



## **Resilient Nurses Coping with Covid Care: A Longitudinal Study of Psychology, Values, Resilience, Stress and Burnout**

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# Resilient Nurses Coping with Covid Care: A Longitudinal Study of Psychology, Values, Resilience, Stress and Burnout

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## Abstract

Findings are presented from 2020 follow-up study of 159 senior hospital nurses involved in the front-line care of COVID patients in urban centres in Northern England, prior to the “second wave” of COVID patients in November, 2020. A typology of nurses from measures completed in 2018 identified 4 types: a. ‘Soldiers’; b. ‘Professionals’; c. ‘Highly Stressed’; d. ‘High Achievers’. In 2020 further measures of adjustment stress (including PTSD), and self-actualization were added to earlier measures of personality, adjustment, work-life stress, and career intention. Principal component and cluster analyses identified 3 main types in the 2020 follow-up cohort: A ‘Actualizing Professionals’; (N=59); B ‘Strong Professionals’ (N=55); C ‘Highly Stressed Nurses’ (N=30). Highly stressed nurses identified in 2018 had mostly left nursing, so the 30 highly-stressed nurses in 2020 were mainly a newly-identified group, who included all nurses (N=14) identified as having PTSD symptoms. The research model driving this research is that of Critical Realism which identifies the process of morphogenesis which creates a constructive dialogue for social change on behalf of nurses, who faced almost overwhelming stress in caring for COVID patients. We have identified two types of dedicated nurses with a hardy personality style which has helped them face severe stress in emerging as psychologically strong, self-actualizing individuals, dedicated to the higher values of nursing.

**Key Words:** Nurses, COVID, Longitudinal Study, Critical Realism, Hardy Personality, Self-Actualization, Nursing Values

## **1 Introduction: A long-term study of nursing values, psychological strengths, stress factors and nursing careers**

We address the issues of how some hospital nurses in England have faced the stress involved in COVID care, a role which has been difficult and demanding and involves not only the demanding tasks of saving the very ill, but also of comforting the dying. Front-line medical care staff have also been at above average level of acquiring COVID infection, and between March 2020 and February 2021 more than 800 nurses and care home staff died of COVID, acquired directly or indirectly during their nursing roles (ONS, 2020; Mitchell, 2021). How have nurses endured under such hazardous conditions? In part, we contend, this is because of a commitment to a set of nursing values (such as the ‘6Cs’, outlined below).

Our follow-up study of English nurses was conducted between June and November, 2020, following the first phase of the COVID pandemic, and before the onset of ‘the second wave’. In England and Wales in the early months of 2020 preceding our study 4,671 men and women aged 20 to 64 died from COVID: in women in the general population this gave a death rate of 9.7 per 100,000, but in the female occupational group categorised as Nurses, the COVID death rate was recorded as 15.3 per 100,000, an elevated rate 1.57 times greater than in the general population (ONS, 2020). There remained a possibility that the COVID-related illnesses and deaths of health carers represented “a parallel pandemic” in all world countries (Dzau et al., 2020). This began at a time (first quarter of 2020) when nurses in English hospitals often did not have access to adequate forms of masks and other protection (PPE) (Hackett, 2021c).

For our interviewees, two-thirds of whom were directly involved in COVID care on a daily basis, the recent history of COVID was a challenging professional reality. It has been well-established that nursing in the face of an infectious disease epidemic is a difficult and demanding task (Brooks et al., 2018). That research was completed before the second wave of COVID infections almost overwhelmed staff in NHS hospitals in England in December 2020 through February 2021. As Waddington (2021) put it, in the face of this second wave, each day frontline nurses faced: “Anxiety and dread in one 12-hour shift ...”. What was impressive in these first-hand accounts from The Royal College of Nursing and its members was the bravery and determination of nurses to fulfil their roles (Guardian, 2021). What could be the source of this steadfastness, bravery, and moral purpose?

We try and answer some of these questions in this paper which is the second in a series of quantitative and qualitative reports in a longitudinal study of personality, stress, values, role performance and career outcomes, in a cohort of female hospital nurses (Adam-Bagley, Abubaker & Sawyerr, 2018). We offer a psychometric study of how many of the English nurses in this study have coped with the extraordinary stressful challenge of coping with COVID patients, as part of an overall qualitative research design, framed within the framework of the Critical Realist research approach (Alderson, 2020).

## **2 Nursing values**

Nursing is a profession which calls for a special kind of person whose personality and personal values may help them cope with demanding roles in medical care (Scott et al., 2015). The values of a nurse’s calling are epitomised by “the 6Cs of nursing”: “Care, Compassion, Competence, Communication, Courage, and Commitment.” These six values were operationalized in recent times by the UK government’s Department of Health (Cummings and Bennett, 2012; NMC: Nursing and Midwifery Council, 2015; RCN: Royal College of Nursing, 2015; Baillie, 2017). These enduring values reflected the pioneering work of Florence Nightingale, who developed humane and efficient nursing care practices based on her 19<sup>th</sup>

century experiences of nursing war-wounded (Spurlock 2017); these values were further developed in a Canadian context by Sister Simone Roach (Bradshaw, 2016). A similar professional ethic in nursing was developed in North America by nurses tending civil-war wounded (Fowler, 2016). In the development of this ‘philosophy of care in nursing’ in America and also internationally, there is also a spiritual or religious sub-theme (Watson 2004 & 2008; Zehtab & Adib-Hajbaghery, 2014). In the UK model of nursing values:

*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, birth, recovery, rehabilitation, end of life care, and ease in dying.

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

*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, optimising personal professional talents, and the application and integration of new techniques and technologies.

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

*Courage* involves steadfastness in the face of stressful situations, coping with the suffering of others, with courage to think of (and implement) new ways of optimising patient care.

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

### **3. The Critical Realist research model, and the study’s first phase**

We approach this research through the lens of critical realism, a value-based approach which intuitively identifies the *ontology* of the research area, creating layers of understanding through dialogues with research populations in order to achieve *morphogenesis*, a constructive social change (Archer, 2011; Bhaskar, 2016). Critical realism is now a widely used methodology in the study and development of industrial and health care management, and is described as “enlightened common sense” (Bhaskar, 2016).

Critical Realism (CR) has been attractive to social researchers, and theorists who are committed to a firm ideological basis for viewing human action, in asserting that structures (e.g. class exploitation, metaphysical moral codes, and associated systems of ordering relationships within society) are *real*: although their nature and detailed structures may be examined and debated, nevertheless their being (ontology) is firmly grounded (Archer, 2014; Adam-Bagley et al., 2016; Bhaskar, 2020).

Priscilla Alderson (2015 & 2016) is an able exponent of CR, and we quote her exposition here, adapting her account of child emancipation into an account of how “nursing duties” may be construed:

*Critical realism begins by separating ontology—existence from epistemology—thinking. So, for example ... talking about duties, such as the values which nurses might deploy in their clinical practice involves **epistemology**; whereas nurses lobbying collectively for better face protection in COVID nursing, involves **ontology** in the being and doing of rights. This difference challenges mainstream philosophy and science, which for 2,500 years have tended to collapse ontology into epistemology, **things into thoughts** in the epistemic fallacy (Bhaskar, 1998)... In critical realism's three layers of reality, the **empirical level** involves our perceptions and responses... The second, actual, layer involves **what actually happens**, for example when nurses' request for protection from infection are honoured or violated. Most research ... tends to reduce the actual into the empirical, emphasizing views, definitions, discussions, and examples about such safety protection. However, critical realism also examines **the deeper, third layer of real causal forces**. These are often unseen and are only known in their effects, although they are crucial to enable us to understand and explain the world. (Alderson, 2016, p. 4 – emphases and examples added)*

Critical Realism (CR) usually begins with researchers defining a crucial area of *Absence*, which existing power structures usually ignore, but which is often the basis of social control, such as “unmasked alienation” (Adam-Bagley et al., 2016). 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 unfavourable, 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 ... 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; Griffiths et al. 2014 & 2016) and are ignored by politicians and policy-makers ... (Adam-Bagley et al., 2019, p. 402).*

This value-based idea of the exploitation and alienation of nurses explores how dialogue might increase the consciousness of nurses about their oppression, in the CR process of *morphogenesis* (Archer 2011), in which crucial actors (e.g. nurse leaders – Mulholland, 2020) encourage a dialectic between exploited groups (e.g. front-line nurses) with individuals and groups lobbying on their behalf to expose social forces involved in the exploitation of nursing staff. Thus, for example, Dame Anne Marie Rafferty, President of the Royal College of Nurses has argued that: “COVID should be a circuit breaker for the ills plaguing nursing.” (Mulholland, 2020). Dame Rafferty identified, for example, the low (and declining) pay for nursing staff, poor nurse-patient ratios resulting in about a third of trained staff leaving the profession, and a lack of CPD (continuing professional development) for nurses. An RCN study

of 1,600 nurses leaving the profession found that about a quarter left because of “continued stress” linked to personal issues of adjustment and mental health (Hackett, 2020).

The first phase of our CR study of a cohort of nurses was not empirical or hypothesis-testing as such, but nevertheless attempted to use complex data analysis which led, 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.

A heuristic procedure in the first phase has been one of data reduction, minimizing the number of variables required to produce a meaningful typology of hardiness and vulnerability in nurses. This approach was relatively successful, producing four types of individuals, with nursing careers ranging from the very successful “hardy personality” career nurses, who could cope successfully with a variety of professional and personal challenges, contrasted with two groups of successful nurses “soldiering on” in the middle range of adjustments and outlook, through to a marginal group who were clearly not coping and needed psychological, social, and professional support—help which they were not currently receiving. In this first phase we also attempted to develop of a co-counselling model, in which 20 successful career nurses were recruited to offer what help and support they could for struggling colleagues, whom we had identified in the study. We reflected that this was an appropriate strategy, given that nurses may have a special bond of care and comradeship (Harris et al., 1997).

#### **4 Stresses faced by nurses, and consequences of stress:**

##### *4.1 Financial issues*

Nurses, we argue, need a commitment to all of the 6C Values in a difficult and demanding profession, especially when their professional roles are undermined by low pay. In the United Kingdom because of government policy, by 2021 nursing pay had been systematically reduced by more than a net 10% over a decade (Kinnair, 2021; London Economics, 2021). Furthermore, a progressively reduced funding for the UK national health service (NHS), and government failure to fund training places in colleges and universities has meant that nurse:patient ratios have systematically declined in a previous decade (RCN, 2009-2019). By 2018 more nurses than in any previous year were leaving the profession in England, the majority aged less than 50 (Triggle, 2018). It appeared that there has been a ‘downward spiral’: as nurse-patient ratios worsen, the job of nursing becomes more stressful, and increasing numbers leave (Hackett, 2020; Mulholland, 2020; Ely, 2021).

##### *4.2 Psychosocial stress and resilience*

Problems facing nurses in their demanding roles, which might lead to profound psychological distress, burnout and even suicidal thoughts and behaviours, have been observed in different cultures, in contrasted models of health care delivery (Feskanovitch et al., 2002; de Boer et al., 2011; Kølves et al., 2013; Anderson et al., 2012; Campbell, 2015; Woodhead et al., 2016). From this case study and epidemiological evidence it appears that *despite* lack of adequate material rewards “faithful and compassionate” dedication to their professional roles in a high stress profession motivates most nurses to “soldier on”. For example, personal religious faith and values in nurses often allows them to practise in a dedicated manner, despite inadequate financial rewards (Bakibinga et al., 2014; Galea, 2014). In this model nurses create “a culture of ethical practice delivery” in which material rewards are subordinated (Rushton 2016).

##### *4.3 Three: Burnout, morbidity and mortality*

American research published prior to the 2020 pandemic, has demonstrated the negative, downward spiral that poor nurse-patient ratios in hospitals could set in train: overworked nurses

caring for too many patients are unable to use their professional skills adequately, leading to disenchantment with nursing, increases in anxiety and depression, burnout, and leaving the profession (Edwards 2001; Browning et al. 2007; Coomber & Barriball 2007; Keneisha et al., 2014). This work has been replicated with large populations of nurses in the United Kingdom showing that, as in the US, poor nurse:patient ratios are associated with higher rates of patient morbidity (new illnesses acquired while in hospital), and mortality (deaths due to poorer care; or ‘tasks left undone’ – Aiken et al. 2008, 2014; Griffiths et al. 2016). The decline in nurse: patient and doctor: patient ratios in UK public hospitals has led to situations in which patient safety (prior to the COVID crisis) was endangered (Thomas, 2020).

The demands of *shift work* (including 12-hours ‘on duty’; and evening and night shifts) have been (in the pre-COVID era) stressful for many nurses (Nelson, 2012). For example, in the 20-year follow-up of a Danish cohort of 18,015 nurses (average age 44 at start of the study), 9 percent had died by the time of the most recent follow-up (Jørgensen et al., 2017). Statistically significant correlates of early death (mainly from CVD, cancer and diabetes) included the degree to which the nurses had undertaken rotating, evening and night shift work, a variety of other premorbid factors controlled for.

The impact on normal biological rhythms may impact negatively on both physical and mental health. For example, completed suicide in nurses shows a ‘U’ shaped curve, with younger nurses more likely to choose this drastic form of exit; but older nurses, in the years following their exit from the profession also have higher rates of self-killing (Feskanich et al., 20002). What is clear is the dropout from the nursing profession is high in the first two years after graduation (Li et al., 2011 & 2013). Rather than “soldiering on” in the face of what seems like an increasingly stressful career, significant numbers of nurses leave the profession in their early years of nursing work, perhaps with some guilt and regret with failing to cope with a professional role to which they were emotionally attached (Barron & West, 2005; Courvoisier et al., 2013; Heinen et al., 2013; Bruyneel et al., 2016).

#### 4.4 Work-Life-Balance stressors

Some career nurses face *Work-Life Balance* (WLB) problems in which the individual’s social and family life is challenged by the demands of their work roles, including having to work long shifts, and night duty (Cortese et al. 2010; Duchting, 2015). For this reason, we have included a measure of WLB stress in our data package, since hypothetically WLB stress may interact with or exacerbate nursing role stresses. The WLB measure chosen was that of Hayman (2006). We chose Hayman’s (2005 & 2009) scale since it showed good evidence of discriminant validity, and as a relevant instrument for completion by human service professionals (Hayman & Rasmussen, 2013). 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 scales into a single measure, which had high alpha reliability. A high score indicates greater amounts of stress due to work-life imbalance in nurses, and in other professional groups (Smeltzer et al., 2016; Agha et al., 2017). One interesting study (Chunta, 2020) argues that a good work-life balance is an essential prerequisite of “joy in nursing”.

#### 4.5 Burnout and its professional and mental health sequels

The pioneer of “burnout” research is Christina Maslach (Maslach & Jackson, 1986): the MBI scale developed from this research has been refined and validated, and is widely used in research on occupational psychology (Maslach et al., 2001 & 2006). The 20-item MBI measures the potential for professionals in demanding roles such as nurses, to suffer exhaustion, role disenchantment, imminence of leaving nursing, frequent sickness, depersonalisation and automated performance of routine duties. It has three subscales,

“Emotional exhaustion” (e.g. “I feel emotionally drained from my work”); “Depersonalization” (e.g. “I don’t really care what happens to some patients”); and “Personal accomplishment” (e.g. “I deal effectively with the problems of my patients”).

Dall’Ora et al. (2020) in a systematic review located 39 studies which had used the full Maslach Burnout Scale with nurses, in several countries:

*The patterns identified by these studies consistently show that adverse job characteristics—high workload, low staffing levels, long shifts, and low control—are associated with burnout in nursing. The potential consequences for staff and patients are severe. The literature on burnout in nursing partly supports Maslach’s theory, but some areas are insufficiently tested, in particular, the association between burnout and turnover, and relationships were found for some MBI dimensions only. (Dall’Ora et al. 2020. p.1)*

Relationships between stress, incipient burnout, and poor professional performance in these studies were not absolute, or entirely predictable, since many nurses did *not* show signs of burnout despite multiple stressors. Hypothetically these are individuals with high levels of psychological hardiness (Garrosa et al., 2008; Henderson, 2015).

Thus, for example, Munnangi et al. (2018) found “moderate” levels of burnout stress and symptoms in ER nurses, implying that “the best survive” and usually adapt successfully to difficult and demanding roles. One of the ideas explored in the present study is whether a cohort of relatively senior nurses have been able to cope with the stresses and demands of nursing care in the COVID pandemic, without experiencing “burnout”; and whether those who were manifesting signs of social and psychological stress when studied in 2018 were overwhelmed, or otherwise, by the subsequent challenges of COVID nursing.

In studies with nurses (and others who engage in work with ill or distressed people ) on personality measures, higher OCEAN (Big 5) Extraversion and lower Neuroticism scores were the most salient in predicting lower scores on the Burnout potential on the Maslach scales (Bakker et al., 2006; Adrianssens et al., 2015; Törnroos et al., 2013).

#### 4.6 PTSD as a possible outcome for critical care nurses

*Posttraumatic stress disorder (PTSD) is a complex, often debilitating, disorder that has far-reaching effects, including anxiety, depression, burnout, and compassion fatigue. Working as a critical care unit nurse can be physically and emotionally demanding. Critical care nurses are at increased risk of developing PTSD compared with general care nurses. Employers are also affected due to increased rates of attrition, absenteeism, and general decreased quality in patient care. There is conflicting evidence related to which factors contribute to PTSD but increased resilience holds the most promise for preventing PTSD and its detrimental effects on critical care nurses. (Salmon & Morehead, 2019, p. 515)*

The measurement of PTSD, and problems faced by nurses facing COVID-related stressors (Carnassa et al., 2020; Schuster & Dwyer, 2020) are discussed in more detail below.



#### 4.7 Resilience, stress, mental health and coping in nurses

There is an important literature on psychological resilience in nurses, showing that some nurses have special strengths in coping with stresses they face, in ways which mean that they can successfully cope with professional challenges (Dewe & Cooper 2017). The ‘resilient nurse’ is (on the ‘Big Five’ personality test), likely to be emotionally stable, outgoing and communicative (Judge et al. 2002; Bruck and Allen 2003; Törnroos et al. 2013).

This idea of resilience has been conceptualised in various ways by those studying the careers of health care professionals: as “Sense of Personal Autonomy” (Hochwälder, 2015); as “Hardiness” (Benishek & Lopez, 2001; Bartone et al., 2008; Henderson, 2015; Foster et al., 2019); and as “Positive psychology self-enhancement strategy” (Friedman & Baum, 2016).

Although the Big Five (OCEAN) personality dimensions are to some extent part of an individual’s biologically inherited personality, studies indicate that the awareness, development and use of these traits can also be fostered and coached in order to enhance job performance, stress resilience, and personal satisfaction (Judge et al., 2002). Measures of self-concept and self-esteem may also be indicators of a hardy personality: these too can be enhanced, despite early developmental factors which impair self-esteem and self-actualization (Sawyer & Adam-Bagley, 2017).

“Resilient nurses” and other health care professionals may possess an ego-strength which helps them buffer stress, and avoid the onset of depression, anxiety and PTSD in difficult conditions (Kadner, 1989; Epstein & Krasner, 2013). Nevertheless, even the strongest person does not have an infinitely strong endurance level. Bartone et al. (2008) for example, in developing measures of hardiness, report that most soldiers (but certainly not all) in combat would develop acute PTSD after three months of continuous warfare. Nurses working at the COVID frontline may also face stressors which result in PTSD symptoms (NICE, 2018; Carmassi et al., 2020).

The CESD depression measure (Radloff, 1977); and Rosenberg’s self-esteem scale (Sawyer & Adam-Bagley, 2017), as measures of both adjustment, and ability to maintain a positive affect in the face of stress, were also completed in both phases of the study.

#### 4.8 Self-Actualization - humanistic psychology and challenges to the nursing vocation

Our value presumption is that all humans, when culture allows them, will seek to maximise personal fulfilment and well-being through service to others. As Bhaskar (2020) puts it: “... we should approach the ontology of persons in terms of the thought embodied in some southern African languages by the notion of ubuntu which means roughly ‘I am because you are’. (p. 113) In this respect we follow Abraham Maslow’s (2013) ideas on human nature and fulfilment in explaining, and planning the management of human action in social and medical professionals as a form of ‘public service’ (Stretton, 1994; Zalenski & Raspa, 2006):

*We have, each of us, an essential biologically based inner nature, which is to some degree "natural," intrinsic, given, and, in a certain limited sense, unchangeable, or, at least, unchanging ... Each person's inner nature is in part unique to himself and in part species-wide... This inner nature seems not to be intrinsically or primarily or necessarily evil. The basic needs (for life, for safety and security, for belongingness and affection, for respect and self-respect, and for self-actualization), the basic human emotions and the basic human capacities are on their face, either neutral, pre-moral or positively good. (Maslow, 1964, p. 100)*

Nurses in particular may benefit from developments in humanistic and positive psychology, which involve the development of both ‘emotional intelligence’ and ‘mindfulness’ (Parsons, 2008; Healy, 2019). Following these ‘Maslovian ideals’ for achieving self-actualization, we have included in the follow-up study of nurses three measures which claim to capture the essence of a successfully adjusted, self-actualized person (Groff-Paris & Terhaar, 2010) – someone who is developing their talents and their “inner goodness” to the fullest degree.

The first of these measures is the Jones & Crandall (1986) Self-Actualization measure, employing concepts directly from Maslow’s hierarchical model of personal development, stress and fulfilment (e.g. of Item “I respect and help my fellow workers”). The second measure (completed only in Phase 2, in 2020) is Neff’s (2003) “Self-compassion Scale” (e.g. of Item “I am kind to myself when I’m experiencing stress”). Thirdly is Lui & Fernando’s (2019) well-being scale which indicates personal fulfilment, a critical understanding of one’s strengths and limitations, and satisfaction and happiness in a variety of roles (e.g. of Item “I have enjoyment in life”, rated from ‘very little’ through to ‘most of the time’). The validation studies for these scales suggest that high scores indicate emotional maturity, role fulfilment, realist self-appraisal, and satisfaction with reaching personal goals.

Hypothetically, from our research on Phase One of this study, individuals scoring well on these self-actualization dimensions two years later, would have a hardy personality, lower burnout profiles in the face of the challenges of COVID nursing.

## **5 Recapitulation of the study’s first phase: measurement, sampling, research methods and findings**

### *5.1 Interviewing and study design*

Respondents were gathered through the snowball sampling technique (Sadler, et al., 2010), for a study nurses who were invited to review personal and professional challenges as reflected in responses to standardised questionnaires, as well as their willingness to participate in the second phase of the survey. Snowball sampling asks the first respondents (known to the researchers) to nominate people similar to themselves who might be interested in completing the measures for a study of “personal adjustment to the nursing role.” This research was conducted entirely outside of clinical or hospital settings, so ethical approval for the study was general rather than that required for clinical research in hospitals. Fuller details of the advantages of the snowball-sampling and interview techniques, and validity of measures used are given in Adam-Bagley et al. (2018).

Of the 192 nurses participating in Phase 1 in 2018, 187 agreed to a follow-up study (of the five declining follow-up, one was at the point of retirement, and two were planning to return to their country of birth within the next 6 months). Of the 192 agreeing to participate, we asked 25 senior or well-qualified nurses to act in the role of co-counselling, professional support volunteers, and 20 agreed to act in this role. It is relevant to observe here that of one of the correlates of the emergence of marked depression and anxiety in COVID-stressed nurses was lack of emotional support for their roles (Wang et al., 2021; Zhao et al., 2021), suggesting that strong emotional support is a factor preventing the emergence of PTSD symptoms.

Average age of participants the nurses contacted in January to June, 2018 was 36.5 years (range 24 to 55 years). All had professional qualifications in nursing: and were working full-time in National Health Service hospitals. 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, and all were permanent or long-term residents of the UK. The snowball

method did introduce the bias that we were studying women who often knew one another, were at similar stages of their careers, and likely shared some of the same interests and values.

The initial interviews were completed in June, 2018, prior to the onset of the COVID-19 pandemic crises.

### 5.2 Ideas explored in the study's first phase: instruments and questionnaires

In the first phase of the study, a questionnaire was completed concerning work history, reasons for choosing the nursing profession, and whether the nurses were considering leaving nursing. Then respondents completed the six-item scale seeking endorsement of the 6C Values of nursing. This instrument invited positive endorsement of core nursing values with the question: we thought it ethical to stress the positive and salient nature of these core nursing values. What we are examining then, was the degree to which the nurse respondents are not completely confident in the application of these values.

Other measures included:

*Maslach's Burnout Inventory*, which has been used in several studies of nurses' career patterns morale (Pisanti et al., 2013).

*The Short Hardiness Inventory* developed by Bartone et al. (2008) to explain why some individuals in stressful conditions (e.g. military combat) emerge without mental health trauma; and problems such as depression, anxiety and post-traumatic stress. 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. 79). The 15-tem measure (e.g. of item "Stressful life events give me interesting opportunities for growth") correlated 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. No available study has used the scale with nurses, but we hypothesize that "hardiness" is a valuable facet of personality for career nurses, as Rich & Rich (1987) had argued, in writing about a group of American nurses.

*Big 5 (OCEAN) Personality Inventory*: This measure (McRae et al., 1999) is now accepted as the standard measure of personality, and validity and reliability have been established in many studies (Soto et al., 2011). The five OCEAN personality dimensions (also called the BIG 5) which have emerged from the factor analytic studies of McRae et al. (1999) are:

O. *Openness to Experience* (curious, artistic, novelty seeking, intuitive, emotionally reactive *versus* pragmatic and evidence-based individuals);

C. *Conscientiousness* (self-disciplined individuals who strive for achievement in meeting external goals, with the ability to control, regulate their impulses with planned rather than spontaneous behaviour *versus* the polar opposite, individuals who do not plan ahead, and may be disorganised in their behavioural patterns);

E. *Extraversion* (outgoing, energetic, strong and usually positive emotional reactions, sociable, seeking social stimulus in the company of others, socially active and attention-seeking individuals *versus* those at the other extreme, described as reserved, shy, withdrawn, self-absorbed, avoiding social interactions);

A. *Agreeableness* (being straightforward, trusting, altruistic, compliant to the needs and wishes of others, modest, co-operative rather than competitive, not inclined to argue or disagree *versus* the polar opposite of these traits, in persons having low scores on this dimension, as rather disagreeable persons);

N. *Neuroticism-Stability* (secure and confident individuals who are stable, calm and unworried versus individuals who are nervous, often worried, anxious and depressed).

A review of 163 studies linking OCEAN (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, with the E, N and O personality types being most salient in defining successful individuals. Genetic studies following twins into adulthood indicate that around half of the variance in the five OCEAN 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 from adolescence through to old age.

It is important to remember that these personality scales are fitted to a normal, standardised curve (like height and weight), so that 68 percent of the general population (with scores falling in one standard deviation around the mean) are (for example) neither extraverted nor introverted, and can best be called “ambiverts”. Only 32 percent are either extraverts (16% in total) or introverts (16% of the population). Usually less than a half of any large population can be described as having any particular kind of salient personality type. The Big 5, like most psychological variables are usually treated as dimensional measures rather than categorical ones (which would be the case in, say making psychiatric diagnoses). The present researchers, with training in either psychology, general and psychiatric nursing, or both employ both the ideas of dimensions and categories.

Thus, for example, in the follow-up studies we have selected three important OCEAN dimensions (E, A & N) which predicted adjustment to nursing roles) and have combined these three personality types not by combining total scores but by assigning a score of 1 to individuals who are “neurotic” (about 16% of the subjects), 2 to scores in the middle range (68%) and 3 to the “highly stable”. (with similar scoring methods for E and O dimensions). A score of 9 would thus represent those who are highly stable, extraverted, and very agreeable – a group of nurses whom we previously found to successful and “hardy” in coping with highly stressful nursing challenges.

*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 20-item scale (range 0 to 60) indicates a strong likelihood that an individual has a depression which should merit 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). The higher the score, the more the indication of clinical depression.

*The Rosenberg Self-Esteem Inventory (RSEI).* There is surprisingly little research on the self-esteem of nurses as a professional group (Sturm & Dellert, 2016). The most relevant study that we can find using the Rosenberg Scale is by Peterson-Graziosa et al. (2013), who showed that lower levels of self-esteem predicted attrition of trainee American nurses. Evidence reviewed by Sawyerr & Adam-Bagley (2017) shows that the widely-used, valid and reliable RSEI is socially constructed, through the individual’s socialization and social interactions, and later becomes a strong basis for inner-strength and self-confidence in meeting the stress 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, a high RSEI score indicates better self-esteem.

*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. We chose Hayman’s (2005 & 2009) scale as showing good evidence of discriminant

validity, and as a relevant instrument for completion by human service professionals (Hayman & Rasmussen, 2013). 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 scales into a single measure, a high score on indicating a greater amounts of stress due to work-life imbalance.

### 5.3 The initial model explored in the 2018 study

The idea initially explored was that commitment to Nursing Values would correlate positively with personal strengths (e.g. high self-esteem, certain personality factors, and a ‘hardy personality’ profile); and negatively with psychological discomfort (e.g. depression, neuroticism), social stressors (e.g. WLB issues); and negatively with work stress, as indicated by the measure of potential burn-out. A further question was whether, if diminished commitment to nursing values predicted intention to leave nursing, the significance of that prediction would survive when other variables in the study were controlled for. Our additional aim was, by heuristic and intuitive statistical analyses, to identify sub-groups within our cohort of nurses, such as those with special strengths, and those who were vulnerable to stress of various kinds.

The Nursing Values Questionnaire (NVQ) invites response set, in that we elicit positive responses (agreement with) concerning personal commitment to each of the six facets of professional values in nursing. High scores on the NVQ were significantly associated ( $p < .01$ ) 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 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 NVQ scale. Two possible reasons for this are that the NVQ imperfectly measures the values construct; and there are other relevant variables which we have not included in our study, which might explain the further variance in NVQ scores.

The simple statement of intention to leave nursing within a year was normalised as a measure for correlation analysis. Intention to leave was predicted ( $P < .01$ ) by: being younger, having lower job rank, being more depressed and neurotic, 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; but the combination of a lack of Hardy Personality traits, Depression, depersonalisation on the Burnout scale, poorer self-esteem, and being Introverted rather than Extraverted – in combination, remained significant predictors of Intention to Leave.

Exploratory factor analysis using the Principal Components method identified groupings of variables, which enabled us to generate *factor scores* for each individual in the study. Factor scores from three major components (explaining more than 50% of the total variance) were then explored using *cluster analysis* (using factor scores for individuals) which categorised individuals within groups, in ways which maximised the “numerical distance” between members of other groups. Heuristic analysis arrived at four distinct clusters of individuals. The statistical values of key variables are outlined in Table 1 (derived from Adam-Bagley et al., 2018).

**Table 1: Cluster analysis of 192 nurses, using factor scores from principal components analysis.**

Variable	A : “The Soldiers” (79)	B: “Cheerful Professionals” (54)	C: “Highly Stressed, Potential Leavers” (20)	D: “High Achievers, Strong & Stable” (39)	Value & Significance of Chi2
Job rank high	13%	31%	6%	49%	36.71 (6 df) p<.0000
Intends to leave nursing?	15%	9%	80%	3%	65.15 (3 df) p<.0000
Neuroticism hi quartile	25%	26%	37%	12%	86.41 (6 df) P<.0000
Extraversion hi quartile	15%	31%	6%	48%	46.23 (6 df) p<.0000
Agreeableness hi quartile	27%	32%	10%	31%	20.86 (6 df) p<.0000
Hardiness hi quartile	23%	30%	2%	44%	38.37 (6 df) p<.0000
Depression hi quartile	29%	25%	30%	17%	51.02 (6 df) p<.0000
Self-Esteem hi quartile	24%	33%	4%	39%	64.35 (6 df) p<.0000
Burnout hi quartile	32%	25%	35%	8%	94.47 (6 df) p<.0000
Work-Life Stress hi quartile	30%	25%	30%	15%	50.53 (6 df) P<.0000
Nursing Values hi quartile	24%	30%	10%	36%	41.32 (6 df) p<.0000

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

The Four Kinds of Nurses resulting from this analysis are:

- 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; 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.

## 6. Phase Two: Research questions for the 2020 follow-up study

### 6.1 Initial questions

In the follow-up interviews with nurses in our research cohort (average time between interviews 26.2 months) we aimed to explore a number of research questions:

*One:* Is there evidence of reliability (shown through correlations) of measures completed at two points in time?

*Two:* Does “intention to leave nursing” predict actual behaviour? And what variables (measured at Time 1) could identify nurses who actually left the profession by Time 2? Do these findings have any implications for interventions to support nurses who consider leaving?

*Three:* Does the 2018 categorization of “four types of nurses” have meaning, or validity, in predicting “leavers” and “survivors” in the face of potentially stress-inducing COVID nursing challenges? Can this typology survive further statistical analysis, including new measures of adjustment and self-actualization? Will a different typology emerge from the follow-up research? Do Nurses in our cohort manifest signs of PTSD following the first wave of COVID in the UK?

*Four:* Do the three new measures completed in 2020 (estimating various aspects of self-actualization) correlate significantly with other scales completed in 2018 and 2020?

*Five:* Can component and cluster analysis identify Types of Nurses in 2020 which are comparable to those emerging from the 2018 cohort?

*Six:* Can we identify a group of nurses whose professional careers are part of what Maslow (2013) described as self-actualization, going beyond the ego-enhancing benefits of professional success, towards a psychological state of enhanced self-awareness and mindfulness, leading (ultimately) towards the maturity of self-transcendence as described by Koltko-Rivera (2006) and Masserly (2018)?

### 6.2 Locating nurses in the follow-up study

In the first sweep, nurses (in Northern England) were interviewed in face-to-face settings, but not in any hospital environment. Measures were completed on a laptop computer. For the 2020 follow-up, Nurses were contacted by phone or e-mail, and completed questionnaires online. Five of the 192 nurses in the original cohort had indicated that they did not want to be contacted again. Of the remaining 187 nurses, six could not be traced through the e-mail or telephone links they had provided earlier. Of those contacted only two declined a follow-up interview. Twenty of the respondents indicated that they had left nursing for a variety of reasons, although seven said they might return to the profession. Thus the final number completing the full follow-up interview with currently practising nurses was 159. The 20 nurses who had left the profession by 2020 came predominantly from Type C, nurses experiencing high stress which had led them to seriously consider leaving the profession within the next year. We retained only six of the 20 Type C nurses for the follow-up interviews (Table 2).

**Table 2: Professional outcomes in 2020 for the four types of nurses in the 2018 cluster analysis**

Type	N in 2018 (full interview)	N in 2020 (full interview)	Left Nursing (by 2020)	Total N lost to study
A. The Soldiers	79	71	6.6% (5/76)	10.1% (8/79)
B. Professionals	54	46	9.9% (5/51)	14.8% (8/54)
C. Highly Stressed	20	6	60% (9/15)	70.0% (14/20)
D. High Achievers	39	36	2.7% (1/37)	7.7% (3/39)
Totals	192	159	11.2% (20/179)	17.2% (33/192)

Notes: Answering “Yes” to “Do you intend to leave nursing ...” (2018) predicted 17 of the 20 known decisions to leave nursing by follow-up 2 years later (1-way ANOVA,  $p < .001$ ). “Lost to study” included 5 who requested ‘no second interview’ in 2018; 2 individuals who declined a further interview in 2020; and 6 who were untraceable. No further questions were asked of those who had left nursing. 159 nurses completed the full interview in 2018 & 2020. Distribution of “left nursing” across the Four Types,  $p < .001$  (1-way ANOVA), indicating a statistically significant excess in Group C.

### 7 Indications of Post-Traumatic Stress Disorder (PTSD) in the 2020 data sweep?

Post-traumatic-stress (PTSD) manifests as a marked and enduring set of symptoms (anxiety, depression, disturbed dreams and insomnia, hypervigilance, flashbacks) which arise from the experience of a profound trauma, which can be physical, psychological or a combination of both (Hansen et al., 2010; NICE, 2018). This process involves complex, but usually temporary neurobiological changes in the individual (Herringa, 2017; Shahrour & Dardas, 2020). But in the most complex and damaging type of trauma (e.g. prolonged physical, emotional and sexual abuse in childhood), a chronic dissociative personality disorder may result (Adam-Bagley & King, 2003). There has been speculation that the kinds of stress experienced by nurses providing COVID care may result in PTSD and related syndromes in health carers in general, and in nurses in particular (Carmassi et al., 2020; Greenberg et al., 2020 a & b; Tracy et al., 2020; Mahase, 2021).

One longitudinal study of several hundred nurses (over 9 months in 2020) found that working directly with COVID patients for several weeks or months with little time for breaks or rest during the health emergency, did frequently result in PTSD-like symptoms (Cai et al., 2020). For this reason, professional advocates for nurses advocate that to prevent high levels of stress, PTSD, and burnout, nurses should be frequently rotated away from direct contact nursing, with additional mental health supports (Barzilay et al., 2020; Carmassi et al., 2020). Unfortunately in countries such as Britain where nurses are in any case in very short supply resulting in poor nurse-patient ratios (Hackett, 2020), such ‘stress relief’ is rarely possible. What is noteworthy in the studies of nurses enduring chronic, high stress events (such as COVID nursing) is that *more than two-thirds* of nurses studied emerge without symptoms of mental illness, trauma, depression and anxiety, and PTSD (Carnassa et al., 2020) – the diagnosed PTSD rates in nurses in various studies in their review ranged from 8 to 30 percent. This psychological survival, this hardiness of personality, deserves further study.

While a reliable and valid measure of PTSD has been developed such as the PTSD-8 (Hansen et al., 2010), these and other measures have usually been validated against specific, one-time traumatic events, such as a car crash, an environmental disaster, or a sexual assault. Personality changes arising from chronic trauma (e.g. continued abuse and assault in children, adolescents



and adults) poses a challenge for both personality theorists and those who develop research instruments (Andersen et al., 2018). We have adapted and reworded the 8-item PTSD-8 scale as a PTSD-N for Nurses scale, posing specific questions about post-traumatic stress in relation to nursing challenges (e.g. sudden and unexpected death of a patient). However, 100 of the 159 nurses studied reported no such enduring memory of a “traumatising” event: rather, death and suffering of patients were part of the everyday nursing role, which according to their personal accounts, they coped with in a professional, but compassionate, manner, without experiencing personal trauma.

**Table 3: PTSD-N (Nurses) Scale: Results for 159 English nurses in 2020, following first COVID wave**

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Question for respondents: *“The following are some of the ways in which nurses may act after experiencing or witnessing an event or series of events, such as unexpected or prolonged severe pain, distress or death of a patients. If these did occur, considering the most recent event(s) of this type, please check your reactions or feelings concerning any such event, focussing on your psychological reactions in the past month.”*

Incidence of relevant events:

“I have not experienced any such a ‘traumatic’ events”: 19 of 159 nurses (11.9%)

“Such events have occurred in my experience as a nurse, but I do not have any recent ‘post-traumatic’ feelings in the past month, concerning such event(s)” 100 of 159 nurses (62.3%)

“I have experienced such event(s) which were a psychological challenge, with some continuing ‘post-traumatic’ feelings in the past month” 40 of 159 nurses (25.2%)

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**Potential Responses:**

1. Recurrent thoughts or memories of the event(s) (1 = Not at all ... 4 Most or all of the time)
2. Feelings as though the event is happening again (1 to 4).
3. Recurrent nightmares about the event. (1 to 4)
4. Sudden emotional or physical reactions when reminded of the event (1 to 4).
5. Avoiding activities that remind you of the event (1 to 4).
6. Avoiding thoughts or feelings associated with the event (1 to 4).
7. On duty, feeling jumpy, easily startled (1 to 4).
8. On duty, feeling constantly alert, nervous and anxious (1 to 4).

PTSD-N Mean: 3.15 (SD 2.35):

“Not at all” (scoring ‘No event’ or ‘No post-traumatic feelings’ as 1) 119

“Traumatic experience, slight trauma” 26

“Some or all of the time” on 5-6 items (average score 17) 13\*

“Some, most or all of the time” on 7 items (score 28) 1\*

“Most or all of the time on all items (score 32) 0

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\*Total 14/159 (8.8%) at or above the presumed clinical cut-off point for the PTSD-N Scale (Andersen et al., 2018)

## 8 Three ‘Self-Actualization ‘measures completed in 2020

### 8.1 The Self-Actualization Scale

Only the Jones & Crandell (1986) scale, designed to measure directly Maslow’s concepts of fulfilling basic needs in the journey towards self-actualization and self transcendence has been adopted faithfully, with no deletion or adding of items. Two other scales have been shortened, including only high loading items from the original factor analyses of the scales: and for each of these two scales (Lui-Fernando Well-Being Scale; and the Neff Self-Compassion Scale) we have included a single item on ‘spiritual values’, because of our theoretical interest in this domain. Factor analyses show that these two items, on seeking or using spiritual values as part of personal fulfilment, do load strongly on the general factor which establishes internal reliability ( $\alpha > .7$  for all three scales).

**Table 4: The 9-Item Positive Self-Actualization Scale: Selected Items from Jones & Crandall**

	Mean	GF
I do not feel ashamed of my emotions	3.12	.69
I believe that people are essentially good and can be trusted	2.85	.59
I feel free to be angry at those I love	3.81	.70
I accept my own weaknesses	3.43	.57
I can like people without having to appraise them	2.93	.62
It is better to be yourself than be popular	3.84	.65
I do feel responsible for helping other people	4.17	.70
I am loved because I give love	3.49	.55
I respect and help my fellow workers	3.91	.72
Scale total	31.55 (SD 5.50)	

*Source of items:* Jones & Crandall (1986). Items scored 1 (Strongly Disagree) through 6 (Strongly Agree). SD=Standard Deviation. GF = General Factor. Basis of selection for Items 1-15: Loading of  $>.5$  on General Factor analysis of the original.

### 8.2 The Self-Compassion Scale

Neff et al. (2003 to 2009) and Germer & Neff (2013) offer their self-compassion scale as the measure of a concept which goes beyond the mere declaration of personal worth as measured by standard measures of self-esteem. While having good self-confidence and high levels of self-praise and self-confidence are often important for the adequate performance of role tasks, nevertheless there may be a point where very high self-esteem becomes narcissistic in nature, and is then a form of “hubristic pride” (Tracy et al., 2009).

In the model of self-offered by Neff and colleagues, mindfulness and emotional intelligence (e.g. McQueen, 2004; Akerjordet & Severinsson, 2008; Prezerakos, 2018; Soto-Rubio et al, 2020) can lead the individual to transcend the narcissistic self into an actualizing form of self-awareness, which involves strong insight into one’s strengths and weaknesses in the effort to strive towards important goals, without anxiety or depression when goal achievement fails. “High self-compassion” in Neff et al’s analyses, is often associated with extraversion,

agreeableness, conscientiousness, and lack of neuroticism on the OCEAN personality measures. Neff and Vonk (2009) conclude that: “Individuals with high levels of self-compassion may be more likely to experience positive feelings because they accept themselves the way they are ... self-compassion also allows one to feel connection with others ... and may be a good approximation of the ‘optimal’ or ‘true’ self-esteem.” (p. 43) Achieving high levels of self-compassion may also to equate to what Maslow (1965 & 2013) calls “self-actualization”, and ultimately “self-transcendence”. Neff and Vonk (2009) also observed that “realism” in self-appraisal and achievement of self-compassion can be achieved through mindfulness training, which others have used successfully in providing psychological support for nurses (Mealer et al., 2017; Stanulewicz et al., 2019).

**Table 5: Scale Based on Items from the Neff Self-Compassion Scale: “Valuing Myself”**

	Mean	GF loadings
1. I am kind to myself when I’m experiencing stress.	3.57	.63
2. When times are really difficult, I tend to be tough on myself.	3.93	.51
3. I try to see my failings as part of the human condition.	2.87	.54
4. When I fail at something that’s important to me I tend to feel alone in my failure.	3.50	.56
5. When I’m feeling down I try to approach my feelings with curiosity and openness.	3.32	.58
6. When something upsets me I get carried away with my feelings.	2.61	.49
8. I’m tolerant of my own flaws and inadequacies.	3.76	.68
9. When somethings painful happens to me I get carried away with my feelings.	3.66	.53
10. I have a firmly based value system.	4.12	.55
<b>New Scale Total</b>	<b>31.34 (SD 6.98)</b>	

**Note:** Source of scale items 1 to 9, Neff (2003). Items scored 1 (Strongly Disagree) through 6 (Strongly Agree), with reverse scoring for some items, as in Neff (2003) & Neff & Vonk (2009). Items 1 to 9 were the highest loading items (>.05) in the original 24-item scale. Item 10 added to original Neff scale. GF = General Factor. Items 1 to 9 had loadings of >.5 on the General Factor in the original study. Item 10 added for theoretical reasons.

### 8.5 Personal Well-Being

The Well-Being Scale (WBS) was devised by Lui & Fernando (2018) to elaborate Maslow’s model of the self-actualizing person, in whom “ ... happiness and well-being emerge from service to others” (p. 140). This is based on the idea of *synergy* through which human acts motivated by altruism, bring reward both to the self, and to others. This, for us, is the higher value informing nursing practice. It is the role of someone who has an enduring and steadfast sense of well-being, earned through self-knowledge, and through service to others.

**Table 6: Selected Items from the Lui-Fernando Well-Being Scale**

	Mean	SD	GF
1. Control over physical activity	3.82	1.28	.71
2. Energy to do necessary things	3.57	1.14	.59
3. Good care of physical health	3.87	1.21	.62
4. People to talk to about problems	4.13	1.33	.76
5. Count on friends/family in crisis	4.35	1.15	.72
6. People who love me	4.57	1.07	.60
7. Solve problems I face	3.91	1.16	.65
8. I like my life at home	3.92	1.33	.69
9. Get along with people	3.97	1.07	.65
10. Spend time with friends/relatives	4.06	1.16	.74
11. Doing interesting things	3.97	1.02	.55
12. Potential to reach my goals	4.29	1.20	.59
13. I do things that make me happy	3.47	1.15	.56
14. Feel happy often	3.94	1.05	.66
15. Enjoyment in life	4.15	1.25	.69
16. Satisfying spiritual life	3.21	1.35	.48
Scale total:	63.20	8.37	

Notes: SD=Standard Deviation. GF=General Factor Loadings. Source of these Shortened & Paraphrased Scale items: Lui & Fernando (2019). Items scored 1 (Strongly Disagree) through 6 (Strongly Agree). SD=Standard Deviation. GF = General Factor. Basis of selection for Items 1-15: Loading of >.5 on General Factor analysis in the Lui & Fernando (2019) study. Item 16 loaded 0.42, and has been included for theoretical reasons.

## 9 The second data sweep: moving towards a further classification of nurses

### 9.1 Initial results

As outlined above and shown in Table 2, of the 192 included in the first Sweep in 2018, 159 nurses were retained in the 2020 Data Sweep, the largest sample loss being 14 nurses from the Highly Stressed group C. The intention of nurses in this group to leave the profession in the forthcoming year predicted the majority of the decisions to leave nursing.

Table 7 presents the mean values and correlations of measures completed in both Sweeps, as well as the means for the three additional measures (Tables 4 to 6) in the domain of Self Actualization. Most measures retained statistical significance over time, indicating some reliability for measures including Nursing Values, Hardiness, WLB Stress, and Self-Esteem. However, “Intention to Leave” related to a largely separate group of nurses in 2020, since most nurses expressing this intention had left the profession by 2020. Since there was a link between desire to leave and Depression, this latter measure also had a weak correlation over time. However, Depression measured in 2020 was an important marker variable for the cluster and component analyses in 2020. The lengthy OCEAN personality scale was not repeated in 2020, the three salient profiles (Extraversion, Stability & Agreeableness) being operationalised as a combined measure, and fitted to a normal curve.

Following correlational analysis, the resulting matrix was subjected to an exploratory Factor Analysis, with three varimax rotated components selected, which explained just over 50 percent of the total variance, and fulfilled the criteria for the “scree test” for selection (Cattell, 1966). Loadings of items on these three rotated factors are shown in Table 8. The first factor or component groups together “strong personalities“(Extraverted+Stable+Agreeable); Hardiness; Self-Compassion; Personal Well-Being; and Self-Actualization. Factor II also represents a dimension of Well-Being, combined with Hardiness, good Self-Esteem, and affiliation with Nursing Values. Factor III identifies a grouping of negative variables, including Burnout scores, WLB stress, poorer overall life satisfaction and adjustment, and a potential for leaving the nursing profession.

### *9.2 Correlation, component and cluster analysis to identify ‘types of nurses’*

In order to arrive at a clustering of individuals (as opposed to a grouping of variables) a similar procedure was followed to that applied in Sweep 1 data: k-means cluster analysis using the SPSS program. The 2020 data analysis could not arrive at a set of groupings which were as clear-cut as in 2018, but 3-group solution maximised statistical distance between the clustering of individuals. However, 15 individuals were outliers, and could not be successfully included in any of the three groups (the 4- and 5-group solution produced clusters which could absorb most of these individuals, but at the cost of lack of clarity in the focus of the other groups – and so the 3-group solution was retained in the qualitative design as having the most heuristic usefulness<sup>1</sup>):

The largest Group A (n=59) we have labelled “**Actualizing Professionals**” who tend to have positive personality profiles, Hardy personality, and strong Well-Being, Self-Compassion and Self-Actualizing scores. This group contains a core of both the 2018 Group B “Strong Professionals”, and Group D “High Achievers”.

The next Group B (n=55) called “**Strong Professionals**” tend to be the most senior group, committed to Nursing Values, with good Self-Esteem and Self-Compassion. This group contains a core of the 2018 “Strong Professionals” group.

The third Group C (n=30) is named “**Highly Stressed Nurses**”, a group of nurses, experiencing feelings of Burnout, contemplating leaving nursing; they also experience significant Work-Life-Balance stress, centred mainly on problems of caring for children. This group contains *all* of the nurses who were tentatively classified as falling into the PTSD clinical category. This group contains both “Soldiers” and “Highly Stressed” nurses from the previous grouping.

There is some continuity of clusters across a two-year period, offering an indication of the reliability and validity of the clustering process, even when a significant number from the first sweep had left nursing. We had recruited some senior nurses in the first sweep to act as telephone counsellors for struggling colleagues: 15 had acted in this capacity. For ethical reasons we did not request details of these conversations, but we understand that most of the “counselling discussions” resulted in the advice to highly stressed, junior colleagues “to take a career break”. One of the disappointments in the follow-up findings was the relatively poor outcomes for the Phase One “Soldiers”. These nurses did not, in the main, evolve into hardy career nurses; rather, they became “highly stressed” nurses, or manifested inconsistent patterns of adjustment which meant that they could not be assigned to any clearly defined group of nurses in Phase Two.

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<sup>1</sup> This approach may be compared with that of Summers (2020) who also used factor analyses in a critical realist study of Australian nurses.

**Table 7: Means and correlations of nurses’ adjustment and coping Scales, Sweep 1 (2018) compared with Sweep 2 (2020)**

	<b>2018 N=192</b> <b>Mean (SD)</b>	<b>2020 N=159</b> <b>Mean (SD)</b>	<b>Correlations</b> <b>2017 to 2020</b>
SVS (Values)	12.64 (3.67)	14.29 (4.39)	.47
Hardiness	33.85 (8.59)	36.26 (8.72)	.53
Self-Esteem (RSES)	28.89 (5.55)	30.23 (5.51)	.40
Burnout	5.63 (1.79)	6.67 (2.81)	.38
WLB Stress	12.54 (4.21)	16.71 (5.23)	.40
Leave nursing?	19%	20%	.16
Self Actualization	Not completed	31.55 (5.50)	-
Self Compassion	Not completed	31.34 (6.98)	-
Personal Well-Being	Not completed	63.20 (8.37)	-
CESD Depression	12.50 (9.92)	10.10 (6.29)	.22
PTSD: Post Traumatic Stress	Not completed	3.15 (2.35) (14/159 above clinical cut-off)	-
<i>Personality:</i> Agreeable, Extraverted & Emotionally Stable	1.0 (normalised, Gaussian curve)	Not completed	-
COVID Contact Nursing	Not relevant	88.6%	-

**Notes:** Correlations calculated for 159 nurses completing similar measures in 2018 & 2020. Significance of correlations by Pearson’s r (2-tailed test): 0.25 and above, P<.01.

**Table 8: Principal components analysis of variables from 2018 and 2020 sweeps**

	<b>Factor I (24% of variance)</b>	<b>Factor II (18% of variance)</b>	<b>Factor III (8% of variance)</b>
Job rank (low to high)	.38	.05	-.40
Extraverted+Stable+Agreeable	.65	-.35	.02
Hardy Personality	.63	-.56	-.20
CESD Depression (high to low)	.22	-.27	-.41
Self-esteem (low to high)	.43	-.54	-.04
Burnout Scales (high to low)	.17	-.08	-.55
Work-Life Balance stress (high to low)	.20	.01	-.61
Intention to Leave Nursing	-.34	.01	-.47
Nursing Values Scale	.37	-.54	-.30
PTSD-N Measure (high to low stress)	.00	-.00	-.33
Self-Compassion	.61	-.39	-.39
Personal Well-Being	.67	-.55	-.41
Self-Actualization	.48	-.30	-.09

Note: Principal component analysis based on the correlation matrix of measures, used Varimax rotation, requiring orthogonal rotation. All measures completed in 2020, except "Personality" (extraverted+stable+agreeable), based on combining high (16%), medium (68%) and low (16%) scorers on each of these 3 scales, combined, from scale completion in 2018.

**Table 9: Typology of 144 Nurses from the 2020 Data Sweep**

	A “Actualizing Professionals” (n=59)	B “Strong Professionals” (n=55)	C “Highly Stressed Nurses” (n=30)	Value & Significance of Chi- squared
Job rank high	<b>57.6%</b>	<b>72.7%</b>	40.0%	Chi2 (4df, 144) p<.0002
Plans to leave nursing?	25.4%	18.2%	<b>60.0%</b>	Chi2 (4df, 144) 17.1, p<.0002
Personality, high on 3 types (n=23)	<b>56.5%</b>	14.5%	6.6%	Chi2 (4df, 144) 11.2, p<.05
Hardiness, top 25% (n=36)	<b>63.9%</b>	27.8%	10.0%	Chi2 (4df, 144) 19.1, p<.0002
Depression, top 25% (n=36)	18.6%	18.2%	<b>50.0%</b>	Chi2 (4 df, 144), 13.2, p<.01
High Self-Esteem, top 25% (n=36)	13.5%	<b>36.4%</b>	26.6%	Chi2 (4 df, 144), 33.2, p<.0000
Burnout, top 25%	6.8%	20.0%	<b>70.0%</b>	Chi2 (4 df, 144) 49.2, p<.0000
WLB stress, top 25%	8.5%	25.4%	<b>56.6%</b>	Chi2 (4 df, 144 )30.6, p<.0000
Nursing Values, top 25%	25.4%	27.2%	20.0%	Chi2 (4 df, 144) 2.0, p=.730, not significant
Well-Being scale, top 25%	<b>32.2%</b>	21.8%	16.6%	Chi2 (4df, 144) 13.30, p.<01=.746
Self-Compassion scale, top 25%	<b>32.2%</b>	27.2%	6.7%	Chi2 (4 df, 144) 3.10, p=.540. not significant
Self-Actualization scale, top 25%	<b>35.5%</b>	20.0%	13.3%	Chi2 (4 df, 144) 16.65, p<.003
PTSD-N ‘clinical’ group	0.0%	0.0%	<b>43.3%</b>	Chi2 (3df, 144) 44.0, p<.0000
(A) Soldiers (2018)	A: 0.0%	7.3%	<b>36.6%</b>	(15 Nurses could not be classified in the 2020 data analysis of 159 nurses)
(B) Professionals (2018)	B: <b>37.4%</b>	<b>60.0%</b>	0.0%	
(C) Stressed (2018)	C: 8.4%	0.0%	20.0%	
(D) Hi Achievers (2018)	D: <b>54.2%</b>	25.4%	0.0%	



## 10 Discussion and Conclusions

Joseph (2019) from the perspective of humanistic psychology argues that the “synergist person” (in Maslow’s model) can face and overcome challenges - which for some would result in PTSD. Nevertheless some personality styles help individuals to transcend these challenges, as part of personal and interpersonal growth, in the movement towards self-actualization. This growth, a core of nurses in our study, seem to be achieving. Siebert (2010) elaborates this theme in relation to front-line soldiers, and then applies it to civilians – managers and professionals of various kinds:

*Central to the development of a synergistic personality is the integration of paradoxical personality traits. Such persons are comfortable with and value their inner counter-balanced dimensions. They appreciate the benefits derived from being able to engage in pessimistic optimism, cooperative non-conformity, selfish altruism, extroverted introversion, playful seriousness, and more. (p. 12)*

In Siebert’s (2010) model, people (including nurses) with “survivor personalities” are those who: (1) have survived a major crisis or crises; (2) surmounted threat crisis through personal effort; (3) emerged from the experience with previously unknown strengths and abilities; (4) in retrospect, find value in the challenging experience. Having inherited resilience is valuable, but according to Siebert many professionals can be also trained and supported in how to find resilience in the face of stress.

Two key variables from the 2018 data sweep have salient predictive power for the 2020 cohort: the personality types represented by the combination of (with moderate to high saliency) the profiles of Extraversion, Emotional Stability, and Agreeableness which together with Hardiness, allow women to face and overcome potential stress.

Nurses who lack these characteristics seem to struggle to find fulfilment in their profession, especially when crises occur such as the challenges of COVID nursing. But the struggles of these nurses should certainly be acknowledged, and roles found for them in hospital or medical work which minimise stress. In addition, nurse training and continuing education programmes should focus on ways of handling the special stresses which nursing imposes, and which can undermine the values to which nurses are, or should be, dedicated (Barzilay et al., 2020; Tracy et al., 2020).

What we do find concerning, is the high incidence of PTSD pictures in Group C, the 30 highly stressed nurses in our study. These interviews were completed before the second and more severe wave of COVID infections swept Britain in December, 2020. Further follow-up work will show how these three types of nurses experienced and hopefully survived the crisis which almost overwhelmed the English hospital system in the Fall and Winter of 2020 to 2021 (Greenberg et al., 2020a; Ely, 2021; Hackett, 2021b; Waddington, 2021). This acute stress from the demands of COVID nursing is not of course confined to Britain, but is a worldwide matter (Jacobs, 2021; Rafati et al., 2021), so that studies of nurses surviving COVID nursing in all parts of the world, will be welcome.

We draw the same lessons from a critical realist analysis as we did from analysing and reporting of findings from the 2018 sweep (Adam-Bagley et al., 2018). There is a hidden dimension of exploitation, an *absence*, in health care delivery. It involves the gross exploitation of the frontline staff, especially the nurses, who bring to nursing a special set of values which inspire their dedication to a demanding profession – but in settings worldwide in which this dedication is taken-for-granted, ignored, and exploited. The morphogenesis, the dialogue of change for better recognition, rewards and professional

autonomy, pointed to by the critical realist scholar Margaret Archer (2011), is taking place. In Britain these ‘conversations’ with exploitive structures are led by the Royal College of Nursing.

Male nurses have not been included in our current research cohort, since resources would not allow us to include this group, who are somewhat marginalised in a female-dominated profession (Boschma, 2003). But male nurses are definitely worthy of study in our planned longer term work. And we also plan to develop the model of the successful female professional in our other research programme, which examines “glass ceiling” effects which block women’s advancement (Abubaker & Adam-Bagley, 2018). How do women managers develop and sustain their “hardy personalities” in facing barriers to progress in non-medical settings? Is nursing a kind of marginalised occupation into which talented women find ways of succeeding, in ways which are different from their male counterparts?

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