work engagement associated with each of the definitions: (1) Burnout/engagement - Work Life Model (Maslash & Leiter, 1997), (2) Work engagement - Job Demands-Resources Model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), (3) Model of Personal Engagement (Kahn, 1992) and (4) Employee Engagement (Harter, Schmimidt, & Keyes, 2003) Model. All of the models include antecedents and consequences of engagement in the work-place; however they differentiate in the range of antecedents included.
Kahn’s (1992) model consists of individual factors and those external to work in addition to work-related factors which are the narrower focus of the other 3 models. The testing of Kahn’s (1990) model is somewhat limited with only one empirical study to date from May et al (2004). However, in the latter study engagement was assessed by the GWA, whose ability to measure engagement is shown in the meta-analysis study from Harter et al (2002).

Consequently, this highlights the issues relating to the measurement instrument for each of these models: the limited support and no distinction between concept and its antecedents. Also, pertaining to this issue of a distinct concept together with the substantial empirical findings which support work engagement and burnout being somewhat related but being independent from one another there is confusion over selecting the best model (Demerouti, Mostert, & Bakker, 2010; Gonzalez-Roma et al., 2006). In contrast the Job Demands-Resources model (see Page 26) offers a conceptualisation of work engagement which is distinct from antecedents and of equal importance is its reported use among a variety of different occupations.

A synthesis of all of the above definitions of engagement suggests an underlying theme of personal energy and drive, combined with an emotional and cognitive connection with one's work to be present in the work place. All of these four definitions of work engagement demonstrate the complexities of the work place research, with some overlap in the definition and meaning of engagement among the different schools of thought. However, only Schaufeli et al (2002) has defined work engagement as a distinct and unique concept divided into the 3 dimensions of vigour (behavioural-energetic), dedication (emotional) and absorption (cognitive). Therefore, it is for these reasons that the JD-R model is the theoretical model adopted for this research project.
2.1.4 Job Demands-Resources Model

The model most frequently used to illustrate the relationships between work-related factors is the Job Demands-Resources model (JD-R) (Demerouti et al., 2001). The JD-R is a heuristic model (Bakker & Demerouti, 2008), which hypothesizes two working conditions as illustrated in Figure 2.1: (1) Motivational process - high work resources leading to high work engagement and (2) Health impairment process - high job demands leading to high burnout, regardless of occupational group. In turn, high work engagement and low burnout predicts positive outcomes of organisational commitment and high employee retention.

The JD-R model is not the only model to link job resources with an employee's well-being in the work place. Others include the job characteristic theory (Hackman & Oldham, 1980), Herzberg’s model of job satisfaction and motivation (1959) and the Demands-Control model of Karasek (1979). However, the JD-R model captures the complexities of the work-place by examining the interaction ‘between the positive and the negative’ thus giving a fuller picture.

**HEALTH IMPAIRMENT PROCESS**

![Diagram: Health Impairment Process]

**MOTIVATIONAL PROCESS**

![Diagram: Motivational Process]

Adapted from Demerouti et al, 2001; Schaufeli & Bakker, 2004

Figure 2.1 The complete dual process of the Job Demands-Resources model
2.1.4.1 Antecedents of Work Engagement

In the last 10 years, a proportion of the research in this area had focused on the job resources which may act as antecedents to work engagement. Job resources are referred to by Demerouti et al (2001) as:

“those physical, psychological, social, or organisational aspects of the job that may (a) reduce job demands and the associated physiological and psychological costs, (b) are functional in achieving work goals, and (c) stimulate personal growth, learning and development” (p. 501).

The JD-R model predicts the availability of job resources which satisfy a basic need and sense of achievement (Schaufeli & Bakker, 2004; Schaufeli & Salanova, 2007) will lead to work engagement. Investigations into the different types of job resources have included organisational, economic, personal and demographic factors which may be present within the work place. Many studies have focussed on the motivational process i.e. job resources $\rightarrow$ work engagement $\rightarrow$ organisational commitment in various professions such as Spanish hotel staff (Salanova, Agut, & Peiro, 2005) and dentists (Hakanen et al. 2005).

In particular, a supportive role provided by job resources has consistently shown a positive relationship with work engagement across many studies. For example, organisation/employer (e.g. salary, job security and career development), relations with co-workers and management and aspects of job such as role clarity, skill variety and performance feedback (Bakker, Demerouti, & Verbeke, 2004). It should be noted, an assumption of the JR-D model is that the salience of job resources differ according to the specific occupation. These findings suggest job resources are linked to organisational factors and significantly predict work engagement.

Despite, many different factors being referred to as a job resource their assessment by measurement scales are somewhat inconsistent. As no global validated instrument is available often items are author-developed or adapted from another source to meet the requirements of the occupational group being sampled. On stating this, however, if an
instrument was to be designed to cope with multiple occupations and the sub-divisions within it may become unwieldy and so impractical.

Other studies have also considered the impact of demographics factors on work engagement. Koyuncu, Burke & Fiksenbaum (2006) found age, level of education and hours worked had no significant effect on the amount of variance of work engagement on a group of 286 Turkish female bank employees. Similarly, in an all-female group of registered medical nurses, Simpson (2009b) found no difference in work engagement based on work shift (day/night), length of work shift and years of experience. However, this study did report work engagement to have a weak and positive correlation with age and the number of hours worked per week.

2.1.4.2 CONSEQUENCES OF WORK ENGAGEMENT

Throughout this review work engagement has been perceived as being good for the individual and the organisation. In turn, the research into the consequences of work engagement has occurred to a much lesser extent to that of its antecedents. Several exceptions examining the benefits of work engagement which stated its validity in predicting a reduction in turnover intentions (Alarcon & Edwards, 2010) and an increase organisational commitment (Schaufeli & Bakker, 2004).

However, it is unclear if work engagement can be considered as the only predictor of intention-to-leave. Other factors such as dis-satisfaction, burnout or personal accomplishment may also be important.

2.2 PERSONAL ACCOMPLISHMENT

Personal accomplishment (PA) is the “self-evaluation” dimension of burnout and in this context is connected with reduced professional efficacy, a decline in one’s feelings to cope and lack of achievement and competency at work. Reduced personal
accomplishment is the only dimension of burnout not to have a direct opposite on the work engagement scale.

Past research has scrutinised the relationship of PA with work engagement using confirmatory factor analysis, in particular Schaufeli et al., (2002) found that PA loaded onto work engagement rather than to burnout in a sample of Spanish students and employees. An explanation given for this occurrence was the positive wording of the PA items in the Maslach Burnout Inventory which is reverse scored before adding to other 2 dimensions to give an overall measure of burnout (Schaufeli & Bakker, 2004). Also a similar finding was reported by Te Brake et al. (2007) among 848 Dutch dentists, who has consequently argued against inclusion of PA as a dimension of burnout by proposing PA is a 4th factor of work engagement.

Of equal importance is the definition of personal accomplishment and its overlap with other personal resources, for example self-efficacy (i.e. individuals perception of their ability to meet demands (Chen, Gully, & Eden, 2001)). In a longitudinal study of burnout in teachers in Germany, Schwarzer & Hallum (2008) identified a high positive correlation between self-efficacy and personal accomplishment, therefore this overlap brings into question marginally its construct validity.

Xanthopoulou, Bakker, Demerouti & Schaufeli (2007) found a role of self-efficacy was to act as a mediator between job resources (which included autonomy, social support, supervisory and opportunities for professional development) and work engagement. Further demonstrations of the availability of job resources activating self-efficacy have been reported in other occupational groups, namely, in Finnish healthcare personnel (Mauno, Kinnunen, & Ruokolainen, 2007) and in Spanish University students (Lloren, Schaufeli, Bakker, & Salanova, 2007).

If it is accepted that personal accomplishment equates to a personal resource, then in addition to the previously discussed operationalisation and definition of personal
accomplishment the nature of its position within the Job Demands-Resources model (JDR) requires discussion. Xanthopoulou, Bakker, Demerouti, & Schaufeli (2009) explain personal resources and job resources are mutually related with each other and also with work engagement in a longitudinal study of electronics company employees in the Netherlands. Further exploration is important, in particular longitudinal studies to measure the temporal positioning of personal accomplishment, job resources and work engagement.

2.3 WORK ENGAGEMENT WITHIN DENTISTRY

After the review of the literature relating to the development of engagement in the work place, this section presents the research of work engagement within dentistry.

This growth in the research concerning work engagement is demonstrated by a search of the literature in November 2011 which found a total of 7 studies related to dentistry. These studies investigated a number of work-related factors, one of which included work engagement. All of the studies, with the exception of one, measured work engagement of only dentists and did not include other members of the dental team. These 7 studies originated in the Netherlands (Gorter et al., 2008; te Brake et al., 2007), UK (Denton et al., 2008), and Finland (Hakanen et al., 2005; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Hakanen, Schaufeli, & Ahola, 2008). The one exception which also included dental care professionals (DCPs) as well as dentists was a study conducted in Northern Ireland (Gorter & Freeman, 2010).

The objectives of these studies examining work engagement in dentistry can be differentiated into (1) to ascertain the level of work engagement and subsequently to investigate its antecedents e.g. job resources and (2) to investigate the relationships of work engagement with other work-related factors e.g. burnout, work demands, job resources within larger theoretical framework. All of the studies relied on the work engagement construct as measured by the Utrecht work engagement scale (Schaufeli et
al) (UWES) and utilised the theoretical framework of the Job Demands-Resources model.

These 7 studies focused on measuring levels of work engagement. Their investigations stemmed from work engagement’s presumed relationship with burnout and based on previously reported findings regarding occupational stress leading to burnout in the UK (Blinkhorn, 1992; Humphris, 1998; Wilson et al., 1998) and the Netherlands (Gorter, Albrecht, Hoogstraten, & Eijkman, 1999). However, it should be said that not all dentists suffer from burnout and these dentists find their work to be engrossing and enjoyable. Therefore, an aim of these 7 studies was to turn the attention towards quantifying work engagement among dentists and to identify the determinants of how dentists coped with stress and so remained engaged in their work.

In all of the studies, the measurement of work engagement was conducted by versions of the UWES. Three studies used the UWES 15 item version (Gorter & Freeman, 2010; Gorter et al., 2008; te Brake et al., 2007) and one study used the 17 item UWES (Denton et al., 2008), and the remaining studies (Hakanen et al., 2005; Hakanen, Perhoniemi, et al., 2008; Hakanen, Schaufeli, et al., 2008) used the Finnish 24 item version as developed by Schaufeli et al. (2002). The results of these studies found moderate to high work engagement in the majority of dentists as measured by the version of the UWES. However, further breakdown of work engagement into its 3 components by Gorter et al (2008) found the mean scores on dedication and absorption to be higher when compared with normative scores obtained from the manual from a variety of professions. This was confirmed by te Brake et al (2007) who also found the dentists’ mean scores on dedication and absorption to be significantly higher when compared to these normative scores. A multivariate analysis of variance including burnout and work engagement by Gorter & Freeman (2010) showed significantly higher scores for dentists, compared to DCPs, on the dedication and absorption sub-scales.
According to the Job Demands-Resources model (JD-R) the antecedents of work engagement for all occupations are found in job resources and are often associated with for example in personal growth, co-worker relations and job variety. In dentistry, certain job resources were found to be important in determining work engagement. One study from Gorter et al (2008) further investigated job resources by developing the Dentists’ Experienced Job Resources Scale (DEJRS) specific to the dental work place. It found there were 8 aspects of the work place being utilised as a job resource and these included ‘Idealism/pride’, ‘Immediate results/aesthetics’, ‘(Long term) patient results’, ‘Craftsmanship’, ‘Professional contacts’, ‘Entrepreneurship’, ‘Patient care’ and ‘Material benefits’.

Another study (Gorter & Freeman, 2010) implemented a ‘Job Resources in dentistry measure’ when it investigated both dentists and DCPs. This study identified ‘Joy of manual-technical work and its effect’, ‘Professional independency and social benefits’, ‘Treatment results’ and ‘Doing well towards patients’ as 4 sub-scales of job resources. It found dentists scored higher on 4 of the job resources but for the job resources of ‘Treatment results’ and ‘Professional independency and social benefits’ were significantly higher than DCPs.

Denton et al (2008) discusses the situation under the National Health Service (NHS) system present in the UK. They found dentists who work more in NHS practices scored low on work engagement. Whereas dentists with post graduate qualifications and who worked as part of a larger dental team had higher work engagement scores. In contrast, in the Gorter & Freeman (2010) study there was no significant effect of practice characteristic (i.e. a NHS practice) on work engagement.

Although, the majority of research in other occupations has found no significant level in work engagement by demographical variables such as age, level of education, and number of hours worked, an exception to this was one study which found work engagement decreased with age among dentists (te Brake et al., 2007). It found a steady decline in
work engagement with an increase of age, but as retirement age approached work engagement increased suggesting that the ‘most’ engaged dentists are still working at an old age.

2.4 WORK ENGAGEMENT AND RETENTION IN NURSES

The paucity of research about work engagement and retention regarding their determinants and outcomes among dental nurses necessitates the inclusion of a section in the review about the on-going research in this area within medical nursing. It seems appropriate to include them as part of the review as this occupational group is reported to have similar issues to dental nursing regarding low retention and shortages (Andrews & Dziegielewski, 2005; Coomber & Louisebarriball, 2007).

Personal correspondence with one author, Prof. Michelle Simpson, resulted in receiving further as yet unpublished papers in this area; she commented that despite a growing number of studies on work engagement, it has been the subject of minimal nursing research (Simpson, 2009b).

Work engagement has received most of its attention from nurse research because of its relationship to burnout and turnover. Fasoli (2010) reported in an article that work engagement was low among nurses with only 18% being actively ‘engaged’ in their work which resulted in many leaving their jobs and overall a high turnover. This findings is not unexpected as nursing has historically been linked to high level of stress resulting in burnout and leading to low retention (Janssen, De Jonge, & Bakker, 2001; Leiter & Maslach, 1988) with this occupation being one of the most examined in relation to burnout (Maslach, Schaufeli, & Leiter, 2001).

Also studies in nurse based engagement have focussed on the identification of its determinants, by investigating conditions which promote work engagement. To date the general finding is that work resources rather than personal resources are antecedents to work engagement. In particular, Simpson (2009b) found improvements in work
environment such as professional status and the interaction between staff members among medical-surgical nurses moderated the relationship between intention to quit and work engagement.

One shortcoming of the nurse work engagement research in the literature is its use of different definitions and so different measures and lines of study (Simpson, 2009a). However, more recently, studies have preferred using Job Demands-Resources model (Jenaro, Flores, Orgaz, & Cruz, 2011; Simpson, 2009b) because of its suitability to test previously unexplored work characteristics more specific to the occupation. Using the JD-R model, Jenaro (2011) reported in a sample of over 400 nurses of nurse managers, registered nurses and certified nursing assistants the job features of satisfaction with job position, higher quality of working life, lower social dysfunction and lower stress predicted higher vigour and dedication.

In contrast an article from Bargagliotti (2011) highlights concerns regarding the use of the JD-R model which is described as a transactional model. Bargagliotti states agreement with Hobfoll (1989) that it [a transactional model] is ‘inherently flawed…..’ as ‘…..neither side of the equation (demands or resources ) has meaning without the other (p. 2)’.

Overall the research on work engagement within nursing, except for some organisational factors that are specific to the profession, mirrors the patterns found in other occupations (Bargagliotti, 2011). The broad range of roles and diversity of work places of medical nurses makes some comparisons with dental nurses difficult. However, the similarity in the work characteristics of patient care, development of professionalisation and teamwork suggests the use of the JD-R model is feasible in the dental nursing context.

2.5 Retention of Dental Nurses

The subject of retention among dental nurses first received attention in the early 1990s in Canada (Burman, Locker, & Otchere, 1990) however, this interest was brief and it was
not until over 10 years later that the topic of retention emerged again in the UK (Allen et al., 2003; Jackson et al., 2007; Sprod & Boyles, 2003). Despite this research being about retention, its focus in terms of outcome investigated was quite different. In the UK studies, a combination of educational needs and employment status (Ross & Ibbetson, 2006), recruitment and retention (Allen et al., 2003), size of DCP workforce (Sprod & Boyles, 2003) and future provision of NHS dental care (Jackson et al., 2007) were considered. Instead Burman et al's (1990) study in Canada investigated the determinants of retention by using a questionnaire completed by dental nurses and found that low job satisfaction decreased retention. Later other studies supported this finding of low levels of job satisfaction in dental nursing (Craven, Blinkhorn, & Roberts, 1995; Gibson, Freeman, & Ekins, 1999; Humphris & Peacock, 1992).

These differences in the focus of the above research may be attributed to uncertainty about definition and measurement of retention (Cavanagh, 1989). Generally in the literature the terms of retention, turnover or intent to leave (turnover intentions) are used interchangeable to describe a person quitting their job, when in fact they are different concepts (Cavanagh, 1989). Often retention and turnover is reported as numerical evidence of movement of staff out of an organisation (Coomber & Louisebarriball, 2007), whereas intention-to-leave infers a process of mental decisions acting as antecedents to actual turnover, a concept that has much empirical evidence (Sager, Griffeth, & Hom, 1998). Consequently, intention-to-leave is an outcome as predicted by affective variables derived from work-place characteristics such as job satisfaction.

Whilst substantial literature exists regarding the relationship between job satisfaction and intention-to-leave among many different professions, less research has explored the capabilities of work engagement to predict intention-to-leave (Alarcon & Edwards, 2010). Following on Alarcon (2010) investigated this relationship in a group of employed university student and found high work engagement significantly predicted low
intention-to-leave. Other occupations where work engagement is negatively associated with turnover intention include Swedish communication technology consultants (Hallberg & Schaufeli, 2006) and a multi-sample group of Dutch employees from an insurance company, a pension fund company, an occupational health and safety service and home care institution (Schaufeli & Bakker, 2004).

2.6 PURPOSE OF THE RESEARCH

In the literature few studies address the consequences of work engagement, with no studies to date exploring the relationship between work engagement and retention in the dental work place. Also, this review highlights the virtual non-existence of studies in the literature examining the work attitudes, beliefs and behaviours pertaining to the occupational group of dental nurses.

In acknowledging what is known about the retention of dental nurses combined with the unknown effect of the introduction of registration by the General Dental Council in 2008, an investigation into the impact of registration is essential. It is important to better understand why some dental nurses remain and why others leave the profession. More knowledge and a better understanding of the work-related factors contributing to and/or impeding dental nurses remaining in the profession may assist the registration training providers and employers to better meet the needs of their registration trainees.

The proposed study has 3 aims. The first is to address the lack of information about work engagement in dental nurses in Scotland. This will be achieved by measuring the level of work engagement. The second aim is to understand which job resources in the work place are utilised by dental nurses. The third aim is to explore whether or not, these job resources lead to future personal accomplishment and work engagement and in turn mediates future intention-to-leave the profession.
2.7 Research Questions

- In the first qualitative phases (1) and (2) the main research question is:
  1) What job resources are available to dental nurses on a daily basis in the workplace?

In addition two supplementary questions:
  2) To identify which of these resources from a dental nurses’ perspective encourage and support a career in dental nursing.
  3) Do job resources differ between pre-registration and post-registration dental nurses?

- In the second quantitative phases (3) and (4):
  4) Do the job resources identified in the first phase predict work engagement?
  5) Do work engagement and personal accomplishment mediate the relationship between job demands and resources and intention to leave dental nursing?
  6) Which job resources predict higher levels of work engagement?
Chapter 3 - Methodology

This chapter explains the logistical structure of the thesis enquiry implemented in order to answer the research questions. It outlines the research methodology used in the study. The details of the collection process for each of the qualitative and quantitative data are outlined. The rationale for including other work-related variables, their measurement instruments and development of the new measure of dental nurses work experiences is outlined.

3.1 RESEARCH DESIGN

In order to answer the research questions of (1) why dental nurses intend to leave and (2) which elements of their occupation influence their retention in the profession, it was necessary to adopt a research strategy which would establish initially, the salient occupational characteristics of dental nursing. The choice of strategy used comprised of a number of linked stages: an initial explorative discussion with dental nurses, followed by the development of a questionnaire from these initial findings. Subsequently, this questionnaire would be distributed to a larger group of dental nurses. Therefore, the strategy adopted for the research to fulfil these requirements was a sequential exploratory mixed methods design.

3.2 METHODOLOGY

Mixed methods should not be seen as only a combination of qualitative and quantitative together but rather as a new distinct approach (Creswell & Plano Clark, 2011). In the last 20 years, fundamental issues about the variety of terms to describe a clearly defined protocol when using both qualitative and quantitative has resulted in much discussion and debate. More recently, the method is commonly referred to as “mixed methods”. The method has resulted in many books and journal publications using this term in the title.
This research design uses procedures to collect, mix and analyse both quantitative and qualitative data within a single study (Tashakkori & Teddlie, 2003). A sequential exploratory strategy is defined by Creswell (2003) as a strategy which ‘involves a first phase of qualitative data collection and analysis, followed by a second phase of quantitative data collection and analysis that builds on the results of the qualitative phase’ (p. 211).

3.2.1 RATIONALE FOR MIXED METHODS
The rationale for using this design is that alone neither qualitative nor quantitative data would sufficiently represent the phenomena under investigation. A potential result of using only qualitative is that a detailed view from a small sample of dental nurses is achieved, but there would be an inability to generalise the findings to the wider population. Alternatively, the use of only quantitative data is problematic when attempting to self-develop a questionnaire to investigate a topic with limited research available. A lack of guidance from the literature on question selection may raise concerns about researcher's subjectivity. The choice of mixed methods alleviates these issues and will assist in understanding more fully the research problem (Creswell, 2002).

In keeping with mixed methods practice, the strategy is that the first qualitative phase will provide data about the occupational characteristics specific to dental nursing, i.e. what work-related factors support and encourage retention in the profession. The reason for collecting the qualitative data first is to supplement the limited discussion available in the literature on this topic. Subsequently, these initial findings will be expanded by the second quantitative phase by the development of an instrument to measure a wider sample of dental nurses across Scotland. Therefore, this design gives priority first to qualitative data collection by using an inductive analytic process to generate themes. In turn, the ‘mixing’ occurs by connecting the themes of the 1st phase and questionnaire data collection in the 2nd phase. The final stage is considering the overarching perspective of the theoretical framework: the Job Demands-Resources
Model to analysis the overall data. This mixed methods strategy as detailed by using an amalgamation of qualitative and quantitative methods will result in a more complete examination of the issues being researched (Tashakkori & Teddlie, 1998).

Nonetheless, there are limitations to mixed methods, first is the amount of time required to collect and analyse two data sets. Secondly, it requires a level of ability and expertise of the researcher to conduct each method, then to integrate them together (Creswell, 2004).

Further explanation of the strategy used in each phase of the mixed methods and their procedures and products are shown in Table 3.1. The model illustrates the priority given to the qualitative stage as it represents the construction of factors to be integrated into an instrument to measure the work related characteristics of dental nursing.

3.3 ETHICAL APPROVAL

Advice was sought from the East of Scotland Research Ethics Service regarding the requirement of an NHS ethical application. After an amendment of a document - Participant Information Sheet - to remove a reference to an NHS research ethics committee, the project was considered to be a service evaluation and thus no ethical review was required - Ethics advice Reference: 10/GA/105 (Appendix 2.1 a).

In addition, The University of St Andrews’ University Teaching and Research Ethics Committee approved this project - Reference Nº MD6985 (Appendix 2.1 b).
Table 3.1 Visual Model for Mixed Methods: Sequential Exploratory Design

<table>
<thead>
<tr>
<th>PHASES</th>
<th>PROCEDURE</th>
<th>PRODUCT</th>
</tr>
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<tbody>
<tr>
<td>(1) QUALITATIVE DATA COLLECTION (Nov 2010 – Jan 2011)</td>
<td>o Focus groups (N = 4) of 6 - 8 DNs divided by pre- and post-registration</td>
<td>o Transcripts of text data</td>
</tr>
<tr>
<td>(2) QUALITATIVE DATA ANALYSIS (Jan 2011 – March 2011)</td>
<td>o Coding and thematic analysis o Across group theme development</td>
<td>o Categories and themes of job characteristics</td>
</tr>
<tr>
<td>(3) CONNECT QUALITATIVE FINDINGS TO QUANTITATIVE DATA COLLECTION (March 2011 – April 2011)</td>
<td>o Develop questionnaire o Incorporate with other validated questionnaires into survey</td>
<td>o Self-developed questionnaire specific to dental nurses</td>
</tr>
<tr>
<td>(4) QUANTITATIVE DATA COLLECTION (April 2011 – June 2011)</td>
<td>o Cross-sectional survey of dental nurses</td>
<td>o Numerical data</td>
</tr>
<tr>
<td>(5) QUANTITATIVE DATA ANALYSIS (July 2011 – Nov 2011)</td>
<td>o Correlations o Factor Analysis and Path Analysis o Structural Equation Modelling</td>
<td>o Associations of main variables o Components and Path estimates of hypothesised relationships</td>
</tr>
<tr>
<td>(6) CONNECT QUALITATIVE FINDINGS TO QUANTITATIVE DATA COLLECTION (Nov 2011 – Feb 2012)</td>
<td>o Interpretation and explanation of qualitative and quantitative results</td>
<td>o Discussion o Implications</td>
</tr>
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3.4 QUALITATIVE PHASE

This section outlines the explorative first phase of the mixed methods. It explains the aim of the exploration and the use of focus groups to achieve this. Also, the planning and organising the stages of the data collection are outlined. Finally, a detailed description of the approach for the analysis of the text data is given.

3.4.1 AIMS OF QUALITATIVE PHASE

It was intended this phase would gather the work-related experiences and views of dental nurses associated with their remaining in the profession. The content of their experience of the profession was differentiated by splitting into either pre-registration or post-registration groups of dental nurses. This separation would discriminate the salient themes within and between each group of dental nurses. Also, work engagement was measured by administering the Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003) to seek out any similarities or differences in work-related wellbeing between the two registration groups.

3.4.2 RATIONALE OF USING FOCUS GROUPS

Focus groups were used to gather the personal experience of the work-related factors associated with dental nursing. Group discussion can result in an increased variety and depth of views compared with individual interviews. In addition, a characteristic of a focus group is its dynamics as group become empowered to generate and discuss their own questions.

In the study, the composition of the focus groups was split into either pre-registration or post-registration dental nurses. This split - a precursor of the training schedule - was preferred as a homogenous group promotes a reassuring environment for discussion (Krueger, 1994). In addition, these pre-existing training groups would relate to each other's work experiences with more interaction among the group (Kitzinger, 1994).
preferred size of the focus groups is between 6 - 8 participants (Krueger & Casey, 2000). Also, consideration should be given to the number of focus groups to be conducted. Krueger (1994) suggests running focus groups until saturation is reached. Saturation is achieved when no new information emerges and the discussion is repetitive. This is normally reached after 3 to 4 focus groups (Burrows & Kendall, 1997).

Nonetheless, some disadvantages of focus groups are the potential for side-tracking due to irrelevant discussion, an inability for inclusion of all participants and the possibility of participants not engaging due to a fear of speaking out if not in agreement with the majority. However, the impact of these three potential difficulties may be reduced by the skill of the researcher to create a relaxed atmosphere and to provide clear ground rules from the outset.

3.4.3 SETTING

3.4.3.1 DISCUSSION WITH NHS EDUCATION FOR SCOTLAND

An initial meeting in September 2009 was organised with NES to discuss the proposed research study. The main points discussed at the meeting were the training routes available to dental nurses, the current concerns of the stakeholders (NES) and potential areas for research e.g. work engagement, burnout and professional socialisation (Appendix 2.2). For a period of several months, further meetings and email correspondence regarding ethical approval and evaluation status took place with the Director of Postgraduate General Dental Practice, East of Scotland, NHS Education for Scotland.

3.4.3.2 LOCATION AND CONTEXT

In Scotland, pre-registered and post-registered training is offered by NHS Education for Scotland (NES) and by local colleges. The result of the earlier discussion with NES and retaining good research practice of conducting at least 3-4 group discussions, it was
agreed that the study would approach the 3 NES training centres based in Aberdeen, Dundee and Glasgow. The intention was to conduct 6 focus groups (3 pre-registration; 3 post-registration) in total i.e. two focus groups in each location of each registration group. NES agreed to contact their training centres in Aberdeen, Dundee and Glasgow on behalf of the researcher to inform them about the study. NES asked the senior tutor in each of the locations to contact the researcher directly about the research (Appendix 2.3).

Although, an opportunity to attend the focus groups was offered to only a small sample of dental nurses, the pool of possible volunteer participants met the criteria in terms of quantity (Section 3.4.2). Also the research design would address this issue in the quantitative 2nd phase of the study by sending out the questionnaires to all NES training centres and colleges across Scotland.

3.4.3.3 Recruitment of training locations

The requested preliminary contact was made to the researcher by the 3 NES training tutors. A responding email (Appendix 2.4) was invitational and informative in style and requested their assistance in the distribution of invitations to the dental nurses who attended either pre-registration courses or post-registration certificate further qualifications to participate in focus groups. The response to the invitation was that each training tutor contacted the researcher by telephone. Discussion ascertained their training course dates in the following 2-3 months, in order to coordinate possible dates to conduct focus groups within the time restrictions of the study. Some points requiring clarification by the tutor regarded the recruitment process of dental nurses and the duration of focus groups. A follow-up email included a copy of the research evaluation proposal providing further information (Appendix 2.5).

Once, all enquiries were answered adequately, the dates for the focus groups were arranged. At this point, the information sheets (Appendix 2.6) were sent out to the
tutors, who in turn distributed them to all the potential dental nurses. The information sheet contained details of the study, an outline of each stage of the research, the aims and objectives and the researcher’s contact details.

The outcome was to conduct 4 focus groups (2 pre-registration; 2 post-registration) at the 2 NES training centres locations – Centre 1 and Centre 2. The non-participation of the 3rd training centre location was due to time restrictions.

3.4.3.4 POPULATION AND SAMPLE SIZE
The target population of the study consisted of dental nurses attending pre-registration or post-registration training. The size of the pre-registration course ranges from 20-30 dental nurses and are 18 months in duration. Whereas, the certificate courses for post-registered dental nurses are attended by fewer, usually between 4-8 dental nurses.

3.4.3.5 SAMPLING FRAMEWORK
Each invitational meeting occurred first thing in the morning prior to the beginning of the day’s training. Dental nurses were asked to volunteer by adding their name to a list circulated around the classroom. They were asked to provide name, age and employment type i.e. NHS, NHS/private and private. This was asked if too many dental nurses volunteered to take part in the focus group. In one focus group (Centre 1) 19 dental nurses volunteered. Consequently to ensure a representative group with a range of ages and employment types the researcher selected 6 participants (3 NHS; 3 mixed NHS/private practice and age range of 18-45). In the other 3 focus groups all volunteers took part in the discussions.

3.4.4 RECRUITMENT OF DENTAL NURSES
Dental nurses had previously been informed of the study and received the information sheet from their tutor. However, during the invitational meeting further copies of the
information sheets were distributed. The content of the meeting covered details about the format of a focus group and an indication of the variety of topics for discussion. The potential topics for discussion were shown on a power point presentation (Appendix 2.6). Dental nurse were given the opportunity to ask questions during the meeting. In addition, reassurances were given about confidentiality and anonymity from the researcher.

3.4.5 Focus Groups
The focus groups would be held during the dental nurses’ lunch break, so were limited to a maximum duration of one hour. Prior to the group discussion the researcher explained the protocol of a focus group to the participants. In particular, the researcher explained the session would be audio recorded and repeated the guarantee about anonymity and confidentiality. Also, a short questionnaire consisting of 3 parts: respondent profile, Utrecht Work Engagement Scale (UWES - 9 items) and a measure of intention to leave dental nursing was completed (Appendix 2.7). All participants received 2 consent forms (Appendix 2.8). One to be retained by participant and the other one to be returned signed to the researcher. The focus group session was audio-taped using an Olympus digital voice recorder VN-8700PC for transcription. Recordings of the focus groups will be downloaded to researcher’s computer and transcribed later. Transcriptions were completed by using the Olympus AS-2400 transcription kit and double spaced and line numbered on A4 paper. Notations that were used are detailed in Appendix 2.9. The audio-recordings and transcriptions were be stored in a locked filing cabinet and only viewed by the evaluation’s researcher and supervisors. After transcriptions were complete the audio-recordings were deleted.

3.4.5.1 Topic Guide
The topic guide areas for discussion by the dental nurse groups were shaped from 3 sources. Firstly, the work-related factors specific to the research questions, secondly from the theoretical perspective as found in the current literature and finally those topics that may be applicable to dental nursing. The topics included were:

- Daily Routine - (repetitive/varied)
- Relationship with work colleagues - (supportive/unhelpful)
- Responsibilities - (lack of/have many)
- Challenges
- Training - (supportive, feedback)
- Enjoyment - What I like/dislike about being a dental nurse
- Role conflict and ambiguities - (confusion/confident)
- Career development and aspirations of a dental nurse (registration/profession/image)

Nonetheless, this list was not prescriptive as the explorative purpose of the focus group was to seek the dental nurses' views; therefore the discussion was mostly nurse-led. As mentioned in the earlier section (3.4.4 - Recruitment of dental nurses), topics were presented in advance at the invitation meeting, as it was known that the groups had little or no experience of participating in focus groups, so providing more detail of what to expect in the focus group would benefit the recruitment with more volunteers.

3.4.6 QUALITATIVE DATA ANALYSIS

3.4.6.1 SELECTION OF ANALYTICAL METHOD

There are a large number of approaches available when conducting qualitative analysis. Broadly, all qualitative methods fundamentally adopt one of two approaches (1) a deductive approach tied to a particular theoretical position e.g. grounded theory (Glaser, 1992; Strauss & Corbin, 1989) or (2) an inductive approach which is theory-free e.g. thematic analysis (Braun & Clarke, 2006). In this study, the approach adopted was
informed by the aim of the research to investigate the factors which support, influence and encourage a dental nurse in the profession. As this is the initial exploratory phase, aiming for an insight into dental nursing by obtaining first-hand the daily work experiences of a dental nurse. The analytic tool adopted must allow a dynamic process of identifying key themes as well as recognising emerging themes which are woven within the narrative text. The preferred method is 'Framework Analysis' which is described as a matrix based method using a thematic framework to organise and classify data according to key themes, concepts and emerging themes (Ritchie & Spencer, 1994). It involves an analytic process of a number of distinct though highly interconnected stages.

3.4.6.2 PROCESS AND PROCEDURES OF FRAMEWORK ANALYSIS

Framework analysis is conducted in 5 key stages:-

1. Familiarisation: Starts during transcribing of audio recordings, afterwards it continues with reading through several times. Reading through in conjunction with on-going comparisons with topic guideline of focus groups. Also, revisiting the research question and considering the characteristics of the participating dental nurses.

2. Identifying a thematic framework: Review recurring themes and build a conceptual framework ‘index’ by drawing up a list of themes in the text whilst reading it through. The index of themes is shown on Appendix 2.10.

3. Indexing: Apply the narrative text to a theme by highlighting the work, phrase or sentence with appropriate colour code (i.e. 1. Registration). Further sub-themes are indicated by numbers e.g. 1.4 (Registration. Implications). The application of the index shows that a theme and a sub-theme have been mentioned in the text with the index reference written in the margin. An example of the indexing undertaken in the analysis of the pre-registration groups is shown in Figure 3.1.
The indexing may result in the refinement of themes by condensing two into one, dividing one into two or creating a new theme. Also, quotes illustrating a core theme or sub-theme are noted in the text.

4. Charting: Each core theme and its respective sub themes are allocated a chart. In the study, the thematic matrix is one Microsoft Excel spread sheet with each column representing a sub-theme. Therefore, charting requires each piece of text that is indexed to be transferred into the appropriate column within the spread sheet. Also, the line number of the text is noted in the margin of the chart for future reference. The purpose is the reduction of text to a manageable level without losing the essence of the participants’ viewpoint.

5. Mapping and interpretation: the task here was to link relationships between the extracts of text and across the whole text. Guidance for this process was taken from Rabiee (2004) to consider frequency; specificity; emotions; extensiveness; big picture to give a richer interpretation of the data.
The benefit of this approach is the iterative nature of the analysis which allows for adding new themes and sub-themes as well as combining two themes into one. Nonetheless, the analytical process must be adhered to rigidly and consistently by the researcher.

**3.4.6.3 SELECTION OF THEMES**

Initial themes were sourced from the literature and those in the narrative text. In order to answer the research question, themes associated with retention from literature were
relationships with co-workers and personal experience of feeling valued. Also a clear understanding of job identity is perceived as being an important indicator of a person’s well-being a work - no ambiguity and conflict. The research required a theme containing the views on registration and career pathway. The a priori themes were registration, relationships with colleagues, daily routine and career development plus any emerging themes resulting from the discussion.

3.4.6.4 DEFINITION OF A THEME
Before the analysis of the narrative, some themes were selected in advance for topic guide preparation i.e. registration as they relate to the research questions, however, others were identified later during the analytic process. During the analytic process a theme is defined as a broad idea which conveys significance and/or implications of a message in the narrative. The theme is derived from the narrative as a conversation topic and a recurring pattern in words, phrases and sentences. Core themes are differentiated into sub-themes.

3.4.6.5 VALIDATION AND RELIABILITY
The coding reliability of themes was discussed during 6 in-situ supervisory meetings and 3 additional meetings with joint supervisor to ensure the analysis was comprehensive and consistent. The meetings focussed on reliability by the naming of theme, in particular their distinctiveness and overlap together with a selection of quotes.

3.4.6.6 REFLECTIVITY
It is important to consider the influence of the researcher’s reflectivity in this setting and how it may shape the research. A quote from Malterud (2001) outlines its important by saying
“A researcher’s background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions” (p. 483-484).

This necessitates the author to include information deemed to be relevant to the research. Therefore, this includes previous experience of projects involving dental nurses within NHS dental public health as part of an evaluation team of a child oral health programme called Childsmile. Resulting in an awareness of the current issues among dental nurses and prompting the investigation on this occupational group. However, it does not include any dental clinical knowledge of the profession. It should be noted the researcher is female, therefore may relate more from a gender perspective to a dominantly female profession.

3.5 QUANTITATIVE PHASE

This section discusses the 2nd subsequent quantitative phase of the study. It details the building of the work-related section within the questionnaire based on the themes in the 1st qualitative phase. Also, it outlines the rationale and justification of including additional work related instruments and a dental nursing outcome measure of intention to leave. It details the sampling population and data collection procedures. Finally, the procedures to conduct the analyses are described.

3.5.1 AIM OF QUANTITATIVE PHASE

The 2nd phase is to further investigate work-related factors in dental nursing in a quantitative construct as measured by a questionnaire. This method was preferred to gather data as the purpose was to generalise the views and attitudes from a sample to the wider dental nursing profession (Babbie, 1990). A questionnaire, developed by the
author, would assess work-related attitudes: work engagement, personal accomplishment and intention to leave.

3.5.2 RATIONALE OF USING A QUESTIONNAIRE

The method chosen to administer the questionnaire was by mail to training centres, then distributed by course tutors to participants on day of training. An on-line version was considered but after seeking advice from NES about the participant's limited access to computers, a paper form was opted for. The reason from NES was that their previous experience of on-line course work for dental nurses had been unsuccessful. Also, the distribution of a paper survey and time allocated for completion within training day may increase response rate. This method of administering addresses the concern of low response rates often associated with mailing questionnaires.

Nonetheless, disadvantages of this method are limited time to complete resulting in missed items and anonymity of responses. This issue of anonymity was circumvented by the collection of surveys into an envelope, to be sealed by a dental nurse and not by a course tutor.

3.5.3 DEVELOPMENT OF QUESTIONNAIRE

The literature review highlighted a limited knowledge on the work-related factors associated with dental nurses; therefore it was necessary to develop a questionnaire specific to this occupational group. The research design addressed this lack of knowledge by directly asking dental nurses about their views and experiences on work-related factors in qualitative phase one. The findings from phase one would be integrated along with other work-related factors identified in the literature into a new questionnaire.

In order to answer the research questions, it is essential to measure the level of fulfilment and engagement a dental nurse reports at work and an outcome measure of intention to
leave. As discussed in Chapter 2 - Literature review the Job Demands - Resources model illustrates the antecedents to work engagement, and then the relationship of work engagement and personal accomplishment with the outcome of intention to leave. Therefore, the measuring instruments of these 4 work-related factors of which 2 were validated (work engagement and personal accomplishment), and 2 were author-developed (job characteristics and intention to leave) including participant demographics were incorporated into a new questionnaire.

3.5.4 MEASURING INSTRUMENTS OF QUESTIONNAIRE
Firstly, this section describes the rationale and justification for using the 2 validated instruments to measure work engagement and personal accomplishment. Second, the procedure utilised by the author to develop the dental nurse specific questionnaires the on work-related attitudes and intention to leave.

3.5.4.1 WORK ENGAGEMENT
The instrument most often administered to measure work engagement is the Utrecht Work Engagement Scale (UWES) which was developed by Schaufeli, Salanova, Gonzalez-Roma & Bakker (2002). Prior to the UWES, work engagement was perceived as the opposite of burnout resulting in both factors being measured on the same scale i.e. low score denotes high work engagement and vice versa. However, the UWES was considered the best choice for this study because previously it has been used in medical nursing context (Simpson, 2009a) and in particular already in dentistry as presented in Chapter 2 - Literature review.

The rationale of the UWES is that it indicates the respondent’s personal experiences and their psychological well-being at work. The items seek to discover an employee’s views on how fulfilled they feel by their work. The dimensions within the scales are defined as absorption, dedication and vigour. Absorption is characterised by being fully engrossed
in one’s work. Dedication is characterised by strong involvement in one’s work, accompanied by feelings of enthusiasm and significance and a sense of pride and inspiration. Vigour is characterised by high levels of energy and mental resilience, a willingness to invest in one’s work and persistence in facing difficulties.

At first, the original UWES consisted of 17 items, now in addition a shortened 9 item version is available. The items are scored on a 7-point Likert scale ranging from 0 (‘never’) to 6 (‘always’). Example items are: “At my work, I feel bursting with energy” (Vigour), “My job inspires me” (Dedication) and “I am immersed in my work” (Absorption). Each sub-scale consists of 3 items which are summed together to give a score of absorption, dedication and vigour. Sub-scale scores are summed together to derive total scores. High scores denote high work engagement.

The shortened UWES 9 item version was used in the study because it reduces the time needed to complete it. Also, a consequence of this is a shorter overall time to complete all 5 sections of the questionnaire. The reduction of time needed to complete a questionnaire is an important consideration as reported in a meta-analysis which concluded that longer questionnaires have significantly lower response rates (Yammarino, Skinner, & Childers, 1991).

The UWES (9 item) indicates good internal consistencies for the 3 sub-scales. A meta-analysis consisting of 36 samples (n - 19,940) from different countries and occupations reported ‘a sample weighted values of Cronbach’s alpha of all 3 scales of the original short versions of the UWES to exceed .80 (p. 18) (Schaufeli & Bakker, 2010).

The aim of the study by administering UWES is to measure scores of work engagement and its sub-scales of absorption, dedication and vigour in order to make comparisons between job resources, personal accomplishment and intention to leave.
3.5.4.2 PERSONAL ACCOMPLISHMENT

In the literature, burnout and one of its dimensions - personal accomplishment - are most commonly measured by the Maslach Burnout Inventory-General Scale (MBI-GS; Schaufeli, Leiter, Maslach & Jackson, 1996). Originally the MBI was designed for the occupation being measured with references to other people i.e. patients, students, or clients being interchangeable. Later, the MBI-GS version was developed to focus more on feelings about the job and not so much about relationships with the people at work. It has been used to measure burnout across many occupations and is widely used in the nursing profession (Maslach et al., 2001) and dentistry (Gorter et al., 1999).

In addition to personal accomplishment, the MBI measures the 2 other dimensions of emotional exhaustion and depersonalisation. These 2 dimensions were omitted because (1) a lack of consensus on the dimensionality of burnout with some research conceptualising burnout as a two-factor structure and (2) some researchers report personal accomplishment as a 4th factor of work engagement (te Brake et al., 2007). The rationale behind including only personal accomplishment and excluding the other 2 dimensions was to tease out the relationship of a respondent’s views on their ability and achievements with work engagement and intention-to-leave. Also, personal accomplishment as a work-related factor may differentiate the attainment of registration status between the 2 groups of dental nurses.

There are 8 items measuring personal accomplishment in the MBI-GS. The items are scored on a 7 point Likert scale ranging from 0 (‘never’) to 6 (‘always’). Participants rate items such as “I have accomplished many worthwhile things in this job”. The score of each item is summed together to derive a total scores. Where personal accomplishment is measured as a dimension of burnout the scoring is reversed (i.e. 0 becomes 6). However, this study relates only to personal accomplishment so interprets the total unreversed score. The MBI-GS has demonstrated good psychometric properties and Cronbach’s alpha for all 3 subscale above 0.7. The MBI-GS’s personal accomplishment
items were administered in order to investigate for relationships with work engagement, work-related attitudes and intention to leave.

3.5.4.3 Job Characteristics

As no instrument was available from the literature to specifically measure the work-related attitudes and experiences of dental nurses which enhance or diminish their work engagement. Therefore a new instrument was developed by the author to measure the potential antecedents to work engagement. The determination of the items to measure was primarily based on the broad themes found in the 1st phase qualitative analysis. The approach of constructing the questionnaire was adapted from Streiner and Norman (2003). Each step taken to devise the items is shown in Figure 3.2.

![Figure 3.2 Illustration of the steps taken in the development of a new instrument to measure work-related attitudes among dental nurses](image)

More detail of each step is as follows:

- Determine themes: the core themes in the narrative text derived the initial framework of items. The themes considered were between registration groups and within registration groups. Content validity checked the items covered the themes adequately. Already, occupation specific in design the individual items
were either from dental nurse (intrinsic) or job/profession (extrinsic) perspective. Items were not categorised as a resource or a demands because it was not known at this stage.

- Select item format: construction of comprehensible questions in terms of easy to understand, jargon-free and a single theme within the item.
- Selection of response scale: a continuous scale measuring a descriptor of agreement (strongly agree to strongly disagree) on a Likert scale (Likert, 1952) was used. A rating scale of 7 points to increase the level of discrimination by the respondent. The mid-point 4 was named ‘uncertain’ therefore providing an option to have no opinion on the item, therefore not ‘forcing’ an answer.
- Pre-test: to test the feasibility of the questionnaire, dental nurses who participated in the pre-registration focus group at Centre 2 were invited to evaluate it. (See details of pre-test of overall questionnaire in section 3.5.4.)

3.5.4.3.1 CONTENT OF JOB DEMANDS AND RESOURCES

As outlined in Table 3.1 - Visual model for Mixed Methods (Page 41), a product of the explorative 2nd phase is the job characteristics salient to the dental nurses who participated in the focus groups. These job characteristics are referred to as job resources and demands (JDR) and are linked to the 3rd phase by using the content of the various job characteristics to develop a new questionnaire. Subsequently, this new questionnaire is used to collect data from a larger group of dental nurses across Scotland. Further explanation of the derivation of content of this author designed JDR questionnaire is described later in Section 4.3.9 following the reporting of the qualitative data analysis in Chapter 4 - Qualitative findings.

3.5.4.4 INTENTION TO LEAVE

The literature is limited in the availability of a validated scale to measure intention-to-leave, other than assessment by a single item (Sager et al., 1998). Sager et al (1989) report
the presence of a cognitive process of ‘thinking of quitting’, ‘intention-to-search’ and ‘intent-to-quit’ when considering leaving or remaining in a job. Subsequently, consistent with these cognitive stages a 3 item scale, each representing one of the stages was adapted specific to dental nursing. The 3 items were:

1. ‘I often think about quitting my job’,
2. ‘I intend to change jobs during the next year’, and
3. ‘I intend to leave dental nursing’.

A Likert scale on a range from 1 indicating ‘completely agree’ to 9 ‘completely disagree’ assesses each stage of intention-to-leave. The scale was reverse-scored, so high scores denotes high intention-to-leave.

3.5.4.5 DEMOGRAPHICS

A section of the questionnaire was constructed to collect personal and work information of the respondents. The personal items included age, registration status, and job tenure and work items included practice type and location, number of dental nurses in the practice and number of dentists worked within a one month period. Overall, it contained 8 items, all closed questions with a combination of categorical and continuous response scales.

3.5.5 PRE-TEST OF QUESTIONNAIRE

From the initial group of pre-registration dental nurses who participated in focus group at Centre 1, six volunteered to participate in the pre-test. After completing the questionnaire the group were asked the following:

- Where the instructions clear? Response – “Yes”
- Where any questions ambiguous? Response – “No”
- Did you object to answering any questions? Response – “No”
- Was the layout clear and attractive? Response – “Yes”
Any other comments?  Response – “Ask a dental nurse to hand out and collect in the questionnaires”

The feedback was positive with no major changes and time taken by the pre-test group to complete the questionnaire ranged from 5-10 minutes. No items were omitted by the group, so no item was changed or eliminated after pre-test. It is noted, however that there are weaknesses to this pre-test due to the smallness of the group, thus an analysis of internal consistency would be meaningless. The purpose of the pre-test was to establish the usability of this first draft of the author developed sections and the size and layout of the overall questionnaire.

In addition, 2 members of staff at Centre 1 reviewed the content and offered suggestions to improve the clarity of one item. For registration status item add ‘qualified’ when asking about number of years registered for post-registration dental nurses and a final open question for further viewpoints to be added.

3.5.6 Questionnaire

The title of the questionnaire was ‘Views on dental nursing profession’. Details about the aim of the questionnaire were outlined in brief introduction, followed by a guarantee of confidentiality and anonymity and it offered a unique opportunity to give important views on their profession. A total of the 4 work-related factors were measured as described in the previous section (3.5.4.1 - 3.5.4.4) along with demographics (3.5.4.5) of respondents. The length of the questionnaire was 4 pages (A5) containing an aggregate of 38 questions. The questionnaire was cross-sectional, self-administered and took 5-10 minutes to complete. The final version of the questionnaire is shown in Appendix 2.11.
3.5.7 Data Collection

3.5.7.1 Population and Sample Size

The target population of the questionnaire was all dental nurses attending pre-registration and post-registration training across Scotland in May - June 2011. The dental nurses were accessed via the 3 NES training centres in Edinburgh, Inverness and Glasgow, along with the 2 centres who already participated in the 1st phase of the study during May and June 2011. While, this convenience sample is not representative of the total population of dental nurses in Scotland as it excludes those not attending training between these dates or training elsewhere i.e. local college.

3.5.7.2 Recruitment of Training Locations

The contact approach was adapted from Dillman (1978) who stressed the importance of advance warning and a covering letter. Therefore, the initial contact by emails informed tutors of the forthcoming study and invited their assistance. The 5 NES training centres were contacted (Appendix 2.12) with details of the 2 NES tutors not previously contacted in 1st phase received via discussion with NES Dundee by email. After some following emails and referrals to other tutors; all undertook to distribute surveys to dental nurses.

3.5.7.3 Distribution of Questionnaire

Subsequently, survey packs of a covering letter, an instruction sheet, an envelope containing the surveys and self-address envelope for returns were mailed out. The covering letter was addressed to the person concerned, and referred to the 1st qualitative phase and to the expectations of survey returns across Scotland (Appendix 2.13). The enclosed instruction sheet provided procedural information for tutor and the volunteer dental nurse about the collection and returning of surveys (Appendix 2.14). Also, the number of nurses attending each course was requested, so as to calculate a response rate.
After, an offer of additional assistance to distribute questionnaire to in-house NHS dental nurse courses, dental schools and local colleges with dental nurse registration courses, an overall total of 390 questionnaires were sent out.

3.5.8 QUANTITATIVE DATA ANALYSIS
A summary of the procedures of data handling derived from the questionnaire and details of the analysis conducted follows in the next section.

3.5.8.1 DATA ENTRY AND SCREENING
The data collected by the questionnaire was collated by the following steps:-

Step 1 - Initially, the raw data from the questionnaire were entered into PASW statistics version 18.0, however in the later stages SPSS 19 version was used.

Step 2 - In the job demands and resources and intention-to-leave sections the scale scoring was reversed because in its current format the overall direction of the total scores resulted in a low score indicated a high agreement to the statement. Therefore, the response value was reversed i.e. if a response was 9; it was converted to 1 and 8 - 2, 7 -3...... and so on. Thus a high score equated to high agreement of the item.

Step 3 - Afterwards, data screening on all of the variables was conducted. The method of imputation used to handle the missing values was adapted from Streiner et al (2008), where a substitution mean value is calculated from the respondent’s completed overall items total. If more than 25% of the items in an instrument were omitted, then all data from this respondent was removed from the dataset. Data screening included information on outliers and normality for all continuous variables.
3.5.8.2 DATA ANALYSIS

Firstly, a description of the sample group is provided in the form of frequency distribution of the data as gathered by the demographic section. Also, in order to examine for differences between the pre-registration and post-registration dental nurses a Mann-Whitney U test was conducted. Further details of the procedures undertook are embedded in the results Chapter 5 - Quantitative findings.

Secondly, the means, standard deviations and inter-correlations between the variable items for job demands and resources (JDR), personal accomplishment (PA) and intention to leave (InToL) and the sub-scales of vigour, absorption and dedication for work engagement (WE) are reported. Cronbach's alphas reveal the reliability and internal consistency of the items and sub-scales. Possible differences in work engagement and personal accomplishment between the two groups of dental nurses (pre-registration and post-registration) are examined by using the Mann-Whitney U test.

The third stage of analysis examines the relationship between the 4 main variables: work engagement, personal accomplishment, job demands and resources and intention to leave. This includes the mean score, standard deviation and a correlation matrix.

The third stage is arranged in order to examine in more detail by grouping the 4 main variables into (1) variables measured by a validated instrument (work engagement and personal accomplishment) and (2) variables measured by the self-developed items (job demands and resources and intention to leave). For the first grouping (1) both the registration groups are included and only the data from the pre-registration group is computed in grouping (2).

Further details of factor analysis conducted are described in Section 3.5.8.3 below.
3.5.8.3 FACTOR ANALYSIS

In this stage of the analysis only the data from pre-registration dental nurses was used as the number of questionnaires from post-registration dental nurses (n = 28) was considered to be too low for factor analysis. Factor analysis was performed to investigate the dimensionality of the 10 items of the JDR and to discover if underlying unobserved factors were present.

The stages taken to perform the factor analysis include the following well recognised criteria as detailed in Thompson (2005): (1) testing of assumptions, (2) Selection of extraction method of factors, (3) Number of factors extracted (4) Rotation and loading of factors and (5) Interpretation and labelling of factors. The statistical findings will be summarised in the text and reported in tabular format in Chapter 5 - Quantitative findings.

3.5.8.4 REGRESSION ANALYSIS

After the initial analyses, it was concluded that a more detailed model of the 4 main variables would be appropriate. This was informed by the theoretically based underpinnings of the factors relating to work engagement as outlined in the Chapter 2 - Literature review. Accordingly, regression analysis was conducted to identify if the job demands and resources measure, work engagement and personal accomplishment were predictors of outcome variable intention-to-leave.

3.5.8.5 STRUCTURAL EQUATION MODELLING ANALYSIS

In order to further investigate and test the relationships between the latent variables in the research model, structural equation modelling (SEM) was implemented using IBM SPSS® Amos™ 19 (Arbuckle, 2005). SEM is a statistical tool used by researchers to assess the degree to which a hypothesised model fits the sample data (Hoyle, 1995). The benefits of SEM over other statistical tests such as multiple regression and path analysis
is that it includes latent variables as well as observed variables, numerous dependent variables and measurement errors (Schumacker & Lomax, 1996). Hence, the relationships between the substantive constructs (i.e. latent variables) are not attenuated by measurement error. Furthermore the procedures have ready-made indices of model fit so that comparisons can be made between to completing models. Also, SEM allows for the testing of direct, indirect and total effects.

3.5.8.5.1 BASIC ASSUMPTIONS

Consequently, several pre-analysis issues need to be addressed before using SEM, namely, (1) sample size, (2) handling of missing data and (3) data normality and outliers (Schreiber, Nora, Stage, Barlow, & King, 2006). The sample size of 231 was adequate as a general consensus recommendation of 10 participants per estimated parameter is needed to conduct SEM. In relation to the issue of missing data several of the items measuring the variables were omitted. The handling procedures are detailed previously in Section 3.5.8.1 - Data entry and screening where imputation was discussed. An evaluation of the assumptions of normality of the data was completed by inspecting the degree of skew and kurtosis values for any deviations. All item-level skewness values were acceptable (less than 1.0) except for 5 items - JDR2 and JDR3 in JDR; UWES7 in WE and Int3 in InToL. Further inspection found the kurtosis values for 2 of these 5 items to be acceptable except in the items of JDR2, UWES7 and Int3 whose values were significantly higher. Subsequently, the item of Int3 was omitted from the SEM because the participants' beliefs about leaving their job may not be fully formed as yet, whilst still undergoing training in the profession. The skewness and kurtosis values for all items are shown in Table 5.1. An examination of the indicator items using histograms and box-plots found no outliers in the data.
3.5.8.5.2 MODEL SPECIFICATION

In order to address the research questions two measurement models were tested. The 2 measurement models specified are theoretically underpinned by the JD-R model as discussed previously in Chapter 2 - Literature review. The models consist of a combination the 5 items of job resources (components from the factor analysis described as professional resources (PR)), 8 items of personal accomplishment, 9 items work engagement and 2 measures of intention-to-leave. This examination was to test their operationalisation as underlying dimensions of a professional resources factor, a personal resources factor and a work engagement factor on an intention-to-leave factor. The two hypothesised models tested are:

- Model one (M1): a 2nd order model comprising of the 3 exogenous variables namely, professional resources (PR), work engagement (WE) and personal accomplishment (PA) and Intention-to-leave (InToL) as the endogenous variable. This model assumes that PR, WE and PA each separately load a positive correlation to factor InToL.

- Model two (M2): a 3rd order model comprising of the exogenous variable of PR and endogenous variable of InToL being mediated through both WE and PA

In addition, one indicator of each latent variable was constrained with a loading factor fixed to 1 to define scaling and recommended by convention. Maximum likelihood (ML) parameter estimation was selected as it met the distributional and scaling of the items in the model (Schumacker & Lomax, 1996). Further details of the steps of SEM relating to identification and estimation are described in the results in Chapter 5 - Quantitative Findings.

3.5.8.5.3 ASSESSMENT OF FIT

The approach adopted to determine the best fitting model of these 24 item-level indicators (4 latent factors) to assess the extent each re-specified model demonstrates an
improvement in fit by examining the differences in $\chi^2$ between models (Byrne, 2001). In addition to the chi-square ($\chi^2$), the other conventional fit measures of Comparative Fit Index (CFI), Tucker-Lewis (TLI) and Root Mean Square Error of Approximation (RMSEA) were used to assess each model’s representation of the raw data. For each of these statistics values of ≥0.95 are indicative of good fit (Hu & Bentler, 1999) except for RMSEA where values of less than 0.05 indicate good fit and values up to 0.08 represent reasonable errors of approximation (Browne & Cudeck, 1993).

3.5.9 OVERVIEW OF THE LOCATION OF AIMS AND RESEARCH QUESTIONS WITHIN THE PHASES OF MIXED METHODS

The research has 3 aims which are addressed by answering 6 specific research questions. This section gives an overview of where each research question is addressed within a single or multiple phase(s) of the mixed methods design (as shown in Table 3.1; Page 41). The overview is shown in Table 3.2.
Table 3.2 Overview of which mixed method phase addressed each aim and research question

<table>
<thead>
<tr>
<th>AIM</th>
<th>RESEARCH QUESTIONS</th>
<th>PHASES of MIXED METHODS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>To understand which job resources in the work place are utilised by dental nurses</td>
<td>1. What job resources are available to dental nurses on a daily basis?</td>
<td>(1) Qualitative data collection</td>
</tr>
<tr>
<td></td>
<td>2. Which job resources encourage and support a career in dental nursing?</td>
<td>(2) Qualitative data analysis</td>
</tr>
<tr>
<td></td>
<td>3. Do job resources differ between pre-registration and post-registration dental nurses?</td>
<td>(2) Qualitative data analysis and (5) Quantitative data analysis</td>
</tr>
<tr>
<td>To address the lack of information about work engagement in dental nurses in Scotland</td>
<td>4. Do these job resources predict work engagement?</td>
<td>(5) Quantitative data analysis</td>
</tr>
<tr>
<td></td>
<td>5. Does work engagement and personal accomplishment mediate the relationship with intention to leave?</td>
<td>(5) Quantitative data analysis</td>
</tr>
<tr>
<td>To investigate how these job resources relate to work engagement and in turn affect a dental nurse's intention to remain in the profession</td>
<td>6. Which job resources predict higher levels of work engagement?</td>
<td>(5) Quantitative data analysis</td>
</tr>
</tbody>
</table>

* Numbering of Mixed Method Phases as denoted in Table 3.1

3.5.10 Comprehensive summary of the qualitative analysis conducted

Table 3.3 illustrates the range of statistical analysis completed on each of the 5 sections of the questionnaire and explains where the sample used in the analysis was only pre-registration dental nurses or either split into the 2 groups of pre-registration and post-registration dental nurses.
Table 3.3 Comprehensive progression of quantitative analysis completed from question section and dental nurse registration group

<table>
<thead>
<tr>
<th>QUESTIONNAIRE</th>
<th>ANALYSIS COMPLETED in 5TH PHASE* (QUANTITATIVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Descriptive Statistics</td>
</tr>
<tr>
<td>(1) DEMOGRAPHICS</td>
<td>Categorical Data</td>
</tr>
<tr>
<td></td>
<td>Distribution (%)</td>
</tr>
<tr>
<td></td>
<td>Continuous Data</td>
</tr>
<tr>
<td></td>
<td>Mean, SD and IQR</td>
</tr>
<tr>
<td></td>
<td>Mann-Whitney</td>
</tr>
<tr>
<td></td>
<td>(BOTH Pre- and post-registration DNs)</td>
</tr>
<tr>
<td>(2) VIGOUR, DEDICATION AND ABSORPTION</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>Mann-Whitney</td>
</tr>
<tr>
<td></td>
<td>(BOTH Pre- and post-registration DNs)</td>
</tr>
<tr>
<td>(3) JOD DEMANDS AND RESOURCES</td>
<td>Measure of agreement (%)</td>
</tr>
<tr>
<td>Author developed from findings from phase 1</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>(ONLY Pre-registration DNs)</td>
</tr>
<tr>
<td>(4) PERSONAL ACCOMPLISHMENT</td>
<td>Mean</td>
</tr>
<tr>
<td>Maslach Burnout Inventory</td>
<td>SD</td>
</tr>
<tr>
<td>General Scale MBI - GS</td>
<td>Mann-Whitney</td>
</tr>
<tr>
<td>(Schaufeli et al, 1996)</td>
<td>(BOTH Pre- and post-registration DNs)</td>
</tr>
<tr>
<td>(5) INTENTION-TO-LEAVE</td>
<td>Measure of agreement (%)</td>
</tr>
<tr>
<td>(Based on Sager et al, 1989)</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>Mann-Whitney</td>
</tr>
<tr>
<td></td>
<td>(BOTH Pre- and post-registration DNs)</td>
</tr>
</tbody>
</table>

* ✓ Denotes analysis conducted as per column heading
Chapter 4 – Qualitative Findings

This chapter outlines the findings for the qualitative exploration. It summarises the descriptive statistics of the demographics and work engagement profile of the focus groups characterised by their pre-registration and post-registration status. It reports the themes in the narrative data and the interpretation of these themes. They are discussed in the context of their applicability for inclusion into a definition of job resource when compared to existing findings in the literature. Also, the variation of these attitudes and views are discussed in terms of them demonstrating a process of professionalism taking place.

4.1 Focus Groups

The focus groups took place in Centre 1 and Centre 2 between November 2010 and January 2011. The groups were divided by pre-registration and post-registration dental nurse status reasons of which are outlined in Chapter 3 - Methodology. There were 4 focus groups in total consisting of 2 pre-registration and 2 post-registration dental nurse groups (n = 24). Details of the location, attendance numbers, duration and amount of narrative data collected by the 4 focus groups are shown in Table 4.1.

<table>
<thead>
<tr>
<th>Date</th>
<th>Area</th>
<th>N attended</th>
<th>Duration (mins)</th>
<th>Total words</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.11.10</td>
<td>Centre 1 (Pre-registration)</td>
<td>6</td>
<td>27.00</td>
<td>4106</td>
</tr>
<tr>
<td>9.12.10</td>
<td>Centre 2 (Pre-registration)</td>
<td>9</td>
<td>44.54</td>
<td>8822</td>
</tr>
<tr>
<td>10.11.10</td>
<td>Centre 1 (Post-registration)</td>
<td>5</td>
<td>23.46</td>
<td>3749</td>
</tr>
<tr>
<td>12.1.11</td>
<td>Centre 2 (Post-registration)</td>
<td>4</td>
<td>50.40</td>
<td>8435</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>24</td>
<td>146.20</td>
<td>25202</td>
</tr>
</tbody>
</table>

Table 4.1 Composition of all pre-registration and post-registration dental nurse focus groups by area, attendance numbers, duration and amount of data (n =24)
4.1.1 DEMOGRAPHIC PROFILE OF THE DENTAL NURSE OF FOCUS GROUPS

4.1.1.1 PRE-REGISTRATION FOCUS GROUPS

Fifteen pre-registration dental nurses participated in 2 focus groups (Centre 1: n = 6; Centre 2: n = 9). Seventy-eight percent (78%) of the dental nurses stated they worked in a mixed NHS/private practice, 15% in NHS and 7% worked in a private practice. The locations of the practices were 39% rural and 61% urban. Eighty-six percent (86%) of dental nurses worked full-time.

The results are of the personal and the work details gleaned from the short questionnaire (Appendix 2.8) which was used as an ice-breaker and are presented in Table 4.2.

Table 4.2 Demographic items 4, 5, 7 and 8 scores for pre-registration dental nurse focus groups (mean, median, standard deviation (SD), minimum and maximum scores, range, and interquartile range (IQR)) (n = 15)

<table>
<thead>
<tr>
<th>Pre-registered focus groups</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) N of dental nurses in practice (n = 15)</td>
<td>7.6</td>
<td>5.50</td>
<td>5.7</td>
<td>3</td>
<td>20</td>
<td>17</td>
<td>5.50</td>
</tr>
<tr>
<td>(5) N of dentists worked with per month (n = 15)</td>
<td>2.2</td>
<td>2.00</td>
<td>1.3</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>2.00</td>
</tr>
<tr>
<td>(7) N of months in this practice (n = 15)</td>
<td>17.6</td>
<td>17.50</td>
<td>4.8</td>
<td>8</td>
<td>25</td>
<td>17</td>
<td>17.50</td>
</tr>
<tr>
<td>(8) Age (n = 15)</td>
<td>27.4</td>
<td>23.50</td>
<td>9.6</td>
<td>18</td>
<td>49</td>
<td>31</td>
<td>23.50</td>
</tr>
</tbody>
</table>

Next, the descriptive statistics and correlations were computed for vigour, dedication and absorption, the 3 sub-scales of work engagement. The results are presented in Table 4.3.

Table 4.3 Mean, median, standard deviation (SD), minimum and maximum scores, range, interquartile range (IQR) and correlations of the 3 sub-scales (vigour, dedication and absorption) of work engagement of pre-registration dental nurses (n = 15)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>IQR</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vigour</td>
<td>1</td>
<td>11.79</td>
<td>10.00</td>
<td>3.24</td>
<td>8</td>
<td>17</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedication</td>
<td>2</td>
<td>13.71</td>
<td>13.50</td>
<td>3.16</td>
<td>8</td>
<td>18</td>
<td>5.25</td>
<td>.77**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absorption</td>
<td>3</td>
<td>12.29</td>
<td>13.50</td>
<td>3.00</td>
<td>8</td>
<td>16</td>
<td>6.00</td>
<td>.81**</td>
<td>.82**</td>
<td></td>
</tr>
</tbody>
</table>

The group scored high for overall work engagement and for the sub-scales scored highest for dedication and lowest for vigour. All inter-correlations of the three sub-scales were significant.
4.1.1.2 Post-Registration Focus Groups (Post Qualification and Registered)

With regard to the post registration status, 9 dental nurses participated in 2 focus groups (Centre 1: n = 5; Centre 2: n = 4). Twenty percent (2) of the dental nurses stated they worked in a mixed NHS/private practice, 60% (6) in NHS, 10% (1) in a Health Board and 10% (1) worked in dental schools. The locations of the practices were 30% (3) rural, 60% (6) urban and 10% (1) in both rural and urban areas. Eighty percent (8) of dental nurses worked full-time. One dental nurse worked with only hygienists.

Table 4.4 Demographic items 4, 5, 7 and 8 scores for post-registration dental nurse focus groups (mean, median, standard deviation (SD), minimum and maximum scores and interquartile (IQR))

<table>
<thead>
<tr>
<th>Post-registered focus groups</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) No of dental nurses in practice (n = 8)</td>
<td>24.50</td>
<td>8.50</td>
<td>8.96</td>
<td>2</td>
<td>80</td>
<td>78</td>
<td>8.50</td>
</tr>
<tr>
<td>(5) No of dentists worked with per month (n = 9)</td>
<td>2.67</td>
<td>1.00</td>
<td>0.92</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>1.00</td>
</tr>
<tr>
<td>(7) No of months in this practice (n = 9)</td>
<td>62.22</td>
<td>50.00</td>
<td>75.93</td>
<td>15</td>
<td>258</td>
<td>243</td>
<td>50.00</td>
</tr>
<tr>
<td>(8) Age (n = 9)</td>
<td>36.20</td>
<td>39.50</td>
<td>11.42</td>
<td>21</td>
<td>53</td>
<td>32</td>
<td>39.50</td>
</tr>
</tbody>
</table>

The first stage was to compute the descriptive statistics for the groups. The overall work engagement score for the group was high with highest score for dedication and lowest score for vigour. The inter-correlations of dedication with vigour and absorption were significant; however the correlation of vigour and absorption was not significant. The results are presented on Table 4.5.

Table 4.5 Mean, median, standard deviation (SD), minimum and maximum scores, range, interquartile range (IQR) and correlations of the sub-scales (vigour, dedication and absorption) of work engagement of post-registration dental nurses (n = 9)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>IQR</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vigour</td>
<td>1</td>
<td>12.80</td>
<td>14</td>
<td>2.62</td>
<td>8</td>
<td>15</td>
<td>7</td>
<td>4.25</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dedication</td>
<td>2</td>
<td>14.60</td>
<td>15</td>
<td>2.84</td>
<td>10</td>
<td>18</td>
<td>8</td>
<td>5.50</td>
<td>0.92*</td>
<td>-</td>
</tr>
<tr>
<td>Absorption</td>
<td>3</td>
<td>13.60</td>
<td>14</td>
<td>2.27</td>
<td>10</td>
<td>18</td>
<td>8</td>
<td>3.25</td>
<td>0.57</td>
<td>0.70*</td>
</tr>
</tbody>
</table>

**p < 0.001
*p < 0.01
4.1.1.3 Comparison of work engagement between pre and post registration focus groups

Visual inspection of the sub-scales scores of work engagement finds both groups scored highest on dedication and lowest on vigour. Further details of the quantitative findings of the work engagement - Work and well-being survey (UWES) © are reported in Appendix 4.1.

4.2 Qualitative content analysis

The next section presents the findings from the analytic process using Framework analysis (Ritchie & Spencer, 1994) as outlined in Chapter 3 - Section 3.4.5. The results include the themes and their interpretation broken down by three sections, namely: (1) pre-registration dental nurses, (2) post-registration dental nurses and (3) further discussion on the similarity and differences of themes between the pre-registration and post-registration dental nurses.

4.2.1 Pre-registered dental nurses

The analytic process of the transcripts as detailed in Section 3.4.5.2 revealed 4 overarching themes: (1) Impact of registration, (2) Features of the daily routine, (3) Dynamics of within the dental team and (4) Factors influencing a dental nursing career. Table 4.6 presents the 4 themes and their sub-themes which emerged from the data. The list is a combination of the themes discussed by the two pre-registration groups as they emerged from the data. A variation in the content of the themes emerged are indicative of the characteristics and demographics of the group e.g. more family oriented themes occurred if the dental nurses were mothers. The following sections take each of the above themes in turn, by discussing their constituent sub-themes and illustrating with quotes.
In addition, whilst analysing there emerged from across all themes an underlying latent theme which related to the level of professionalism shown by the dental nurse. This latent theme may occur on two levels as (1) an individual’s becoming professional as a dental nurses and (2) dental nursing being a profession. The responses and comments given by dental nurses whilst discussing characteristics of their work-life suggest a process of professionalism may occur on the following continuums as illustrated on next page:

**NON-PROFESSIONAL**

- **Support**
- **Dependence**
- **Security**

**PROFESSIONAL**

- **Autonomy**
- **Independence**
- **Insecurity**

In the following discussion, the analysis will refer to professionalism and demonstrate how the themes and their sub-themes which emerge from the narrative are positioned on the continuums.
4.2.2 IMPACT OF REGISTRATION

A central view about registration was its impact. The variation in the impact was understood in terms of demands of training, payment of registration fee, effect of learning, application of training and benefits of training for registration status.

4.2.2.1 DEMANDS OF TRAINING

For many dental nurses the training was more demanding than anticipated, in terms of quantity, depth, difficulty of curriculum, duration of study, and time implications. (See appendix for abbreviations in transcription conventions).

‘I was expecting it to be a breeze and certainly it’s not a breeze. There’s quite a lot to learn’. [1: 297]

‘It’s a lot more work than I thought it would be. You need to know a lot more than I thought you would’. [1: 309 - 310]

Nonetheless, it is worthy of note that the difficulty and amount of classwork material to be learned, lack of time and hours of study have been noted elsewhere in the ten most common sources of stress (Beck & Srivastava, 1991; Jones & Johnston, 1997). Some dental nurses used support from the training centre staff whereas others relied on other dental nurses in the practice, as a means of reducing the impact of training demands. The following are illustrative:

‘A lot to learn in just one day, you’ve got to literally go home and learn more but I find myself kinda not so keen on it as I used to be. I don’t know it’s that down heartened me, not wanting to do anymore. But then I come back to college and I’m fine again’. [1: 299 - 303].

‘I’ve been able to bring things to them [dental nurses] for help there. The way, they do things and they obviously help me in return’. [2:278 - 279]
Other realistic support received included financial with payment of course fees and travelling expenses, as well as a time to study during working hours at the practice. However, the occurrence of this kind of support varied across the 2 groups of pre-registration dental nurses. Despite, the presence of these potentially stress related demands of training the support was adequate as confirmed by the work engagement scores of the two groups.

4.2.2.2 EFFECT OF LEARNING AMONG DENTAL NURSES

An outcome of the newly introduced registration training was the knowledge gap between these trainee dental nurses and those dental nurses accredited with ‘grandparent’ registration. One nurse stated:

‘They’re old school and ways in which you shouldn’t be doing things nowadays’. [2:409]

This quote suggests the knowledge gained during registration training brings confidence and sureness to the dental nurses with other dental nurses. However, this security in their training knowledge does not extend to all areas of their work as illustrated in the next section.

4.2.2.3 APPLICATION OF TRAINING

One aspect of the training required the dental nurse to give oral health advice to patients. Dental nurses were apprehensive and nervous about giving advice, feeling it was inappropriate and required preparation and careful planning on their part to do it. This sub-theme suggests another variation in the response to the training by producing feelings of fear and self-doubt about personal competencies which are illustrated in the quotes below:

‘yeah cause we've got a bit in our portfolio for where we're supposed to speak to a patient and give them like oral health advice sort of thing but I've still not managed to cover that-no ((laughter) neither have I-I don't think I could do it’. [2:343]
‘I’ve still not managed to cover that [giving oral health advice to patients] - no

(laughter)) neither have I-1 don’t think I could do it. I think I could but it would need a

lot of planning’. [2: 344-346]

Also, it was problematic for many dental nurses, as it caused concerns about how
dentists may view it. This fear of the dentist making a judgement about an aspect of the
job required by training is illustrated below:-

‘If you were to say something she [dentist] would be like it’s not your place’ [2: 325]

‘Like see with my dentist I wouldn’t give any like advice’. [2; 330]

This sense of well-defined role and clear boundaries of acceptable clinical behaviours was
the underlying view, so giving advice was a personal and clinical challenge for many
dental nurses. Subsequently, this aspect of the training resulted in a sense of insecurity
for many as it required them to step out of their ‘comfort zone’, so suggesting their level
of confident regarding professional behaviour is not fully developed as yet.

4.2.2.4 BENEFITS OF TRAINING FOR REGISTRATION STATUS

The benefit of registration was perceived on its own as not being sufficient to improve
the image of dental nursing. Any respect given to a dental nurse was more to do with the
individual person than the status of having professional registration.

‘I think if you’re registered as well you gonna be more - that’s not the word I looking

for like even within the practice - you looked upon-yeah kinda you’re gonna be given

respect-more respect-I think it’s the person more. I think it doesn’t come down to the

registration I think it comes down to the person’. [D241-246]

This quote suggests an understanding that changes in an individual’s behaviour are
linked to registration. This may demonstrate an awareness of what is considered to be
appropriate behaviour in becoming a professional person.
The only direct benefit mentioned in relation registration was that it may mean an increase in salary but the general view held was this was unrealistic.

‘They say that you will get more pay when you qualify but I don’t think in our practice it’s a huge amount more. I think according to most of the nurses that are there in the practice mentioned it’s the year like the experience you have and the number of years you’ve been working the more money you get so obviously you need the registration to keep working but I don’t think it’s the actually registration it’s the experience you get’. [D:232-236]

4.2.2.5 PAYMENT OF GENERAL DENTAL COUNCIL REGISTRATION FEE

Knowledge about the General Dental Council (GDC) registration fee was found to be limited. This emerged as concerns about the actual cost and who would pay the fee once the training was completed and the final exam passed:

‘Thirty pounds a year, I believe aye- [our boss pays.... ] - as we do register I think- I think our-No we have to pay it ourselves-No the practice pays- or that you have to sign a contract to say that you’re gonna stay with them for a year each time they pay it-which is fair enough though-so say you don’t stay they shouldn’t have to pay it-yeah’. [2:452-455]

Some concerns were raised as to the implications of the employer paying for the GDC registration fee. Generally, the view of the dental nurses was that if the practice (i.e. their employer) paid for the fee this would mean they were contracted to remain with their current employers for the duration of the registration fee i.e. one year. If currently the dental nurse was satisfied with her work situation this offered job security, or alternatively if thinking about leaving this would incur the cost of a refund to the employer. Again this variation in views about registration fees could indicate the level of security and dependence some dental nurses require from their practice.
4.2.2.6 SUMMARY OF THEME - IMPACT OF REGISTRATION

In general, the introduction of registration was welcomed and this could relate to one aspect of job resources as it has the ‘functional to achieve goals’ and ‘stimulate personal growth, learning and development’ (Demerouti et al., 2001). In addition, the social support either emotionally and/or financially provided by colleges, dentists and/or dental nurses was important. As a group of mainly women, the literature (Antonucci et al., 2002) suggests they are more likely to seek social support and in particular support from co-workers is recognised as a job resource (Demerouti et al., 2001; Hackman & Oldham, 1976).

In conclusion, dental nurses found the impact of registration training required them to adjust to changes which were not expected. The training challenged them both from the learning and adapting perspective. The manner in which they viewed the ways of how to cope and to adapt with these changes was affected by levels of their own confidence and dependence on others.

4.2.3 FEATURES OF DAILY ROUTINE

The narrative on features of daily routine focused on starting time of working day, characteristics of the daily routine and autonomy.

4.2.3.1 START TIME OF WORKING DAY

Much discussion concentrated on the hours expected to work, in particular the starting times. The required preparation and setting up of the surgery before the arrival of patient necessitated many nurses to begin working prior to their contracted hours. This resulted in a feeling of resentment as they were not outwardly appreciated or recognised by their employers for doing this.
‘All the nurses are always in by 8, 5 past 8, because we have to set up the surgery. We don’t get paid for it and they say you can come in at half past but then that’s not giving you enough time to set up for your day, prepare the surgery and everything’. [1:63-66]

4.2.3.2 CHARACTERISTIC OF THE DAILY ROUTINE

The characteristics of the daily routine discussed included time pressures and repetition. Time was a large factor; it was a constant pressure to keep up to time with the responsibility frequently falling on the dental nurse to maintain the smooth running of the surgery. Often breaks for coffee and lunch were sacrificed in order to maintain the appointment schedule. One dental nurse describes this sense of sole responsibility which may be shown by the repeated use of you’re in her description of the routine:

‘I think it can be quite stressful sometimes when you’re running late and you’re trying to catch and you’ve got patients in the waiting room asking when they’re gonna been seen and you’re just… You’ve got, you know, hundreds of things to do’. [1:344 – 346]

Another characteristic of the job was the routine being described as repetitive.

‘I think in general practice for me I just find it quite repetitive’. [1:312]

This repetition became tedious and ultimately influenced their views on remaining in the profession.

‘It is too repetitive I think to do your whole life’. [2:503]

Any variation in the routine was achieved by non-routine clinical procedures and by moving around to work with different dentists.

‘Which is quite good as you’re not stuck with the same one. Like [coughing] working with the same one, you can get a bit irritate each other sometimes. It’s nice to get a change of scenery and see how different people work’. [1:102-104]
This variation offered an opportunity to learn for different dentists as well as a welcomed change to the routine.

4.2.3.3 AUTONOMY

Whilst talking about their daily routine, often dental nurses talked about ‘my surgery’ and ‘my dentist’ and expressed a preference to prepare and set up the surgery to their own personal specifications in terms of layout. This gave the dental nurses an important sense of ownership.

‘I just did my work in my surgery and my surgery is always fine. I don’t every run late in my surgery. So I wouldn’t expect anyone to cover my surgery.’ [2: 85-87]

The emphasis and repetition of the word ‘my’ in the above quote stresses the importance placed on this opportunity for the individual to work independently and contribute to the smooth running of the surgery. It is the only situation where dental nurses have control and sole responsibility of work procedures.

4.2.3.4 SUMMARY OF THEME – FEATURES OF DAILY ROUTINE

This theme suggests that certain tasks being undertaken can be linked with job resources. The features present are autonomy, albeit limited in this context and task significance as shown by time management of appointments, both of which fit into the criteria of tasks associated as being a job resource. (Bakker et al., 2004). However, the responsibility taken to time manage appointments does not extend to starting and finishing times as well as breaks for lunch or coffee. This behaviour of acting independently in the practice may be interpreted as being professional.
4.2.4 DYNAMICS OF DENTAL TEAM

The sub-themes derived from the dynamics were working style of dentist, hierarchy among dental nurses, working relationship with dentists and role of the dental nurses within dental team.

4.2.4.1 WORKING STYLE OF DENTIST

The type of working relationship differed as to whether it was with the dentist or with other dental nurses. In the case of the dentist, it ranged from a relaxed, friendly interaction to a fear of the dentist. Two working styles became apparent:

- supportive
- integrated

The style was dependent on the dentist and the dental nurse had to be able to adapt to different styles when moving between dentists.

‘You feel it was like that a bit scared that you’re not allowed to speak or anything but now when I’m working with the other dentists like when you said you’re working like a team. So he [dentist] works like a team it goes like quicker goes faster and works is really nice so now I’m really enjoying the work and this is really good’, [2: 307-310]

The recreation of a sense of teamwork by the dentist was important as it resulted in a more efficient and relaxed atmosphere, thus moving away from the supporting role and a more reciprocal role in the surgery. In a supportive working style it was felt they were the invisible person in the surgery. Therefore, a preference was given to the integrated style which promoted a sense of being valued and gave satisfaction. This idea of an active and shared role in the surgery is previous described as ‘four-handedness’ and resulted in higher job satisfaction among dental nurses (Gibson et al., 1999).
4.2.4.2 Hierarchy among Dental Nurses

These trainee dental nurses reported a strong feeling of a hierarchy amongst dental nurses. As trainees they are expected to do the same job as qualified dental nurses. However, sometimes, and they got the jobs more senior dental nurses don’t want to do, according to one trainee they are ‘too posh to wash’ [D: 220].

An issue emerged between trainee dental nurses and other dental nurses with grandparent rights. Differences between their approaches to some procedures caused concerns as those undergoing their training were being taught to do some procedures in a different way.

‘Specially with the older nurses already qualified, they’re like, that shouldn’t be done like that and why are they saying you know that shouldn’t be like that and stuff and that’s a load of nonsense ………………………come away with (more) knowledge that what the nurses do there because there’s always new laws’ [D:403 - 407]

This finding suggests that the dental nurses undergoing their registration training are secure in their knowledge of protocols and procedures, and not doing it correctly may relate to being unprofessional.

4.2.4.3 Working Relationship with Dentists

The work relationship with the dentist varied from a relaxed atmosphere in the surgery to actual fear of the dentist. There were boundaries - sometimes unsaid - of acceptable working behaviours, for instance talking to patients was considered to be a complete ‘no-no’ by some dental nurses. Although, as previously mentioned in Section 4.2 this conflicts with an element of their training which includes talking to patients to give oral health advice.
4.2.4.4 The Role of the Dental Nurses within Dental Team

Again this issue of talking to patients emerged when discussing their role as many did not see themselves as a liaison between patient and dentist. It is not their place to speak about clinical matters to patients; it is the role of the dentist. There was a clear perception of role clarity.

‘It’s her [dentist] place to do all the chat and the like the banter with the patient’. [2:326]

Yet, despite views on not speaking to patient was contrary to their training, many felt the importance their role was not always appreciated leading to a feeling of being under-valued.

I think dental nursing is people don’t realise how important we are in a dental-yeah-practice would not move it wouldn’t work if it wasn’t for the nurses'. [D: 572-574]

This view of little recognition was more strongly held if combined with a support-role working style preference by the dentist. Thus, the importance of the dentist’s preference to a particular working style may influence a dental nurse’s views on feeling under-valued. The item of under-valued relates to a dental nurses’ understanding of her task identity, to achieve clarity and boundaries on what is not acceptable as measured on the job demands scale used by Gorter & Freeman (2010).

4.2.4.5 Summary of Dynamics of Dental Team

In summary this theme relates to the dental nurses perception of their role within the dental team. However, often there emerged differences in the level of confidence attained by the dental nurses. They were more confident to voice their training knowledge with their peers in relation to following the correct protocol and procedures but much less so with patients and dentists.
4.2.5 FACTORS INFLUENCING A DENTAL NURSING CAREER

The sub-themes within factors influencing a dental nursing career were becoming a dental nurse, the barriers to remaining in dental nursing and the facilitators to remaining in dental nursing.

4.2.5.1 BECOMING A DENTAL NURSE

Many dental nurses said becoming a dental nurse had not been their first choice; in fact several trainees mentioned being interviewed for other vacancies and the position of a dental nurse being suggested by the practice.

'I just needed a job and I actually originally went for the job as a receptionist in the dental surgery'. [D: 507]

This explanation as to why they became a dental nurse was often for pragmatic reasons as having a job which offered security was more important than having a career for them.

4.2.5.2 BARRIERS TO REMAINING IN DENTAL NURSING

Some characteristics of the work such as repetition along with the perceived lack of a clear career pathway did not encourage staying in dental nursing. The next step of becoming a dental hygienist was difficult as training places were limited.

'There is only 10 places at Dundee University so it’s very competitive to get into-the same dental therapists’. [2:637]

This barrier may increase intention-to-leave as career progression fits into one of the categories of job resources which predicted by the Job Demands-Resources model.

4.2.5.3 FACILITATORS TO REMAINING IN DENTAL NURSING

In response to the question: - Where do you see yourself in 5 years?

Nursing babies - ((laughter)) nursing babies ((laughter)) - I think it will be the bottom of the ladder as a dental nurse ((laughter)) - a well ((laughter))[D: 672 – 673]
This laughter during these comments may suggest embarrassment among the dental nurses about making the choice of motherhood or a career. The ambition to have a family outweighed their desire to have a career. The flexibility and security of the job to meet current or future family needs was more important aspect to being a dental nurse, therefore for many within the group it was not perceived as a profession.

4.2.5.4 SUMMARY OF FACTORS INFLUENCING A DENTAL NURSING CAREER

For many there were clear facilitators and barriers to a career in dental nursing. Many were not looking for a career but the security of a job which fitted in with family commitment. Others who considered a career in dental nursing expressed a wish for more opportunities to progress but the supporting role to dentists and the repetitiveness of clinical procedures was the main barrier.

4.2.6 SUMMARY OF VIEWS

Overall, from the discussion it emerged that these dental nurses prioritised the impact of registration, features of the daily routine, and dynamics of the dental team, family commitment, and provision of career pathway as the factors most experienced by them in their work life and likely to influence a decision to remain in dental nursing as shown in Figure 4.1
Figure 4.1 Illustration of the main themes regarding a career in dental nursing for pre-registration group

Commonly in the literature the job resources of performance feedback, job control, autonomy, work colleague support, task variety and career development are reported (Bakker et al., 2004). These groups of dental nurses described some aspects of their occupation which could be interpreted as partially fulfilling these pre-defined types of job resources. For example, autonomy to set-up and prepare the surgery and support received from other dental nurses. However, the readiness of certain resources such as job control and task variety is limited in this context by the support nature of dental nursing.

The facilitative aspects of the profession for these pre-registration dental nurses included job security from being registered, availability of social support from work colleagues especially other dental nurses, an integrated working style with dentists and some autonomy in the surgery. The dental nursing differentiated by an integrated working style and autonomy in surgery preparation can be linked with membership of team
(Humphris & Peacock, 1992) and smooth running of surgery (G. Byrne & Heyman, 1997), which in turn is associated with professional self-esteem (Gibson et al., 1999).

In contrast, the barrier to the profession was found to be features of the role such as repetition and a being of under-valued resulting in a view that this factor diminished a long-term career in dental nursing. Although perceived as a negative aspect of the job, it is proposed that its impact may be offset by other positive factors which are available to the dental nurse.

In addition, from the data there emerged an underlying latent content of process of professionalisation occurring among these pre-registration dental nurses. However, unlike perhaps other professional qualifications in dentistry the security of the qualified dental nurse with regard to job and career security is different.

4.3.1 Post-registered Dental Nurses

This section turns to work experiences of those dental nurses who have attained registration status and are studying for further post-registration qualifications. The analyses of the transcripts reveal the 3 overarching themes of: (1) impact of registration, (2) qualities of a dental nurse and (3) way forward for dental nursing.

Table 4.7 presents the 3 themes and their sub-themes which emerged from the data. As with the pre-registration groups, the themes discussed by these 2 groups of post registration dental nurses do not reflect any order of the group discussion. Again, some work experiences were discussed more, some less but all themes were indexed as outlined in step 2 of the framework analysis as described in previous Chapter 3 - Methodology chapter, page 38.

The following section discusses each of the themes and their respective sub-themes in turn, and illustrated by quotes. Furthermore, these themes will be discussed in relation
to a proposed process of professionalism, a latent factor which emerged across all the narrative.

Table 4.7 Main themes and sub-themes in narrative of post-registration groups

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4.3.2 IMPACT OF REGISTRATION

The consensual views of this group related to the impact of registration were equality with other professions, particularly with medical nursing, responsibility of the overall dental team, benefits of registration status and maintenance of registration status.

4.3.2.1 EQUALITY WITH OTHER PROFESSION (MEDICAL NURSING)

Often references were made to a comparison between dental nursing and medical registered nursing, in particular, a perception about professional status. For these dental nurses, dental nursing as a profession was viewed as the ‘poor relation’ to medical registered nursing by being 10 years behind in development. Furthermore, they felt it was viewed by many including some from within dental nursing and dentistry as not being perceived as a profession at all.

‘When I came into dental nursing it was like being classed as the lowest of low’. [2:124]

The introduction of registration was an important development as it gives equality, as one dental nurse said:-
Registration for one, mm... actually thankfully recognising dental nursing as a profession on a par with general nursing’. [2:122-123]

This finding suggests these dental nurses perceive themselves as professions but seek acceptance from other professions too. A consequence to being a profession was a salary and work conditions which reflected this status. The remunerations should be consistently applied across dental nursing but also be equivalent to that of medical nurses.

‘I honestly think it’s shocking if (1.0) registered as a professional then they should have a standardised professional pay scale on which whether it be ( ). [1:516-518]

4.3.2.2 DENTAL TEAM RESPONSIBILITY

One aspect discussed was the issue of joint responsibility for clinical procedures among the dental team. Concerns were raised about the pre-registration dental nurses understanding of this and the implication of not speaking up.

‘Don’t seem to realise the implications is if something is wrong and they haven’t spoken up and haven’t highlighted it that they are equally responsible and they will pay the consequences just as much as the dentist’. [2:137-139]

This view about taking responsibility was important as this behaviour was linked to the idea of acting in a professional manner. These post-registration dental nurses verbally acknowledged an understanding of what it is to be a professional person.

‘I think they need to also look at ( ) there are only 5 post qualification certificates to do now and they need to look at doing other.’ [1:356]

4.3.2.3 BENEFITS OF REGISTRATION STATUS

A positive outcome from the introduction of registration is the promotion of dental nursing from a ‘trade’ to a profession.
‘Bringing the profession up into making it pass from a trade to a definite-career-profession and career has been massive.’ [2:128]

However, being a profession required the provision of a career pathway, in particular a larger selection of post-registration courses:

‘I think they need to also look at (.) there are only 5 post qualification certificates to do now and they need to look at doing others.’ [1:535-537]

One dental nurse described how registration made her feel empowered to speak up if unhappy about working conditions. However, it was recognised that in certain situations i.e. dental nurses working a practice where the dentist is their employer the dental nurse are unlikely to benefit as much.

Particularly girls who work in practice who are employed by the dentist they are working with they will not speak up for themselves’. [2:134-136]

Another benefit discussed the recognition of being a registration and feeling as being part of a profession:

‘I think registration has perhaps [aye] (1.0) you know (3.0) given us an mmm... (1.0) more permanent face. It is a recognised profession now as well and I think that when employers has to look at us as being a professional and provide a career (.) pathway. Mmm...you know (1.0) so we can develop ourselves professionally.’ [1: 200-203]

However, this recognition as a profession was not automatically forthcoming from within dentistry itself as illustrated by one nurse’s comment:

‘I think the dental profession perhaps that’s the next step they need to recognise that actually you’ve got very highly qualified -mm...-trained people now with good sound education behind them and I think they could do so much more-This extended duty thing as well-yep’. [1:244-247]
4.3.2.4. MAINTENANCE OF REGISTRATION

Many dental nurses talked about the maintenance of registration (completion of 150 hours of CPD sessions in a 5 year period) and how it was their responsibility. The CPD training could be financed by either the dental nurse or by their employer. There were inconsistencies in the support given by the employer to the dental nurses. A nurse working in the NHS said:-

‘My work do encourage going on courses and we had like in-house training days so they are pretty flexible. (1.0) so everybody’s kinda up to date with their CPD’.[1: 254-255]

Disparity was highlighted by many in that part-time dental nurses are required to pay the same registration fee and complete the same amount of CPD as full-time employed dental nurses. This point in general was viewed by all the dental nurses present as being extremely unfair.

4.3.2.5 SUMMARY OF THEME: IMPACT OF REGISTRATION

The impact of registration was discussed on 2 different levels, namely, the effect on the individual and also the implications for dental nursing. Registration status denoted a professional person but these dental nurses acknowledged that some professional practices were not fully understood by trainees. Its introduction had promoted dental nursing as a career and more recognition as a profession.

4.3.3 QUALITIES OF A DENTAL NURSE

4.3.3.1 PERSONAL SKILLS

Many discussed the skills to deal and cope with the duties of being a dental nurse. In order to be effective in their main role of the smooth running of the daily work schedule in the surgery certain attributes and skills were necessary.

The skills conveyed during the group’s discussions were:-
- Time management - required a dental nurse to be: '
  Very organised' [1:162] and have the ability to be 'Able to not get distressed so easy' [1:166].
- A capacity to adapt - one dental nurse stated: 'You’ve got to be really good to adapt to change as a dental nurse I think mm... ‘Cause the circumstances change all the time and got try anticipate what you’re going to be doing'. [1:152-154]
- Present an image - described by one dental nurse as: 'You’ve to put on a face the whole day [yeah] a smiley face'. [1:168]
- Patience - especially if surgery is not running to time - an example when patience is required: A lot of patience especially if you’re with a dentist that runs late ((laughter)) (3.0) and cause you’re working like with public as well you do get the flak if you’re out sometimes or if you’re running late or they’re not happy about stuff so you’ve got to be able to keep calm, just mm... defuse the situation ((laughter)). [A:170-173]
- Liaise between dentist and patient - as they are perceived themselves as being more approachable than the dentist by the patients.

This clarity on role responsibility echoes the views from the pre-registration; however post-registered nurse’s experience brings acceptability resulting in less need to discuss this aspect of their job. Instead the post-registration group focussed on the attributes of a dental nurse, thus indicated what was required to be a professional person.

What it actually entails in terms of work and study and commitment and the realisation as it dawns this is not just the little job it’s a profession and until people get out of that mind-set, we are not gonna have a better standing' [1:439-462]

A sense of teamwork among dental nurses was apparent with a main purpose of providing support and advice to each other.
‘We’re quite good as nurses as helping each other out. So normally, we’ll just do our bit so it all gets done’. [A: 23]

In contrast, a sense of teamwork with dentists was limited. Many dental nurses reiterated the views dentist’s made assumptions about dental nurses. The common view as stated by one dental nurse was:

‘Yeah, I think with dentists there are a lot of assumptions about what the dental nurses’ job actually involves.’ [D: 74]

4.3.3.2 CLINICAL SKILLS

The general view held by these groups was that the introduction of registration and its required training resulted in the increase in the knowledge of dental nurses. However, the knowledge was viewed to be under-utilised and awareness of its depth was unknown to many dentists.

‘Some of them are quite surprised the depth of knowledge that’s required with the view to passing the qualification now.’ [D: 83]

It was noted that the opportunities to progress whilst working in general practice is not so assessable when compared to working in the NHS.

‘I was in practice for 10 years and I was never encouraged to progress you were cause it was a business and that just obviously to treat patients and that and make money but then I moved to NHS and within a year I was encouraged to a post certificate qualification’. [A: 207-210]

Often, however these dental nurses felt their experience and skills went under recognised.
‘What’s involved with our jobs cause I mean think either a dentist just walks assumes that the surgery is going to be set up and that the dental nurse is going to be ready to go.’ [D: 64-66]

You don’t even think about it it’s ((laughs)) auto pilot almost you just go on and do your usual routine. [A: 70-71]

4.3.4 WAY FORWARD FOR DENTAL NURSING

4.3.4.1 STANDARDISATION OF THE PROFESSION

The introduction of registration had assisted in developing dental nursing exist by giving options but not necessary any financial reward for gaining this qualifications.

4.3.4.2 CAREER PATHWAY

The general view was that the provision of additional qualifications was limited and to support a continuing progression in their career more courses were requested.

4.3.4.3 INTER-PROFESSIONAL PARAMETERS

One dental nurse expressed a concern about dentists and dental care professionals (DCPs) having the same governing body i.e. General Dental Council. The concern related to future incidences of misconduct which may involve both the dentist and the dental nurse and how the ensuing representation would be dealt with for both parties. Concerns about conflict within

4.3.4.4 SUMMARY OF THEME: WAY FORWARD FOR DENTAL NURSING

The over-arching theme emerging from the post-registration dental nurses is the continuing development of professionalism by providing a clear career pathway and recognition within dentistry. One dental summarised her view by saying:
‘we need to have the right calibre of people within the profession to take it forward and prove the GDC and then the clinicians that we are worth what we can do now’. [2:579-582]

4.3.5 SUMMARY OF MAIN THEMES

This exploration into the experiences of dental nurses on a daily basis and thereby to reveal factors which may facilitate or act as a barrier to remaining in the profession. In terms of antecedents to engagement dental nurses talked about the fulfilment with being part of the profession. As a group, already by taking further courses they demonstrate a commitment to the profession and a desire to develop personally. This group recognised their role as dental nurse is important in an effort to improve the image of dental nurses. Also, they reflected more how dental nursing should progress and not so much about their daily routine in the workplace. The main themes emerging from the groups are illustrated in Figure 4.2

Figure 4.2 Illustration of the main themes regarding a career in dental nursing for post-registration group
4.3.6 COMPARISON BETWEEN PRE-REGISTRATION AND POST-REGISTRATION DENTAL NURSES

These two groups of pre-registration and post-registration dental nurses, although not significantly different in terms of demographics, except for job tenure and work engagement scores did have varying views about dental nursing.

Not surprisingly, the introduction of registration by the General Dental Council in 2008 was the major theme to be discussed by both groups; however, its impact differed between the groups. The importance and the amount of weight placed on registration as it emerged in the themes discussed by the pre-registration and post registration groups was quite different. Pre-registered dental nurses talked about its impact being personal to them and did not relate it to dental nursing as a profession.

In contrast, those dental nurses who were registered, looked at the ‘bigger picture’, and viewed the introduction of statutory registration in terms of how it would benefit the whole dental nursing profession in time. A second example of this internalised personal aspect of the pre-registration group was shown by negative views about the daily routine, and how it was repetitive for them, which again did not emerge as a theme for discussion by the post registration dental nurses. Furthermore, the post-registration groups expressed their views more confidently when compared to the pre-registration group.

One theme salient to both groups was the provision of a career pathway in dental nursing. Whilst the post-registration group recognised its existence by undergoing their current further qualification training and expressing a wish for more options, the pre-registration group stated progression was limited and not easily accessible for them.
4.3.7 PROCESS OF PROFESSIONALISM

In the exploration of themes salient to dental nurses the analysis uncovered a latent theme running throughout the manifest themes of both pre-registration and post-registration dental nurses. It is proposed that the development of a professional process characterised by security and independency may explain why a dental nurse remains in the discipline of dental nursing. The learning and implementation of professional behaviours such as dealing with tasks, dealing with others and dealing with oneself (Bakker et al., 2008) was different between the 2 registration status groups.

More noticeably, the levels of these professional behaviours varied within the pre-registration dental nurses. The proposed professional process during registration training is illustrated in Figure 4.4 by showing how some dental nurses ‘drop out’ before completing their registration whilst other become professionalised and remain in dental nursing. The pre-registration reported insecurities about their personal competencies to provide oral health care to patients. Some dental nurses looked for support from the dentist in the surgery and were reliant on their employer to pay registration fees. Nevertheless, the responsibility of looking after the surgery resulted in professional self-
esteem, however if this role was not valued the pre-registration dental nurses reported dis-contentment.

In contrast, the post-registration dental nurses’ demonstrated professionalism by understanding the inner values and attributes of being a professional person and also looked outward in consideration of the public’s views of dental nursing.

4.3.8 DISCUSSION

The purpose of the study was to explore the work experiences which support and encourage dental nurses and consequently have an influence on the intention to leave the profession. The framework analysis provided a useful method for understanding the job resources and demands present in the work place. Many of the themes that arose among pre-registration dental nurse related to familiar issues highlighted in the dental literature such as being under-valued, shared role with dentist and smooth running of surgery (Gibson et al, 1999). The daily routine if composed of feelings of being integrated in the dental team and being valued can encourage an intention to remain. However, a work place which results in feelings of being taken for granted, along with essentially a supportive role, can discourage and may lead to thinking about leaving dental nursing.
Furthermore, these findings augment the understanding of the real work experiences of
dental nurses in each of the registration status groups. A fundamental assumption of the
JD-R model as referred to in the literature review is that although every occupation has
its specific work characteristics, it is still possible to include these characteristics within
either work resources or job demands. Within the context of dental nursing the
availability support of co-workers, having sole responsibility within surgery, and an
integrated working style developing a sense of team-work have all been shown to act as
job resources. In addition, these dental nurses are striving for acceptability as a
professional on a personal level from within dentistry as well as for dental nursing as a
whole across the professions.

However, the relationship between job resources and professional behaviour is unclear.
This ambiguity raises the question of what drives professional behaviour. Job resources
may provide some explanation but other factors related to career choice and family
commitment may contribute to intentions to leave the profession. An explanation of the
reason for dental nurses’ leaving the profession may be considered as an interaction of
these job resources, development of professional behaviour and personal resources.

4.3.9 DERIVATION OF JOB DEMANDS AND RESOURCES QUESTIONNAIRE

The themes emerging from the discussions provided information on the importance of
both intrinsic and extrinsic job resources among these 4 groups of pre-registration and
post-registration dental nurses. These job resources which are illustrated in Figure 4.3
(Page 98) were the basis of the new author-designed questionnaire to measure job
resources. Subsequently, the questionnaire was derived from the following job resources:
professional growth and status, daily routine, provision of career pathway, dynamic of
dental team, sense of feeling valued and family commitment. The specific wording of the
each question endeavoured to measure the salience of a job resource separately as shown
below in Table 4.8. The job resource of professional growth and status contained a
variety of attributes such as the impact of the training and the benefits and implications of registration as a consequence 5 questions were required to measure all its different aspects.

Table 4.8 Derivation of question content from theme emerging from data analysis in 2nd phase of research (numbers in brackets denotes the order in JDR section of questionnaire)

<table>
<thead>
<tr>
<th>JOB DEMANDS and RESOURCES</th>
<th>QUESTION</th>
</tr>
</thead>
</table>
| PROFESSIONAL GROWTH AND STATUS | - The introduction of compulsory registration will benefit dental nursing (1)  
- I fully understand the implication of professional registration (2)  
- I am able to use all my skills learned during training whilst in the surgery (3)  
- The preparation and setting up of the surgery gives me a sense of ownership (4)  
- Patients are unaware of the duties of a dental nurse (10) |
| DAILY ROUTINE | - The daily work routine is repetitive (5) |
| PROVISION OF CAREER PATHWAY | - There is a clear pathway of career development for dental nurses (6) |
| DYNAMICS OF DENTAL TEAM | - I have a good working relationship with other dental nurses in the practice (7) |
| FEELING VALUED | - I am taken for granted by the dentists in my practice (8) |
| FAMILY COMMITMENTS | - Interpretation and explanation of qualitative and quantitative results (9) |

These 10 questions are the constituent parts of the JDR section of the overall survey. Four other were sections included in the survey. A single section was constructed to gather the demographical details and three further sections were included to measure the work engagement, personal accomplishment and intention-to-leave respectively.

The development of this survey fulfilled the product element of the 3rd phase of the research design and the procedural stage of collecting the quantitative data for the 4th phase of the research.
4.3.10 SUMMARY OF THE CHAPTER

This chapter reported the findings of the qualitative phase of the study. The narrative data was analysed using framework analysis (Ritchie & Spencer, 1994) into themes. This analysis investigates the present of the salient themes and sub-themes, but does not offer an explanation of relative significance, an interaction between them and any relationship with work engagement and future intentions to leave dental nursing. The themes formulated are used subsequently to inform the development of a questionnaire, results of which are reported in Chapter 5 - Quantitative findings.
Chapter 5 - Quantitative Findings

This chapter reports and interprets the data from the quantitative component of the research. It contains the demographic profile of the sample group responding to the survey. The bivariate correlations, means, standard deviations and internal reliability of the 4 instruments used to measure work engagement (WE), personal accomplishment (PA - a dimension of MBI), job demands and resources (JDR) and intention to leave (InToL) are shown and described.

Further analyses of the subscales and items within each of the 4 key variables of WE, JDR, PA and InToL are described and analysed. In addition factor analysis is conducted on the self-developed scale of job demands and resources to determine its dimensionality. Regression analysis follows on JDR, PA and WE as predictors of intention to leave.

Finally the mediating role of WE and PA is investigated and the research model is tested using structural equation modelling (SEM).

5.1 Response Sample

Initially a total of 5 locations were approached to take part in the study, however a further 5 were recruited with assistance from the tutor from one location. Hence, the dental nurses under training at 10 locations were invited to participate in the study. These 10 locations were a combination of NES training centres, NHS Health Board training courses and further education colleges across Scotland.

The total number of surveys completed and returned was 269 (pre-registration \( n = 241 \); post-registration \( n = 28 \)). On the day of the training course, the survey was distributed to each group for completion and the course tutors self-reported the potential number of dental nurses present at that time. The course tutors reported an accumulative score of 281 pre-registration dental nurses present. Ten surveys with missing values (> 25% of item total) were removed from the data set and where < 25% of items were missing (16
items) the mean substitution values were computed; resulting in 231 pre-registration dental nurse surveys included for analyses purposes. The response rate was 82% for pre-registration group (231/281). The response rate for post-registration dental nurses is unknown as no self-report of potential number of post-registration dental nurses was not completed by the course tutors. However, the expectation is that the response rate would be of a similar level to that of the pre-registration dental nurses. Although less post-registration dental nurses (n = 28) completed the survey, these post-registration qualification courses are attended by fewer dental nurses. This difference in the numbers of pre-registration and post-registration is supported by observations made by the researcher during the recruitment for focus groups in the qualitative stage (Phase one) of the research.

5.2 Dental Nurse Demographics
The demographic data consisting of 9 variables included details on the registration status, number of years qualified (post-registration dental nurses only), employer’s practice type, number of number of hours worked, number of dental nurses employed at practice, number of different dentists worked with in a month, practice location, job tenure and age.

This data is reported separately in two parts (1) categorical items relating to registration status, practice type and location, and employment status and (2) continuous data including the number of dental nurses in practice, number of dentists worked with per month, number of years at practice and age. Furthermore, the presentation of the data is divided into the 2 registration status groups of pre-registration and post-registration dental nurses. Finally, due to distribution of the sample the non-parametric Mann-Whitney U test was used to compare the demographic variables of number of dental nurses in practice, number of dentists worked with, job tenure and age between the 2 groups of registration status.
5.2.1 CATEGORICAL DATA

A description of the distribution of response for the employers’ practice type, hours worked and practice location for both registration groups is shown in Table 5.1.

Table 5.1 Distribution of employers’ practice type, hours worked and practice location for pre-registration and post-registration dental nurses (N = 259)

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-registration (n = 231)</th>
<th>Post-registration (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Employers’ practice type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHS</td>
<td>36%</td>
<td>71%</td>
</tr>
<tr>
<td>Private</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>NHS &amp; Private</td>
<td>60%</td>
<td>25%</td>
</tr>
<tr>
<td>(3) Number of hours worked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>85%</td>
<td>71%</td>
</tr>
<tr>
<td>Part-time</td>
<td>15%</td>
<td>29%</td>
</tr>
<tr>
<td>(6) Practice location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>41%</td>
<td>43%</td>
</tr>
<tr>
<td>Rural</td>
<td>57%</td>
<td>54%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

As can be seen in Table 5.1 the majority of pre-registration dental nurses (n = 137) worked in NHS & private practices whereas the most of the dental nurses attending further qualifications post-registration (n = 20) worked for the NHS. More post-registration dental nurses worked part-time compared to the pre-registration group of dental nurses, however the location of the practice were similar between the two groups.

5.2.2 CONTINUOUS DATA

The results of the demographic data for the items of number of dental nurses in practice, number of dentists worked with per month, number of months at this practice and age divided into pre-registration and post-registration dental nurses are shown on Table 5.2 and Table 5.3 respectively.
Table 5.1 Demographic items 4, 5, 7 and 8 scores for pre-registration nurses (mean, median, standard deviation (SD), minimum and maximum scores, range and interquartile range (IQR)) (n = 231)

<table>
<thead>
<tr>
<th>Pre-registered dental nurses</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Q4) N of dental nurses in practice (n = 221)</td>
<td>9.06</td>
<td>5.00</td>
<td>14.7</td>
<td>1</td>
<td>100</td>
<td>99</td>
<td>4.00</td>
</tr>
<tr>
<td>(Q5) N of dentists worked with per month (n = 229)</td>
<td>3.44</td>
<td>2.00</td>
<td>5.1</td>
<td>1</td>
<td>50</td>
<td>49</td>
<td>3.00</td>
</tr>
<tr>
<td>(Q7) N of months in this practice (n = 229)</td>
<td>17.54</td>
<td>14.00</td>
<td>15.3</td>
<td>1</td>
<td>151</td>
<td>150</td>
<td>15.00</td>
</tr>
<tr>
<td>(Q8) Age (n = 231)</td>
<td>25.01</td>
<td>23.00</td>
<td>6.8</td>
<td>18</td>
<td>55</td>
<td>37</td>
<td>8.00</td>
</tr>
</tbody>
</table>

Fifteen dental nurses reported job tenure longer than 34 months\(^1\) therefore, their employment at the practice commenced before the requirement of compulsory registration in August 2008.

Table 5.2 Demographic items 4, 5, 7 and 8 scores for post-registration dental nurses (mean, median, standard deviation (SD), minimum and maximum scores, range and interquartile range (IQR)) (n = 28)

<table>
<thead>
<tr>
<th>Post-registered dental nurses</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Q1) Registration - How many years qualified (n = 27)</td>
<td>6.24</td>
<td>4.00</td>
<td>5.27</td>
<td>1</td>
<td>22</td>
<td>21</td>
<td>7.50</td>
</tr>
<tr>
<td>(Q4) N of dental nurses in practice (n = 27)</td>
<td>12.52</td>
<td>7.00</td>
<td>13.46</td>
<td>2</td>
<td>70</td>
<td>68</td>
<td>13.00</td>
</tr>
<tr>
<td>(Q5) N of dentists worked with per month (n = 28)</td>
<td>3.71</td>
<td>3.00</td>
<td>2.98</td>
<td>1</td>
<td>10</td>
<td>9</td>
<td>3.00</td>
</tr>
<tr>
<td>(Q7) N of months in this practice (n = 28)</td>
<td>47.04</td>
<td>34.50</td>
<td>31.82</td>
<td>6</td>
<td>121</td>
<td>115</td>
<td>36.00</td>
</tr>
<tr>
<td>(Q8) Age (n = 28)</td>
<td>32.39</td>
<td>28.00</td>
<td>10.36</td>
<td>21</td>
<td>58</td>
<td>37</td>
<td>14.75</td>
</tr>
</tbody>
</table>

A Mann-Whitney U test was conducted to compare the demographic data response scores between the pre-registration and post-registration 2 groups. The findings indicated that for post-registration dental nurses the number of dentists worked with per month did not differ from pre-registration dental nurses. However, post-registration nurses reported higher numbers of dental nurses in practice. This result was significantly different, \(U = 2160.50; p < .05\). Also, this group reported a higher duration of job tenure (number of months in this practice) and age, the result was highly significant \(U = 1026.00, p < .000\) and \(U = 1626.50, p < .000\) respectively. The median (IQR) scores

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\(^1\) Period of time elapsed since August 2008 (Introduction date of compulsory registration by GDC) and completion of questionnaire in May 2011.
among post-registration dental nurses was for number of dental nurses 7 (13), job tenure 34.5 (36) and age 28 (14.75). For the pre-registration dental nurses the scores were 5 (4), 14 (15) and 23 (8) respectively.

5.3 **WORK ENGAGEMENT**
In the survey work engagement was measured by the Work and Well-being Survey (UWES)©. Initially, the findings are presented separately by registration group. The results report the mean scores of the sub-scales of work engagement as well as the standard deviations and the inter-item correlations. The reliability and internal consistency is verified by the Cronbach’s alpha. Finally consideration was given to a difference in the level of work engagement between the 2 registration groups.

5.3.1 **PRE-REGISTRATION DENTAL NURSES**
The results for the pre-registration dental nurses are presented in the correlation matrix (Table 5.4) with the means, standard deviation and Cronbach’s alphas for each of 3 subscales of work engagement: vigour, dedication and absorption.

The mean score of the sub-scales varies between 3.75 and 4.50. The dental nurses scored highest on the dedication subscale and lowest on the vigour subscale. All the correlations among the 3 sub-scales of work engagement were positive and significant. Each of the sub-scales has an acceptable Cronbach’s alpha, with all exceeding the 0.70 criterion (Nunnally & Bernstein, 1994).

Table 5.4 **Mean, standard deviations (SD) and correlation matrix for pre-registration dental nurses** (n = 231)

<table>
<thead>
<tr>
<th>Sub-scales</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Mean (Norm)</th>
<th>SD  (Norm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Vigour</td>
<td>3.75</td>
<td>1.15</td>
<td>[0.78]</td>
<td></td>
<td></td>
<td>4.18</td>
<td>1.24</td>
</tr>
<tr>
<td>2 Dedication</td>
<td>4.50</td>
<td>1.11</td>
<td></td>
<td>0.76**</td>
<td>[0.81]</td>
<td>4.28</td>
<td>1.36</td>
</tr>
<tr>
<td>3 Absorption</td>
<td>3.95</td>
<td>1.12</td>
<td>0.71**</td>
<td>0.75**</td>
<td>[0.76]</td>
<td>3.68</td>
<td>1.43</td>
</tr>
</tbody>
</table>

** p<0.01
Note: Cronbach’s alphas are on the diagonal in square brackets
Further analysis found the pre-registration dental nurses in this study were more dedicated (p < 0.0001), and absorbed (p < 0.007) and had less vigour (p < 0.0001) when compared with the UWES manual norm values.

5.3.2 Post-registration dental nurses

Table 5.5 presents the correlation matrix with the mean, standard deviation and Cronbach’s alphas for each of 3 subscales of work engagement: vigour, dedication and absorption for post-registration dental nurses. The scores of the sub-scales range from 3.55 to 4.21. The highest score was dedication and vigour was the lowest. All the correlations among the 3 sub-scales of work engagement were positive and significant. The Cronbach’s alpha for each of the 3 subscales range from 0.66 to 0.77, therefore the UWES-9 was found to be reliable. The alphas were computed for the sake of completeness, however, the sample size is small therefore the precision of the reliability coefficient estimate is likely to be low.

Table 5.5 Mean, standard deviation (SD) and correlation matrix for post-registration dental nurses (n = 28)

<table>
<thead>
<tr>
<th>Sub-scales</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Vigour</td>
<td>3.55</td>
<td>1.39</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Dedication</td>
<td>4.21</td>
<td>1.27</td>
<td>0.73**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3 Absorption</td>
<td>3.77</td>
<td>1.26</td>
<td>0.66**</td>
<td>0.77**</td>
<td>-</td>
</tr>
</tbody>
</table>

** p<0.01

5.3.3 A Comparison between the Pre-registration and Post-registration Dental Nurses

A further examination of the scores on the sub-scales of work engagement for the pre-registration group and post-registration groups were compared using the Mann-Whitney U test. It indicated no significant difference between the 2 groups for the work engagement sub-scales of vigour, dedication and absorption (all p's > 0.05).
5.4 PERSONAL ACCOMPLISHMENT

In the study, personal accomplishment (PA) was measured by the 8 items taken from its sub-scale in the Maslach Burnout Inventory. The reported findings include a description of the PA scores, the Pearson's r correlation to assess the relationship between the items measuring PA and the consistency, i.e. reliability (Cronbach's alpha). These results for each registration status of the dental nurses are reported separately. Lastly, a comparison between the mean scores of PA for the 2 registration status groups using a Mann-Whitney U test was examined.

5.4.1 PRE-REGISTRATION DENTAL NURSES

The findings from this group are presented in the inter-item correlation matrix below (Table 5.6) together with means and standard deviation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>PA1</th>
<th>PA2</th>
<th>PA3</th>
<th>PA4</th>
<th>PA5</th>
<th>PA6</th>
<th>PA7</th>
<th>PA8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td>4.54</td>
<td>1.09</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>4.55</td>
<td>1.14</td>
<td>0.62**</td>
<td>0.48**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA3</td>
<td>3.89</td>
<td>1.33</td>
<td>0.46**</td>
<td>0.45**</td>
<td>0.48**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA4</td>
<td>4.06</td>
<td>1.31</td>
<td>0.45**</td>
<td>0.45**</td>
<td>0.48**</td>
<td>0.54**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA5</td>
<td>4.67</td>
<td>1.06</td>
<td>0.55**</td>
<td>0.42**</td>
<td>0.52**</td>
<td>0.52**</td>
<td>0.57**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA6</td>
<td>4.04</td>
<td>1.28</td>
<td>0.41**</td>
<td>0.44**</td>
<td>0.42**</td>
<td>0.52**</td>
<td>0.61**</td>
<td>0.66**</td>
<td>0.55**</td>
<td></td>
</tr>
<tr>
<td>PA7</td>
<td>4.00</td>
<td>1.40</td>
<td>0.42**</td>
<td>0.38**</td>
<td>0.42**</td>
<td>0.67**</td>
<td>0.54**</td>
<td>0.49**</td>
<td>0.69**</td>
<td></td>
</tr>
<tr>
<td>PA8</td>
<td>4.51</td>
<td>1.20</td>
<td>0.45**</td>
<td>0.49**</td>
<td>0.41**</td>
<td>0.40**</td>
<td>0.48**</td>
<td>0.49**</td>
<td>0.53**</td>
<td></td>
</tr>
</tbody>
</table>

** p<0.01

The pre-registration dental nurses scored highest on item PA5 ('I can easily create a relaxed atmosphere with my patients') and lowest level of agreement on item PA3 ('I have accomplished many worthwhile things in this job'). There was a positive correlation between the all the items (0.43 < r < 0.67). A good level of internal consistency was reported by a Cronbach's alpha score of 0.89.
5.4.2 Post-registration Dental Nurses

Table 5.7 below presents the findings from the post-registration dental nurses.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>PA1</th>
<th>PA2</th>
<th>PA3</th>
<th>PA4</th>
<th>PA5</th>
<th>PA6</th>
<th>PA7</th>
<th>PA8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td>4.68</td>
<td>0.98</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>4.61</td>
<td>1.13</td>
<td>0.81**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA3</td>
<td>3.68</td>
<td>1.16</td>
<td>0.62**</td>
<td>0.47*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA4</td>
<td>3.71</td>
<td>1.56</td>
<td>0.47*</td>
<td>0.48**</td>
<td>0.44*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA5</td>
<td>4.68</td>
<td>0.91</td>
<td>0.67**</td>
<td>0.63**</td>
<td>0.39*</td>
<td>0.20</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA6</td>
<td>3.86</td>
<td>1.08</td>
<td>0.65**</td>
<td>0.62**</td>
<td>0.35</td>
<td>0.28</td>
<td>0.67**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA7</td>
<td>4.11</td>
<td>1.23</td>
<td>0.52**</td>
<td>0.54**</td>
<td>0.65**</td>
<td>0.27</td>
<td>0.57**</td>
<td>0.46*</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>PA8</td>
<td>3.93</td>
<td>1.22</td>
<td>0.72**</td>
<td>0.71**</td>
<td>0.62**</td>
<td>0.50**</td>
<td>0.55**</td>
<td>0.61**</td>
<td>0.70**</td>
<td>-</td>
</tr>
</tbody>
</table>

** p<0.01; * p<0.05

The post-registration dental nurses scored lowest on item PA3 ('I have accomplished many worthwhile things in this job') and both the items PA1 ('I can easily understand how my patients feel about things') and PA5 ('I can easily create a relaxed atmosphere with my patients') scored the highest. In most of the items, there was a positive correlation (0.20 < r < 0.81), however, no significant correlation was found between item PA3 and item PA6; item 4 with items PA5, PA6 and PA7. A Cronbach's alpha coefficient of 0.89 indicates a good internal consistency of the items.

5.4.3 A Comparison (Mann-Whitney U Test) Between the Registration Status and Personal Accomplishment

One item of the PA showed a significant difference between the two registration status groups (p = .013). Pre-registration dental nurses had a higher mean score of 133.89 for item PA8 ('In my work, I deal with emotional problems very calmly') than the a mean score of 97.95 for post-registration dental nurses.
5.5 Job Demands and Resources

This section examines the findings of the self-developed instrument measuring 10 items of job demands and resources (JDR). This section of results refers to pre-registration dental nurses only. Firstly, it describes the frequency distribution of the responses to the 10 items and secondly it reports the item means, standard deviations and inter-item correlation matrix.

In the JDR section of the survey the dental nurses scored highest on ‘Good working relationship with other dental nurses’ (91%). ‘Taken for granted’ scored the lowest (40%) and also the highest negative agreement (48%). The highest score of uncertainty was rated by 23% of dental nurses to ‘A clear pathway of career’. Table 5.8 presents rating scores expressed as percentages into negative, neutral and positive agreement categories.

Table 5.8 Measures of agreement to items of job demands and resources of by percentage for pre-registration dental nurses (n = 231)

<table>
<thead>
<tr>
<th>Job Demands and Resources</th>
<th>Strongly +VE†</th>
<th>+VE†</th>
<th>Uncertainty</th>
<th>-VE††</th>
<th>Strongly -VE††</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Compulsory registration benefit</td>
<td>3%</td>
<td>8%</td>
<td>16%</td>
<td>38%</td>
<td>35%</td>
</tr>
<tr>
<td>2 - Implication of professional registration</td>
<td>2%</td>
<td>4%</td>
<td>13%</td>
<td>35%</td>
<td>46%</td>
</tr>
<tr>
<td>3 - Use training skills</td>
<td>3%</td>
<td>10%</td>
<td>6%</td>
<td>43%</td>
<td>38%</td>
</tr>
<tr>
<td>4 - Setting up /sense of ownership</td>
<td>4%</td>
<td>11%</td>
<td>8%</td>
<td>47%</td>
<td>30%</td>
</tr>
<tr>
<td>5 - Daily work repetitive</td>
<td>3%</td>
<td>19%</td>
<td>9%</td>
<td>43%</td>
<td>26%</td>
</tr>
<tr>
<td>6 - Clear pathway of career</td>
<td>4%</td>
<td>10%</td>
<td>23%</td>
<td>45%</td>
<td>18%</td>
</tr>
<tr>
<td>7 - Good working relationship</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
<td>35%</td>
<td>56%</td>
</tr>
<tr>
<td>8 - Taken for granted</td>
<td>20%</td>
<td>28%</td>
<td>12%</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>9 - Balance work and family life</td>
<td>3%</td>
<td>9%</td>
<td>15%</td>
<td>48%</td>
<td>25%</td>
</tr>
<tr>
<td>10 - Patients unaware of duties</td>
<td>5%</td>
<td>6%</td>
<td>10%</td>
<td>35%</td>
<td>44%</td>
</tr>
</tbody>
</table>

† includes the ‘completely’, ‘strongly’, ‘agree’ and ‘slightly’ agree categories, collapsed for presentation purposes
†† includes the ‘completely’, ‘strongly’, ‘disagree’ and ‘slightly’ disagree categories, collapsed for presentation purposes

The correlation matrix of the 10 items measuring the JDR is presented below in Table 5.9 along with the mean, and standard deviations.
Table 5.9 Mean, standard deviation (SD) and correlation matrix for pre-registration dental nurses (n = 231)

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>JDR1</td>
<td>5.47</td>
<td>1.5</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR2</td>
<td>5.82</td>
<td>1.37</td>
<td>0.54**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR3</td>
<td>5.61</td>
<td>1.47</td>
<td>0.39**</td>
<td>0.40**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR4</td>
<td>5.43</td>
<td>1.5</td>
<td>0.38**</td>
<td>0.29**</td>
<td>0.48**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR5</td>
<td>5.17</td>
<td>1.58</td>
<td>0.14*</td>
<td>0.13</td>
<td>0.12</td>
<td>0.19**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR6</td>
<td>5.02</td>
<td>1.43</td>
<td>0.27**</td>
<td>0.24**</td>
<td>0.25**</td>
<td>0.38**</td>
<td>0.16*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR7</td>
<td>6.11</td>
<td>1.28</td>
<td>0.29**</td>
<td>0.29**</td>
<td>0.25**</td>
<td>0.35**</td>
<td>0.01</td>
<td>0.26**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR8</td>
<td>4.00</td>
<td>1.97</td>
<td>0.02</td>
<td>-0.09</td>
<td>-0.15*</td>
<td>-0.08</td>
<td>0.27**</td>
<td>-0.05</td>
<td>-0.30**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR9</td>
<td>5.24</td>
<td>1.44</td>
<td>0.18**</td>
<td>0.16*</td>
<td>0.01</td>
<td>0.14*</td>
<td>0.12</td>
<td>0.17*</td>
<td>0.28**</td>
<td>-0.18**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDR10</td>
<td>5.66</td>
<td>1.64</td>
<td>0.05</td>
<td>0.16*</td>
<td>-0.07</td>
<td>0.09</td>
<td>0.18**</td>
<td>0.16*</td>
<td>0.24**</td>
<td>0.18**</td>
<td>0.12</td>
<td></td>
</tr>
</tbody>
</table>

** p<0.01; *p<0.05

A set of analyses reveals the mean score varies between 4.00 (item JDR 8) and 6.11 (item JDR 7). The dental nurse scored the highest level of agreement on item 7 (‘I am able to use all the skills learned during training whilst in the surgery’) and lowest level of agreement on item 8 (‘I am taken for granted by the dentists in my practice’).

An examination of the correlation matrix presented above reveals the Pearson’s r coefficients of the 10 items range from the lowest of 0.01 to the highest of 0.54. This variation of scores challenges the unidimensionality of the 10 item scale. As a consequence, factor analysis was performed on the 10 JDR items to explore whether these items were measuring an underlying dimension. The reliability of the scale comprising the 10 JDR items was just acceptable with a Cronbach’s alpha coefficient of 0.64.

5.6 INTENTION-TO-LEAVE

This section refers to pre-registration dental nurses only. Twenty-two percent of dental nurses thought about leaving their job and 24% intended to leave their job during the next year. Nearly three-quarters of dental nurses (74%) responded negatively to intentions to leave dental nursing; 12% positively and 14% uncertain (Table 5.10).
Correlations between the three items were high (range of R values = 0.66 to 0.74). The internal consistency was highly reliable with a Cronbach’s alpha coefficient of 0.87.

Table 5.10 Measures of agreement to items of Intention-to-Leave by percentage for pre-registration dental nurses (n = 231)

<table>
<thead>
<tr>
<th>INTENTION TO LEAVE</th>
<th>+VE</th>
<th>Neutral</th>
<th>-VE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often think about quitting my job</td>
<td>22%</td>
<td>10%</td>
<td>68%</td>
</tr>
<tr>
<td>I intend to change jobs during the next year</td>
<td>24%</td>
<td>13%</td>
<td>63%</td>
</tr>
<tr>
<td>I intend to leave dental nursing</td>
<td>12%</td>
<td>14%</td>
<td>74%</td>
</tr>
</tbody>
</table>

† includes the ‘completely’, ‘strongly’, ‘agree’ and ‘slightly’ agree categories, collapsed for presentation purposes
†† includes the ‘completely’, ‘strongly’, ‘disagree’ and ‘slightly’ disagree categories, collapsed for presentation purposes

The variable of intention-to-leave was measured by 3 self-developed items. The results of the findings are detailed in Table 5.10 below.

Table 5.11 Mean, standard deviation (SD) and correlation matrix for pre-registration dental nurses (n = 231)

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I often think about quitting my job</td>
<td>3.47</td>
<td>2.56</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I intend to change jobs during the next year</td>
<td>3.47</td>
<td>2.62</td>
<td>0.74**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>I intend to leave dental nursing</td>
<td>2.88</td>
<td>2.28</td>
<td>0.69**</td>
<td>0.65**</td>
<td>-</td>
</tr>
</tbody>
</table>

** p<0.01

The mean score varies between 2.88 (item 3) and 3.47 (item 1). The dental nurse scored highest level of agreement on both item 1 (I often think about quitting my job) and item 2 (I intend to change jobs during the next year) and lowest level of agreement on item 3 (I intend to leave dental nursing).

5.7 Factor Analysis

The self-developed items to measure the job characteristics of dental nurses underwent factor analysis to investigate for the presence of underlying latent variables. The procedures to examine the factor analysis followed the well recognised criteria outlined by Thompson (2005).

These will consist of (1) testing for assumptions (2) extraction methods (3) rotation and the loading of factors and (4) interpretation and naming of components.
Firstly, an examination of the factorability of the correlations of the 10 JDR items found in the matrix of correlation coefficients that 6 of the 10 items correlated as least 0.3, suggesting reasonable factorability. Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.736, above the recommended value of .6, and Bartlett’s test of sphericity was significant ($\chi^2 (45) = 417.81, p < .0001$), therefore supporting the factorability of the inter-item correlation matrix. Finally, the communalities were all above 0.35 (see table 5.13 below) further confirming that each item shared some common variance with other items. These overall findings support the computing of factor analysis on all JDR 10 items.

Principal components analysis was selected because it fitted the purpose of identifying the underlying components to the JDR variable. The initial Eigen values shows the 1st factor explains 29% of the variance, 2nd factor 14% of the variance and 3rd factor 12% of the variance. The factors 4-10 had eigen values under 1.0. Further analyses showed little difference between varimax and oblimim solutions. Therefore, the 3 factor solution using varimax rotation was preferred as it explained 56% of the variance. Also inspection of the scree plot (presented in Figure 5.1) showed a ‘flattening off’ of the eigen values after the 3 factors.

![Scree Plot](image)

**Figure 5.1** Scree plot of the eigenvalues indicating the extraction of factors (Dotted line superimposed to show randomness of the eigenvalues component 4 upwards)
All items had primary loadings over 0.6 except for item 6 (‘There is a clear pathway of career development for dental nurses’) which had a cross loading of above 0.3. Another 2 items (Patients are unaware of the duties of a dental nurse and ‘I have a good working relationship with other dental nurses in the practice’) had cross loadings above 0.4, however both items has a primary loading above 0.6. It was decided by convention that membership of the items to a particular factor would be indicated by the highest loading. The factor loading matrix for the varimax solution is shown on Table 5.13 below).

Table 5.12 Factor loadings and communalities based on principle component analysis with varimax rotation for 10 items of JDR (Pre-registration dental nurses n = 231; items sorted by factor loading size)

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 I am able to use all the skills learned during training whilst in the surgery</td>
<td>0.792</td>
<td>-0.021</td>
<td>-0.110</td>
<td>0.640</td>
</tr>
<tr>
<td>1 The introduction of compulsory registration will benefit dental nursing</td>
<td>0.741</td>
<td>0.024</td>
<td>0.137</td>
<td>0.569</td>
</tr>
<tr>
<td>2 I fully understand the implication of professional registration</td>
<td>0.703</td>
<td>0.146</td>
<td>0.094</td>
<td>0.523</td>
</tr>
<tr>
<td>4 The preparation and setting up of the surgery gives me a sense of ownership</td>
<td>0.670</td>
<td>0.190</td>
<td>-0.011</td>
<td>0.485</td>
</tr>
<tr>
<td>6 There is a clear pathway of career development for dental nurses</td>
<td>0.475</td>
<td>0.339</td>
<td>0.069</td>
<td>0.345</td>
</tr>
<tr>
<td>10 Patients are unaware of the duties of a dental nurse</td>
<td>-0.101</td>
<td>0.690</td>
<td>0.455</td>
<td>0.694</td>
</tr>
<tr>
<td>9 I am able to balance my work and my family life</td>
<td>0.122</td>
<td>0.857</td>
<td>-0.125</td>
<td>0.462</td>
</tr>
<tr>
<td>7 I have a good working relationship with other dental nurses in the practice</td>
<td>0.391</td>
<td>0.642</td>
<td>-0.221</td>
<td>0.614</td>
</tr>
<tr>
<td>8 I am taken for granted by the dentists in my practice</td>
<td>-0.072</td>
<td>-0.270</td>
<td>0.797</td>
<td>0.707</td>
</tr>
<tr>
<td>5 The daily work is repetitive</td>
<td>0.198</td>
<td>0.125</td>
<td>0.703</td>
<td>0.549</td>
</tr>
</tbody>
</table>

Note: Factor loadings > 0.3 in bold

The labels proposed to describe the extracted factors are (1) Professional resources (2) Relationships with colleagues, patients and family and (3) Characteristics of work.

5.8 Relationship between the key variables

Correlational and regression analyses were used to assess whether the relationship between the outcome variable of intention-to-leave and the predictor variables of job resources and demands (JDR) work engagement (WE) and personal accomplishment (PA) are in the expected direction as delineated by the JD-R model.

The descriptive statistics and correlations of the 3 key variables of work engagement, personal accomplishment and intention-to-leave along with the 3 latent factors of job
resources and demands are divided into the groups of pre-registration and post-registration. The results are presented in Table 5.13 and Table 5.14 respectively.

Table 5.13 Mean, standard deviation (SD) and correlation matrix for pre-registration dental nurses (n = 231)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Engagement</td>
<td>1</td>
<td>36.58</td>
<td>9.2</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Accomplishment</td>
<td>2</td>
<td>34.37</td>
<td>7.5</td>
<td>.71**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Resources (Factor 1)</td>
<td>3</td>
<td>27.00</td>
<td>5.4</td>
<td>.34**</td>
<td>.35**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships (Factor 2)</td>
<td>4</td>
<td>16.87</td>
<td>3.1</td>
<td>.23**</td>
<td>.01</td>
<td>.34**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Characteristics of work (Factor 3)</td>
<td>5</td>
<td>8.94</td>
<td>2.9</td>
<td>-.24**</td>
<td>-.20**</td>
<td>.05</td>
<td>-.01</td>
<td>-</td>
</tr>
<tr>
<td>Intention to Leave</td>
<td>6</td>
<td>9.85</td>
<td>6.6</td>
<td>-.55**</td>
<td>-.33**</td>
<td>-.23**</td>
<td>-.18**</td>
<td>.41**</td>
</tr>
</tbody>
</table>

** p < 0.01

Table 5.13 above for the pre-registration dental nurse shows work engagement was significantly correlated with personal accomplishment, r = 0.71; p < 0.01. The relationships between work engagement and each of the 3 latent factors (professional resources, relationships and characteristics of work) were all significant and the r values were 0.34, 0.23 and -0.24 respectively. In turn, the correlation between personal accomplishment and professional resources and characteristics of work was significant (p < 0.01), however with the relationship (factor 2) was not significant. The r values were 0.35, 0.01 and -0.20 respectively. Intention-to-leave was significantly negatively correlated with work engagement (-0.55) and personal accomplishment (-0.33): p < 0.01. Intention to leave was significantly negatively correlated with professional resources (-0.23) and relationships (-0.18) and positively correlated with characteristics of work (0.41); p < 0.01. Subsequently, there were negative correlations between intention-to-leave with work engagement (-0.55) and personal accomplishment (-0.33): both significant, p < 0.01.

In the following section the attention is directed at the findings of the relationship between the 3 key variables and the 3 latent factors of post-registration dental nurses. For intention-to-leave there was negative correlation between work engagement (r = -0.78) and personal accomplishment (r = -0.55) and work engagement and personal accomplishment were positively correlated (r = 0.68); all were statistically significant, p <
However for the 3 latent factors of JDR there were only significant correlations between relationships and professional resources (0.54) and characteristics of work and intention-to-leave (-0.52). The remaining correlations were all non-significant. The results are presented in Table 5.14.

Table 5.14 Mean, standard deviation (SD) and correlation matrix for post-registration dental nurses (n = 28)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Engagement</td>
<td>34.57</td>
<td>10.6</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Accomplishment</td>
<td>33.25</td>
<td>7.1</td>
<td>0.68**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Resources (Factor 1)</td>
<td>19.14</td>
<td>8.8</td>
<td>-0.28</td>
<td>-0.11</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships (Factor 2)</td>
<td>9.96</td>
<td>5.5</td>
<td>-0.15</td>
<td>-0.00</td>
<td>0.54**</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristics of work (Factor 3)</td>
<td>7.75</td>
<td>3.4</td>
<td>0.27</td>
<td>0.18</td>
<td>-0.03</td>
<td>0.20</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Intention to Leave</td>
<td>12.18</td>
<td>7.7</td>
<td>-0.78**</td>
<td>-0.55**</td>
<td>0.20</td>
<td>-0.07</td>
<td>-0.52**</td>
<td>-</td>
</tr>
</tbody>
</table>

** p < 0.01

In conclusion the correlations between these 3 key variables were similar between the two registration groups. Most notable is the differences the relationships between the latent factors of the job demands and resources measure between the 2 groups of dental nurses. Lastly, for both registration groups there was no significant relationship between job demands and resources (JDR) and intention-to-leave. A summary of these findings is shown in Figure 5.2.

In addition, a further comparison between the two registration groups of dental nurses for each of 3 key variables was conducted using a Mann-Whitney U test. It indicated no significant difference in the scores for work engagement, personal accomplishment, occupational-related attitudes and intention-to-leave between the two groups of dental nurses.
5.9 SIMPLE REGRESSION

The research aimed to investigate the predictive value of the measured work-related on intention-to-leave. Accordingly, simple regression analysis was conducted to identify if the job demands and resources measure, personal accomplishment and work engagement are predictors of intention-to-leave. Also, regression would establish if the key variables measured in this sample predicted an effect as expected by the JD-R model. In the following sections the findings for WE, PA and each of Professional Resources (PR), Relationships (RE) and Characteristics of Work (CW), the 3 latent factors of JDR, as predictors of InToL are discussed.

5.9.1 WORK ENGAGEMENT AS A PREDICTOR OF INTENTION-TO-LEAVE

The regression analysis examines the relationship between work engagement and its 3 sub-scales of namely, vigour, dedication and absorption and intention-to-leave. In total work engagement significantly explained 31% of the variance of intention-to-leave $F(230, 101.32) = -10.07, p < 0.000$. Whilst both high absorption and low vigour equally explained some of variance in intention-to-leave, it was low dedication which predicted
higher intentions of leaving. A summary of these results is included in the Appendix 5 - Table 5a.

5.9.2 PERSONAL ACCOMPLISHMENT AS A PREDICTOR OF WORK ENGAGEMENT AND INTENTION-TO-LEAVE

In total of 51% of the variance in work engagement was explained by personal accomplishment, $F (230,236.92) = 15.39, p < 0.000$, in particular high scores of PA4 ('feeling energetic') and PA7 ('accomplishing many worthwhile thing in this job') and to a lesser extent PA8 (dealing with emotional problems calmly') scored higher work engagement.

Overall personal accomplishment significantly predicted intention-to-leave $R^2 = 11\%$; $F (230, 27.15) = 6.68, p < 0.000$. Two items explained most of the variance in personal accomplishment, namely higher scores of PA4 ('feeling energetic') and PA7 ('accomplishing many worthwhile thing in this job') predicted higher scores of personal accomplishment.

More details relating to these findings are presented in the Appendix 5 - Table 5b work engagement and Table 5c for intention-to-leave.

5.9.3 RELATIONSHIP OF 3 LATENT FACTORS OF JDR WITH WORK ENGAGEMENT, PERSONAL ACCOMPLISHMENT AND INTENTION-TO-LEAVE

Previously the outcome of conducting exploratory factor analysis was 3 underlying latent factors in the measure of JDR relating to professional resources (PR), Relationships with colleagues, patients and family (RE), and Characteristics of work (CH). As a consequence, these 3 latent factors provide a more comprehensive measure of the JDR construct and therefore a closer investigation of their predictive value is necessary. Subsequently, simple regression analyses were conducted to identify if the 3 latent factors predicted WE, PA and InToL. Only the statistically significant findings are presented in Table 5.15.
Table 5.15 Regressions of 3 latent factors as predictors for pre-registration and post-registration dental nurses (N = 259)

<table>
<thead>
<tr>
<th></th>
<th>Pre-registration (n = 231)</th>
<th>Post-registration (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>p</td>
</tr>
<tr>
<td>Professional Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>-.33</td>
<td>.000</td>
</tr>
<tr>
<td>WE</td>
<td>-.40</td>
<td>.000</td>
</tr>
<tr>
<td>InToL</td>
<td>-.23</td>
<td>.001</td>
</tr>
<tr>
<td>Relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>-</td>
<td>.132</td>
</tr>
<tr>
<td>WE</td>
<td>.23</td>
<td>.000</td>
</tr>
<tr>
<td>InToL</td>
<td>-.18</td>
<td>.008</td>
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However, the interpretation of these results, although significant should be cautious as (1) the sample size of post-registration dental nurses is small, (2) examination of the scatterplots suggest concerns relating to the degree of skew and kurtosis of the data and (3) the number of statistical tests will increase the possibility of a Type 1 error.

5.10 STRUCTURAL EQUATION MODELLING

The statistical method used to test the degree of fit of the multivariate models was structural equation modelling (SEM) which was implemented by IBM SPSS® Amos™ 19 (Arbuckle, 2006). In order to examine the research questions 4-6, the fit of 2 models was compared using the data of pre-registration dental only. First the measurement qualities of the derived latent variables were inspected prior to the fitting of the structural equation model.

5.10.1 DEVELOPMENT STAGE OF THE MODEL

A series of steps was taken during the evaluation of the quality of fit of the measurement model. Each step included inspection procedures on each of the 3 exogenous (job
resources, personal accomplishment and work engagement) and one endogenous latent factor (intention-to-leave) before inclusion in the model.

For the work engagement scale a comparison between 9 indicators and the alternative 3 indictors was conducted. The 9 items had factor loadings ranging from 0.54 to 0.87 while the factors loadings of the 3 indicators of vigour, dedication and absorption were 0.80, 0.92 and 0.80 respectively. Whilst both permutations achieved the minimum level of 0.5 recommended by Jourdain & Chenevert (2010), the 9 indicator solution was less acceptable due to an estimation parameter of -1.06 linking work engagement and intention-to-leave. This high value suggests the occurrence of an overly high co-linearity between 2 variables of a model (Bentler & Chou, 1987). Therefore, this comparison indicates that the 3 indicator solution of vigour, dedication and absorption is a better fit; so it was selected for inclusion in the model.

Secondly, an examination of the 5 indicators of job resources derived from the factorial analysis found the factors loading of items 1-4 and 6 of professional resources found 3 items fell within the acceptable range of 0.50 to 0.70. The exceptions were JDR2 (0.47) and JDR6 (0.49). However, these values were a close approximation to 0.5 and hence were included. Thirdly, the 8 indicators of PA all had factors loading which met the criteria of being acceptable with a range from 0.50 to 0.81. Finally, the 2 indicators (Int1 and Int2) of intention-to-leave had the loading factors of 0.96 and 0.77 respectively. Thus, these values are within an acceptable level.

This preliminary analysis of unidimensional measurement models provided details on the most satisfactory fit prior to their inclusion into an overall structural model. The correlation matrix of the data used in the structural equation modelling is shown on Table 5.16.
5.10.2 Model Testing

After inspection of the correlation matrix and along with the theoretical underpinning of the JD-R model, it was concluded to test two different models, namely, a direct effects model and a mediational model. It is acknowledged that others may be proposed although the theoretical logic was not appealing. After the assessment of the quality of fit of the measurement model, the following 2 models were estimated:

- Model one (M1) was fitted which assumes direct paths from the 3 exogenous factors of PR, WE and PA to the endogenous factor of InToL.
- Model two (M2) was fitted which assumes direct paths from exogenous factor PR to the 2 factors of WE and PA which in turn mediate to InToL.

The results of the SEM showed that in model (M1) the fit of the measurement model to the data was inadequate ($\chi^2 = 432.10$, df = 130, CFI = 0.86, TLI = 0.84, RMSEA = 0.10). Three high modification indices were found and so the fit could be improved by allowing these 3 pairs of errors to correlate. Interpretation of these errors from a theoretical viewpoint suggests common error variance so the model was re-specified. After freeing these 3 parameter the M1 (re-specified) showed some improvement in fit: ($\chi^2 = 318.90$, df = 127, CFI = 0.91, TLI = 0.89, RMSEA = 0.08). The fit indices values of CFI and TLI fall just below level of ≥ 0.95 and the value of the RMSEA is reasonable, that is it is below 0.10. As specified in M1 the relationship between the professional resources and intention-to-leave was not significant ($p > 0.5$). The paths from work engagement and personal accomplishment to intention-to-leave were both significant ($p < 0.02$) and their associations were -0.91 and 0.38 respectively.
Table 5.16 Correlation matrix of the items in SEM for pre-registration dental nurses (n = 231)

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In order to test the second model (M2) the path from PR to InToL was removed and additional direct relationships from PR to WE and PA were included (mediational model). The fit of the measurement model (M2) was unacceptable ($\chi^2 = 509.24$, $df = 131$, CFI = 0.83, TLI = 0.80, RMSEA = 0.11). However, post-hoc re-specifications based on the modification indices the model could be significantly improved by allowing 5 pairs of errors to covary. The modification indices revealed significant correlations between pairs of items error including: VI and PA4, PA1 and PA2, PA3 and PA7, JDR1 and JDR2 and lastly WE and PA. As these relationships appeared plausible from a theoretical perspective, the correlated errors were applied. This resulted in a model M2 (re-specified) ($\chi^2 = 244.98$, $df = 125$, CFI = 0.95, TLI = 0.93, RMSEA = 0.065) with no remaining high modification indices. The relationships between the latent variables, as specified in model M2, were all significant ($p < 0.001$). The strength of the association between work engagement and intention-to-leave was very high (-0.96). The positive relationship between personal accomplishment and intention-to-leave was less strong (0.41). The paths from professional resources to work engagement and personal accomplishment showed similar correlations of 0.46 and 0.47 respectively.

An inspection of the fit of the two models revealed that M2 (re-specified) fits marginally better to the data than M1 (re-specified). In particular, the difference in the chi-square test ($\Delta \chi^2 = 73.92$, $df = 2$) showed clear significance and the lower RMSEA indicated a better model in M2 (re-specified) than the M1.

<p>| Table 5.17 The fit of the 1st order model (M1) and mediating model (M2) (Pre-registration dental nurses; $n = 231$) |
|--------------------------------------------------|--|--|--|--|</p>
<table>
<thead>
<tr>
<th>$\chi^2$</th>
<th>df</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
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<td>M1 (re-specified)</td>
<td>318.90</td>
<td>127</td>
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<td>M2 (re-specified)</td>
<td>244.98</td>
<td>125</td>
<td>0.95</td>
<td>0.93</td>
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Note: $\chi^2$, Chi-square; $df$, degree of freedom; CFI, Comparative Fit Index; TLI, Tucker-Lewis Index; RMSEA, Root Mean Square Error of Approximation.

It can be concluded that work engagement is a high predictor of reduced intention-to-leave but in contrast personal accomplishment predicts increased intention-to-leave. In
turn, work engagement and personal accomplishment act as mediators between professional resources and intention-to-leave. Finally, there was indirect path between of professional resources and intention-to-leave which was found to be statistically significant using the resampling feature on AMOS to specify indirect effects. Figure 5.3 shows the structural model (M2) with standardised path coefficients.

Figure 5.3 Structural model of M2 with standardised path coefficients
Note: ProRes: professional resources; WE: work engagement; PA: personal accomplishment; InToL: Intention-to-leave
Chapter 6 - Discussion

This is the first mixed methods study to explore links between job demands and resources, personal accomplishment, work engagement and intention-to-leave by applying the Job Demands/Resources Model (JD-R) (Demerouti et al., 2001) among dental nurses in Scotland.

The research has attempted to clarify which job resources are salient to the dental nursing profession and so have a role in a dental nurse's future work engagement. Unlike, most studies conducted on the JD-R model this study investigated the unique effect of the salient job characteristics on the personal accomplishment, one of the components of burnout, and the 3 dimensions of work engagement. In addition, the study attempted to further explore the mediating effect of personal accomplishment and work engagement on the relationship between job demands and resources and intention-to-leave.

In summary, the aim of this cross-sectional study among Scottish dental nurses was three-fold:-

1. To address the lack of information about work engagement of dental nurses in Scotland
2. To understand which job resources in the work place are utilised by dental nurses
3. To explore whether or not, these job resources lead to future personal accomplishment and work engagement and in turn mediates future intention-to-leave

In this section the discussion which follows presents a more theoretical perspective and with particular reference to the J D-R model. The discussion integrates the findings of the quantitative and qualitative phases. Each of the key variables, namely, job demands and resources, personal accomplishment, work engagement and intention-to-leave are
considered separately but in circumstances where they are linked by the research question, they are considered together.

6.1 Job Demands and Resources

The qualitative exploration investigated the job characteristics which support and encourage dental nurses in their work life and examined how their views affected their intention to leave dental nursing.

The themes the trainee pre-registration group focused on were ‘features of daily routine’, ‘impact of registration’, ‘dynamics of dental team’ and ‘family commitments’ whereas the themes of ‘professional status’, ‘person-job fit’, ‘future directions of dental nursing’ were salient to the post-registration dental nurses. The only theme emerging from both groups was the ‘provision of a career pathway’. Collectively the themes emerging from the pre-registration dental nurses’ discussion were personal experiences while more objective views about dental nursing were held by the post-registration dental nurses. This variation in the themes salient among the two groups suggests a transition may be occurring as dental nurses’ progress from being a trainee to obtaining registration status and hence support what this research proposed, that is the development of professional behaviour.

Unique to dental nursing was the unknown effect of the introduction of registration by the General Dental Council in 2008. Possible concerns for the future are: (1) the maintenance of registration for those qualified dental nurses and (2) the potential stress associated with studying for trainees. These two issues summate to enhance the view for some nurses that registration is simply not “worth the hassle”. However, for others the effect of compulsory registration to practice has the potential to turn a ‘job’ into a profession. Similar studies investigating the development of professionalism of medical nursing (Fasoli, 2010) refer to an emerging group of professions as ‘semi-professions’ to describe a group who have not achieved fully all professional attributes and are mostly
female (Etzioni, 1969; Schwirian, 1998). This supports the current findings that some trainees make a transition to professionalism, but goes further to suggest those who do are more likely to remain in dental nursing.

A fundamental assumption of the JD-R model, as referred to in the literature review, is that although every occupation has its specific work characteristics, it is still possible to include these characteristics within either a category of a work resource or a job demand. Within the context of dental nursing the availability of support of co-workers, having sole responsibility within a surgery, an integrated working style developing a sense of team-work and the provision of a career pathway have been shown to act as job resources.

In summary, these 4 job characteristics were supportive in the work place together with the development of behaviours and beliefs associated with that of being a professional person encouraged intention to remain in dental nursing. Next, in the quantitative phase these factors and their relationship with personal accomplishment, work engagement and intention-to-leave are investigated further. Findings are discussed in the following sections.

6.1.1 Salient Job Resources

This section turns to the findings relating to the job characteristics section in the questionnaire of phase two and examines how a motivational process delineated by the JD-R model starts with the job resources salient to dental nurses.

Over 65% of the dental nurses rated the most agreement to statements relating to ‘good working relationship with colleagues’, ‘aware of implications of registration status to profession’, ‘perceive a pathway of career development’, ‘able to use skills’ and ‘have ownership of surgery’ in their work place. Whilst this agreement indicates their relevance in the daily work place, their motivating role as job resources is unclear. However, further analyses confirm the relevance of 3 of the job characteristics on work
engagement. Having a ‘high sense of ownership of surgery’, ‘low repetition of daily routine’ and ‘a clear pathway of career development’ are key variables when explaining work engagement. According to Gibson et al, (1999) previous research has shown that high repetition is associated with overall low job satisfaction. Whereas job satisfaction is concerned with an appraisal of one’s job (Locke, 1976), repetition may be related to aspects of job resources such as task significance (Schaufeli & Bakker, 2004). These findings concur with previous studies which identified a number of resources as contributing to work engagement including job control and personal resources (Mauno et al., 2007; Xanthopoulou et al., 2009). Also the 2 resources of ‘a high sense of ownership of surgery’ and ‘low repetition of daily routine’ are linked to 3 components of the job characteristics model (JCM) (Hackman & Oldham, 1980), namely, job significance, skill variety and task autonomy. The JCM proposes that employees will become intrinsically contented when they succeed in a task which has meaning and value to them. Indeed, it was these characteristics of the daily routine that had a more significant influence on the work engagement, whilst other higher agreement items had no effect on work engagement, and therefore are harder to explain. However, one explanation may be that the higher agreement items which did not result in work engagement where in effect negative characteristics of the work place and so not a resource but a demand to the dental nurses. As a consequence these characteristics which may act as a demand would be expected to increase burnout and in turn increase intentions to leave as theoretically underpinned by the JD-R model (as shown in Figure 2.1 on page 26).

6.2 PERSONAL ACCOMPLISHMENT

This section discusses the relationship of personal accomplishment with job resources (JDR) and intention-to-leave (InToL).
The present study confirms the relevance of personal accomplishment on dental nurses in their work place. Although as a component of the burnout measure MBI in this research personal accomplishment was utilised as a measure of personal resources. The results indicate that dental nurses who expressed higher levels of a sense of ownership of the surgery and lower repetition of daily work routine had significantly higher levels of personal accomplishment. Furthermore, aspects of personal accomplishment appear to be a key factor when explaining intention-to-leave, in particular dental nurses reporting high levels of energy and accomplishment had higher intentions of leaving dental nursing.

The role of personal accomplishment as a component of burnout as assessed by MBI with work engagement required further investigation, specifically its relationship with intention-to-leave. Some have suggested that personal accomplishment should instead be considered as a ‘4th factor of work engagement (Schaufeli & Bakker, 2004). However, other research investigating the association between the 3 burnout components have reported significant correlations with intention-to-leave (Maslach et al., 2001). Whilst in this research the personal accomplishment measurement score was not reversed as would have been necessary if included as reduced personal accomplishment in the sub-scale of burnout where a low score reflects higher burnout. However, the positive association found between personal accomplishment and intention-to-leave in this study was still not in the expected direction as found in the literature (Alarcon & Edwards, 2010; Leiter & Maslach, 2009; Schaufeli & Bakker, 2004). One explanation may be the feature of dental nursing which is to give support to the dentist or dental therapist in the surgery so an opportunity for personal accomplishment by the individual is limited.

The findings suggest that a motivational process occurs in dental nurses who are self-efficacious more specifically to high energy and high accomplishment can experience high intention-to-leave, particularly if a high sense of ownership of surgery, low repetition of tasks and provision of career development is experienced by the dental
nurse at work. Consequently this suggests that personal accomplishment appears to play an important role along with work engagement in explaining intention-to-leave among dental nurses.

6.3 WORK ENGAGEMENT

In this section the research question addressed relates to the investigation of work engagement among this occupational group.

Among this group of Scottish dental nurses whilst the overall level of work engagement was favourable when compared to other occupational groups as found in the UWES manual (Schaufeli & Bakker, 2003) when considering the 3 sub-scales of dedication, absorption and vigour separately some differences were shown. The results found that the dental nurses in this study were more dedicated (p < 0.0001), and absorbed (p < 0.007) and had less vigour (p < 0.0001) when compared to other groups.

In addition, the research found work engagement significantly predicted intention-to-leave among dental nurses when entered into a simple regression model. This finding confirms the relevance of work engagement in this context of dental nursing. Dedication is the factor which most helps to understand intention-to-leave by explaining 36% of the variance and so those dental nurses who stated higher dedication to their job showed lower intention-to-leave. The other factors of vigour and absorption equally predicted an additional 6% of the variance in intention-to-leave but in the opposite direction. Dental nurses who expressed higher vigour but lower absorption in their work showed lower intention-to-leave.

Also, it is noted that this result has implications about the 3 sub-scales of work engagement and in particular how each has a different mediating effect on intention-to-leave. Dedication was found to be a key predictor of intention-to-leave, rather than all three when explaining the relationship between work engagement and retention among
dental nurses. A higher sense of being involved and a feeling of significance and pride lowered a dental nurses’ intention to leave the profession. This finding that the levels of dedication and absorption are significantly higher among dental nurses when compared to other occupations, however, this is consistent with another study which found the work engagement of dentists showed higher mean scores of dedication and absorption (Gorter et al., 2008).

The result of reduced vigour was unexpected as a previous study measuring work engagement among dental care professional which included dental nurses found vigour to have the highest mean score of the 3 sub-scales. Yet, it is not reported if these dental nurses were trainees or not. So it may be proposed that the supporting role to dentists in the surgery, together with the high repetition of procedures undertaken by the dental nurses may explain the lower levels of energy found among the trainees.

Also, previous empirical evidence has found task significance, where an employee finds work meaningful, it in turns leads to work engagement (Kahn, 1992) and more specially to vigour (Mauno et al., 2007). In addition, in a qualitative study (Shraga & Shirom, 2009), defining job significance as the amount of impact both on others and the organisation itself, found it to the job characteristic most likely to an effective predictor of experiencing vigour at work. Despite, the limited number of studies making a comparison between dentists and DCPs and other occupations it may be suggested that the sedentary quality of surgery working reduces the opportunities for vigour in some circumstances. Overall, these features of dental nursing may explain the reported findings of low vigour among this group of dental nurses; however, vigour did not predict higher intentions to leave.

A major goal of this research was to determine if the mediational role of work engagement between job resources and intention-to-leave could be replicated within the dental nursing context and if it predicted intention-to-leave the profession. The results found confirmed replication of the mediational model of work engagement. First, the
findings confirmed a direct relationship between aspects of the work place, in particular professional resources which included beliefs about registration, task variety and task significance and work engagement. Secondly, work engagement was a very strong indicator of intention-to-leave and therefore it mediated the effect of work place factor of professional resources on this outcome.

In addition it is observed that the overall model of work engagement when entered into the latent variable model makes no distinction between the 3 components of the engagement. The latent variable model pools the common variance associated with the latent variable and uses this to predict intention to leave. Hence the individual component and their individual variation with InToL will not be reflected as it was in the simple regressions where each of the three components of engagement was examined for their separate relationship strength with InToL.

Also it is noted that when job resources (JDR) was entered into a simple regression model its relationship with intention-to-leave was not significant ($r = 0.10; p > 0.5$). Therefore not ascribing to the criteria outlined by Baron & Kenny (1986) to detect a mediational relationship in their causal steps method (Step 1). However, MacKinnon (2008) argues that there are limitations to this method in establishing mediation, particularly in both a multiple mediator model and a latent variable mediation model. Following on MacKinnon states that:-

‘As the number of mediators increases, the number of possible combinations of consistent and inconsistent mediation effects increases. As a result, the requirement of a significant total effect, $c$', may be incorrect for some models’. (p. 111)

Also in considering the benefits of latent variable MacKinnon comments that:-

‘Once measurement models are specified, the usual tests for indirect effects can be based on the more reliable measure of latent variables’. (p. 190)
Overall, these statements provide additional support for the mediational model of work engagement proposed in this research. However, other assumptions regarding the timing priority of the measurements and any suggestions of causal relationship still apply to the mediation model. This is discussed further in the limitations of the research (6.6.3) later.

6.4 PROFESSIONALISATION

One aim of this research was to determine the predictors of work engagement among trainee dental nurses. The factor which explained most variance in work engagement was professional resources the underlying latent variable derived from the factorial analysis of the self-developed measure of job demand and resources. The amount of variance in work engagement explained by professional resources was 30% among pre-registration dental nurses and nearly 60% among post-registration dental nurses. This importance placed on professional resources has been demonstrated in the nursing literature with its ranking by nurses as the component providing the job satisfaction in the work place (Simpson, 2009b). Also within dentistry professional independency was found to be significantly higher among dentists when compared to dental care professionals of which 36% were dental nurses (Gorter & Freeman, 2010).

Furthermore, professional resources explained 5% of the variance in intention-to-leave in the pre-registration dental nurses but it has no significant effect among post-registration dental nurses, however with a small sample size caution should be taken in suggesting this is representative of post-registration dental nurses. However, the importance of professional resources among the pre-registration dental nurses should not be underestimated. It is argued that beliefs about the positive benefits to registration together with task variety and task significance supports a transition to professionalisation. This is linked to professional status which refers to the overall importance or significance felt about one’s job – both in one’s own view and in the view of others (Stamps & Piedmont, 1986). Subsequently, professional status has shown to be a predictor of work
engagement among medical-surgical registered nurses (Simpson, 2009b), but it does not address intrinsic resources such as confidence in ability and reduced dependence on others within the work place as found in this research.

Further investigations into dental nurses' intention-to-leave should give some notice to the development of professionalism among trainees by dental practices and providers of registration courses which has been previously highlighted in the training for dental undergraduates and dental therapy students (Woodman, Pee, Fry, & Davenport, 2002).

6.5 CONTEXTUALISATION OF RESULTS

The research was conducted on a sample of dental nurses who were employed by either the NHS or in the non-salaried General Dental Services (GDS) with just over half of the dental nurses in Scotland employed by the latter in 2009 (Scottish Government, 2011). Therefore for the many dental nurses who work in the GDS sector other members of the dental team, in particular the dentist may be the owner of the practice and so be the dental nurse's employer. Therefore, opportunities for career development may be limited by the size and financial constraints of the practice.

Also it is noted that the large majority (93%) of dental nurses are female in Scotland (Scottish Government, 2011) which in itself brings some reflection on the factors relating to intention-to-leave among dental nurses. Foremost is the anticipation of career breaks which may occur in a workforce. In dentistry the duration of career breaks is longer for women than for men and 71% of female dental therapists will take a mean career break of 11.5 months (Newton, Buck, & Gibbons, 2001). Consequently, in this predominately female workforce other explanatory reasons for intentions-to-leave other than work-related factors need to be considered.
6.6 LIMITATION OF THE RESEARCH

The current research has limitations that need to be acknowledged by the researcher. These are outlined in the following 3 Sections.

6.6.1 SAMPLE LIMITATIONS

Some issues may relate to the exploration of views using volunteers in focus groups. It may be argued that because the selection was based on the willingness of the dental nurses to participate there is a strong possibility of selection bias and may be not sufficiently represent their peers. That is, dental nurses who are more engaged in their work may be more agreeable to coming forward to express their views. This issue about the composition of the focus groups is commonly reported in the literature. Likewise, the qualitative phase of the research was conducted at two training centre locations which may not be representative of the experiences of dental nurses attending other training centres.

Also, a consideration is the duration of the registration training which is approximately 18 months so dental nurses in the earlier stages may be less affected by the repetitive description of the work whereas professional provision may be more developed in those dental nurses nearing the completion of the training.

In addition, the gender of the sample in phase 2 was not reported. Nevertheless, it is anecdotally acknowledged that dental nursing is predominately a female occupation and this was supported by General Dental Council in 2010 who reported 93% of the 4335 registered dental nurses in Scotland were female. Subsequently, this omission of gender was not expected to alter the findings of the research.

Furthermore, the research was conducted using for the most part those dental nurses training for registration status. Therefore it was not possible to test validity of the
findings those dental nurses with registration status but who are not taking further qualifications.

6.6.2 Methodology limitations

The second phase of the research relied totally on self-report measure resulting in common method variance problems (Podsakoff & Organ, 1986). Nonetheless, it may be argued that the measurement of work-related factors is impossible to conduct in any other way (Makikangas, Kinnunen, & Feldt, 2004).

6.6.3 Data analysis limitations

The qualitative research method of framework analysis adopted in the study yielded rich and detailed data. However the research uses only one coder to interpret the narrative text so rigorous and detailed explanation of procedures is important (Miles & Huberman, 1994).

Likewise the framework analysis revealed themes contained in the text but at times did not pick up on how the language used increased the understanding of the themes. That is, often the use of language such as determiners e.g. ‘my’ and ‘your’ appeared repeatedly to describe the surgery or the dentist. As a result the choice of framework analysis narrowed the narrative data to themes found without considering the language used to describe them.

Also the use of the SEM to analyse the fit of the data to the JD-R model to investigate possible direction of paths, however the cross-sectional design of the research limits any causal relationships between the variables. In particular, the study suggests a reciprocal relationship of job resources and personal accomplishment; however the design restricts any conclusions relating to the sequence of these effects. A longitudinal study is required in order to validate the findings over a period of time and thus provide an insight to causality.
6.6.4 Validation of Questionnaire

The newly developed questionnaire may have practical use in assisting managers to get a profile of dental nurses' beliefs about registration and their job. However, it is acknowledged there are limitations in the interpretation of the 10 item questions (JDR) e.g. reliability of 3 sub-scales is less than recommended i.e. Cronbach's alpha is below 0.6, hence the questionnaire would merit from expansion of content and further evidence of validity. Also, the question's reliance on the findings from qualitative work is accepted. A validation segment of new part of the JDR has been provided i.e. factor analysis and univariate component e.g. age. However with regard to the full instrument its effectiveness can be estimated from the SEM analysis. The findings show that the constitute parts of how each component related to InToL at different levels of association.

6.7 Future Directions

Despite these limitations, the findings have broadened the understanding of intentions to leave the profession among dental nurses. In the first instance the use of the work engagement measure has advocated its ability to identify intentions to leave in dental nursing so practical developments to improve work engagement among employees will in the longer term reduce turnover of dental nurses. In order to continue to address the challenge of reducing the turnover of dental nurses, it is necessary to understand what brings them into the profession but also to recognise the factors which keep them engaged in their work and so reduce their intention to leave.

The range of job resources examined in the research was restricted to those emerging from the focus groups. Future work should consider the further development of the instrument which measured the job resources of dental nurses.

In response to the sample limitations, future research should include dental nurses who are registered but not participating in any further qualification courses, so comparison
could be made between them and pre-registration dental nurses. This would enhance the understanding of the job resources salient to post-registration dental nurses.

As mentioned in the limitations there would be advantages in a longitudinal study to inform more on the causality of these work-related factors.

6.8 Recommendations

The conclusion and limitations of this research point to a number of recommendations for future research. This research offers a starting point for investigating the work-related factors which support, encourage and influence dental nurses in their career choices. However, it is noted that this research reported the majority of findings from pre-registration dental nurses because the participation of post-registration was low.

(1) An important continuation of this work would be further investigation into the views of post-registration nurses about work engagement, personal accomplishment, retention and including professional development. Also, it might be useful to compare dental nursing with other allied professions such as medical nursing to learn if comparative groups have undergone similar steps in development.

(2) As previously mentioned the cross-sectional design and limitation of using of a newly-developed questionnaire indicates the need for replication of the research. Validation of the questionnaire would then be further tested and these initial study findings confirmed or refuted. This research has established the possible role of work engagement as a mediator between job resources and intention to leave in the dental nursing context. It would be useful to investigate its validity with a larger group of dental nurses.

(3) In addition, this research revealed that work engagement acts as a predictor of intention to leave; therefore a further recommendation is that it should be the focus of stakeholders' attention along with its antecedents if there is a desire to retain dental nurses in the profession.
(4) A finding in the research specifically in the quantitative phase alludes to the idea of professional development supported by beliefs around the resources of registration, use of skills and provision of career pathway. The focus group sessions highlighted the dental nurses’ awareness of job characteristics which did not encourage or support them to stay in the profession, such as not being integrated into the dental team and not having a sense of being valued. Further exploration of these job characteristics is essential in order to develop an integrated dental team.

(5) A key outcome of the research model was that those dental nurses with higher personal accomplishment had higher intentions to leave the profession. This finding may result in the conclusion that as dental nurses’ self-efficacy increases they start to ‘outgrow’ their role in dental nursing which results in a belief of being capable of much more which is not currently available to them within their chosen profession. These dental nurses are those which the profession can least afford to lose and further investigation into this unexpected finding is warranted.

Finally, this thesis shows that as research continues to investigate a person’s work-related well-being it must do so in consideration to the unique circumstances found within the particular working context in which the research question is asked.
Conclusions

The Job Demands-Resources model serves as a useful model to explore the work characteristics which act as antecedents of work engagement and lead to future intentions to remain in the dental nursing profession.

The key finding from this research is that there is a very strong association between work engagement and intention-to-leave in the dental nursing context. The predictors of work engagement in the model are professional resources which include positive beliefs regarding the introduction of registration and opportunities for task variety and task significance within the surgery. In addition, there is some evidence that job resources may act indirectly on intention-to-leave.

In addition, more focus on dental nursing whilst it undergoes its development as a profession is necessary. In particular, to better understand how professional principles are gained as well as how their development impacts on other members of the dental team. Also some future consideration should be given to overall team work engagement and specifically how engaged and non-engaged individuals may influence the well-being and dynamics of the whole team.
References


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Ritchie, J., & Spencer, L. (Eds.). (1994). *Qualitative data analysis for applied policy research*.


Schaufeli, W. B., & Bakker, A. B. (2010). *Defining and measuring work engagement: Bringing clarity to the concept*.


Appendices

Appendix 2.1a - REC Ethical Advice Reference
Appendix 2.1b - The University of St Andrews' University Teaching and Research Ethics Committee approval letter
Appendix 2.2 - NHS Education for Scotland: Initial discussion summary
Appendix 2.3 - Invitation to participate
Appendix 2.4 - Follow up email
Appendix 2.5 - Information sheet
Appendix 2.6 - Points for discussion
Appendix 2.7 - Focus group survey
Appendix 2.8 - Consent form
Appendix 2.9 - Transcription notations
Appendix 2.10 - Index of themes
Appendix 2.11 - Questionnaire
Appendix 2.12 - Email to training centres
Appendix 2.13 - Covering letter
Appendix 2.14 - Instruction sheet and procedures
Appendix 5.1 - Table 5(a), Table 5(b) and Table 5(c)
From: Ackland Caroline (NHS Tayside) <caroline.ackland@nhs.net>

Sent: 14 September 2010 10:06
To: gmf9@st-andrews.ac.uk
Subject: ethics advice Ref: 10/GA/105

Dear Gillian,

Re: An investigation into the work engagement of new registered profession of dental nursing

You have sought advice from the Research Ethics Office on the above project. The Research Ethics Co-ordinators and I have considered this and can advise that this does not require ethical review under the terms of the Governance Arrangement for Research Ethics Committees (GAfREC) in the UK. The advice is based on the following documentation provided to us:

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- You are undertaking a service evaluation

Please note that this advice is issued on behalf of the Research Ethics Service Office and does not constitute an opinion of a Research Ethics Committee (REC). It is intended to satisfy journal editors and conference organisers, who may require evidence of consideration of the need for ethical review prior to publication or presentation of your results.

You should keep a copy of this email within your project file.

Yours sincerely,

Caroline

Caroline Ackland
Scientific Officer
East of Scotland Research Ethics Service
Tayside Academic Health Sciences Centre
Ninewells Hospital & Medical School
Dundee, United Kingdom
DD1 9SY
Appendix 2.1b

University of St Andrews
University Teaching and Research Ethics Committee

04 November 2010

Gillian Forbes
School of Medicine

Ethics Reference No: MD6985
Please quote this ref on all correspondence

Project Title: An investigation into the work engagement of new registered profession of dental nursing

Researchers Name(s): Gillian Forbes

Supervisor(s): Professor Gerry Humphris

Thank you for submitting your application which was considered at the School of Medicine Ethics Committee meeting on the 2nd November 2010. The following documents were reviewed:

1. Ethical Application Form YES
2. Participant Information Sheet YES
3. Consent Form YES
4. NHS Ethics letter YES

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the ‘Guidelines for Ethical Research Practice’ (http://www.st-andrews.ac.uk/media/UTREC/guidelines%20Feb%202008.pdf) are adhered to.

Yours sincerely

[Signature]
Professor Gerry Humphris
Convenor of the School Ethics Committee

UTREC Convenor, Mansfield, 3 St Mary’s Place, St Andrews, KY16 9UY
Email: utrec@st-andrews.ac.uk Tel: 01334 462866
The University of St Andrews is a charity registered in Scotland: No SC013532
Research Discussion Meeting on 10th September 2009 at the University of St Andrews

In attendance:
Wendy McCombes & Anne Crowe (NES)
Ruth Freeman (University of Dundee)
Gerry Humphris & Gillian Forbes (University of St Andrews)

The purpose of this meeting was to discuss potential topics of research within the area of dental nurse training in Scotland for a proposed MPhil project which would be mutually beneficial to both project and NES.

An outline of the current training available in Scotland was given and areas of concern and interest were highlighted. Currently there are large numbers of dental nurses being trained across Scotland but little is known about the trainees’ employment after their training. It is known that there is a high number who leave the profession but there is little knowledge and understanding about the reasons as to why the dental nurses drop-out during and after their training.

Speculation was given for the loss of staff during training under the following themes of family commitments, sickness, financial matters, demographic area, standard of nurses’ education and employer issues around their time management i.e. over-running work hours and their lack of support for study time. In contrast, there was little speculation about the possible reasons for intention to leave after training. Some reasons were thought to be the same as those during training but it was generally felt other explanations were needed to explain the timing of this later drop-out.

This lead to discussions around the topics of drop-out rates and intention to leave as offering an opportunity to ask an interesting research question about the reasons dental nurses have for leaving their profession at different stages of their training.

Background information was provided about the current routes available for dental nurse training. Usually a dental nurse will have trainee post at a general dental practice or community based NHS practice and attend a day release course run by NES or a college for up to 18 months duration. The training of dental nurses occurs across Scotland but there are geographical differences in the methods of delivery of training. In particular, 4 regions were discussed, the south-west, Lanarkshire, Grampian and Tayside as providing diversity in teaching style (NES and college), numbers of trainees (between 40 and 70 per intake), and demographics.

The remaining discussion focused around the themes which should be considered and how best to measure them and if in fact they would be a predictor of a dental nurses’ intention to leave at different stages of her training.

The themes discussed were:-

- Engagement - characterised by efficiency and enthusiasm and an ability to deal with work demands.
- Burnout - defined as a state of fatigue and frustration which is ongoing rather than a daily occurrence.
• Educational background - Does the dental nurse have the only the basic entry requirements or do they have higher qualifications? Other considerations may be age and life experience.

• Feedback & support from employers’ practice – Is the practice interested in their training? Do they provide free time for study? Is their training being recognised? Are they given an opportunity to use their new skills? Does the practice learn anything from the nurses? Do they identify with a role model?

• Professional socialisation – which refers to the acquisition of values, skills, habits and knowledge as gained over the period of training as dental nurses move from a trainee to being fully-qualified

• Value – how they are taught and how it is practised at work may be different and this may influence dental nurses in the terms of job satisfaction and morale.

Further items were considered such as when and which dental nurses to access and how to gain information i.e. focus groups or/both questionnaires. The next intake is in Nov 2009 which was thought to be too soon for this proposed study because ethical approval would need to be sought from NRES and UTREC (University of St Andrews ethics committee) and this process can take up to 3 months from beginning to end. Although baseline data for the new intake in Nov 2009 is not possible, they can still participate in any data collection done later in their training. NES kindly agreed to facilitate access to dental nurses during training.

Finally, it was concluded by all that research around the themes listed above would be beneficial to both parties. For MPhil purposes, this requires more in depth research of the literature in order to gain an insight to previous findings and so take this proposal to the next stage.

It was agreed to circulate these notes to all in attendance.
Hi Gillian,

Have asked my colleagues in Glasgow and Aberdeen to contact you direct to make their arrangements.
I am sure that Anne will be in touch re Dundee’s involvement once she has spoken to our Senior dental Nurse tutor.
I am free all day 13/9/10 and available in the morning of Thursday 16 September.

It’s really exciting that things are beginning to move and I know my colleagues in Aberdeen and Glasgow are really keen to get cracking!

Regards,

Wendy

Wendy McCombes BDS, DGDP, MDSc.
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This correspondence is intended for the named recipient. If it is received or accessed by any individual or organisation other than stated, the recipient must treat the information contained in the correspondence as confidential and dispose of it appropriately.
Hi Caroline

Thank you very much for getting in touch with me. I'm not sure how much Wendy has told you about me and this project. So here's a brief introduction: I'm a PG research student based at the University of St Andrews and my project title is “An investigation into the work engagement of new registered profession of dental nursing”.

Currently, I'm waiting to receive NHS ethics approval before I can proceed much further. However, in the meantime, I wished to make contact and discuss with you how I can best fit into your training schedule in order for me to meet and invite dental nurses to participate in the study.

I envisage meeting dental nurses, initially during their lunch-break to give some background to the study and ask for volunteers to take part in focus groups (again, hopefully held during breaks if time allows).

These discussions will help me develop a survey which all dental nurses then, will be asked to complete.

This is a very brief outline and I'm sure you have lots of questions, so perhaps, I should phone you tomorrow and we can discuss more.

I look forward to speaking tomorrow.

Best regards

Gillian

Gillian M Forbes
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School of Medicine
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North Haugh
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Fife KY16 9TF
Tel: 01334 462369

The University of St Andrews is a charity registered in Scotland No:SCO13322
PARTICIPANT INFORMATION SHEET

Project Title: An investigation into the work engagement of new registered profession of dental nursing

I would like to invite you to take part in an evaluation research project. Before you decide to participate you need to understand its purpose and what it will involve for you. Please take the time to read the following information. Please ask the researcher if there is anything that is not clear or if you would like some more information.

PART A (Tells you about the purpose of the evaluation and what happens if decide to take part)

What is the evaluation about?
The purpose of the evaluation is to investigate the aspects of dental nursing which encourage and support a career pathway in the profession.

Why are we doing this evaluation?
The aim is to investigate aspects of dental nurses’ job such as job resources (performance feedback & colleague support), personal resources (self-value & self efficacy) and job demands (work pressure & mental demands) in order to gain an insight into how the work and training of dental nurses impacts on their work engagement. Also, to find out what dental nurses think about their new registered professional status.

Why have I been invited?
You are invited because you are currently undergoing pre-registered or post-registration dental nurse training conducted by NHS Education Scotland (NES). As participants of this training you have invaluable information and experience which the evaluation would like to gather from you. Only dental nurses can give us this information.

Do I have to take part?
No, it is up to you if you wish to take part in the evaluation. If you decide to take part and later wish to withdraw, you can do so at any point without giving a reason and your data will be deleted. Your participation in the information gathering via focus groups or questionnaires will not in any way affect your overall training.

What will I be asked to do?
You will be asked to help by participating in an information gathering session called a focus group. Focus groups encourage groups of 6-8 people at one time to share their
thoughts, opinions and ideas on a particular topic. The topics discussed for this evaluation will be job and personal resources, job demands, work engagement and training outcomes. The focus groups will be held on NES premises during a training/CPD break and be audio-recorded by the researcher. The duration of a focus group will be approximately 45 minutes to an hour during lunch-time break. Alternatively, you may be asked to complete a survey containing questions about your age, work experience, educational background, training outcomes and work engagement. It will take about 10-15 minutes to complete the survey.

If you are interested in helping with the evaluation, please read the additional information in Part B before making your decision

PART B (Further details about the evaluation)

Are there any benefits or disadvantages to taking part?
It is hoped the outcomes of the evaluation will inform the training of dental nurses, but as we cannot predict these outcomes, it is not possible to say if this will affect you or future groups of dental nurses in anyway.

What happens to the audio recordings & surveys?
Audio-recordings of focus groups will be transcribed, then analysed together with the survey data by an independent researcher. Audio-recordings and survey data will be stored in a locked filing cabinet and only viewed by the evaluation’s researcher and supervisors.

Can I be identified?
No, all the information you give us will be treated anonymously. Your name will not appear anywhere, so you cannot be recognised. Names recorded of those taking part in the focus groups will be allocated a code and so will not appear in the transcription. If we use any of the information, we will ensure you cannot be recognised as having contributed to the evaluation. The outcomes of the evaluation will be reported to NHS Education Scotland. Also, the outcomes may be submitted to scientific journals for publication and included in conference presentations to the wider healthcare community.

Who is organising the evaluation research?
This project is being organised by a postgraduate research student from the University of St Andrews facilitated by the Social Dimension of Health Institute.

Who do I contact with any concerns or complaints?
If you have any concern that you wish to raise about any aspect of the project, please contact the University Ethics Committee – UTREC (University Teaching and Research Ethics Committee) Secretary – Tracy Niven, c/o School of Psychology, St Mary’s Quad, South Street, St Andrews, Fife KY16 9TP Telephone: 01334 462081 Email: utrec@st-andrews.ac.uk

If you require any further information, please contact the independent researcher of the evaluation:
Gillian Forbes, School of Medicine, University of St Andrews, Medical and Biological Sciences Building, North Haugh, St Andrews, Fife
Telephone: 01334 462369 Email: gmf9@st-andrews.ac.uk

**Supervision to research student provided by:**
Prof. Gerry Humphris, School of Medicine, University of St Andrews, Medical and Biological Sciences Building, North Haugh, St Andrews, Fife
Telephone: 01334 463565 Email: gmh4@st-andrews.ac.uk

Prof. Ruth Freeman, University of Dundee, Dental Health Services & Research Unit, The Mackenzie Building, Kirsty Semple Way, Dundee DD2 1BF
Telephone: 01382 420070 Email: r.e.freeman@cpse.dundee.ac.uk

*Thank you for taking the time to read this information sheet and for considering taking part in this evaluation*
Topics for discussion today
(suggestions)

- Daily Routine - (repetitive/varied)
- Relationship with work colleagues - (supportive/unhelpful)
- Responsibilities - (lack of/have many)
- Challenges -
- Training - (supportive, feedback)
- Enjoyment - What I like/dislike about being a dental nurse
- Role conflict and ambiguities - (confusion/confident)
- Career development and aspirations of a dental nurse - (registration/professionalism/image)
An investigation into the work engagement of the new registered profession of dental nursing

This survey includes questions about dental nurse demographics, work engagement and turnover cognitions. Please note the survey is anonymous so any information provided cannot be identified as coming from you. Omit any questions you are unhappy to answer.

Your contribution is valued and gratefully received.

### 1. Dental Nurse Demographics

<table>
<thead>
<tr>
<th>1. Registration Status (Please tick box)</th>
<th>Pre-registration</th>
<th>Post-registration</th>
<th>Number of years registered (Please state)</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>2. Employer’s practice type (Please tick box)</td>
<td>NHS</td>
<td>Private</td>
<td>NHS &amp; Private</td>
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<td>3. Number of hours worked (Please tick box)</td>
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<td>Part-time</td>
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<td>4. How many dental nurses are employed at your practice? (Please write number)</td>
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<td>5. How many different dentists do you work within a one month period? (Please write number)</td>
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<td>6. How would you describe the location as being?</td>
<td>Urban (E.g. large city)</td>
<td>Rural (E.g. small town)</td>
<td>Other (Give details)</td>
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<td>7. How long have worked at your current practice? (Please give time or tick box)</td>
<td>Years.......... Months..........</td>
<td>Prefer not to say</td>
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<td>8. How old are you? (Please give age or tick box)</td>
<td>Age...............</td>
<td>Prefer not to say</td>
<td></td>
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</tbody>
</table>

### 2. Work Engagement - Work & Well-being Survey (UWES 9) ©

The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the ‘0’ (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way

<table>
<thead>
<tr>
<th>Statement</th>
<th>0 Never</th>
<th>1 A few times a year or less</th>
<th>2 Once a month or less</th>
<th>3 A few times a month</th>
<th>4 Once a week</th>
<th>5 A few times a week</th>
<th>6 Every day</th>
</tr>
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<tr>
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<td></td>
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Continued / 2. Work Engagement - Work & Well-being Survey (UWES 9)

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<thead>
<tr>
<th>Question</th>
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<th>2</th>
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<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. I am proud on the work that I do</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. I am immersed in my work</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. I get carried away when I’m working</td>
<td>0</td>
<td>1</td>
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<td>4</td>
<td>5</td>
<td>6</td>
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</table>

### 3. Turnover Cognitions

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you think about quitting your job? &lt;br&gt;(Please circle)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How much do you agree with statement: &lt;br&gt;“Often think about quitting my job” &lt;br&gt;(Please circle)</td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Neither</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>3. Circle a response for each pair of adjectives which best describes how you feel about the statement: &lt;br&gt;“For me, searching for another job in the next 3 months is”&lt;br&gt;a. Bad/Good &lt;br&gt;b. Awful/Nice</td>
<td>Bad</td>
<td>Very</td>
<td>Moderately</td>
<td>Slightly</td>
<td>Neither</td>
</tr>
<tr>
<td>4. How would you rate your chance of: &lt;br&gt;a. Quitting in the next 3 months? &lt;br&gt;b. Quitting in the next 6 months? &lt;br&gt;(Please circle)</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
<td>So-so</td>
<td>Not so good</td>
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<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

That’s it!

Many thanks for your time.
CONSENT FORM

Project Title: An investigation into the work engagement of new registered profession of dental nursing

Name of Researcher: Gillian Forbes

1. I confirm that I have read and understand the information sheet for the above evaluation. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

3. I understand I will be audio recorded during the focus group session.

4. I agree for any quotes recorded during the focus group session to be used anonymously in any presentations and publications.

5. I agree to take part in the above evaluation.

Name................................................................................Date: ...............................

Signature: ...............................................................................

Name of Researcher: ..........................................................Date: ...............................

When completed 1 consent form for participant; 1 for researcher
Transcription Conventions

- [word] Simultaneous talk, when more than one person is speaking at a time
- word = Latching (one speaker following another with no pause)
- (.) Micro pause, less than one second long
- (2.0) Estimated length of pause of one second or more, to nearest 0.5 of a second
- wor: Lengthening of a syllable
- wor- Word / syllable cut off before completed (e.g. false start, interruption)
- { } Inaudible speech; brackets left empty
- {word} Unclear speech; brackets contain a guess at / approximation of what was said
- ((laughs)) Non-verbal communication
- (word) Talk overlaid by nonverbal communication
- word Stressed syllable
- /word/ Non-standard pronunciation by patient represented in standard orthography
- Source International Sociolinguistics
Appendix 2.10

Index of themes and sub-themes (with colour coding)

Registration
1.1 Benefits
1.2 Gives respect
1.3 Who pays registration fee
1.4 Implications

Practices
2.1 Setting up and preparation of surgery
2.2 Ownership
2.3 Starting times – having to go in early to prepare
2.4 Expectation of loyalty/dedication to practice
2.5 Size (big or small)

Work colleagues
3.1 Hierarchy
3.2 Grandparent rights of older nurses
3.3 Trainee gets least liked jobs – too posh to wash!
3.4 Teamwork

Communications
4.1 Talking to dentists
4.2 Talking to other dental nurses
4.3 Talking to patients
4.4 from management e.g. team meetings

Self
5.1 Feeling valued
5.2 Lots of women working together
5.3 Expectations of what a dental nurse does
5.4 Pressure
5.5 Conflict over training

Other issues (not listed above)
4. Personal Accomplishment

**KEY** (Please circle a number)

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>A few times a year or less</td>
<td>0</td>
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<td>Once a month</td>
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<td>A few times a week</td>
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<tr>
<td>Every day</td>
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</table>

**Item 1**: I can easily understand how my patients feel about things.

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**Item 2**: I deal effectively with the problem of my patients.

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**Item 3**: I feel I’m positively influencing other people’s lives through my work.

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</table>

**Item 4**: I feel energetic.

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</table>

**Item 5**: I can easily create a relaxed atmosphere with my patients.

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</table>

**Item 6**: I feel exhilarated after working closely with my patients.

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<th>6</th>
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**Item 7**: I have accomplished many worthwhile things in this job.

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</table>

**Item 8**: In my work, I deal with emotional problems very calmly.

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</table>

5. Intention to leave

**In your view, please rate the following statements as to your level of agreement. Please circle a number.**

**KEY**: 1 Completely Agree; 2 Strongly Agree; 3 Agree; 4 Slightly Agree; 5 Uncertain; 6 Slightly Disagree; 7 Disagree; 8 Strongly Disagree; 9 Completely Disagree

1. I often think about quitting my job.

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<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>5</th>
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<th>7</th>
<th>8</th>
<th>9</th>
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</table>

2. I intend to change jobs during the next year.

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<tr>
<th>1</th>
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</table>

3. I intend to leave dental nursing.

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<th>1</th>
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<th>9</th>
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</thead>
</table>

Many thanks for taking the time to answer the questions.
2. Work Engagement

The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the ‘0’ (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

<table>
<thead>
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3. Job demands and resources

Please rate the following statement on amount of agreement. Please circle a number

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>i. The introduction of compulsory registration will benefit dental nursing</td>
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<td>ii. I fully understand the implication of professional registration</td>
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<td>iii. I am able to use all the skills learned during training whilst in the surgery</td>
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<td>iv. The preparation and setting up of the surgery gives me a sense of ownership</td>
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<td>v. The daily work routine is repetitive</td>
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<td></td>
</tr>
<tr>
<td>vi. There is a clear pathway of career development for dental nurses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>vii. I have a good working relationship with other dental practitioners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii. I am taken for granted by the dentists in my practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ix. It is difficult to plan work and my family life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>x. Patients are unaware of the duties of a dental nurse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2.12

Title - An investigation into the work engagement of the newly registered profession of dental nursing

I am a research student from the University of St Andrews doing a project on the subject shown in the title above. Already, I have conducted focus groups of pre and post registered dental nurses attending NES courses in Dundee and Aberdeen. The findings from the focus groups have informed the development of a survey - Dental nurses' views of their profession.

I am writing to request your assistance in distributing the survey to pre and post registration dental nurse attending the courses in your region. Hopefully, this participation invitation is not totally unexpected as Anne Crowe may have kindly mentioned it to you beforehand.

If you are happy to assist in the distribution of the survey and afterwards to return by post to me, please let me know by return. Also, please indicate how many surveys you will need to give to all dental nurses attending courses by end of May.

Your support of this study is appreciated and greatly received.

Best regards
Gillian

Good morning Ladies,

I spoke some time ago about a research programme that was being carried out by St Anderews University in partnership with NES, Gillian Forbes has requested that I contact external providers of dental nurse education to ask if you would be willing for your students to participate in this. The students would be asked to complete a questionnaire, which is anonymous and return direct to Gillian.

If you are happy to participate in this please contact me direct and I will pass your details to Gillian.

Regards
Margaret

Margaret Saunderson
Lead DCP Tutor West

West Dental
Clifton House, Clifton Place
Glasgow G3 7LD

Tel 0141 352 2855
e-mail margaret.saunderson@nes.scot.nhs.uk
Caroline Taylor
Lead Dental Care Professional Tutor - North East Scotland
NHS Education for Scotland
Aberdeen Dental Education Centre
Argyll House
Cornhill Road
ABERDEEN
AB25 2ZR

27th April 2011

Dear Caroline

Following on from the successful focus groups held in Aberdeen and Dundee the survey is now developed and it is ready for distribution to dental nurses across Scotland. Therefore, I am writing to request your assistance in distributing the survey to pre and post registered dental nurses attending training/courses in Aberdeen.

Please find enclosed the survey - Dental nurses’ views on their profession. There are 50 copies of the survey enclosed.

There is an instruction sheet to assist with the procedure to follow for the distribution of the survey. This is in order to make the process consistent across NES areas.

It is hoped a total of at least 150-200 questionnaires will be completed from the participating NES areas and colleges.

The return date is 31st May 2011.

Many thanks for your continuing support.

Best regards

Gillian M Forbes
PG Research student

Encs
Questionnaire - (Brown envelopes)
Instruction sheet x 3
Self-addressed envelope to University of St Andrews x 3
Instruction Sheet

NES TUTOR

In order to make the completion of the questionnaire as anonymous as possible, please use the following procedure.

Please, ask a dental nurse to volunteer to:

Hand out the questionnaires and to make sure all are returned after completion.

DENTAL NURSE

Would dental nurse, please open the envelope (marked surveys) and hand out to everybody who wants to fill in one.

1. Please note the following details:-
   a. How many dental nurses are present? Please write number in box
      (The number who could potentially answer the questionnaire)
   b. How many questionnaires are completed? Please write number in box

2. Once everybody has filled in the surveys, hand round the envelope (marked RETURN - addressed to University of St Andrews) so each dental nurse can put her questionnaire in it.

3. Also, put this instruction sheet in the RETURN addressed envelope.

4. Seal the envelope and give it back to NES tutor for posting.

Many thanks for your help

Gillian
### Appendix 5.1

Table 5(a) Summary of regression of vigour, dedication and absorption on predicting intention-to-leave (n = 231)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>Beta</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigour</td>
<td>-0.331</td>
<td>0.164</td>
<td>-0.172*</td>
<td>3%</td>
</tr>
<tr>
<td>Dedication</td>
<td>-1.20</td>
<td>0.180</td>
<td>-0.603**</td>
<td>36%</td>
</tr>
<tr>
<td>Absorption</td>
<td>0.338</td>
<td>0.164</td>
<td>0.172*</td>
<td>3%</td>
</tr>
</tbody>
</table>

** p<0.001; *p < 0.05

B = unstandardised beta weight; SE = Standard error; Beta = standardised beta weight

---

Table 5(b) Summary of the regression on personal accomplishment predicting work engagement (n = 231)

<table>
<thead>
<tr>
<th>Item</th>
<th>B</th>
<th>SE</th>
<th>Beta</th>
<th>Variance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td>-.390</td>
<td>.476</td>
<td>-.046</td>
<td>-</td>
</tr>
<tr>
<td>PA2</td>
<td>-.358</td>
<td>.467</td>
<td>-.044</td>
<td>-</td>
</tr>
<tr>
<td>PA3</td>
<td>.286</td>
<td>.418</td>
<td>.042</td>
<td>-</td>
</tr>
<tr>
<td>PA4</td>
<td>3.748</td>
<td>.415</td>
<td>.529**</td>
<td>28%</td>
</tr>
<tr>
<td>PA5</td>
<td>.171</td>
<td>.496</td>
<td>.020</td>
<td>-</td>
</tr>
<tr>
<td>PA6</td>
<td>.347</td>
<td>.474</td>
<td>.048</td>
<td>-</td>
</tr>
<tr>
<td>PA7</td>
<td>1.658</td>
<td>.428</td>
<td>.249**</td>
<td>6%</td>
</tr>
<tr>
<td>PA8</td>
<td>.937</td>
<td>.406</td>
<td>.122*</td>
<td>1%</td>
</tr>
</tbody>
</table>

** p<0.001; *p < 0.05

B = unstandardised beta weight; SE = Standard error; Beta = standardised beta weight

---

Table 5(c) Summary of regression on personal accomplishment on intention-to-leave (n = 231)

<table>
<thead>
<tr>
<th>Item</th>
<th>B</th>
<th>SE</th>
<th>Beta</th>
<th>Variance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td>.368</td>
<td>.507</td>
<td>.061</td>
<td>-</td>
</tr>
<tr>
<td>PA2</td>
<td>.330</td>
<td>.497</td>
<td>.057</td>
<td>-</td>
</tr>
<tr>
<td>PA3</td>
<td>.313</td>
<td>.446</td>
<td>.063</td>
<td>-</td>
</tr>
<tr>
<td>PA4</td>
<td>-1.494</td>
<td>.442</td>
<td>-.294*</td>
<td>9%</td>
</tr>
<tr>
<td>PA5</td>
<td>-.244</td>
<td>.528</td>
<td>-.039</td>
<td>-</td>
</tr>
<tr>
<td>PA6</td>
<td>.776</td>
<td>.505</td>
<td>.149</td>
<td>-</td>
</tr>
<tr>
<td>PA7</td>
<td>-1.780</td>
<td>.456</td>
<td>-.372**</td>
<td>14%</td>
</tr>
<tr>
<td>PA8</td>
<td>-.229</td>
<td>.432</td>
<td>-.041</td>
<td>-</td>
</tr>
</tbody>
</table>

** p<0.001; *p < 0.05

B = unstandardised beta weight; SE = Standard error; Beta = standardised beta weight