Vulnerability to burnout within the nursing workforce : the role of personality and interpersonal behaviour

Vulnerability to burnout within the nursing workforce – the role of personality and interpersonal behaviour

ABSTRACT

Aim

To study the combination of personality and interpersonal behaviour of staff nurses in general hospitals in relation to burnout and its separate dimensions.

Background

More research on the individual factors contributing to the development of burnout is needed to improve the risk profile of nursing staff. Therefore, a combination of Leary's Interpersonal Circumplex Model, which depicts the interpersonal behaviour trait domain, and the Five Factor Model was considered in the study at hand.

Design

A cross-sectional research method was applied using self-report questionnaires.

Methods

A total of 880 Belgian general hospital nurses were invited to participate in the study. Data were collected from November 2012 to July 2013. The questionnaire consisted of three validated self-report instruments: the NEO-Five Factor Inventory, the Dutch Interpersonal Behaviour Scale and the Maslach Burnout Inventory.

Results

Of the 880 nurses invited to participate, 587 (67%) returned the questionnaire. Sex, Neuroticism, Submissive-Friendly behaviour, Dominant-Friendly behaviour, and vector length were found to be predictive factors for emotional exhaustion. For depersonalisation, sex, Neuroticism, Conscientiousness, Friendly behaviour, Submissive-Friendly behaviour, Dominant-Hostile behaviour, and vector length were predictive factors. Finally, personal

accomplishment was determined by Neuroticism, Openness, Conscientiousness, and Hostile behaviour.

Conclusions

This study confirmed the influence of the Big Five personality factors on the separate dimensions of burnout. Interpersonal behaviour made a significant contribution to the predictive capacity of the regression models of all three dimensions of burnout. Additional longitudinal research is required to confirm the causal relationship between these individual factors and burnout.

Relevance to clinical practice

The results of the current study can help to achieve a better understanding of what vulnerabilities an individual prevention programme for burnout should target. In addition, hospitals could use assessment instruments to identify nurses who are prone to burnout and thus would benefit from additional support or stress-reduction programmes.

Keywords: burnout, nurses, personality, behaviour

WHAT DOES THIS PAPER CONTRIBUTE TO THE WIDER GLOBAL COMMUNITY?

- This paper provides a more elaborate insight in the individual factors that contribute to staff nurse burnout by enriching the Big Five Model with the Interpersonal Circumplex Model.
- Staff nurses showed predominantly Friendly-Submissive behaviour in their interpersonal interactions.
- The paper confirms the influence of the Big Five personality traits on the separate dimensions of nurse burnout. Additionally, it describes the significant contribution of Interpersonal behaviour to the prediction of nurse burnout.

INTRODUCTION

Recent international research has identified health care workers as a population at risk for the development of burnout due to the specific nature of their job (Grau-Alberola *et al*. 2010, Lorenz *et al*. 2010). Aiken *et al*. (2012) have confirmed this high-risk status in a large study across Europe and the USA by reporting that 10-78% of nurses regard themselves as being burned out. In Belgium, the situation is comparable with 12% of nurses having a high risk of developing burnout and 7% being diagnosed as burned out (Vandenbroeck *et al*. 2012).

This high prevalence is disturbing, especially when taking into account the wide array of negative individual and organisational consequences. Individual nurse burnout is associated with psychological distress, somatic complaints, insomnia, substance use or abuse and lower job satisfaction (Aiken *et al*. 2002, Birkmeyer *et al*. 2004, Jackson 1982, Vahey *et al*. 2004). In addition, Bakker *et al*. (2005) confirmed that burnout can be contagious and might thus be transferred from one nurse to another both consciously and unconsciously. As a consequence, burnout is not only an individual problem, but one of the entire nursing unit or even the whole organisation as it can substantially increase costs due to more absenteeism, turnover and recruitment difficulties (Aiken *et al*. 2012, Leiter & Maslach 2009, Van Bogaert *et al*. 2009b).

However, burnout does not only affect the individual nurse and the organisation, but the patient as well. After all, nursing care accounts for 45% of the variance in the overall quality of care ratings (Carey & Seibert 1993). More specifically, nurses influence patient satisfaction by the affective nature of their interactions (Leiter *et al*. 1998). Symptoms of burnout such as depersonalisation and emotional exhaustion can therefore influence patient satisfaction and patient safety (Gravlin 1994, Laschinger *et al*. 2006, Leiter *et al*. 1998, Vahey *et al*. 2004). This was confirmed by Firth-Cozens and Cornwell (2009) who described that burnout causes

a reduction in compassion and caring. Furthermore, nurses with symptoms of burnout report a lower perceived quality of care (Van Bogaert *et al*. 2010).

When summarizing these consequences for the individual nurse, the organisation and the patient, it becomes evident that burnout has an extensive influence on the nursing profession. Consequently, it might be important to identify possible causes for this syndrome to be able to address it.

BACKGROUND

The most accepted definition of burnout is that described by Maslach & Jackson (1981). They describe burnout as a psychological syndrome consisting of three dimensions: emotional exhaustion, depersonalisation and reduced personal accomplishment. Emotional exhaustion refers to feeling overextended and emotionally and physically depleted at work. Depersonalisation stands for the alienation towards others. This is expressed in a cold, cynical, distant an impersonal attitude towards the patients and co-workers. Finally, reduced personal accomplishment is related to negative feelings about professional achievements, which go hand in hand with feelings of incompetence and doubts about ones' personal abilities (Schaufeli & Van Dierendonck 2000). This syndrome is the result of chronically experienced psychological and physical distress (Folkman & Greer 2000). Distress develops through an interplay between external stressors or demands and individual factors (Payne 1999). The external stressors—such as organisational and job-related factors—have been researched extensively in the nursing population. As such, burnout has been proven to be influenced by for example, lack of feedback clarity, job complexity (Melchior *et al*. 1997), work overload (Garrosa *et al*. 2008), hospital management (Van Bogaert *et al*. 2013) and recurrent night duty (Lasebikan & Oyetunde 2012).

With regard to the individual factors, Swider & Zimmerman (2010) suggested that personality has a relation to burnout, absenteeism and turnover. Based on modern theories of personality, they hypothesised that individuals' dispositions or personalities affect their interpretations of and reactions to their environments. For example, individuals with aspects of neuroticism may evaluate an event in their environment—such as a conflict with a team member—differently than other individuals involved. The first may be predisposed to reacting to this event in such a way that they become emotionally drained, distance themselves from their job, or feel that they will not be able to achieve prior levels of performance which may affect subsequent work outcomes. Therefore, job burnout may be predicted by personality traits (Swider & Zimmerman 2010).

To study these individual factors, the Five Factor Model has taken a prominent position in the field of personality research (Hoekstra *et al*. 2012). This model defines five groups of personality traits that are interdependent: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. Neuroticism reflects emotional instability and overall fear. People that score high on this trait worry and brood often and feel relatively unhappy and unsafe. A high score on the personality trait of Extraversion implies a sociable person who likes to be in the company of other people. It represents people who are habitually assertive, active and verbal. Someone with a high score on Openness is curious, playful and flexible. They like new and unconventional ideas and images, tolerate ambiguity and accept values that deviate from their own willingly and with curiosity. The trait of Agreeableness represents the orientation of the individual towards the experiences, interests and goals of others (Graziano & Eisenberg 1997). A high score on this trait indicates a person who is helpful, modest, kind, and empathic and wants to cooperate with others. Finally, Conscientiousness refers to a careful, thorough attitude as a directive for behaviour. Therefore, conscientious people are reliable, well-disciplined, collected and cautious (Hoekstra *et al*. 2012). Earlier research has

demonstrated that this model is valid across different age groups and cultures (Costa & McCrae 1988, Swider & Zimmerman 2010).

Alarcon *et al*. (2009) found in their meta-analysis on employee personality-burnout relationships that the burnout dimensions of emotional exhaustion and depersonalisation were negatively related to emotional stability (the opposite of neuroticism), agreeableness, conscientiousness, and extraversion. Contrary, personal accomplishment was positively related to emotional stability, agreeableness, conscientiousness, extraversion, and openness to experience. Cañadas-De la Fuente *et al*. *(2015)* confirmed these findings for a population of 676 Spanish nursing professionals. However, they also stated that more research on this subject is needed to improve the risk profile associated with the burnout syndrome among nursing staff. An increase in studies on individual vulnerability factors could be valuable as personality is relatively stable. In particular, the Five Factor Model displays a high degree of stability of the traits with a test-retest reliability of 0.79-0.91 over several years (Costa & McCrae 1988).

A more elaborate risk profile for the nursing population might be obtained by combining two of the most leading and pervasive structural models in personality and social psychology (DeYoung *et al*. 2013), the Five Factor Model and Leary's Interpersonal Circumplex (IPC) Model, which depicts the social behaviour trait domain (Leary 1957, Wiggins *et al*. 1989). This conceptual IPC model has in recent decades become the most popular model for conceptualising, organising, and assessing interpersonal dispositions, and provides a solid two-dimensional foundation – grounded in both theory and research – on which to build a multidimensional understanding of our interpersonal world (Locke 2010). The IPC is defined graphically by two orthogonal axes: a vertical Agency-axis (Dominance (A+) versus Submission (A-)) and a horizontal Communion-axis (Friendliness (C+) and Hostility (C-)). Agency refers to the condition of being a differentiated individual, and it is manifested in

strivings for mastery and power which enhance and protect that differentiation. Communion refers to the condition of being part of a larger social or spiritual entity. This is manifested in strivings for intimacy, union, and solidarity with that larger entity (Wiggins 1991). Each point within the IPC can be specified as a weighted mixture of Agency and Communion, and thus a different type of interpersonal behaviour (Locke 2010). The originators of this coding system regarded interpersonal traits as structural variables that reflect enduring tendencies of personality (Wiggins 1991).

Consequently, the IPC model can enrich Five Factor Model research. After all, the simple structure Five Factor Model assumes primacy for a few core categories of personality, resulting in certain 'preferred' areas in personality space where variables tend to cluster (Gurtman 2009) - thus, providing a global profile of personality traits. Two of these five characteristics (Extraversion and Agreeableness) seem to be equivalent to the dimensions of the IPC (DeYoung *et al*. 2013, McCrae & Costa 1989, Trapnell & Wiggins 1990, Traupman *et al*. 2009). However, the IPC Model can be precise about angular position rather than merely assigning markers to one factor or another. In a way, the two characteristics of Extraversion and Agreeableness come to life within the IPC. They are represented with more detail, which provides a more refined image of the interpersonal trait (Rouckhout & Schacht 2000). This refinement in noticeable behaviours can be important to clinical practice when aiming at individual burnout prevention.

However, the concepts of Agency and Communion, by themselves, do not fully capture the broad spectrum of important individual differences that characterize human interactions. In terms of the Big Five factors, dominant (Extraversion) and nurturant (Agreeableness) dispositions interact with characterological (Conscientiousness), emotional (Neuroticism), and cognitive (Openness) dispositions (Wiggins 1991). Therefore, a combination of the IPC Model and the Big Five Model was considered in the study at hand. As such, we wish to study

whether the IPC can contribute to the Big Five factors when describing an individual vulnerability model for burnout in staff nurses.

METHODS

Aim

To study the combination of personality and interpersonal behaviour of staff nurses in general hospitals in relation to burnout and its separate dimensions of emotional exhaustion, depersonalisation and reduced personal accomplishment.

Design and data collection

A cross-sectional research method was applied. Data collection was performed several years prior to this publication, more specifically from November 2012 to July 2013 by using a written questionnaire. This questionnaire consisted of three validated self-report instruments concerning personality (NEO Five Factor Inventory), interpersonal behaviour (Dutch Interpersonal Behaviour Scale), and burnout (Utrecht Burnout Scale), supplemented with several demographical questions and questions regarding job characteristics.

Sample

The study sample was selected from 16 large general hospitals in the Dutch speaking part of Belgium. We aimed to include respondents from all different nursing specialty areas, namely 1) technical units such as radiology and outpatient clinics, 2) Emergency Room (ER)-Operating Room (OR)- Intensive Care Units (ICU), 3) medical-surgical units, 4) psychiatric units, 5) paediatric units and finally 6) geriatric units. In Belgium full-time nurses work 8-hour shifts.

Stratified random sampling was applied in order to obtain a broad spectrum of the nursing profession within the hospital setting. All nursing units from the participating hospitals were categorised within one of the six specialty areas. Consecutively, nursing units were selected through simple random sampling within each stratum or nursing specialty area using dice. All staff nurses from the selected units between 21-65 years of age that mastered the Dutch language were included.

Building on previous research concerning Big Five personality types and burnout in teachers, quick-service restaurant employees and volunteer counsellors, significant results could be reported for respectively 404, 187 and 80 respondents (Bakker *et al*. 2006, David & Quintao 2012, Kim *et al*. 2009). Therefore, expecting a response rate of 50%, 880 questionnaires were handed out across 44 different units.

Ethical considerations

Ethics committee approval was obtained from a university hospital designated as central committee (B300201317244) as well as approval from the local ethics committees of each participating hospital. Every eligible staff nurse was asked to fill out an informed consent form. To ensure privacy after completion a sealable envelope was provided together with the questionnaires.

Validity and reliability

Burnout was evaluated using the Utrecht Burnout Scale (UBOS; Schaufeli & Van Dierendonck 2000). This is the Dutch version of the Maslach Burnout Inventory, which is based on 20 items of the MBI-Human Service Survey (Van Bogaert *et al*. 2009a), and measures the frequency of the main burnout symptoms on a seven-point scale ranging from 0 to 6. For this version test-retest correlations with an interval of two months were found between 0.72-0.85. The Cronbach's alpha value of the dimension of emotional exhaustion

was 0.83, of depersonalisation 0.68 and of personal accomplishment 0.75 (Schaufeli & Van Dierendonck 2000). Dutch cut-off values specified for nurses were used to label high or very high levels of emotional exhaustion (mean score >2.12) and depersonalisation (mean score >1.79 or >1.59 for men or women, respectively) and low or very low levels of personal accomplishment (mean score <3.57), hence Belgian cut-off values were not available (Schaufeli & Van Dierendonck 2000). In keeping with the guidelines, burnout was defined as having a high to very high score of emotional exhaustion and depersonalisation combined with a low to very low score on personal accomplishment. Another term that is used in burnout research is 'a high risk of burnout'. Respondents were identified as having a high risk when they experienced high to very high emotional exhaustion in combination with either high to very high depersonalisation or low to very low personal accomplishment (Schaufeli & Van Dierendonck 2000). In the current study, Cronbach's alpha for the dimension of emotional exhaustion was 0.89; 0.73 for the depersonalisation dimension; and 0.81 for personal accomplishment.

To measure personality, the Dutch version of the NEO Five Factor Inventory (NEO-FFI; Hoekstra *et al*. 2012) was applied. This is an authorized shortened version of the 1992-revision of the NEO Personality Inventory (NEO-PI-R) of Costa & McCrae. The NEO-PI-R is based on the Big Five personality traits and thus measures the five most important personalities in adults with an additional 30 underlying facets using 240 questions. The shorter NEO-FFI is also able to provide a good assessment of these five personalities with only 60 questions answered on a five point scale, ranging from 'strongly disagree' to 'strongly agree'. The brief version was chosen to maintain the interest of participants and to minimize respondent refusal. The Dutch version of this questionnaire has been proven to have a good internal consistency in different populations such as elderly people, students, random population samples and employees with Cronbach's alphas ranging from 0.69-0.88. The test-

retest correlations in these populations ranged from 0.68-0.82 (Hoekstra *et al*. 2012). In the study at hand, Cronbach's alphas totalled up to 0.80, 0.70, 0.54, 0.83, and 0.76 for the personality traits of Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness, respectively. A standard nine point scale of a norm group was used to separate the raw scores on each trait into categories of low to very low scores (Stanine 1-3), average scores (Stanine 4-6), and high to very high scores (Stanine 7-9). Different nine point scales were applied for men and women (Hoekstra *et al*. 2012).

Finally, interpersonal behaviour was assessed using the Dutch Interpersonal Behaviour Scale (NIHS; Nederlandse Interpersoonlijke Handelingen Schaal; Rouckhout & Schacht 2000). The NIHS is an authorized circumplex adaptation of Kiesler's taxonomy of act-descriptors (Kiesler 1981). Instead of using adjectives as is done in Wiggin's IAS-R (Wiggins *et al*. 1988) the NIHS contains descriptors that specify overt interpersonal behaviours or actions. Accordingly, all item descriptors contain either a verb or verb phrase. As a consequence, this instrument is able to measure the general interpersonal characteristics of a broad population that result in Leary's interpersonal circumplex model. Such a circumplex model consists of eight main categories of interpersonal behaviour in relation to two main axes: the Communion axis and the Agency axis (Figure 1). Each of the eight categories has a generic two-letter code, alphabetically ordered counter clockwise. The Communion axis contains Friendly versus Hostile behaviour. These behaviours are calculated by combining the related octants of JK, LM, and NO for Friendly behaviour, and BC, DE, and FG for Hostile behaviour. If behaviour is Friendly, it will evoke similar behaviour from the other party and if behaviour is Hostile, it will evoke Hostile behaviour. The Agency axis portrays Dominant behaviour versus Submissive behaviour. Similarly, these behaviours are calculated by combining the related octants of NO, PA, and BC for Dominant behaviour and FG, HI, and JK for Submissive behaviour. Dominant behaviour provokes Submissive behaviour and vice versa.

The instrument consists of 116 items that are scored on a 5-point Likert scale ranging from 'absolutely not suitable' to 'absolutely suitable'. Using simple vector arithmetic, summary analysis can be conducted. This resultant has a certain directional orientation in the circular space of the circumplex (vector angle) and a certain length or extremity (vector length). The first is a measure of circular tendency and informs us of the predominant interpersonal theme that characterizes the personality. The second is a measure of circular variability. High vector length indicates a well-defined profile, with a clear central tendency – an interpersonal pattern with a clear peak in one region and a clear trough in the opposite region. Low vector length (minimum = 0) suggests less definition to the profile – hence less confidence in any summary conclusion about the overall thematic trend in the personality (Gurtman 2009). The test-retest correlations with an interval of one month lay between 0.76-0.85 (Rouckhout & Schacht 2000). In the current study, the Cronbach's alpha values of the eight main categories were 0.84, 0.81, 0.85, 0.80, 0.56, 0.76, 0.84, and 0.83 for PA, BC, DE, FG, HI, JK, LM, and NO respectively. A standard nine point scale of a norm group was used to separate the raw scores on each trait into categories of low to very low scores (Stanine 1-3), average scores (Stanine 4-6), and high to very high scores (Stanine 7-9). This norm group consisted of employees from various sectors. Different nine point scales were applied for men and women.

Data analysis

Multiple Linear Regression Modelling within SPSS version 22.0 (IBM 2011) was used to analyse the data. No missing values were allowed for the calculation of the Big Five personality traits as this uses sum scores. For interpersonal behaviour maximum 1 missing value was permitted. The Utrecht Burnout Scale allowed two missing values for the dimensions of emotional exhaustion and personal accomplishment, and one missing value for depersonalisation.

The angular location and the vector length of the Interpersonal Circumplex were computed using the following geometric formulas:

Agency (vertical axis) = $\sum r_i \,.\, \sin\theta_i$

Communion (horizontal axis) = $\sum r_i \,.\, \cos\theta_i$

Angular location = arctan (Agency/Communion)

Vector length h^2 = sqrt ($Agency^2$ + $Communion^2$)

where r_i represents the raw mean octant score and θ_i is the angle of the its octant.

The angular location was calculated for the descriptive analysis of the mean vector angle within the population. The vector length was computed to include the extremity of the predominant interpersonal theme within the multiple linear regression models.

To examine whether a certain combination of personality and interpersonal behaviour can be associated with the burnout dimensions, we conducted three multiple linear regression analyses (method enter) with the separate burnout dimensions as dependent variable (Tables 2-4). In the first step, age and sex were entered as predictor variables, as they have been known to influence the dimensions of burnout and the Big Five personality traits (Armon *et al*. 2012). In the second step, the Big Five personality traits were entered simultaneously as extensive research has proven the impact of these personality traits on the dimensions of burnout (Alarcon *et al*. 2009, Cañadas-De la Fuente *et al*. 2015). In the third step, the eight segments of interpersonal behaviour were entered, in addition to the vector length.

When the assumptions were checked, no multicollinearity was found using collinearity diagnostics between the variables in the regression analyses. Determinants of multicollinearity were considered a very low tolerance (<0.10) and/or a high VIF (>10). However,

heteroscedasticity was observed for the regressions with emotional exhaustion and depersonalisation as dependent variables. Therefore, the logarithms of these variables were calculated and used as dependent variable. As a consequence, to interpret the B-values correctly an additional calculation was made: 100 X (Exp(B) - 1). Extreme outliers and influential data points were excluded by trimming the data in order to improve the accuracy of the studied models by removing the scores which were unrepresentative of the sample as a whole (Field 2013).

Furthermore, effect sizes were calculated to measure the strength of the results. Cohen's f^2 was calculated for the multiple linear regression in Tables 2-4 with 0.02 suggesting a small effect, 0.15 a medium effect and 0.35 a large effect (Hunt n.d.).

RESULTS

Five hundred eighty-seven of the 880 questionnaires were returned, resulting in a response rate of 67%. However, of these 587 questionnaires, 22% contained some missing data. The response rate after exclusion of the missing data is presented at the top of each table and figure. The population consisted of mainly women (82%) with a mean age of 40 years (SD 10.8) and a mean nursing experience of 17 years (SD 11.2). Eighty-three percent of staff nurses had a working regime of 75% or more of a full-time position and most worked alternating shifts (73%). An equal amount of nurses (11%) worked in technical, psychiatric, paediatric and geriatric units. ER-OR-ICU and medical-surgical units had a slightly larger share in this sample with respectively 23 and 33%.

Descriptive analysis of personality, interpersonal behaviour and burnout

Table 1 describes the amount of staff nurses that had a low to very low, and a high to very high score on each of the Big Five personality traits and on the eight segments of interpersonal behaviour. Figure 2 demonstrates that staff nurses displayed on average Friendly-Submissive behaviour. This was confirmed by the mean vector angle amounting up to 309° (SD= 75.9°), which is located in the octant of JK. The mean vector length was found at 4.3 (SD= 1.3).

Regarding the separate burnout dimensions, 22.1% of nurses experienced high to very high levels of emotional exhaustion (range= 0.0-6.0; mean= 1.5; SD= 1.0), 16.1% had high to very high levels of depersonalisation (range= 0.0-5.0; mean= 0.9; SD= 0.8), and 15.0% scored low to very low on the dimension of personal accomplishment (range= 1.7-6.0; mean= 4.5; SD= 0.8). This totalled up to 6.7% of nurses with a high risk for the development of burnout and an additional 2.2% scoring above the diagnostic cut-off for burnout.

Linear regression analysis

In order to define which combination of personality traits and behavioural factors were related to the separate dimensions of burnout, we conducted multiple linear regression analyses (Table 2-4). In block 1, we entered age and sex. In block 2, Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness were entered simultaneously. In block 3, the eight segments of interpersonal behaviour and vector length were entered. The separate burnout dimensions were the dependent variables.

For emotional exhaustion, sex, Neuroticism, Submissive-Friendly behaviour (JK), Dominant-Friendly behaviour (NO) and vector length (definition of the profile) proved to be determining factors (Table 2). Women experienced 31.1% less emotional exhaustion than men. For each additional point on the scale of Neuroticism, emotional exhaustion increased with 6.2%. For

Dominant-Friendly behaviour and vector length, every added point caused an increase of emotional exhaustion with 38.4%, and 25.2% respectively. For Submissive-Friendly behaviour, on the other hand, each additional point triggered a decrease in emotional exhaustion of 42.5%. The complete model explained 35.3% of the variance in emotional exhaustion. Age and sex explained 0.8% of this variance in step 1 (R^2= 0.008; F= 1.992; p= 0.137). The Big five personality traits explained an additional 33.4% in step 2 (R^2 Change= 0.334; F Change= 52.843; p <0.001) and finally, the eight segments of interpersonal behaviour and vector length explained an added 3.1% (R^2 Change= 0.031; F Change= 2.849; p= 0.003) in step 3 of the regression.

For the burnout dimension of depersonalisation, a significant impact of sex, Neuroticism, Conscientiousness, Dominant-Hostile behaviour (BC), Submissive-Friendly behaviour (JK), Friendly behaviour (LM), and vector length was found (Table 3). Women suffered 36.2% less depersonalisation than men. Furthermore, for each additional point on Neuroticism, depersonalisation increased with 2.3%. For Dominant-Hostile behaviour and vector length, every added point caused an increase of depersonalisation with respectively 44.5%, and 45.1%. For Conscientiousness, Submissive-Friendly and Friendly behaviour, on the other hand, each additional point triggered a decrease in depersonalisation of respectively 2.5%, 66.0%, and 53.6%. This model explained 19.9% of the variance in depersonalisation. Age and sex explained 4.8% of this variance in step 1 (R^2= 0.048; F= 11.517; p <0.001). The Big five personality traits increased the model's predictive capacity with 14.0% in step 2 (R^2 Change= 0.140; F Change= 15.486; p <0.001). Lastly, the factors of interpersonal behaviour explained an additional 3.9% (R^2 Change= 0.039; F Change= 2.454; p= 0.010) in the third step.

Neuroticism, Openness, Conscientiousness, and Hostile behaviour (DE) were found to be determining factors for the burnout dimension of personal accomplishment (Table 4). This model explained 17.9% of the variance in personal accomplishment. Age and sex explained

0.3% of this variance in step 1 (R^2= 0.003; F= 0.885; p=0.413). The Big five personality traits explained an extra 17.0% in step 2 (R^2 Change= 0.170; F Change= 22.051; p <0.001) and finally, the eight segments of interpersonal behaviour and vector length added 3.0% (R^2 Change= 0.030; F Change= 2.193; p= 0.021) to the predictive capacity in step 3 of the regression.

DISCUSSION

In this study we aimed to report whether the Interpersonal Circumplex could contribute to the Big Five factors when describing an individual vulnerability model for burnout and its separate dimensions in a population of staff nurses in general hospitals.

Gender was taken into account as predictor variable in the regression analyses, as it has been known to influence the dimensions of burnout and the Big Five personality traits (Armon *et al*. 2012, Purvanova & Muros 2010). Purvanova & Muros (2010) concluded in their meta-analysis that women are likelier to report emotional exhaustion than men, whereas men are likelier to report depersonalisation than women. The latter is confirmed in the current study. The finding that women are likelier to report emotional exhaustion, however, is contradicted in the current study, which finds that women experienced 31% less emotional exhaustion than men. This could, however, be explained by the fact that domination of an occupation by one gender is likely to create negative experiences for members of the underrepresented gender. Therefore, men in female-typed occupations, such as nursing, fare worse than men employed in male-typed occupations (Purvanova & Muros 2010). Evans and Steptoe (2002) discovered that male nurses had the highest rate of sickness absence compared to female nurses and also perceived more work-related hassles than female nurses. This difference could be due to the fact that men in female-typed occupations often face emotional and interpersonal challenges that they are ill prepared for, as these skills are not necessary for successful fulfilment of the

male gender role. In addition, increased sensitivity to social status, as well as men's lower earnings in female-typed occupations, can cause men in these professions to feel frustrated with their supposed underachievement. After all, high social status and successfully fulfilling the role of a breadwinner are important motivations to men (Purvanova & Muros 2010). In addition, men in healthcare are more likely than women to report having been subjected to adverse social behaviour, which entails all acts of physical and verbal violence and intimidation at work (Eurofound 2012). However, in contrast to the current findings, Purvanova & Muros (2010) found that women are more emotionally exhausted than men in female-typed occupations.

In line with the meta-analysis of Alarcon *et al*. (2009), we established a strong relationship between Neuroticism and three burnout dimensions of emotional exhaustion, depersonalisation, and personal accomplishment. Several explanations for this relationship have been described. Armon *et al*. (2012) state that certain personality traits may predispose individuals to experience stressors more intensely, thus subsequently eliciting burnout. Neuroticism was described as the disposition to interpret events negatively. Consequently, Neuroticism consumes resources and is likely to lead to resource depletion or burnout because the higher its level, the more pronounced is the tendency to view the world pessimistically and interpret many stimuli as threatening. Therefore, neurotic individuals are likely to invest resources in dwelling on their internal affective states rather than in addressing work-related demands (Armon *et al*. 2012). Another possible explanation follows the 'emotional dissonance theory', which suggests that burnout relates to reduced emotional regulation that causes a gap between felt and expressed emotions (Tei *et al*. 2014). This theory denotes a conflict between experienced emotions and emotions expressed to conform to display rules. This emotional dissonance may thus emerge when the efforts of neurotic nurses to express occupationally-required positive and empathic emotions become too much of a burden and

emotional responses become poorly regulated (Tei *et al*. 2014). In addition, 41% of men and 37% of women in healthcare report that they have to hide their feelings (Eurofound 2012). Supporting the 'emotional dissonance theory', research suggests that burnout severity is related to difficulty in regulating negative arousal and difficulty describing / identifying one's own emotions (alexithymia: reduced emotional awareness) (Tei *et al*. 2014). However, longitudinal research is recommended to prove this order of occurrence and thus the causal inferences between Neuroticism and the dimensions of burnout. After all, due to the use of cross-sectional methodology it is also possible that the trait of Neuroticism in fact reflects the burnout symptomatology. Armon *et al*. (2012) attempted to contradict this by reporting that Neuroticism predicted emotional exhaustion both at T1 and T2 (1 year later). However, because Neuroticism was not assessed during T2, the possibility of reverse causation could not be tested nor disconfirmed. As a consequence, this theory acquires further research.

In our study we able to predict the three burnout dimensions through interpersonal behaviour. Emotional exhaustion and depersonalisation decreased when interpersonal behaviour was Friendly-Submissive or Friendly. Several possible interactions could clarify this relationship. First of all, when looking at nurse-patient interactions, Friendly behaviour from nurses can evoke Friendly behaviour in patients. After all, Friendly behaviour provokes a complementary response in other people that is similar (Locke 2010). Additionally, Friendly behaviour from nurses can increase patients satisfaction with nursing care as the locations of Friendly and Friendly-Submissive behaviour on the interpersonal circumplex (0° and 315°) are also named Warm-Agreeable and Unassuming-Ingenuous (IAS) or Nurturant and Deferential (SAS-C) (Gurtman 2009) in other IPC measures - traits that positively influence patient satisfaction with nursing care (Leiter *et al*. 1998). This patient satisfaction and Friendly behaviour of the patient towards the nurse can positively influence nurse-patient relationships and as a result increase nurse job satisfaction and reduce symptoms of burnout. Secondly, regarding

teamwork similar interactions can be found. Friendly behaviour of the individual nurse is likely to evoke Friendly behaviour of colleagues, thus establishing social support and a positive work atmosphere, which in turn can augment job satisfaction and reduce burnout symptoms. After all, workers are more likely to be able to cope with work pressures when they feel they have friends at work (Eurofound 2012). Both interactions support the diathesis x stress model which implies that individual factors (diathesis) – such as interpersonal behaviour – in combination with environmental stressors (stress) cause the development of burnout (Ingram & Luxton 2005). However, behaviour as a cause of burnout can only be confirmed with longitudinal research.

This longitudinal research is also necessary to explain why the only association between personal accomplishment and interpersonal behaviour is a positive correlation with Hostile behaviour. This unexpected result might be clarified by the current discussion in the literature about personal accomplishment as a dimension of burnout. Personal accomplishment has been criticised as being akin to a personality variable, such as self- or professional efficacy and correlates only weakly with the other two burnout components, as well as with known burnout correlates (Purvanova & Muros 2010). Furthermore, this position on the Interpersonal Circumplex (180°) can be described as critical (SAS-C) or even as resentful-distrusting behaviour (NIHS) (Gurtman 2009, Rouckhout & Schacht 2000). As such, a distrusting or overly critical attitude towards the capacities of others might induce greater confidence in the personal capacities and vice versa. Therefore, it might be possible that personal accomplishment and Hostile behaviour measure the same construct.

Emotional exhaustion and depersonalisation increased as interpersonal behaviour was aimed more towards Dominance (Dominant-Hostile and Dominant-Submissive behaviour). The location of Dominance on the IPC has also been described as the need to ‘get ahead’ or as ambitious behaviour (Gurtman 2009, Traupman *et al*. 2009). When this ambition becomes

excessive and turns into a compulsion to prove oneself, it becomes a risk factor for the development of burnout. Some researchers even suggest excessive ambition to be the first stage of burnout development followed by stages as 'working harder' and 'neglecting own needs', up to 'increasing feeling of meaninglessness and lack of interest', and finally 'physical exhaustion that can be life-threatening' (Kaschka *et al*. 2011). However, interpersonal complementarity could also explain why Dominant behaviour and emotional exhaustion and depersonalisation are related. In contrast to Friendliness and Hostility, a complementary response to Dominant behaviour is Submissive behaviour and vice versa (Locke 2010). Additionally, research has shown that for dyads complementarity on Dominance specifically was predictive of greater cohesion in the relationship (Gurtman 2009). As a consequence, nurses who behave dominantly in the highly hierarchical structure of hospitals – where physicians already claim the Dominant position – might face more interpersonal conflicts than their more Submissive colleagues. This in turn could lead to additional work stress and symptoms of burnout.

Finally, a longer vector length increased the burnout dimensions of emotional exhaustion and depersonalisation. Vector length indexes rigidity because it is greater to the extent that scores are especially high in one segment of the IPC and especially low in the opposite segment. Thus, the longer the vector, the more that individual expresses behaviours exclusively and intensively from that particular segment on the IPC. Research has confirmed this hypothesis by observing participants working together. Participants with a longer vector length were less likely to behave in ways that were complementary to their partner's behaviour (Locke 2010). As described before, complementarity is predictive of greater cohesion in the relationship (Gurtman 2009). Therefore, nurses with a longer vector length might face more interpersonal struggles than colleagues who exert more complementary behaviour. As a consequence, this could lead to additional work stress, emotional depletion and a blunt, cynical attitude.

Limitations

Due to the reasonably large number of respondents, the results of this study can be generalised to settings with similar job-related and organisational characteristics. However, five hundred eighty-seven of the 880 questionnaires were returned, resulting in a response rate of 67%. A certain amount of non-response to the written questionnaire was unavoidable as nurses were not obliged to participate in the study. As such, this non-response may bias the results as it was not random.

The time of data collection should also be taken into account. This was executed from November 2012 to July 2013. Therefore, it might be possible that a more recent study finds somewhat different results. However, several studies have proven behaviour and personality to be relatively stable with for instance interpersonal behaviour displaying test-retest reliabilities of 0.76 to 0.85 over one month (Rouckhout & Schacht 2000) and the Five Factor Model even 0.79-0.91 over several years (Costa & McCrae 1988).

Because distress develops through an interaction between external stressors and the individual response to these stressors, it is important to take job-related and organisational factors into account. However, these factors were not incorporated in the present study. Therefore, future research should combine individual, organisational and job-related factors to reproduce a complete model of risk factors for the development of burnout.

An additional limitation of this study is the cross-sectional design, which makes it impossible to track changes in personality, interpersonal behaviour and burnout scores over time or verify any causal relationship between these variables. A longitudinal study may be interesting as to investigate this interaction between personality, behaviour and burnout. Additionally, burnout was calculated based on the scores of a self-report instrument. This could possibly leave our results vulnerable to common-method variance as nurses might not have an accurate

perception of their actual interpersonal behaviour or might feel pressured to provide socially desirable answers. Additionally, denial of the problem has been described as a symptom of burnout (Kaschka *et al*. 2011), which could lead to underreported symptoms of burnout. Objective clinical diagnosis of burnout by a professional may delete this bias. However, although many researchers assume that common-method variance is a serious problem in organisational research, it has also been argued that for studying personality factors, self-reports might in fact be the most valid measurement method, because participants are the most suitable persons to report their own personality and level of burnout (Alarcon *et al*. 2009).

CONCLUSION

This study confirmed the influence of the Big Five personality factors on the separate dimensions of burnout. Interpersonal behaviour according to the Interpersonal Circumplex made a significant contribution to the predictive capacity of the regression models of the dimensions of burnout. Additional longitudinal research is required to confirm the causal relationship between these individual factors and burnout.

RELEVANCE TO CLINICAL PRACTICE

In tackling burnout, several authors plead for the development of preventive measures (Awa *et al*. 2010, Oginska-Bulik 2006). After all, burnout is characterised by a long preamble while the psychological and physical effects stay invisible until quite a late stage. However, once an individual becomes physically and/or psychologically unwell through stress, it can take a long time to recover (Wright 2014). Therefore, it is important to take this long build up and use it to prevent the syndrome of developing further. A recent review of Ruotsalainen et al. (2015), described that Cognitive Behavioural Therapy, mental and physical relaxation might reduce stress more than no intervention, but not more than an alternative. A better understanding of what vulnerabilities an individual prevention programme for burnout should target, could contribute to the development of more effective preventive measures. The results of the

current study can help to achieve this by emphasizing the negative effect of Neuroticism and Dominant behaviour on two of the burnout dimensions and the positive effect of Friendly behaviour. Therefore, prevention programmes can target, for instance, brooding by showing nurses how to create a more positive outlook on life, but also teach them to express their emotions (Neuroticism). In addition, prevention programmes could demonstrate nurses how to protect themselves from the compulsion to prove oneself or even reduce perfectionism (Dominant), and emphasize the importance of social support and cooperative behaviour (Friendliness). These individual interventions could potentially be very effective in clinical practice because when organisations only apply interventions that focus on changing the work environment, some individuals may still experience high levels of burnout as a result of their personalities (Alarcon *et al*. 2009). Therefore, it is important to create self-awareness, because this can help the individual nurse to change the way he/she thinks about a stressful situation. It may be clearer why this situation is causing him/her so much concern, what he/she can do to improve the situation, and what he/she may need to accept it, even without changing the situation itself through organisational interventions (Wright 2014). However, Awa *et al*. (2010) suggest in their review to implement a combination of both person- and organisation-directed interventions to insure a longer lasting positive effect of 12 months and more. Introducing refresher courses could enhance these effects even further. Effective prevention programmes for burnout can thus reduce the aforementioned negative effects caused by this syndrome, such as overall nurse wellbeing, quality of care, absenteeism, job turnover, and recruitment difficulties.

Furthermore, hospitals could use personality assessment instruments to identify nurses who are prone to burnout. This information could be used to determine which nurses would likely benefit most from additional support or stress-reduction programmes (Alarcon *et al*. 2009).

REFERENCES

Aiken LH, Clarke SP, Sloane DM, Sochaliski J & Silber JH (2002): Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *Journal of the American Medical Association* **288**, 1987-1993.

Aiken LH, Sermeus W, Van den Heede K, Sloane DM, Busse R, McKee M, Bruyneel L, Rafferty AM, Griffiths P, Moreno-Casbas MT, Tishelman C, Scott A, Brzostek T, Kinnunen J, Schwendimann R, Heinen M, Zikos D, Sjetne IS, Smith HL & Kutney-Lee A (2012): Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ* **344**, e1717.

Alarcon G, Eschleman KJ & Bowling NA (2009): Relationships between personality variables and burnout: A meta-analysis. *Work & Stress* **23**, 244-263.

Armon G, Shirom A & Melamed S (2012): The big five personality factors as predictors of changes across time in burnout and its facets. *J Pers* **80**, 403-427.

Awa WL, Plaumann M & Walter U (2010): Burnout prevention: a review of intervention programs. *Patient Educ Couns* **78**, 184-190.

Bakker AB, Le Blanc PM & Schaufeli WB (2005): Burnout contagion among intensive care nurses. *J Adv Nurs* **51**, 276-287.

Bakker AB, Van Der Zee KI, Lewig KA & Dollard MF (2006): The Relationship Between the Big Five Personality Factors and Burnout: A Study Among Volunteer Counselors. *The Journal of Social Psychology* **146**, 31-50.

Birkmeyer JD, Dimick JB & Birkmeyer NJ (2004): Measuring the quality of surgical care: structure, process, or outcomes? *J Am Coll Surg* **198**, 626-632.

Cañadas-De la Fuente GA, Vargas C, San Luis C, García I, Cañadas GR & De la Fuente EI (2015): Risk factors and prevalence of burnout syndrome in the nursing profession. *Int J Nurs Stud* **52**, 240-249.

Carey RG & Seibert JH (1993): A patient survey system to measure quality improvement: questionnaire reliability and validity. *Med Care* **31**, 834-845.

Costa PT, Jr. & McCrae RR (1988): Personality in adulthood: a six-year longitudinal study of self-reports and spouse ratings on the NEO Personality Inventory. *J Pers Soc Psychol* **54**, 853-863.

David IC & Quintao S (2012): [Burnout in teachers: its relationship with personality, coping strategies and life satisfaction]. *Acta Med Port* **25**, 145-155.

DeYoung CG, Weisberg YJ, Quilty LC & Peterson JB (2013): Unifying the Aspects of the Big Five, the Interpersonal Circumplex, and Trait Affiliation. *J Pers* **81**, 465-475.

Eurofound (2012) Fifth European Working Conditions Survey (Union POotE ed.), Luxembourg.

Evans O & Steptoe A (2002): The contribution of gender-role orientation, work factors and home stressors to psychological well-being and sickness absence in male-and female-dominated occupational groups. *Soc Sci Med* **54**, 481-492.

Field A (2013) *Discovering statistics using IBM SPSS statistics*. Sage.

Firth-Cozens J & Cornwell J (2009) *The point of care. Enabling compassionate care in acute hospital settings.* . The King's Fund, London.

Folkman S & Greer S (2000): Promoting psychological well-being in the face of serious illness: when theory, research and practice inform each other. *Psychooncology* **9**, 11-19.

Garrosa E, Rainho C, Moreno-Jiménez B & Monteiro MJ (2008): The relationship between job stressors, hardy personality, coping resources and burnout in a sample of nurses: A correlational study at two time points. *Int J Nurs Stud* **47**, 205-215.

Grau-Alberola E, Gil-Monte PR, Garcia-Juesas JA & Figueiredo-Ferraz H (2010): Incidence of burnout in Spanish nursing professionals: a longitudinal study. *Int J Nurs Stud* **47**, 1013-1020.

Gravlin GL (1994) *The relationships among nurse work satisfaction, burnout, and patient satisfaction with nursing care.* Columbia University Teachers College, New York.

Graziano WG & Eisenberg NH (1997) Agreeableness: a dimension of personality. In *Handbook of personality psychology* (Hogan R, Johnston J & Briggs S eds.). CA: Academic Press, San Diego, pp. 795-824.

Gurtman MB (2009): Exploring personality with the interpersonal circumplex. *Social and Personality Psychology Compass* **3**, 601-619.

Hoekstra HA, Ormel J & de Fruyt F (2012) *NEO-PI-R en NEO-FFI handleiding*. Hogrefe, Amsterdam.

Hunt A (n.d.) A Researcher's Guide to Power Analysis, Utah State University. Available at: http://rgs.usu.edu/irb/wp-content/uploads/sites/12/2015/08/A_Researchers_Guide_to_Power_Analysis_USU.pdf (accessed 04/02/2016).

IBM (2011) *IBM SPSS Statistics for Windows, Version 20.0*. IBM Corp., Armonk, New York.

Ingram RE & Luxton DD (2005) *Vulnerability-stress models. In Hankin, B.L. & Abela, J.R.Z. (Eds.) Development of psychopathology: a vulnerability-stress perspective.* Sage Publications, Thousand Oaks.

Jackson SE, Maslach, C. (1982): After-effects of job-related stress: Families as victims. . *Journal of Occupational Behaviour* **3**, 63-77.

Kaschka WP, Korczak D & Broich K (2011): Burnout: A fashionable diagnosis. *Dtsch Arztebl Int* **108**, 781-787.

Kiesler DJ (1981) Over interpersonal behavior and the interpersonal circle. In *Handbook of Interpersonal Psychotherapy* (Anchin JC & Kiesler DJ eds.), pp. 3-34.

Kim HJ, Shin KH & Swanger N (2009): Burnout and engagement: A comparative analysis using the Big Five personality dimensions. *International Journal of Hospitality Management* **28**, 96-104.

Laschinger S, Heather K & Leiter MP (2006): The Impact of Nursing Work Environments on Patient Safety Outcomes: The Mediating Role of Burnout Engagement. *Journal of Nursing Administration* **36**, 259-267.

Lasebikan VO & Oyetunde MO (2012): Burnout among Nurses in a Nigerian General Hospital: Prevalence and Associated Factors. *ISRN Nursing* **2012**, 402157.

Leary TF (1957) *Interpersonal diagnosis of personality: A functional theory and methodology for personality evaluation.* . Ronald Press Co., New York.

Leiter MP, Harvie P & Frizzell C (1998): The correspondence of patient satisfaction and nurse burnout. *Soc Sci Med* **47**, 1611-1617.

Leiter MP & Maslach C (2009): Nurse turnover: the mediating role of burnout. *J Nurs Manag* **17**, 331-339.

Locke KD (2010) Circumplex Measures of Interpersonal Constructs. In *Handbook of Interpersonal Psychology*. John Wiley & Sons, Inc., pp. 313-324.

Lorenz VR, Benatti MC & Sabino MO (2010): Burnout and stress among nurses in a university tertiary hospital. *Rev Lat Am Enfermagem* **18**, 1084-1091.

McCrae RR & Costa PT (1989): The structure of interpersonal traits: Wiggins's circumplex and the five-factor model. *Journal of Personality and Social Psychology* **56**, 586.

Melchior ME, van den Berg AA, Halfens R, Huyer Abu-Saad H, Philipsen H & Gassman P (1997): Burnout and the work environment of nurses in psychiatric long-stay care settings. *Soc Psychiatry Psychiatr Epidemiol* **32**, 158-164.

Oginska-Bulik N (2006): Occupational stress and its consequences in healthcare professionals: the role of type D personality. *Int J Occup Med Environ Health* **19**, 113-122.

Payne RL (1999) Stress at work: a conceptual framework. In *Stress in health professionals: psychological and organisational causes and interventions.* (Firth-Cozens J, Payne, R.L. ed.). John Wiley & Sons, Chichester, pp. 3-16.

Purvanova RK & Muros JP (2010): Gender differences in burnout: A meta-analysis. *Journal of Vocational Behavior* **77**, 168-185.

Rouckhout D & Schacht R (2000): Ontwikkeling van een Nederlandstalig interpersoonlijk circumplex. *Diagnostiekwijzer* **3**, 96-118.

Ruotsalainen JH, Verbeek JH, Mariné A & Serra C (2015): Preventing occupational stress in healthcare workers. *Cochrane Database Syst Rev* **4**.

Schaufeli WB & Van Dierendonck D (2000) *Handleiding van de Utrechtse Burn-out Schaal (UBOS)*. Swets Test Services, Lisse.

Swider BW & Zimmerman RD (2010): Born to burn-out: A meta-analytic path model of personality, job burn-out, and work outcomes. *Journal of Vocational Behavior* **76**, 487-506.

Tei S, Becker C, Kawada R, Fujino J, Jankowski KF, Sugihara G, Murai T & Takahashi H (2014): Can we predict burnout severity from empathy-related brain activity&quest. *Translational psychiatry* **4**, e393.

Trapnell PD & Wiggins JS (1990): Extension of the Interpersonal Adjective Scales to include the Big Five dimensions of personality. *Journal of Personality and Social Psychology* **59**, 781.

Traupman EK, Smith TW, Uchino BN, Berg CA, Trobst KK & Costa Jr PT (2009): Interpersonal circumplex octant, control, and affiliation scales for the NEO-PI-R. *Personality and Individual Differences* **47**, 457-463.

Vahey DC, Aiken LH, Sloane DM, Clarke SP & Vargas D (2004): Nurse burnout and patient satisfaction. *Med Care* **42**, II57-66.

Van Bogaert P, Clarke S, Roelant E, Meulemans H & Van de Heyning P (2010): Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: a multilevel modelling approach. *J Clin Nurs* **19**, 1664-1674.

Van Bogaert P, Clarke S, Vermeyen K, Meulemans H & Van de Heyning P (2009a): Practice environments and their associations with nurse-reported outcomes in Belgian hospitals: Development and preliminary validation of a Dutch adaptation of the Revised Nursing Work Index. *Int J Nurs Stud* **46**, 55-65.

Van Bogaert P, Clarke S, Willems R & Mondelaers M (2013): Nurse practice environment, workload, burnout, job outcomes, and quality of care in psychiatric hospitals: a structural equation model approach. *J Adv Nurs* **69**, 1515-1524.

Van Bogaert P, Meulemans H, Clarke S, Vermeyen K & Van de Heyning P (2009b): Hospital nurse practice environment, burnout, job outcomes and quality of care: test of a structural equation model. *J Adv Nurs* **65**, 2175-2185.

Vandenbroeck S, Vanbelle E, De Witte H, Moerenhout E, Sercu M, De Man H, Vanhaecht K, Gerven E, Sermeus W & Godderis L (2012) Een onderzoek naar burn-out en bevlogenheid bij artsen en verpleegkundigen in Belgische ziekenhuizen. FOD Volksgezondheid, FOD Werkgelegenheid, http://www.werk.belgie.be/moduleDefault.aspx?id=36139.

Wiggins JS (1991) Agency and communion as conceptual coordinates for the understanding and measurement of interpersonal behavior. In *Thinking clearly about psychology: Essays in honor of Paul E. Meehl, Vol. 1: Matters of public interest; Vol. 2: Personality and psychopathology.* (Cicchetti D & Grove WM eds.). University of Minnesota Press, Minneapolis, MN, US, pp. 89-113.

Wiggins JS, Phillips N & Trapnell P (1989): Circular reasoning about interpersonal behavior: Evidence concerning some untested assumptions underlying diagnostic classification. *Journal of Personality and Social Psychology* **56**, 296-305.

Wiggins JS, Trapnell P & Phillips N (1988): Psychometric and geometric characteristics of the Revised Interpersonal Adjective Scales (IAS-R). *Multivariate Behavioral Research* **23**, 517-530.

Wright K (2014): Alleviating stress in the workplace: advice for nurses. *Nurs Stand* **28**, 37-42.

TABLES AND FIGURES

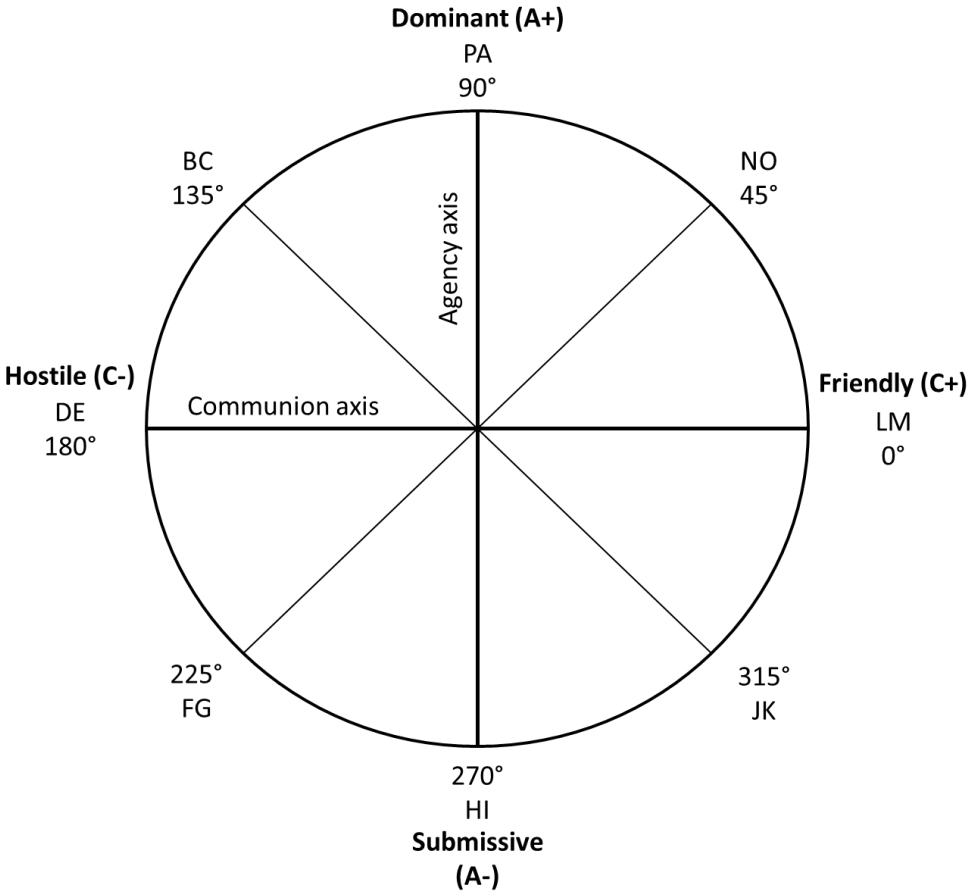

Figure 1. The Interpersonal Circumplex Model (Gurtman 2009)

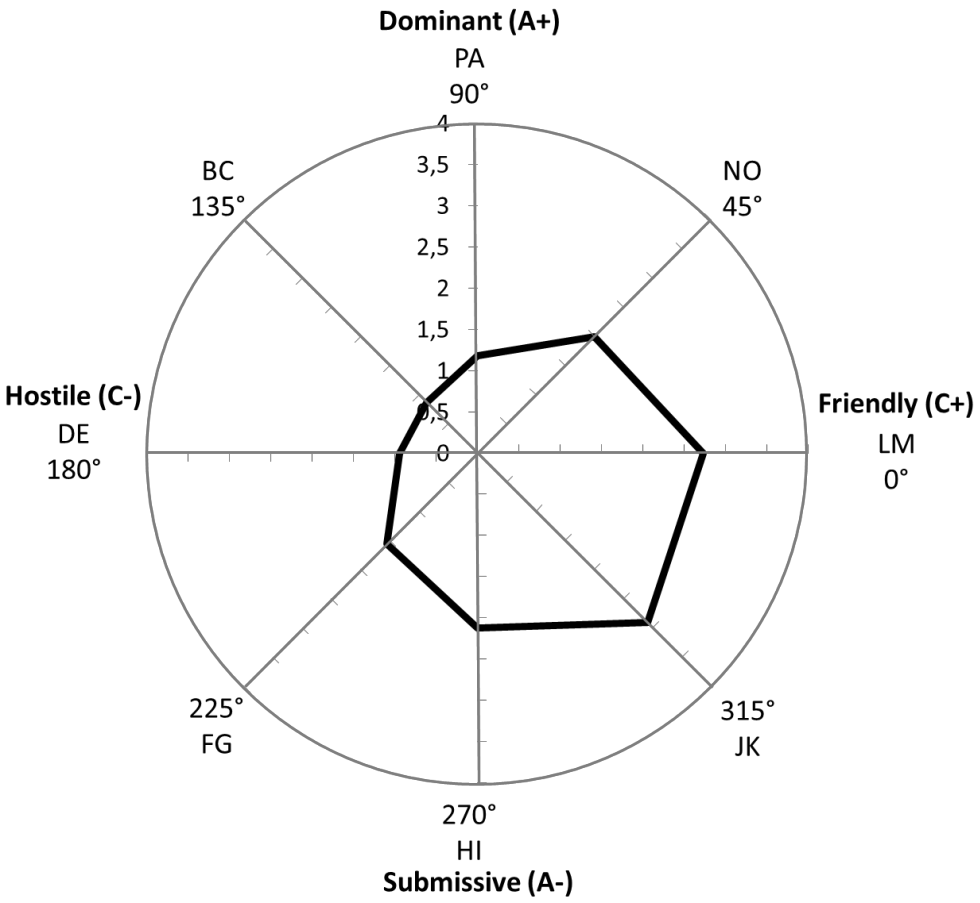

Figure 2. Description of the average interpersonal behaviour (N = 587)

Table 1

Description of the Big Five personality traits and the eight segments of interpersonal behaviour of staff nurses (N=585)

Variables	Low to very low score	High to very high score
Big Five Factors		
Neuroticism	20.7%	19.8%
Extraversion	9.3%	40.1%
Openness	13.3%	25.5%
Agreeableness	10.9%	37.3%
Conscientiousness	12.3%	31.1%
Segments of Interpersonal Behaviour		
Dominant (PA)	51.3%	7.6%
Dominant – Hostile (BC)	39.9%	17.1%
Hostile (DE)	31.5%	19.6%
Submissive – Hostile (FG)	15.9%	33.8%
Submissive (HI)	20.6%	35.3%
Submissive – Friendly (JK)	14.6%	31.8%
Friendly (LM)	26.8%	21.4%
Dominant – Friendly (NO)	58.2%	4.7%

Table 2

Multiple linear regression analysis of the logarithm of emotional exhaustion (N=527)

STEP	Variables	B	Standard error	β	t	p	CI
1	**Women vs men**	-0.271	0.068	-0.151	-3.963	<0.001	-0.405 – -0.137
	Age	0.002	0.003	0.035	0.903	0.367	-0.003 – 0.007
2	**Neuroticism**	0.060	0.004	0.618	13.486	<0.001	0.051 – 0.068
	Extraversion	-0.007	0.007	-0.057	-1.063	0.288	-0.020 – 0.006
	Openness	-0.003	0.005	-0.026	-0.687	0.493	-0.013 – 0.006
	Agreeableness	-0.001	0.008	-0.006	-0.110	0.912	-0.016 – 0.014
	Conscientiousness	0.008	0.006	0.057	1.378	0.169	-0.003 – 0.020
3	**Dominant (PA)**	-0.055	0.092	-0.042	-0.596	0.552	-0.236 – 0.126
	Dominant – Hostile (BC)	0.228	0.137	0.140	1.666	0.096	-0.041 – 0.496
	Hostile (DE)	0.189	0.133	0.114	1.415	0.158	-0.073 – 0.451
	Submissive – Hostile (FG)	0.062	0.105	0.038	0.591	0.555	-0.144 – 0.267
	Submissive (HI)	-0.181	0.104	-0.096	-1.734	0.084	-0.386 – 0.024
	Submissive – Friendly (JK)	-0.354	0.142	-0.173	-2.489	0.013	-0.633 – -0.074
	Friendly (LM)	-0.193	0.114	-0.128	-1.702	0.089	-0.417 – 0.030
	Dominant – Friendly (NO)	0.325	0.104	0.199	3.114	0.002	0.120 – 0.530
	Vector length	0.225	0.082	0.431	2.733	0.006	0.063 – 0.387

Note: linear regression analysis, enter method; CI = 95% confidence interval; p = p-value; Adjusted R^2 = 0.353; effect size f^2= 0.546 (0.02 = small, 0.15 = medium, 0.35= large)

Table 3

Multiple linear regression analysis of the logarithm of depersonalisation (N=458)

STEP	Variables	B	Standard error	β	t	p	CI
1	**Women vs men**	-0.309	0.086	-0.164	-3.595	<0.001	-0.478 – -0.140
	Age	-0.004	0.003	-0.052	-1.119	0.264	-0.010 – 0.003
2	**Neuroticism**	0.023	0.006	0.220	3.961	<0.001	0.011 – 0.034
	Extraversion	-0.002	0.008	-0.018	-0.282	0.778	-0.019 – 0.014
	Openness	-0.004	0.006	-0.028	-0.625	0.532	-0.015 – 0.008
	Agreeableness	-0.019	0.010	-0.126	-1.929	0.054	-0.039 – 0.000
	Conscientiousness	-0.025	0.007	-0.171	-3.422	0.001	-0.040 – -0.011
3	**Dominant (PA)**	0.111	0.117	0.081	0.946	0.345	-0.120 – 0.341
	Dominant – Hostile (BC)	0.368	0.169	0.222	2.182	0.030	0.037 – 0.700
	Hostile (DE)	0.137	0.165	0.081	0.833	0.405	-0.186 – 0.461
	Submissive – Hostile (FG)	0.172	0.137	0.099	1.263	0.207	-0.096 – 0.441
	Submissive (HI)	-0.077	0.132	-0.038	-0.585	0.559	-0.336 – 0.182
	Submissive – Friendly (JK)	-0.507	0.179	-0.238	-2.831	0.005	-0.859 – -0.155
	Friendly (LM)	-0.429	0.142	-0.267	-3.025	0.003	-0.708 – -0.150
	Dominant – Friendly (NO)	0.213	0.134	0.127	1.587	0.113	-0.051 – 0.477
	Vector length	0.372	0.100	0.685	3.725	<0.001	0.176 – 0.569

Note: linear regression analysis, enter method; CI = 95% confidence interval; p = p-value; Adjusted R^2 = 0.199; effect size f^2= 0.248 (0.02 = small, 0.15 = medium, 0.35= large)

Table 4

Multiple linear regression analysis of personal accomplishment (N=543)

STEP	Variables	B	Standard error	β	t	p	CI
1	**Women vs men**	0.006	0.092	0.003	0.063	0.950	-0.174 – 0.186
	Age	0.000	0.003	0.004	0.085	0.933	-0.006 – 0.007
2	**Neuroticism**	-0.014	0.006	-0.124	-2.441	0.015	-0.026 – -0.003
	Extraversion	0.004	0.009	0.023	0.402	0.688	-0.014 – 0.021
	Openness	0.014	0.006	0.094	2.238	0.026	0.002 – 0.027
	Agreeableness	0.018	0.010	0.105	1.752	0.080	-0.002 – 0.039
	Conscientiousness	0.029	0.008	0.172	3.711	<0.001	0.014 – 0.045
3	**Dominant (PA)**	0.037	0.123	0.024	0.298	0.766	-0.205 – 0.278
	Dominant – Hostile (BC)	-0.048	0.178	-0.025	-0.267	0.790	-0.398 – 0.302
	Hostile (DE)	0.404	0.174	0.206	2.329	0.020	0.063 – 0.746
	Submissive – Hostile (FG)	-0.268	0.140	-0.139	-1.916	0.056	-0.543 – 0.007
	Submissive (HI)	0.082	0.137	0.036	0.598	0.550	-0.187 – 0.350
	Submissive – Friendly (JK)	0.096	0.188	0.039	0.510	0.611	-0.274 – 0.466
	Friendly (LM)	0.129	0.145	0.070	0.888	0.375	-0.156 – 0.413
	Dominant – Friendly (NO)	0.079	0.138	0.041	0.569	0.569	-0.193 – 0.350
	Vector length	0.090	0.102	0.143	0.888	0.375	-0.110 – 0.290

Note: linear regression analysis, enter method; CI = 95% confidence interval; p = p-value; Adjusted R^2 = 0.179; effect size f^2= 0.218 (0.02 = small, 0.15 = medium, 0.35= large)