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Article

Personality, Work-Life Balance, Hardiness, and Vocation: A Typology of Nurses and Nursing Values in a Special Sample of English Hospital Nurses

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Abstract: This initial report of a longitudinal study of 192 English hospital nurses measured Nursing Values (the 6Cs of nursing); Personality, Self-Esteem and Depression; Burnout Potential; Work-Life Balance Stress; “Hardy Personality”; and Intention to Leave Nursing. Correlational, component, and cluster analysis identified four groups: “The Soldiers” ($N = 79$), with medium scores on most measures, who bravely “soldier on” in their nursing roles, in the face of numerous financial cuts to the National Health Service, and worsening nurse–patient ratios; “Cheerful Professionals” ($N = 54$), coping successfully with nursing roles, and a variety of challenges, in upwardly mobile careers; “High Achievers” ($N = 39$), senior nurses with strong profiles of a “hardy personality”, and commitment to fundamental nursing values; and “Highly Stressed, Potential Leavers” ($N = 20$), with indicators of significant psychological distress, and difficulty in coping with nursing role challenges. We have initiated a program of co-counselling and social support for this distressed group, by nurses who are coping more successfully with multiple challenges. We discuss the role of nurse educators in fostering nursing values, developing and supporting a “hardy personality” and emotional resilience in recruits to nursing. This study is framed within the disciplinary approach of Critical Realism, which identifies the value basis for research and dialogue in developing strategies for social change. The importance of this research is that: (a) it is part of the new thrust in nursing research, applying Critical Realist theory and methodology to research on nursing stress; (b) it has established, through network sampling, a group of nurses who can be supportive of each other in their stressful careers; (c) it establishes the reliability and potential validity of a measure of core nursing values; (d) it is among the first studies in research on nursing stress, to use the humanizing methodology of moving from data analysis (description of “things”), to describing a typology of nursing stress and career progress (description of individuals).

Keywords: nursing values; burnout; hardy personality; work-life balance; nursing stress; co-counselling; critical realism; nurse education; nurse–patient ratios

“Hospitals are institutions cradled in anxiety.” (Revans 1996, p. 420)

1. Introduction: A Planned Long-Term Study of Nursing Values, Psychological Strengths, Stress Factors, and Nursing Careers—A Critical Realist Approach

This paper is planned as the first in a series of quantitative and qualitative reports on a group of nurses, from a longitudinal study of personality, stress, values, role performance, and career outcomes

in groups of hospital nurses. The study is grounded in the research philosophy of *critical realism* (Bhaskar 2002; Wilson and McCormack 2006; Bagley et al. 2016). Critical realism is a value-based approach which intuitively identifies the ontology or value base of the phenomena examined, creating layers of understanding and analysis through dialogues with, and by, the subjects of study in order to achieve *morphogenesis*, the constructive dialogue of consciously engineered social change (Archer 2007; Caetano 2015). Critical realism (CR) seeks to understand the “real” nature of social phenomena, and ideally involves a qualitative case study, which can deploy mixed-methods, including use of standardized questionnaires, to elucidate the morphogenetic process, a dialogue for self-awareness, self-regard, and social change (Archer 2007). Critical realism is then, fundamentally a value-based approach to research, and goes beyond hypothesis-testing and positivist models.

Based on our personal assumptions and experiences of nursing as a value-based, highly stressed and often unrewarded profession we develop a heuristic enquiry which seeks: (a) to see, in our “snowball” sample, if the relationships between stressful outcomes and supposed antecedents of stress, are similar to those established in previous research studies of nurses, which have used probability samples, and more positivist notions of research; (b) to explore on the basis of various methodologies both quantitative and qualitative, how relationships between the variables measured can be reduced to a potentially fruitful typology of different types of adjustment amongst the nurses studied; (c) to establish some bases for a co-counselling and mutual support network amongst nurses, to support those undergoing stress; (d) to explore a *values* base for nursing education, practice, and administration.

Critical Realism seeks on the basis of both an intuitively derived value framework, and a variety of types of evidence, to promote social change in which *absences*—the hidden parts of systems of oppression, abuse or exploitation are hidden—can be exposed as the basis of *morphogenesis*, the dialogue for social change and the confrontation of alienating forces which mask oppression (Alderson 2013, 2015; Sawyerr and Bagley 2017). A fuller account of general principles of critical realist methodologies is given in Bagley et al. (2016). Critical realism is seen as a valuable research approach in the study of institutions, and of groups of students and workers (including nurses), experiencing stress and change (Bhaskar 2002; McEvoy and Richards 2003; Wilson and McCormack 2006; Walsh and Evans 2014; Schiller 2016; Williams et al. 2017; Allmark and Machaczek 2018). Critical realism in nursing research is par excellence a methodology “for emancipatory practice” (Parlour and McCormack 2012).

Our first research task in the critical realist research journey has been to explore, in an opportunistic sample of research subjects gathered through the “snowball” methodology, to replicate previous work in which a variety of stress factors, and their antecedents, may be significantly correlated. If the correlations we obtained were similar to those of previous research, then we have some indicators of reliability and validity of the basic parameters. We also introduce at the outset a new measure, of Nursing Values, attempting to establish the reliability of this instrument before exploring its correlation with other measures. Findings on the reliability and implications of the Nursing Values Scale (NVS) are presented before the further measures and their usefulness in research on nursing stress are described, since we argue that the NVS is merely one of a number of variables which may have importance in establishing a typology of nurses’ stress and achievement.

2. The Initial Model Explored

This study is exploratory and descriptive, but with an element of action research. The model initially explored was that commitment to Nursing Values would be predicted by or at least would correlate significantly with personal strengths such as high self-esteem, certain personality factors, and a “hardy personality” profile; with psychological discomfort such as depression, neuroticism, and social stressors such as Work-Life Balance (WLB) issues; and work stress as indicated by the measure of potential burn-out. A further question was explored—if diminished commitment to nursing values predicted intention to leave nursing, would the significance of that prediction survive when other variables in the study were controlled for in a standard regression analysis? A further

aim has been to identify sub-groups within our cohort of nurses, such as those with special strengths, and those who are vulnerable to stress of various kinds.

2.1. Nursing Values

Nursing, we argue is a profession which calls for a special kind of person, whose personality and personal values may help them cope with demanding roles as key providers of medical care. The values of a nurse's calling are epitomized by "the 6Cs of nursing" (Cummings and Bennett 2012; NMC 2015). These are: *Care, Compassion, Competence, Communication, Courage, and Commitment*.

The origin of these six values seems to be British and were operationalized in recent times for all National Health Service hospital staff guidance and achievement, by the United Kingdom's Department of Health (Clarke 2014; Stephenson 2014). But the values have a decidedly "Nightingalean" ring, reflecting the pioneering work of Florence Nightingale, who developed humane and efficient nursing care practices (Spurlock 2017). There is a clear connection in nurse populations between strongly held professional values, "personal dignity", and professional self-esteem (Sturm and Dellert 2016).

2.1.1. Care

Care is at the core of the nurse's role, the nurse being the carer and comforter of individuals undergoing stressful (and sometimes joyous) life changes, including injury, life-saving treatment, birth, recovery, rehabilitation, end of life care, and ease in dying.

2.1.2. Compassion

Compassion includes both inherent and acquired personality traits of intelligent and empathic identification of each patients' fears, anxieties, sufferings, and hopes.

2.1.3. Competence

Competence involves acquiring the technical skills of being able to nurse well, and to integrate with and sometimes manage complex tasks in medical care teams, optimizing personal professional talents; and the mastery, application and integration of new techniques and technologies.

2.1.4. Communication

Communication involves listening and talking to others—patients and colleagues—and communicating one's own needs and understandings of patient care to colleagues and to line managers, and openly offering support to both colleagues and patients in stressful situations.

2.1.5. Courage

Courage involves steadfastness in the face of stressful situations and in coping with the suffering of others, with the courage to think of and implement new ways of optimizing patient care, as well as overcoming the stress of identifying with the personal pain and grief of some patients, in positive ways.

2.1.6. Commitment

Commitment involves a dedication not only to patients, but also to understanding and applying new skills and forms of technology, as well as a commitment to understanding the organization in which one works, enabling through insightful understanding the smooth running of this organization.

2.2. Importance of Values in Nursing

Nursing educators in North America and the UK have consistently argued and shown in research studies, that a coherent framework of values such as the 6Cs may assist in the performance of roles which are often difficult and challenging: however, scholars are in agreement that more research is needed to discover methods that may be used to promote and support professional

values among nurses already practicing clinically (Day et al. 2017; Sibandze and Scafide 2017; Gottlieb and Gottlieb 2017).

Newly graduating nurses may have their idealistic values about nursing crushed by hospital bureaucracies, especially when nurse–patient ratios are poor, and the anxiety-laden culture of the hospital fails to support this devoted section of its staff (McSherry et al. 2012; Maben et al. 2006; Gottlieb 2013). For these reasons, nurse educators have argued that in their undergraduate education, nurses should “anchor and internalize” a set of basic values which will support them during the stresses of a nursing career that they will inevitably face (Day et al. 2017).

3. Stresses Faced by Nurses, and Some Consequences of Stress

Nurses need all of the qualities described in the 6Cs in surviving in a difficult and demanding profession, especially when their professional roles are undermined by relatively low pay, as in the United Kingdom. Furthermore, recent failure to fund nurse training places in colleges and universities in the UK has meant that nurse–patient ratios have steadily declined (RCN 2017; Francis 2013; Ball and Pike 2009). By 2018, more nurses were leaving the profession in England than were joining, the majority of leavers being aged less than 50 (Triggle 2018). Over two years there had also been a decline of one-third in numbers entering a nursing degree and other nurse training courses (Marsh 2018). It appears that there has been a “downward spiral”: as nurse–patient ratios worsened, the job of nursing has become more stressful and increasing numbers have left the profession.

The problems facing nurses in their demanding roles which may lead to profound psychological distress, burnout, and even suicidal behavior have been described in different cultures, regardless of models of health care delivery (Adriaenssens et al. 2015; Akerboom and Maes 2006; De Boer et al. 2011; Bruyneel et al. 2016). American research too has clearly shown the negative, downward spiral that poor nurse–patient ratios in hospitals can set in train. Overworked nurses caring for many patients are unable to use their professional skills adequately, leading to disenchantment with nursing, increase in anxiety and depression, burnout, and leaving the profession (Edwards 2001; Browning et al. 2007; Coomber and Barriball 2007).

This work has been replicated with large populations of nurses in Europe and the United Kingdom showing that, as in the United States, poor nurse–patient ratios are associated with higher rates of patient morbidity—new illnesses acquired while in hospital; and mortality—deaths due to poor care, or to “tasks left undone” (Aiken et al. 2008, 2014; Griffiths et al. 2016).

Nurses themselves have significantly elevated rates of completed suicide compared with females in other professions (Anderson et al. 2015)—this may be due to their greater access to lethal substances (Kölves and De Leo 2013). Although completed suicide is relatively rare in populations of nurses, there is clearly a population of nurses enduring depression, suicidal ideation, and other indicators of psychological distress at rates which significantly exceed those in their age peers in non-medical professions (De Boer et al. 2011).

Career nurses also have to face the challenge of work-life balance (WLB), when the individual’s social and family life is challenged by the demands of their work roles, including having to work long shifts, some of them as night duty (Cortese et al. 2010). For this reason, we have included a measure of WLB stress in our measurement package, since hypothetically WLB stresses may interact with or exacerbate nursing role stress. This is a surprisingly under-researched area in nursing research (Düchting 2015).

There is an additional literature on *psychological resilience* in nurses and other human service workers, showing that some individuals have special strengths in coping with stress and professional challenge (Dewe and Cooper 2017). The “resilient nurse” is, on the “Big Five” personality profiles, likely to be emotionally stable, outgoing, and communicative (Judge et al. 2002; Bruck and Allen 2003; Törnroos et al. 2013). However, this important issue of resilience, and how nurses may be supported or assisted in developing resilience, has a relatively sparse body of research literature. Because of the potential importance of various personality factors in creating resistance to stress in various

occupational groups (Törnroos et al. 2013; Judge et al. 2002; Bruck and Allen 2003; Bakker et al. 2006) we have included the measure of the American “Big 5” personality profiles, which are valid and reliable measures across cultures (McCrae et al. 1999), in the present study of British nurses.

No specific hypotheses have been formulated in this exploratory study, although we did expect to find links between important variables such as personality, adjustment, mental health, work-life balance stress, burnout potential, desire to leave nursing, a hardy or resilient personality, and nursing values, which were consistent with those of previous work. Ours is the first study to combine all of these variables, which have been measured as the basis for longitudinal work predicting adjustment to nursing roles, and ways in which nurses under stress can be supported by collegial, peer support.

4. The Study Population and Interview Procedures

Nurses are most easily accessed for questionnaire completion during their college studies, and afterwards during post-qualification training workshops. Accessing nurses in their workplaces is difficult, since many employers will not allow researchers to have access to their already overtaxed nursing staff; and approaches for participation using employment channels seem to yield a less than 60 percent response rate (Adriaenssens et al. 2015). Heinen et al. (2013) reported that in England, mailed questionnaires using hospital employment records yielded only a 39 percent response. Another method is to use the professional register of nurses, sending questionnaires to listed addresses. But this is problematic since many addresses are out of date, and responses using this method can be as less than 50 percent (Edwards 2001).

The method we have used in the present work is that of “snowball sampling”, an established methodology in social and nursing research (Sadler et al. 2010; Heckathorn 2011; Kandola et al. 2014). The snowball sample acquires respondents as a rolling snowball collects snow, each contacted individual recommending one or more professional colleagues who might be interviewed. The sample acquired represents a non-random group of nurses, but comparative work suggests that this method yields a higher proportion of acquiescent subjects, and also gives information that is representative and valid, and at least as complete as that obtained through probability (random) sampling (Kandola et al. 2014; Valerio et al. 2016).

The initial persons (accessed through our own personal contacts) interviewed were asked to name people (other nurses) working in hospitals whom we might contact in order to invite them to complete the questionnaire. We were thus able to make contact with 210 female nurses, 192 of whom (91%) finally completed the whole questionnaire—an excellent response rate compared with studies of nurses using other research methods. Each person contacted was given a £10 retail store voucher, regardless of whether or not they finally completed the questionnaires. The female nurses lived in the north of England, in the urban regions of Liverpool and Manchester. We chose not to interview male nurses at this stage, in order to gain a gendered, homogenous group.

The biases introduced by snowball sampling (obtaining a subgroup for study who may share the same interests and experiences) must be judged against more formal studies of UK nurses, which have only achieved successful response rates of between 39 and 49 percent (Edwards 2001; Heinen et al. 2013). Our initial sample consisted of six relatively senior nurses known to us professionally, each of whom then nominated two or more likely candidates for the study, as did the majority of the nurses successfully interviewed in the “snowball” network (often we were referred to nurses who were already in the sample). One bias in our sample is that through our initial selection of six successful nurses, we would be referred to a professionally successful group of nurses, who were not struggling in their professional roles. We note, however, that we did identify in this network a group of nurses (12% of the sample) who declared an intention to leave nursing, compared with the 10 percent of English nurses in the probability sample of Heinen et al. (2013).

The average age of the nurses we contacted was 36.5 years (range 24 to 55 years), and all had professional qualifications in nursing: 87 with three or four year degree training; 100 with three-year training to become state registered nurses; and 5 with two-year training to become state

enrolled nurses; 37 had additional training, diplomas or certificates in midwifery, children's nursing, psychiatry, orthopedics, theatre nursing, or other specialties, and all worked between 20 and 40 h a week, in National Health Service hospitals. Nearly two thirds (65%) had either a partner, children, or both, and 50 percent had a dependent child (<19) or adult in their household, who relied on them for care. Forty percent held positions of relative seniority, beyond that of staff nurse. Our method of sampling meant that we contacted women who were active in their nursing roles, so we did not reach those who had already left the profession for any reason. The snowball method did introduce the bias that we were studying women who often knew one another, were often at similar stages of their careers, and likely shared some of the same interests and values.

Respondents completed the questionnaire on a laptop computer in a variety of settings, while the researcher was close by, answering any queries. Ethical procedures required us to refer for specialist help any individual whom test results, or personal accounts indicated significant psychological stress. We offered all of those interviewed strict confidentiality of the interview questionnaire findings, but with the option to allow us to contact them in follow-up work. Ten nurses (5%) requested that we should not contact them again. A small number of individuals began answering the laptop-programmed questions, but at some stage declined to complete the questionnaires: they were not included in the study, and in the final count 192 nurses completed all the questionnaires.

In addition, we asked those nurses who completed the questionnaires, and had been in post for at least five years, whether they were interested in being trained as telephone counsellors for any of their professional peers who were experiencing difficulties in their professional roles, and in the area of work-life stress. After considering the qualifications of the volunteers, and their own manifest psychological stability and "hardiness", we recruited a core group of 20 peer counsellors. A report on peer-to-peer counselling and support will be the topic of a subsequent paper.

5. Instruments and Questionnaires

First, a general questionnaire was completed concerning work history, periods away from nursing, other qualifications, reasons for choosing the nursing profession, and any plans for leaving nursing.¹ Then respondents completed the six-item scale seeking endorsement of the 6C Values of nursing (Table 1). We acknowledge that the instrument as designed, invites a positive response set: we thought it ethical at the outset to stress the positive and salient nature of these core nursing values. What we were examining was the degree to which the nurse respondents were not completely confident in the endorsement or application of these values.

Other measures completed were:

5.1. Maslach's Burnout Inventory

Maslach's Burnout Inventory, which has been used in studies of nurses' and other professionals' career patterns in order to assess diminished morale due to job stress (Maslach and Jackson 1986; Maslach et al. 2001, 2006). This 20-item scale has identified the potential for nurses suffering "burnout"—exhaustion, role disenchantment, imminence of leaving nursing, frequent sickness, and automated or depersonalized performance of routine duties. It has three subscales, "Emotional exhaustion" (e.g., of item "I feel emotionally drained from my work"); "Depersonalization" (e.g., of item "I don't really care what happens to some patients"); and "Personal accomplishment" (e.g., of item "I deal effectively with the problems of my patients"—scored negatively) (Rich and Rich 1987). The scale is valid and reliable in studies of nurses in a variety of cultural settings (Van Bogaert et al. 2009a, 2009b; Pisanti et al. 2013). There is some evidence that susceptibility to

¹ Ethnicity and country of origin were measured in various ways but did not correlate significantly with any of the other variables deployed.

burnout is influenced by pre-existing personality variables (Langelaan et al. 2006), so it has been useful to covary personality with burnout measures.

5.2. The Short Hardiness Inventory

The Short Hardiness Inventory which has been developed by Bartone et al. (2008) from the work of Kobasa et al. (1982) to explain why some individuals in stressful conditions such as military combat, survive with and without mental health problems such as depression, anxiety, and post-traumatic stress. The measure is also valuable in measuring various kinds of motivation in the face of potentially stressful challenges (Benishok and Lopez 2001). Bartone et al. (2008) found that: “Hardy persons have a high sense of life and work commitment, greater sense of control, and are more open to challenges in life” (p. 80). The 15-item measure (e.g., of item “Stressful life events give me interesting opportunities for growth”) correlates positively with various kinds of role achievement, good psychological health following stress, good self-concept in role performance, and inversely with a global measure of depression. The three sub-scales in the Hardiness Inventory (control, commitment, challenge) are strongly intercorrelated so we have combined them into a single scale. We speculate that “hardiness” is a valuable facet of personality for career nurses, as Rich and Rich (1987) had argued in writing about a group of American nurses, and as Garrosa et al. (2008) have shown in a more recent study.

5.3. The ‘Big 5’ Personality Inventory

The “Big 5” Personality Inventory is now accepted as the standard measure of personality, and validity and reliability have been established in many studies, including work with translated versions of the scale in a variety of cultures (McCrae et al. 1999; Soto et al. 2011).

The five personality dimensions which emerged from the factor analytic studies of McCrae et al. (2008) are:

5.3.1. Agreeable

Agreeable: wishes of others are always considered, modest, co-operative rather than competitive, not inclined to argue or disagree—and the polar opposite of these traits (e.g., of item “I see myself as a person who is helpful and unselfish to others”).

5.3.2. Openness to Experience

Openness to Experience: curious, artistic, novelty seeking, intuitive, emotionally reactive versus being pragmatic, and evidence-based individuals (e.g., of item “I see myself as a person who values artistic, aesthetic experience”).

5.3.3. Extraversion

Extraversion: outgoing, energetic, strong and usually positive emotional reactions, sociable, seeking social stimulus in the company of others—socially active and attention-seeking at one extreme, versus being reserved, shy, withdrawn, self-absorbed, and avoiding social interactions, at the other extreme (e.g., of item “I see myself as a person who is sometimes shy and inhibited”).

5.3.4. Neuroticism

Neuroticism: secure and confident individuals who are stable, calm, and unworried versus individuals who are nervous, often worried, anxious, and depressed (e.g., of item “I see myself as a person who is emotionally stable, not easily upset”).

5.3.5. Conscientiousness

Conscientiousness: self-disciplined individuals who strive for achievement in meeting external goals, with the ability to control or regulate their impulses with planned rather than spontaneous

behavior, versus the polar opposite, of individuals who do not plan ahead, and may be disorganized in their behavioral patterns (e.g., of item “I see myself as a person who does a thorough job”). The scales are measured on a 5-point parameter from “strongly disagree (1) to “strongly agree” (5), with reverse scoring as necessary.

Responses to the NEO (Neuroticism-Extraversion-Openness) Personality Questionnaire fit the normal curve, so some 68 percent of respondents (i.e., those scoring in the one standard deviation range around the population mean) do not score at the extremes of the five personality dimensions—thus, the average person for example, is neither introverted nor extraverted. There are small but significant correlations between the five dimensions, in theoretically expected directions (McCrae et al. 2008), so new studies using the NEO questionnaire must explain any deviation from previously observed patterns (McCrae et al. 1999). A review of 163 studies linking Big 5 scores to “job satisfaction” (Judge et al. 2002) showed that in combination the five profiles of personality correlated on average, at 0.41 with various measures of job satisfaction.

In studies with nurses and others who engage in work with ill or distressed people, higher Extraversion and lower Neuroticism scores were the most salient in predicting lack of Burnout potential on the Maslow scales (Adriaenssens et al. 2015; Törnroos et al. 2013).

Genetic studies following twins into adulthood indicate that around half of the variance in the five NEO scores has a hereditary basis (Jang et al. 1996), so these personality dimensions are likely to be stable and enduring factors in an individual’s temperament, rather than primarily being due to environmental or stress factors. It is possible however that individuals who have salient personality characteristics may react to stress in distinctive ways. Thus, nurses who are both introverted and neurotic (scoring beyond the one standard deviation range) might handle stress poorly (Adriaenssens et al. 2015). Whether scores on measures of personality and social adjustment precede (as a risk factor), or are caused by stress factors, or is due to statistical interaction effects, is not clear from the published literature.

5.4. The Center for Epidemiological Studies of Depression (CES-D) Questionnaire

This measure, developed by Radloff (1977), is a widely used and well-validated 20-item measure of classical signs of depression, and a score of 16 or more on the scale (theoretical range 0 to 60) indicates a strong likelihood that an individual has a depression which merits investigation and treatment (Knight et al. 1997). The questionnaire asks about feelings in the past week (e.g., “I felt depressed”) on a scale ranging from 0 (not at all) to 3 (most days or all of the time).

5.5. The Rosenberg Self-Esteem Inventory (RSEI)

There is surprisingly little research on the self-esteem of nurses as a professional group (Sturm and Dellert 2016). The only relevant study that we can find using the Rosenberg Scale—our preferred measure—is by Peterson-Graziose et al. (2013), which showed that poorer levels of self-esteem predicted attrition of American nurses from Associate Degree programmes. Evidence reviewed by Sawyerr and Bagley (2017) shows that the widely-used, valid, and reliable RSEI is socially constructed, through the individual’s socialization and social interactions, and from early adolescence becomes a strong basis for inner-strength and self-confidence in meeting the stresses of life. This evidence shows that by young adulthood, self-esteem has become a core part of personality, and is difficult to modify. In the tables below, higher RSEI score indicates better self-esteem.

5.6. Hayman’s Measure of Stress Linked to Work-Life Balance (WLB) Problems

Stresses due to the imbalance between work outside of the home, and commitments to family and vocational pursuits other than in the field of paid work, has only been properly recognized in the past two decades, and indeed feminist critics argue that women are frequently disadvantaged in the workplace because the demands in a largely sexist society, of having to “care for” husband and children—which add to stresses imposed by professional work, such as nursing (Boyar et al. 2007;

Cortese et al. 2010; Törnroos et al. 2013; Yilmaz et al. 2017). We chose Hayman's (Hayman 2005, 2009) scale as showing good evidence of discriminant validity. The measure includes three sub-scales, but since the third sub-scale measured a different dimension of work-life balance, we have combined the first two strongly correlated sub-scales (personal life interfering with work performance; and work roles undermining enjoyment of personal life) into a single measure, which has high alpha reliability (e.g., of items "I neglect personal needs because of the demands of my job"; "My work suffers because of the demands of my personal life"). Scoring is on a 7-point Likert scale, and a high score indicates greater amounts of stress due to work-life imbalance. The factorial validity of the three dimensions of WLB stress in nurse educators has been established by Smeltzer et al. (2016).

5.7. Intention to Leave

Intention to Leave was measured by responses to the questions (Li et al. 2011): "Do you plan to leave nursing permanently within the next 12 months? (No, Unsure, Yes); "Even if you have no plans to leave the nursing profession, would you leave if alternative employment became available?" (No, Unsure, Yes). Twelve percent planned to leave nursing, and an additional 10 percent would leave if they had an alternative. In the correlational analysis reported below, only active intention to leave was used.

5.8. Seniority in Nursing

Seniority in nursing was measured as: 0 = basic grade nursing (e.g., staff nurse) 15%; 2 = senior staff; 3 = nurse/charge nurse 45%; clinically specialized/executive role 40%.

5.9. Issues of Response Set and Problems of Validity

The Nursing Values Survey invites response set, in that we invite positive responses (agreement with), and positive answers about personal commitment to each of the six facets of professional values in nursing. Respondents answered this questionnaire first, and this may have influenced their responses to subsequent questions, focusing the nurses on presenting themselves, professionally and personally, in the best possible light—as they would like to be, rather than as they "actually" are. If this bias has occurred, then correlations with indicators of distress, alienation from nursing, burnout, depersonalization, and desire to leave nursing may have been *underestimated*. In addition, curtailing statistical variance in this type of response set may be an artefact working *against significance* in the correlations obtained.

In the longitudinal research planned we are also creating an experimenter effect, in that we are committed to alleviating psychological distress, as well as attempting to support nurses who are contemplating leaving the profession. We describe our cohort of nurses as "special" since we are potentially creating a particular consciousness, an enhanced set of values concerning self and others. Nevertheless, we hope that our approach can be an exemplar for practice by professional nurse managers and educators.

6. Findings: The Nursing Values Scale (NVS)

The NVS (Table 1) follows a simple format, restating each basic value, and asking respondents the extent to which they applied or followed each value in their practice. A quarter of nurses responded "All of the time" to all six of the values, while only seven individuals responded "Unsure" or "Rarely" to all six.

Table 1. The six-item measure of basic nursing values.

To What Extent Do You Apply or Follow These “Basic Nursing Values” in Your Work? (All of the Time = 1/Some of the Time = 2/Unsure = 3/Rarely = 4)	Mean (Standard Deviation)	Loading on General Factor
<i>Caring</i> as a core part of my nursing role	1.85 (1.1)	0.72
<i>Compassion</i> in identifying patients’ needs	2.40 (1.9)	0.51
<i>Competence</i> in acquiring & applying professional skills	1.93 (1.6)	0.69
<i>Communication</i> with patients and colleagues	2.22 (1.7)	0.53
<i>Courage</i> in dedicating myself to the nurse’s role	2.42 (1.8)	0.48
<i>Commitment</i> in dedication to patients	1.82 (1.6)	0.65
Scale total	12.64 (3.6)	General factor (Eigen 5.76) explains 67% of variance in correlations between 6 items

The scale has good internal reliability (Alpha 0.91), reflecting a strong general factor in a principal components analysis.

7. Findings: Correlation of Variables, and Prediction of Nursing Values and of Intention to Leave

Inspection of the correlation matrix shows that the highest correlations are those between Depression, Self-Esteem, and Neuroticism, with smaller but significant correlations of these three salient variables with many of the other measures, including the Burnout Scales, Hardy Personality, Nursing Values, and Intention to Leave. Since we were particularly interested in correlations which could offer some evidence of face validity, in terms of correlation with established scales with known criteria of external validity, for the Nursing Values Scale (NVS) we list these correlations in Tables 2 and 3, along with correlations of Intention to Leave Nursing, another key variable.

Higher scores on the NVS were significantly associated with having a Hardy Personality, Good Self-Esteem, being in a Higher Ranked Job, not Intending to Leave Nursing, being Conscientious and Agreeable, not being Depressed or Neurotic, and having lower scores on the Burnout sub-scales. While this offers some evidence of construct or face validity, nevertheless even when the effect of all of these variables was combined in a regression equation (in which no particular hypothesis was tested, and variables entered according to the strength of their original correlation with the dependent variable), the final correlation of 0.39 explained only 15.2 percent of the variance in the NVS scale. Two possible reasons for this are that the NVS imperfectly measures the values construct; and there are other relevant variables which we have not been included in our study, which might explain additional variance in NVS scores.

The simple statement of intention to leave nursing within a year was normalized as a measure for correlation analysis, and interestingly had a number of variables significantly associated with it, but in an obverse manner compared with the correlations with the Values scale. Intention to Leave was predicted with statistical significance by: being younger, having lower job rank, being more depressed and neurotic, with lower self-esteem, lacking a Hardy Personality, having higher scores on the Burnout Scales, experiencing Work-Life Balance stress, being less Extraverted and Agreeable, and showing somewhat less attachment to basic Nursing Values. However, when these variables were controlled on one another in a regression analysis, Nursing Values failed to be a significant predictor of intention to leave, while the combination of a lack of Hardy Personality traits, Depression, depersonalization on the Burnout scale, poorer self-esteem, and being Introverted rather than Extraverted, remained significant predictors of Intention to Leave, but in combination explained only 10 percent of the variance in the Intent to Leave measure.

Table 2. Intercorrelation of variables in 192 female nurses, with mean scores.

	1A	2J	3N	4E	5O	6A	7C	8H	9D	10S	11B	12B	13B	14W	15L	16V
1A	-															
2J	0.38	-														
3N	0.01	-0.33	-													
4E	0.19	0.17	-0.30	-												
5O	0.05	0.03	0.24	0.26	-											
6A	-0.10	0.16	-0.24	-0.35	0.29	-										
7C	0.17	0.14	-0.39	0.05	0.32	0.31	-									
8H	0.14	0.35	-0.36	0.32	0.19	0.24	0.14	-								
9D	-0.09	-0.24	0.42	-0.20	-0.13	-0.20	-0.37	-0.41	-							
10S	-0.11	0.29	-0.35	0.21	0.14	0.09	0.57	-0.47	-0.31	-						
11B	-0.16	-0.27	0.38	-0.30	-0.23	-0.34	-0.35	0.30	0.35	-0.29	-					
12B	-0.17	-0.20	0.30	-0.23	-0.14	-0.00	-0.32	0.39	0.35	-0.23	0.60	-				
13B	-0.20	-0.21	-0.29	-0.21	-0.25	-0.04	-0.30	0.22	0.39	-0.36	-0.23	0.53	-			
14W	-0.01	-0.19	0.39	-0.25	-0.10	0.00	0.14	0.26	0.17	-0.14	0.20	0.27	0.30	-		
15L	-0.27	-0.20	0.27	-0.27	0.02	-0.19	-0.16	-0.15	0.29	-0.29	0.30	0.30	0.19	0.28	-	
16V	0.19	0.29	-0.26	0.31	0.24	0.28	0.31	0.36	-0.27	0.36	-0.25	-0.30	-0.23	-0.06	-0.30	-
Alpha	1A	2J	3N	4E	5O	6A	7C	8H	9D	10S	11B	12B	13B	14W	15L	16V
			0.80	0.82	0.79	0.81	0.76	0.74	0.79	0.74	0.83	0.80	0.79	0.76	-	0.91

1 = Age 36.5 (13.1).

2 = Job rank low to high (1 low 15%; 2 medium 45%; 3 high, 40%).

3 = NEO Neuroticism 2.49 (0.76).

4 = NEO Extraversion 3.49 (0.74).

5 = NEO Openness to Experience 3.74 (0.59);

6 = NEO Agreeableness 3.87 3.76 (0.54).

7 = NEO Conscientiousness;

8H = Hardy Personality 33.85 (8.5).

9D = CESD depression scale 12.50 (9.9).

10S = Rosenberg self-esteem scale 28.89 (5.50).

11B = Maslach Burnout Scale, Emotional Exhaustion 2.02 (0.58).

12B = Maslach Burnout Scale, Depersonalization 1.78 (0.50).

13B = Maslach Burnout Scale, Lack of Achievement 1.83 (0.47).

14WLB = Hayman Work Life Balance Scale 12.54 (4.21);

15Leave? = Intends to leave nursing within a year (No/Unsure 84%; Yes 16%).

16NVS = Nursing Values Scale 12.64 (3.6).

Final horizontal column, Alpha scale values, where relevant.

Significance of correlations: $r = 0.15, p < 0.05$; $r = 0.20, p < 0.005$; $r = 0.25+, p < 0.001$.

Non-linear variables normalized for correlational analysis by z transformation.

SD = Standard Deviation of Distribution.

Table 3. Correlations of Nursing Values Scale, and intention to leave nursing, with results of regression equations for each predicted variable.

Variable	Nursing Values Scale	Intention to Leave Nursing
Hardy Personality	0.36	−0.15
Good Self-Esteem	0.36	−0.29
Extraversion	0.31	−0.27
Conscientiousness	0.31	−0.06
Burnout 2 (Depersonalized)	−0.30	0.30
Job rank (low to high)	0.29	−0.20
Agreeableness	0.28	−0.19
Depression	−0.27	0.29
Neuroticism	−0.26	0.27
Burnout 1 (Emotional Exhaustion)	−0.25	0.30
Open to Experience	0.24	0.02
Burnout 3 (Achievement Failure)	−0.23	0.30
WLB Stress	−0.06	0.28
Intention to Leave Nursing	−0.30	1.00
Combined predictor variables significant after step-wise regression	0.39 (15.2% of variance: Hardy hi + Self Esteem hi + Neuroticism lo + Extraversion hi)	0.32 (10.0% of variance: Hardy lo + Depression hi + Burnout 2 hi + Self Esteem lo + Extraversion lo)
Nursing Values Scale correlation with Intention to Leave, after stepwise multiple regression		−0.13 (NS)

Significance: Correlations of 0.15 and above are significant at the 5% level or beyond. Significance of combined predictor variables: 0.001% level for Nursing Values; and 0.005% for Intention to Leave.

8. Component and Cluster Analysis to Identify Groups of Individuals

In this exploratory study, we are interested to see if our sample of nurses can be classified into different groups, who might require different kinds of support in their professional lives. To explore this, we used programs in the SPSS-16 package which first of all classified selected variables in a principal component analysis, calculating factor scores on each component for each individual, these scores then being used as the basis for cluster analysis of individuals. In sociological research, component analysis can flow logically into cluster analysis which identifies groups of individuals from clustering of variables (Bailey 2012; Mokhtarian et al. 2012; Hillege et al. 2017). This process “humanizes” data analysis in identifying groups of individuals rather than focusing on a set of reified variables (Bailey 2012; Hacking 2012). Cluster analysis is the final technique for “bringing people back in” after complex types of data analysis leaves the researcher “swamped” with a set of complex covariants (Byrne and Uprichard 2012).

After an initial factor analysis, we specified a 3-factor, orthogonal solution (i.e., required each rotated component to be independent, with vectors at right-angles with *sin* values of zero.) This solution was specified after an initial calculation of seven oblique factors which accounted for just over 50 percent of the total variance in the intercorrelation matrix. This intuition proved fruitful, and four distinct and heuristically useful clusters have emerged accounting for 54 percent of the variance in a truncated list of variables, in which the three Burnout scales were merged into a single scale (Tables 4 and 5). Table 6 presents a typology of nurses, based on cluster analysis of the principal component scores for each individual. The basis for the fourfold typology is that it is both heuristically meaningful, and maximizes the “statistical distance” between individuals, on the various measures employed.

Table 4. Principal components analysis of selected variables.

	I	II	III
Job rank (low to high)	0.59	0.05	0.40
Neuroticism	−0.65	75	0.02
Extraversion	0.46	0.17	0.57
Openness to Experience	0.11	0.26	−0.15
Agreeableness	0.48	−0.37	0.44
Conscientiousness	0.14	0.22	−0.13
Hardy Personality	0.63	−0.46	0.60
Depression	−0.52	0.67	−0.31
Self-Esteem (low to high)	0.63	−0.46	−0.28
Burnout Scales combined	−0.47	0.58	0.15
Work-Life Balance stress	−0.32	0.20	−0.41
Intention to Leave Nursing	−0.49	0.01	0.14
Nursing Values Scale	0.27	0.07	0.40
Eigen Value	3.13	2.61	2.00
Cumulative % of variance accounted for	34%	45%	54%

Note: Principal components analysis used Varimax rotation, requiring orthogonal vectors.

Table 5. Cluster analysis of 192 nurses, using factor scores from the principal components analysis.

	A (79)	B (54)	C (20)	D (39)	Chi-Squared Values
Job rank high	13%	31%	6%	49%	36.71 (6 df) $p < 0.0000$
Job rank low	17%	7%	20%	4%	
Intention to leave nursing	15%	9%	80%	3%	65.15 (3 df) $p < 0.0000$
Neuroticism hi quartile	25%	26%	37%	12%	86.41 (6 df) $p < 0.0000$
Neuroticism lo quartile	25%	23%	2%	50%	
Extraversion hi quartile	15%	31%	6%	48%	46.23 (6 df) $p < 0.0000$
Extraversion lo quartile	33%	30%	17%	20%	
Agreeableness hi quartile	27%	32%	10%	31%	20.87 (6 df) $p < 0.002$
Agreeableness lo quartile	33%	26%	22%	19%	
Hardy Personality hi quartile	23%	31%	2%	44%	38.37 (6 df) $p < 0.0000$
Hardy Personality lo quartile	33%	26%	22%	19%	
Depression hi quartile	29%	25%	30%	17%	51.02 (6 df) $p < 0.0000$
Depression lo quartile	24%	31%	2%	43%	
Self-Esteem hi quartile	24%	33%	4%	39%	64.35 (6 df) $p < 0.0000$
Self-Esteem lo quartile	27%	21%	35%	17%	
Burnout Scales hi quartile	32%	25%	35%	8%	94.47 (6 df) $p < 0.0000$
Burnout Scales lo quartile	19%	20%	4%	57%	
Work-Life Stress hi quartile	30%	25%	30%	15%	50.33 (6 df) $p < 0.0000$
Work-Life Stress lo quartile	19%	36%	4%	41%	
Nursing Values hi quartile	24%	30%	10%	36%	41.32 (6 df) $p < 0.0000$
Nursing Values lo quartile	33%	21%	30%	16%	

Method used: K-means cluster analysis (SPSS-16), specifying five, then four, then three clusters in separate analyses, using factor scores from the principal components analysis shown in Table 3. The finally chosen, four-groups solution (using 11 of the 13 variables in the principal components analysis) *maximized* average significance differences between groups on the selected variables, listed above.

Table 6. Four Types of Nurses.

Four Kinds of Nurses	
Group A (N = 79)	“The Soldiers” : medium scores on most measures; some burnout; fewer intentions to leave nursing, but more work-life stress; somewhat lower scores on agreeable personality, and lower scores on nursing values scale.
Group B (N = 54)	“Cheerful Professionals” : higher job rank; more extraverted; more agreeable; better self-esteem; not depressed; few plans to leave nursing; medium-to-low scores on neuroticism and depression; good self-esteem; middle range hardy personality scale score; somewhat higher attachment to core nursing values.
Group C (N = 20)	“Highly Stressed, Potential Leavers” : high levels of depression and neuroticism; poor self-esteem; less extraverted; low “hardy personality” profiles; experiencing work-life stress; somewhat lesser attachment to core nursing values.
Group D (N = 39)	“High Achievers, Strong and Stable” : higher job rank; more extraverted; lower scores on neuroticism and depression measures; higher scores on hardiness and self-esteem; less work-life stress; less burnout; higher nursing values profile.

9. Discussion of Findings

First of all, the method of obtaining nurses for our study group using snowball sampling has located an enthusiastic and co-operative group of nurses, who are unique by virtue of the non-random sampling method employed, but who nevertheless manifested many of the characteristics of prior studies which have used random sampling. We anticipated that beginning our network or snowball sample with relatively senior, successful professional nurses might mean that we would miss highly stressed nurses described in previous work in Europe and North America. This has proved not to be the case, and we have identified a sub-group of highly stressed nurses who do anticipate leaving their chosen profession. Nevertheless, we have a sample strongly weighted towards nurses who are both successful and senior in their profession. Hypothetically, a fully representative sample would identify a significant proportion of nurses who experience stress in their profession, and who are leaving nursing in greater numbers, including those being recruited to degree and training courses who are experiencing increasing stress, as nurse–patient ratios worsen.

The *Nursing Values Scale* (NVS) measuring acceptance of the 6Cs of nursing developed in this study has internal reliability, and some evidence of face validity in terms of its statistically significant correlations. We retained it in the component and cluster analyses not for its predictive power, which as a variable on its own is relatively weak; but because of our personal interest in this scale. It does in fact form part of a variable set which includes Hardy Personality, Extraversion (higher), Self-Esteem (higher), and Neuroticism (lower). On its own the NVS does not significantly predict “intention to leave nursing” when the effects of psychological variables are controlled for. Nevertheless, the NVS is a significant marker for two of the groups emerging from cluster analysis: the “High Achievers” group score highly on the NVS, while the “Highly Stressed” group who contemplate leaving nursing, have lower NVS scores.

We argue that enhancing core nursing values is an important facet of nurse training, as Day et al. (2017) have advocated: internalizing and trying to adhere to such values may be ego-enhancing, and act as a buffer when professional stressors are faced (Gottlieb 2013). Disenchantment with nursing, in the absence of adherence to higher values may be part of the “malaise syndrome” which in turn results in poorer nursing care, with increased rates of patient morbidity and mortality (Aiken et al. 2008; Griffiths et al. 2016).

But the causes of nursing stress, for example, in the United Kingdom, must once again be emphasized: poorly-funded health systems and poor staff–patient ratios result from government policies which leave hospitals chronically underfunded (Marsh 2018).

Burnout (as measured by Maslach’s frequently used scale) was certainly a feature of the stress and malaise in this group of nurses. The three sub-scales separately, and combined in a single scale,

were part of a personal profile in which stress and depression were associated with an intention to leave. Directions of cause are difficult to adduce, however, and only longitudinal work can clarify this. The same observation can be made of the *Work-Life Balance* stress measure. Some nurses in this sample clearly feel highly stressed by the ways which work impinges on their enjoyment of home life, or vice versa.

But nurses who are identified as having a *Hardy Personality* do not generally report such stress. Since we do not have a matched comparison sample of non-nurses, we are unable to show whether our cohort of nurses have significantly less favorable levels of depression, poor self-esteem, personality problems, and work and home-life related stress compared with other professional women. We can conclude, however, that within our sample we have identified a sub-group of nurses who are often very depressed in relation to, and perhaps resulting from, the stresses they perceive or experience in their lives and professional roles. Once we have identified such a group, we have an ethical obligation to help them as much as possible, including the use of a peer-counselling model.

Is having a hardy personality an inherent quality of an individual, from childhood onwards—as are some of the Big 5 personality dimensions measured? Should recruits to potentially stressful professional roles be screened for their “hardy personality” profiles? Pre-screening potential recruits to the nursing profession in order to exclude them (e.g., Swider and Zimmerman 2010) is not something that we would countenance, although broad screening of potential nurses when there are more applicants than degree course places may occur.

Work in this field suggests that a major determinant of success in training is the candidate’s value commitment to their chosen profession (Traynor et al. 2017). Given this, we advocate that professional educators should develop the personal (and personality) strengths of nurses accepted for training. Alongside socialization in fundamental nursing values, educators should also promote ongoing programs of social support both before and after graduation (Cortese et al. 2010; DÜchting 2015). As Welby (2016) has argued, valuing nurses requires the fostering and support of nurses’ professional value systems as well as building their professional strengths. Additional strategies such as increasing “mindfulness” (Galante et al. 2017) may also enhance emotional well-being and endurance in professional students. A variety of approaches to problems of burnout deserve to be tested, including cognitive-behavioral counselling (Lloyd et al. 2013). Nurses’ spiritual values may be another aspect of a nursing professional’s identity which is worth exploring, and supporting (Ross et al. 2014).

Programs exist for promoting “emotional intelligence” and “emotional resilience” in nurses prior to and following their graduation (Montes-Berges and Augusto 2007; Rego et al. 2010; Grant and Kinman 2013; Sharon and Grinberg 2018), and these approaches could also promote (or build on) nurses’ “hardy personality”. Nursing education, and post-graduate professional support needs to be “strength-based” (Gottlieb 2013; Gottlieb and Gottlieb 2017), and nursing educators could have a crucial role in providing career-long support for their graduates which includes fostering both hardiness and emotional resilience (McSherry et al. 2012). These are important areas for future research, policy development, and social change.

This research employs the approach of Critical Realism (CR), which differs from earlier social research models in significant ways. The CR study begins with a value-based description of *ontology*, an assertion that there frequently exists within a social structure a hidden but powerful form of alienation, an idea based on Bhaskar’s (2002) development of Marxian ideas. At base a crucial area of *Absence* is defined and identified, which existing power structures usually ignore. For nurses, the crucial Absence we frame in the following proposition:

The majority of nurses are dedicated to caring roles which involve important value commitments, as well as dedication to professional excellence. Yet nurses are not adequately valued or rewarded by the communities and institutions they serve. All too often their welfare and work are devalued in a variety of ways—in modern Britain, for example, by making nurse–patient ratios so unfavorable, that nurses struggle to offer an adequate service. They must soldier on or leave. Only the strongest,

the most dedicated, survive. This continued struggle of nurses to break from the bonds of professional alienation is largely absent in the public discourse concerning health reform.

From the review of both the clinical and the political debate surrounding nursing, we find little emphasis on the dedication of nurses, and their willingness to “soldier on”. The single exception, in our experience is the organization dedicated to the professional excellence of nursing in the UK: *The Royal College of Nurses*, which offers to politicians and professionals a flow of well-written, finely argued, and well-researched reports (e.g., Ball and Pike 2009; Ball and Catton 2011; Ball and Royal College of Nursing Research Team 2005; Ball et al. 2014; RCN 2017). Official government silence in the face of these reports, and the parallel clinical research showing that worsening nurse–patient ratios are a direct cause of increases in patient mortality and morbidity in England (Aiken et al. 2014; Ball et al. 2014; Griffiths et al. 2016) are ignored by politicians and policy-makers, until another major crisis—usually an excess of patient deaths—emerges. resulting in an official enquiry (e.g., Francis 2013) whose recommendations are then largely ignored, with continued public underfunding of health care, and worsening of nurse–patient ratios (Grierson 2017).

This value-based idea of the exploitation and alienation of nurses we held at the beginning of this research and have reviewed the literature and undertaken data analysis in order to elaborate and support our initial value-based position on this alienation, exploring how dialogue might increase the consciousness of nurses about their oppression, in the CR process of *morphogenesis* (Archer 2007).

The present study was not an empirical or hypothesis-testing exercise, but rather attempted to use complex data analysis methodologies which lead, heuristically within an overall qualitative design, to the humanizing description not of relationships between data (things), but between groups of people (humans) working together for the same goal, bound together by a set of higher order nursing values.

10. Conclusions

Although statistical methods have been used in analyzing data, this is essentially a qualitative study, using statistical modelling within the qualitative framework of a critical realist approach, in the study of a specially selected group of nurses. However, the standard rules for analysis of statistical data have been carefully followed in the exercise of generating correlations, exploring the primacy of variables through regression analysis, then the grouping of variables, and then of individuals. The heuristic procedure has been one of data reduction, minimizing the number of variables required to produce a meaningful typology of individuals.

This approach has been relatively successful in producing four types of individuals, with nursing careers ranging from the very successful “hardy personality” career nurses, who can cope successfully with a variety of professional and personal challenges, with two groups of successful nurses “soldiering on” in the middle range, through to a marginal group who are clearly not coping and need psychological, social, and professional support—help which they were not currently receiving.

In the next phase of this longitudinal study we will report on the development and outcomes of a co-counselling model, in which 20 successful career nurses offer what help and support they can to their struggling colleagues, whom we have identified in this study.

The limitations of our work must be stressed. First of all, our sample is relatively small, and replication with a larger group of nurses using a different method of sampling (e.g., random sampling) would be welcome, to see if our four-level typology can be replicated, and whether the proportion of nurses “intending to leave” would be greater in a more random sample. We do not have a control or contrast group of professional women in non-nursing roles, so we are not certain that it is the pressures of a nursing career which are causing psychological distress in the women in our sample. But we are certainly aware of the multiple stressors which face women who try and achieve senior positions in various employment sectors, including those concerned with human service careers (Bagley et al. 2018).

Although the correlations which emerged in the analysis of the variables measured are compatible with those of previous studies, we remain disappointed that the correlations in our own and in previous

work rarely explain more than half of the shared variance of any two variables (or set of variables). This implies both complexity of interacting influences on personal adjustment and role performance; and a degree of imperfection in the ability of standardized instruments to capture fully the concepts or domains they purport to measure.

Directions of cause are often also difficult to adduce, in our own and in previous work. Longitudinal work may be able to clarify this.

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