



Stress and the Well-Being of Nurses: An Investigation Using the Demands-Resources- Individual Effects (DRIVE) Model and the Well-Being Process Questionnaire (WPQ)

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ABSTRACT

Previous research shows that nurses have high levels of stress, but less is known about their well-being. The present research used an adapted version of the Demands-Resources-Individual Effects (DRIVE) model to investigate these areas. The Well-Being Process Questionnaire (WPQ), which consists of single items derived from longer scales, was also used. One hundred and seventy-seven British nurses (160 female, 17 male) participated in an online survey. The results showed that work characteristics could be grouped into three factors (resources; demands; and role/change/bullying), as were personality scores (positive personality; openness, agreeable, conscientious; and extraversion, emotional stability). Coping (positive and negative coping) and outcomes (positive and negative outcomes, and positive and negative job appraisals) had a two-factor solution. Results from logistic regressions showed that well-being outcomes were predicted by high positive personality and low negative coping. Positive job appraisals were predicted by high resources and low demands. These findings confirm that the use of the DRIVE model and a single short item measuring instrument can quickly provide information about factors predicting the well-being of nurses.

Key words: DRIVE model; Nurses; Stress; Well-being; WPQ.

INTRODUCTION

The aim of the present study was to investigate stress and well-being in nurses using the Demands-Resources-Individual Effects (DRIVE) model [1] and a measuring instrument using short versions of established questionnaires (the Wellbeing Process Questionnaire – WPQ Short Form, [2,3]). The next section briefly reviews the stress and well-being of nurses.

Stress and well-being of nurses

Research in the last 20 years has shown that health professionals are at significant risk from the negative effects of stressful workplaces [4, 5]. Calnan et al. [6] administered the GHQ to health service staff and found that 27% of all hospital staff were classified as suffering stress and mental ill-health, compared to between 14 and 18% of the general population. Of health workers, nurses are particularly at risk from stress-related problems, with high rates of turnover, absenteeism and burnout [5, 7]. Clegg [7] cites statistics from 1979-83 showing that suicide rates for nurses were significantly higher than the national average, and life expectancy for nurses was approximately 72, only one year more than miners. Lambert et al. [8] note that most research on nursing stress has taken place in the UK and USA, and they then showed that Japanese nurses also face similar issues.

Mark and Smith [9] reviewed the literature on stress in nurses, and this can be briefly summarised as follows. Nurses can be exposed on a daily basis to a large number of potent stressors, including conflict with physicians, discrimination, high workload, and dealing with death [10] as well as working shifts and bullying [11]. McVicar [12] states that many nursing work situations are high in "emotional labour", where they are expected to regulate their emotions during interactions with patients, colleagues and their managers according to the health care system's guidelines.

Both the Demands-Control-Support model (DCS: [13]) and the Effort-Reward imbalance model (ERI: [14]) have been used in research involving nursing populations [15, 16]. These models largely focus only on job characteristics [17] and often do not take account of individual differences. Transactional models of stress included coping styles as an initial individual difference in the stress process. Folkman et al. [18] claim that problem-focused forms of coping are associated with lower levels of negative health outcomes and that coping of an emotional-focused type, such as self-blame or escape/avoidance, is associated with poor mental health. This view has been tested with nurses. Healy & McKay [19] found that avoidance coping predicted poor mental health, whereas active problem solving was positively related to satisfaction.

Mark and Smith [9] investigated the relationships between job characteristics and coping in predicting levels of anxiety and depression in nurses. Their results showed that job demands, extrinsic effort, and over-commitment were associated with higher levels of anxiety and depression. Social support, rewards and skill discretion was associated with fewer mental health problems. Coping behaviours significantly added to the explanation of variance in anxiety and depression outcomes. The above effects were largely independent, and there were few significant interactions.

Since the Mark and Smith [9] study, other research has added to the knowledge of stress in nursing. This more recent research has been carried out in different countries, and, in general, similar results have been found across cultures. Cross-national differences often occur because the professional roles and duties vary. For example, in Italy, nursing is often considered as an auxiliary profession, with nurses' expertise not receiving accreditation and recognition [20]. Happell et al. [21] used focus groups to identify sources of occupational stress in nursing. Sources included: high workloads, unavailability of doctors, unsupportive management, human resource issues, interpersonal issues, patients' relatives, shift work, car parking, handover

procedures, no common area for nurses, not progressing at work and patient mental health. Suggestions for stress reduction included: workload modification, non-ward-based initiatives, changing shift hours, forwarding suggestions for change, music, special events, organisational development, ensuring nurses get breaks, massage therapists, acknowledgement from management and effective leadership within wards. Similar research has been carried out in other countries. For example, Adib-Hajbaghery et al. [22] carried out a content analysis of interviews to identify stress in Iranian nurses. Three categories emerged: "nurses' perceptions of job stress", "professional interest", and "prioritising career over family life". The first category included the following subcategories of "being in a constant alarm situation," "lack of experience", "dignity and social status", "lack of proper logistics", "shortage of nurses", "Irregularities in the organisation," "directors of nursing performance," "undesirable relations among colleagues," and "the patients' conditions". All of these factors affected the nurses' level of professional stress.

Other research [23] also examined sources of stress and linked these to job turnover intentions. The results showed that a third of hospital nurses rated their occupational stress as high. The major sources of stress were inadequate pay, inequality at work, too much work, staff shortage, lack of promotion, job insecurity and lack of management support. Occupational stress was positively associated with nurses' turnover intentions, with more than 35% of nurses considering leaving the hospital if they could find another job opportunity. Suresh et al. [24] concluded that stress continues to be a problem for nurses in the clinical setting. Excessive workload requires urgent attention by hospital managers in view of widespread retention difficulties. The themes identified could provide a framework for possible interventions for improving the clinical environment for nurses. Research [25] has also aimed to improve the resilience of nurses using techniques such as mindfulness or cognitive-behavioural interventions [26]. These approaches can be incorporated into general training and may generally reduce stress and also be important in specific changes (e.g. the transition from student to graduate nurse).

There have been few studies of positive outcomes (life satisfaction; positive affect; happiness) in nurses. The aim of the present study was to provide information on this topic. Other research has examined positive resources such as control and support and shown that these can reduce negative outcomes such as burnout [27]. There has also been a call to improve positive features of nursing rather than just reduce negative features [28, 29]. Others [30] argue that one must make a distinction between emotional work and emotional labour in nursing. Findings support the Conservation of Resources Theory [31] with "emotional work" (emotional response behaviours performed for the benefit of the nurse's relationships with others – e.g. companionship, help and regulation), rather than "emotional labour" (emotional regulation as part of their professional role largely for the benefit of the organisation), enabling the uptake of resources and leading to positive occupational health and well-being.

Nurses have been selected as the population for the current study, given the many stressors they face and the high levels of negative health outcomes they suffer from [5]. The traditional models of Demands-Control-Support and Effort-Reward-Imbalance were tested simultaneously in this population to see how much each contributes to the variance in different well-being outcomes. Ways of coping are also being investigated due to their centrality in transactional stress models and to see how much additional variance they explain over the use of DCS and

ERI. McVicar [12] and Kirkcaldy & Martin [5] also suggest that there is a need for more understanding of how individual variation in reactions to stressors in nurses affects health outcomes. This is examined here by considering aspects of personality.

The Demands-Resources-Individual Effects (DRIVE) Model

Mark and Smith [1] suggested that an ideal approach is to have a model of the stress process that accounts for circumstances, individual experiences, and subjective perceptions without too much complexity. Research using the DRIVE model has supported the direct effects of these variable groups on outcomes, although little support was found for interactions [9, 32]. The DRIVE model can also be easily adapted by adding or removing factors relevant to the circumstances they are applied to. In the present study, the model (see Figure 1) added personality measures, as it has been suggested that personality is a significant predictor of emotional well-being [33-35] and that taking personality into account is important for increasing well-being [3, 36].

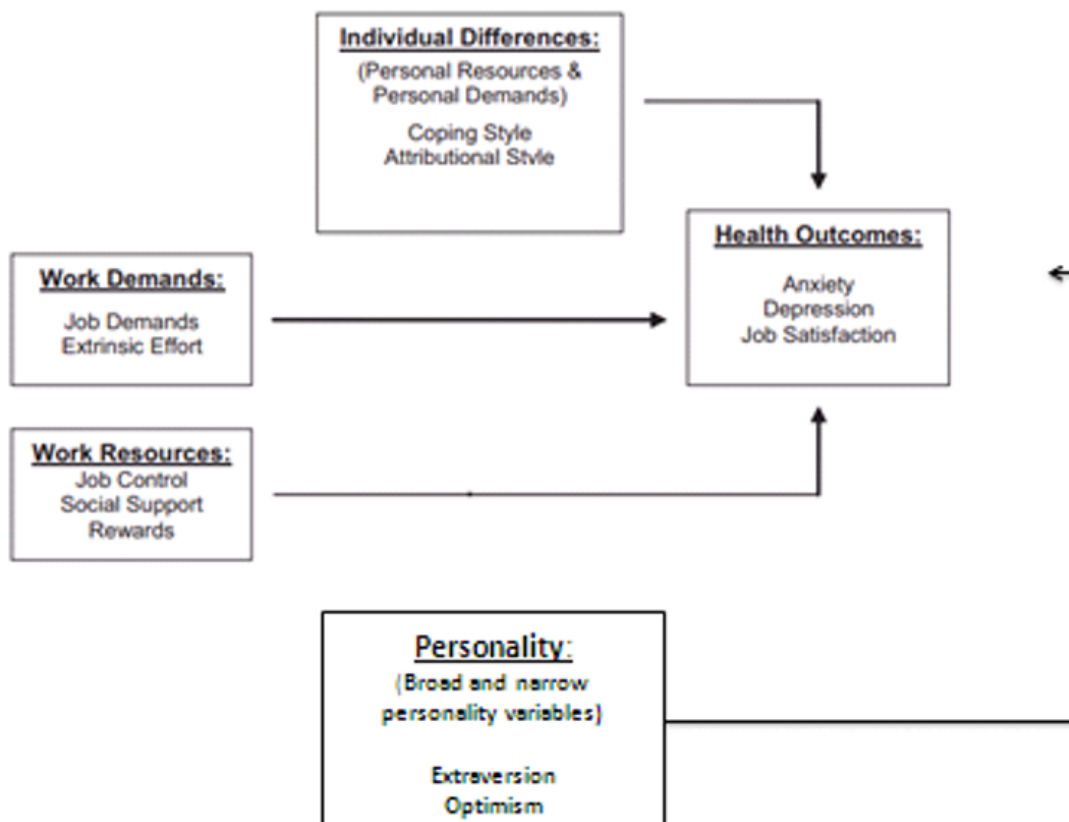


Figure 1: The adapted DRIVE model used in the present study.

The model used here also includes subjective well-being (SWB) more directly, with satisfaction (both life and job) and positive affect as separate components as recommended by prior research [37]. The other outcomes were stress (both life stress and job stress), negative mood, depression, and anxiety: the most commonly assessed negative aspects of well-being. Although these outcomes are measured individually, they can also be conceptually grouped in terms of positive, negative, cognitive (appraisals), and emotional categories, and more broadly as aspects of well-being as a whole. As a result, the present application provides a simpler but

broader approach to well-being than the original DRIVE model, although there is also an increased potential for redundant variables.

Development of single-item measures of well-being and associated variables

The variables that were chosen represent those used in previous research applying a multi-faceted approach to workplace well-being [9, 32, 38, 39]. Variables were congruent with international and national well-being definitions [40, 41], had strong research evidence for their association with well-being [32, 42-45] and were recommended for well-being assessment [46, 47].

Overall, this review suggests that there is a need to provide more information on the predictors of positive well-being of nursing staff. In summary, the present research involved nursing staff, representing 1 out of 3 occupations with the highest estimated prevalence of work-related stress in the UK [48]. Previous work on the DRIVE model also used a nursing sample [9]; therefore, the application of this approach in this research sample is already established, providing a suitable foundation for further research using the WPQ. There is much smaller literature on positive well-being in nurses. Most studies on this topic have looked at job satisfaction and considered factors that alter it. Quite often, factors that improve job satisfaction (e.g. rewards, social support, control, positive coping and attributions) also lead to a reduction in negative outcomes (e.g. anxiety and depression [32]). However, the relative contributions of individual characteristics and features of the work require further investigation.

METHOD

This research was approved by the Ethics committee, School of Psychology, Cardiff University, and carried out with the informed consent of the participants. Participants were recruited through the Royal College of Nursing. The study involved an online survey presented using SurveyTracker that they could complete in their own time. Participants were instructed that they could skip any questions that they were not comfortable answering, although all data were provided anonymously. Informed consent was achieved within the questionnaire, where participants without agreeing could not continue beyond the consent page. Following the consent page, participants were presented with an instructions sheet and a debrief sheet.

Participants

One hundred and seventy-seven nursing staff members (160 female; 17 male) aged 19-69 (mean age: 40 years) participated in the study. This number of participants was considered satisfactory to identify the large effect sizes based on previous research and to provide a meaningful cases-to-IV ratio for regression analysis [49]. The majority of the volunteers were married or living with a partner (66%) and were educated to degree or higher degree level (86.6%). Participants from all areas of nursing responded to the survey, including practitioners, educators and managers.

Materials

A questionnaire (the WPQ) consisting of single-item measures was used. The variables included:

- Previous DRIVE model variables – work demands, effort and over-commitment; resources: control, support and reward at work; coping style.

- Additional work characteristics: role understanding, consultation on change (HSE Management Standards), bullying [50] and supervisor relationship [51].
- Personality - Extraversion, emotional stability, conscientiousness, agreeableness, and openness (the "Big 5"); optimism, self-esteem, and self-efficacy.
- Outcomes: Job stress, life stress, negative affect, depression, and anxiety; positive mood, happiness, job satisfaction and life satisfaction.

Table 1 shows the complete set of single-item questions. Previous research with university staff [3] has shown that these items have good reliability and validity.

Table 1: Single item questions

Work characteristics

(Effort) I feel that I do not have the time I need to get my work done (for example: I am under constant time pressure, interrupted in my work, or overwhelmed by responsibility or work demands)

(Reward) I feel that I have been rewarded for my efforts (for example: The respect, role, and job prospects I receive are suitable for my efforts and achievements)

(Demands) I feel that my work is too demanding (for example: I have to work very fast, I have to work very hard, I have conflicting demands)

(Control) I feel that I get adequate control over my work (for example: I have a choice in what I do or how I do things, I am able to learn new things, I am able to be creative)

(Support) I feel that I am supported by my colleagues (for example: there is a good atmosphere at work, I get along with my colleagues, my colleagues understand me)

(Bullying) I feel that I have been subjected to bullying in the workplace in the past 12 months (for example: unjustified criticism, verbal/non-verbal threats, violence, humiliation or exclusion)

(Change) I feel that I am not consulted about changes at work (for example: There is no opportunity to question managers about change, I am unclear about how the change will work out in practice).

(Role) I feel that I don't understand my role clearly (For example: I am not clear of what is expected of me and what tasks I need to perform)

(Supervisor relationship) I feel that I get along well with my supervisor (For example: I know where I stand in terms of their opinion of me, my supervisor understands me, my supervisor recognises my potential)

Coping

(Positive Coping) When I find myself in stressful situations, I try to deal with them in a pro-active way (For example: by taking one step at a time, by changing something so that it would work out, by learning from the situation, by asking someone for help)

(Negative Coping) When I find myself in stressful situations, I tend to look inwardly (For example: I blame myself for the situation, wish that I had the power to change what has happened, wish the situation would go away, try to forget the whole thing)

Personality

(Optimism) In general, I feel optimistic about the future (For example: I usually expect the best, I expect more good things to happen to me than bad, It's easy for me to relax)

(Self-efficacy) I am confident in my ability to solve problems that I might face in life (For example: I can usually handle whatever comes my way, If I try hard enough I can overcome difficult problems, I can stick to my aims and accomplish my goals)

(Self-esteem) Overall, I feel that I have positive self-esteem (For example: On the whole, I am satisfied with myself, I am able to do things as well as most other people, I feel that I am a person of worth)

(Extraversion) I consider myself to be outgoing (For example: Talkative, comfortable with myself, confident in social situations)

(Agreeableness) I feel that I have an agreeable nature (For example: I feel sympathy toward people in need, I like being kind to people, I'm co-operative)

(Conscientiousness) I feel that I am a conscientious person (For example: I am always prepared, I make plans and stick to them, I pay attention to details)

(Emotional stability) I feel that I can get on well with others (For example: I'm usually relaxed around others, I tend not to get jealous, I accept people as they are)

(Openness) I feel that I am open to new ideas (For example: I enjoy philosophical discussion, I like to be imaginative, I like to be creative)

Outcomes

(Positive affect) Thinking about myself and how I normally feel, in general, I mostly experience positive feelings (For example: I feel alert, inspired, determined, attentive)

(Negative affect) Thinking about myself and how I normally feel, in general, I mostly experience negative feelings (For example: I feel upset, hostile, ashamed, nervous)

(Job Satisfaction) Overall, I feel that I am satisfied with my job (For example: In most ways, my job is close to my ideal, so far I have gotten the important things I want in my job)

(Life Satisfaction) Overall, I feel that I am satisfied with my life (For example: In most ways, my life is close to my ideal, so far, I have gotten the important things I want in life)

(Depression) On a scale of one to ten, how depressed would you say you are in general? (e.g. feeling 'down', no longer looking forward to things or enjoying things that you used to)

(Anxiety) On a scale of one to ten, how anxious would you say you are in general? (e.g. feeling tense or 'wound up', unable to relax, feelings of worry or panic)?

(Job Stress) In general, how stressful do you find your job?

(Life Stress) In general, how stressful do you find your life?

Analysis Procedure

Analyses were carried out using the IBM SPSS 23 package. Guidance from Tabachnick and Fidell [49] was followed with the data assessed for outliers, missing values and normality. Factor analyses were carried out for the groups of variables (work demands; resources; personality; coping and outcomes) related to the DRIVE model. Factor scores were then dichotomised, and logistic regressions were then performed to examine associations between the predictor variables and outcomes.

RESULTS

Separate factor analyses were performed for the job characteristics, personality variables, coping scores and outcomes. These involved principal components analyses extracting factors with Eigenvalues greater than one and with varimax rotation.

The analysis of the job characteristics revealed three factors accounting for 62% of the variance:

1. Resources (35.1% of the variance; support, control, rewards).
2. Demands (17.9% of the variance; demands, effort and over-commitment).
3. Role/Change/Absence of Bullying (9.3%)

The analysis of the personality variables also revealed a three-factor solution accounting for 66% of the variance:

1. Positive personality (36.4% of the variance; self-esteem, optimism, and self-efficacy).
2. Openness, Agreeable and Conscientious (16.8% of the variance).
3. Extraversion/Emotional stability (12.9%).

Two coping factors accounting for 50.8% of the variance were identified:

1. Positive coping (40.9%).
2. Negative coping (13.7%).

Two outcome factors accounting for 61.9% of the variance were also extracted:

1. Positive Outcomes (49.4% of the variance; happiness, life satisfaction, positive affect and low life stress, low depression, low anxiety and low negative affect).
2. Positive Work Appraisals (12.6% of the variance; job satisfaction and low job stress).

The above factor scores were dichotomised and entered into two logistic regressions, one examining predictors of positive outcomes, the other predictors of positive work appraisals. Positive outcomes were predicted by high positive personality (OR = 12.53; $p < 0.001$; CI = 5.00-31.39), high positive coping (OR = 4.47; $p < 0.01$; CI = 1.97-10.20) and low negative coping scores (OR = 0.27; $p < 0.005$; CI = 0.12 – 0.61). Positive work appraisals were predicted by high resources (OR = 6.31; $p < 0.001$; CI = 2.89-13.78) and low job demands (OR = 0.25; $t=2.60$; $p < 0.001$; CI = 0.12-0.52). Additional regressions included the interaction terms but these were not significant.

DISCUSSION

The value of the DRIVE model and WPQ

The results demonstrate the value of using an adapted DRIVE model to examine both positive well-being and negative outcomes such as stress and anxiety in nurses. The WPQ work characteristics questions loaded on three factors, the established demands-resources factor and another covering clarity of role, management of change and the absence of bullying. The personality questions also produced three factors: positive personality (self-esteem, optimism and self-efficacy), extraversion and emotional stability and open, agreeable and conscientious personality. Separate positive and negative coping factors were also identified. The outcome measures (positive well-being, absence of negative well-being) and positive job appraisals (job satisfaction, absence of work stress) loaded on separate factors. Positive outcomes were predicted by positive personality and by positive coping. In contrast, positive work appraisals were predicted by high resources and low job demands and negative coping. These results extend previous research by considering a wider range of predictors and by examining both positive and negative outcomes.

Future Developments

The results reported here suggest that the WPQ has a clear factor structure and that these factors have good predictive validity. The WPQ, based on the adapted DRIVE model, can now be used in longitudinal studies and to evaluate interventions. Some of the factors (e.g. role clarity/management of change/absence of bullying and open, agreeable, conscientious personality) were not significant predictors and could either be dropped or replaced by other items in future studies. For example, it is well-established that work-life balance is a major issue for nurses and questions on this should be included. Similarly, the WPQ does not provide information on other important work characteristics (e.g. the working environment; working hours) and important outcomes (e.g. absenteeism, presenteeism, performance efficiency and musculoskeletal disorders). This wider range of measures has been added to other questionnaires based on the WPQ approach (e.g. the Smith Well-being Questionnaire – SWELL

– [52-54]). The profile of results found here was different from that seen in other professions (e.g., university staff – [3]). This suggests that it may be appropriate to maintain most of the WPQ items when investigating new samples or to consider samples from a wide range of occupational sectors.

Summary

In summary, both the older literature and more recent research suggest that nurses report high levels of stress and reduced well-being. The present study has shown that a DRIVE model, encompassing job characteristics and individual effects, can identify predictors of these outcomes. The WPQ has the ability to measure these factors very quickly and is an ideal tool to use in both audits of psychosocial factors and the assessment of interventions. These interventions could involve changes in job characteristics, development of coping skills or therapeutic approaches dealing with established problems. The presence of an underlying model and short measuring instrument will enable more effective prevention and management of negative influences and outcomes and also allow promotion of positive well-being.

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