The COVID-19 Wellbeing Study:
Perceived Coercion and Psychological Wellbeing in Frontline Healthcare Workers

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Date: 29th July 2022

Overview

With high rates of post-traumatic stress, depression, anxiety, and burnout in the healthcare workforce as a result of the COVID-19 pandemic, it is important to identify key contributing factors to prevent and protect against further psychological harm. **Part 1** of this thesis explores the concept of perceived coercion and applies this to understand healthcare workers' experiences of pressures and dilemmas in relation to restrictions of freedom to choose and control their circumstances during the pandemic (e.g., having to work with COVID-19 patients without adequate PPE). By exploring previous research demonstrating an association between perceived coercion and psychological distress and applying the Transactional Stress-Coping paradigm to understand this association, four research questions are presented. **Part 2** of the thesis aims to address the research questions by conducting two studies, including a scale validation study to develop and validate a context-specific perceived coercion scale, and a sequential mixed-method study, where we use a path model to test the association between perceived coercion, psychological distress and other identified variables that were generated on the basis of the themes identified from qualitative data. The model was tested using structural equation modelling. **Part 3** of the thesis provides a critical appraisal of the research process, with a particular focus on some of its challenging aspects. Firstly, I will provide reflections on the challenges and pressures of conducting time-sensitive research. Secondly, I will discuss the challenges of conducting COVID-19-related research, both with regard to the design and recruitment process and with regard to conducting the research as a healthcare worker living in and working during the COVID-19 pandemic.

Impact Statement

The present thesis has benefits both inside and outside academia. By applying the concept of perceived coercion to better understand healthcare workers' experiences of working on the frontline of the COVID-19 pandemic in Part 1, and by developing a context-appropriate instrument to measure perceived coercion in Part 2, we provide a platform and conceptual framework for healthcare workers to discuss their experiences and impact of having to navigate their responsibility in working with COVID-19 patients, and their right to refuse without suffering negative consequences. We hope the instrument can be further adapted, validated and applied to other frontline workers or other contexts where professionals experience restriction of freedom and autonomy.

In the second study in Part 2, we use a combination of quantitative and qualitative methods to get a comprehensive understanding of the nature and the extent to which healthcare workers experience perceived coercion and pressures during the COVID-19 pandemic. With a path model, we were able to demonstrate how perceived coercion is associated with psychological distress via avoidance coping and highlight the protective effect of collegial support. These findings will be key both in academia, adding to the literature on contributing factors to healthcare workers' psychological distress during health emergencies, but also outside of academia where we hope it can influence policymakers and hospital managers in the UK and Norway. Specifically, we would like to increase the awareness of the importance of promoting agency, inclusion and communication across levels of health organisations and facilitating supportive team dynamics. The pandemic has amplified and highlighted a range of issues within the healthcare service and with a unique combination of scale development and mixed-method methodology conducted in two European countries, the present thesis has been able to capture some of this time-sensitive and critical data. With healthcare workers

reporting high levels of post-traumatic stress, fatigue, and intention to leave the profession, our findings can contribute to recommendations and guidance for preventative measures in planning for future health emergencies in supporting healthcare workers' wellbeing and staff retention in already under-resourced and understaffed healthcare systems.

Table of Contents

Table of Figures

Table of Tables

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Part 1: Conceptual Introduction

Applying the Concept of Perceived Coercion to Healthcare Workers during a Global Pandemic

Abstract

The devastating mental health impact of the healthcare workforce during and following the COVID-19 pandemic has led to numerous studies investigating the factors that has contributed to psychological distress and burnout (e.g., Lai et al., 2020). Many studies have focused on COVID-19-specific work stressors (e.g., Frenkel et al., 2022), however, there is, to the best of our knowledge, no present research examining how perceived coercion may impact psychological wellbeing in healthcare workers during a global pandemic. The perceived coercion concept has primarily been studied in relation to restrictive measures used in mental health care, and evidence shows that higher levels of perceived coercion is associated with higher levels of post-traumatic stress (Whitecross et al., 2013) and worse quality of life (Link et al., 2008). This conceptual introduction will review the perceived coercion literature and apply the perceived coercion concept to understand healthcare workers' experiences of pressures to work on the frontline with restricted freedom to choose and control their circumstances (e.g., working without adequate Personal Protective Equipment). The Transactional Stress-Coping framework (Lazarus & Folkman, 1984) will then be applied to explore a potential relationship between perceived coercion (i.e., the stressor), coping and psychological distress. Based on these theoretical considerations, the aims of the wider research project, exploratory and explanatory research questions and methods used to address these are proposed.

Introduction

The COVID-19 pandemic has led to significant challenges for healthcare workers (HCWs) across the globe. Particularly, the shortage of patient resources and limited personal protective equipment (PPE) have introduced difficult ethical and moral dilemmas for HCWs, who as part of their work role, have been expected to perform their normal duties in extraordinary circumstances (Zhu et al., 2020). This has for many included putting their own life and wellbeing at risk to protect the wider public from harm. Whereas numerous studies have investigated COVID-19-related stressors that have contributed to the elevated rates of psychological distress in HCWs during previous and current large health emergencies (e.g., Denning et al., 2021), fewer studies have investigated the experience and impact of some of these moral dilemmas. Perceived coercion, a concept that has been widely studied in the mental health care context, is the experience of being coerced or pressured to do something on the premise that refusing to comply with a request, or *proposal*, is associated with negative or harmful consequences. Research suggests that higher levels of perceived coercion can lead to negative consequences, such as poorer mental health prognosis and psychological distress. There is, to the best of our knowledge, no present research examining how perceived coercion may impact psychological wellbeing in HCWs during a global pandemic. The present thesis aims to apply the perceived coercion concept to understand healthcare workers' experiences of choice and control in working on the frontline, to understand the extent to which HCWs experienced perceived coercion and whether higher levels of perceived coercion are associated with higher levels of psychological distress. In this introduction, we will first explore the concept of perceived coercion, its theoretical underpinnings and current literature. The perceived coercion concept will then be applied to understand the experience of pressures and moral dilemmas in the healthcare workforce during the pandemic. Lastly, the transactional stress-coping framework will be used to explore the potential relationship

between perceived coercion and psychological distress. Investigating the relationship between perceived coercion and psychological distress is crucial to developing a better understanding of the contributors to poor mental health seen in frontline HWCs during pandemics (Allan et al., 2020). Specifically, it can support the development of preventative measures that can contribute to improving healthcare workers' wellbeing in future large-scale health emergencies.

Psychological Wellbeing in Frontline Healthcare Workers during Health Emergencies

The COVID-19 pandemic has led to significant challenges for healthcare systems around the world, including a widespread shortage of patient resources and limited personal protective equipment (PPE) for HCWs (Burki, 2020; Tabah et al., 2020). Whilst countries around the world enforced national restrictions, including restricting contact with others, HCWs were expected to take on frontline roles, managing stressful and unfamiliar work conditions, high levels of uncertainty and exposing themselves to an infectious and potentially fatal virus (e.g., Allan et al., 2020; Kisely et al., 2020; Morgantini et al., 2020), placing HCWs at a higher risk of infection in comparison to the general public (Houlihan et al., 2020). Mental health is a state of mental or psychological wellbeing that enables people to realise their potential, cope with stressors and productively contribute to their community (World Health Organisation (WHO), 2018). With HCWs facing unsafe and unfamiliar stressors during the pandemic, their ability to cope with these stressors and to contribute to their community in a way that feels productive, such as delivering care of a standard that falls within what they consider acceptable, is potentially limited. With the prevalence of burnout and psychological morbidity already being alarmingly high in UK healthcare staff before the COVID-19 pandemic, due to factors such as job stress and overload (Imo, 2017; O'Connor et al., 2018), it is not surprising that the COVID-19 pandemic has exacerbated mental health

issues. Moreover, in comparison to previous infectious disease outbreaks, the scale and duration of the COVID-19 pandemic have made the risk of mental health impact and burnout particularly high (Denning et al., 2021).

Evidence of the psychological impact of working as a healthcare worker at the forefront of current and previous infectious disease outbreaks (i.e., Severe Acute Respiratory Syndrome (SARS), H1N1, Ebola) indicates the presence of depressive symptoms, anxiety, chronic stress, emotional exhaustion/burnout and post-traumatic stress symptoms (Matsuishi et al., 2012; Wu et al., 2009; Hsu et al., 2006; Mauder, 2004; Muller et al., 2020; Allan et al, 2020; Krishnamoorthy et al., 2020; Lai et al., 2020; Cai et al., 2020). Rather than merely being a result of excessive workloads and exposure to risk, additional factors such as lack of strict and consistent infection control guidelines, PPE and collegial support, poor management, increased media coverage, stigmatization and isolation, lack of access to structured mental health offers, and fear of infecting others have all been associated with negative psychological impact (Chan & Huak, 2004; Chan et al., 2005; Wu et al., 2009; Bai et al., 2004; Muller et al., 2020; Morgantini et al., 2020; Krishnamoorthy et al., 2020; Nguyen et al., 2020; Denning et al., 2021). Healthcare staff has also been at increased risk of moral injury, the psychological distress that results from actions, or the lack of them, which violate someone's moral or ethical code, when dealing with the challenges of the COVID-19 pandemic. Higher reported exposure to moral injury has been associated with anxiety, depression, PTSD symptoms and alcohol misuse in HCWs during the pandemic (Greenberg, 2020; Lamb et al., 2021). The prevalence of these common mental disorders increased during periods of greater pressure on the NHS (Lamb et al., 2022). Potentially linked to psychological wellbeing and not well-understood, is the possibility that having to take on frontline roles of the pandemic is associated with experiences of coercion. This chapter will start by defining perceived coercion and reviewing some of its key findings and models,

before reviewing evidence suggesting the presence of perceived pressure and coercion in frontline HCWs during the pandemic, and lastly suggest the possible role of perceived coercion as a predictor of mental health outcomes.

Perceived Coercion

Defining Perceived Coercion

The term 'coercion' has often been used synonymously with pressures exerted by a person or organisation on an individual with the intention of making the latter act in accordance with the wishes of the former (Szmukler & Appelbaum, 2008). Contemporary accounts have tended to understand coercion in the context of conditional proposals rather than direct use of force, and more specifically when proposals are experienced as a threat, as opposed to an offer, such as when refusal to comply leads to deprivation of rights or somehow makes an individual worse off (Rhodes, 2000; Anderson, 2006). From a philosophical perspective, Alan Wertheimer, argues that what counts as coercion depends on a *moral baseline* (Wertheimer, 1993; 2014). In other words, one needs to define the moral grounds, or what is expected of one, in order to define whether one is worse off than before the proposition; this baseline is defined by both the coerce and the coercer. For instance, if person A approaches person B with a proposition that B will be able to keep their job and professional reputation on the condition that they work on a COVID-19 ward during the pandemic, the key moral test depends on the baseline; whether A ought to have requested this of B and whether B has the right to refuse (e.g., to protect themselves from infection) without fearing they will be worse off than before the proposition. If not, then A's proposition may be perceived as a threat (Szmukler & Appelbaum, 2008). As we have seen during the COVID-19 pandemic this 'moral baseline' falls in the grey zone and thus has opened up for ambiguity and difficulty in defining the presence of coercion. This will be considered in more detail

below, but before getting into this, further exploration of the definition and evidence of *perceived* coercion in the mental health care context will be discussed.

Coercion in healthcare has almost exclusively been studied and defined in the context of the use of restrictive practices in mental health care, such as involuntary admissions, restraint, and seclusion procedures applied to *patients*. 'Emotional restraint' has also been considered a restrictive practice, however, with less clarity and agreement in terms of its definition (Roper et al. 2015). Generally, it refers to situations where the service user and carers feel constrained from expressing their views openly and honestly to the health practitioner or behaving in particular ways in fear of the consequences (Kinner et al., 2017). Several people have tried to distinguish between types of coercion, often resulting in a distinction between compulsion/formal (legally mandated) coercion and informal coercion and perceived coercion (Wild, 2006; Nyttingen, 2018). Formal coercion represents measures that are allowed by the law, such as measures to prevent immediate and significant danger to a person or property as stated in the Mental Health Act (1983; 2007). Informal coercion includes coercive measures that are not directly defined as coercion in mental health legislation, such as treatment pressures and interventions that can be applied by the professional with the intention to foster treatment adherence, such as leverages (Hotzy & Jaeger, 2016). This category also involves more informal and subtle sources of coercion, such as social pressure and circumstances with hierarchical structures. Perceived coercion is coercion as viewed from the recipient's point of view. With limited evidence of formal coercion as a predictor of perceived coercion (e.g., Iversen et al., 2002), there has been a move away from defining coercion based on formal categories and towards defining it based on an individual's perception or experience of coercion, regardless of the level of objective coercion used. Perceived coercion will be the main focus of the present chapter and thesis.

Perceived Coercion in Mental Health Care

A number of studies have shown that both voluntary and involuntary patients in mental health care, with varying degrees of deprivation of liberty, report experiencing coercion (Bindman et al., 2005; Prebble, 2015). Moreover, results from a literature review in 2012 showed that a quarter of involuntary patients did not feel coerced into psychiatric care, whereas a quarter of voluntary in-patients reported coercion (Newton-Howes & Stanley, 2012). This suggests that formal admission status has a poor predictive effect on perceived coercion. Individual appraisal of coercion has been found to be influenced by several factors such as individual coercion histories (e.g., Link et al., 2008), environmental factors (e.g., Lidz et al., 1993) and social context, such as quality of relationships (e.g., Seed et al., 2016; Hoge et al., 1997). A thorough overview of all these contributing factors is beyond the scope of the present chapter, some of the key findings will be discussed below.

The impact of the context on a person's experience of coercion was early demonstrated by Lidz and colleagues (1993). In their observational study in a psychiatric emergency room, they noticed that even though they observed few episodes of direct threat, pressure and use of power, simple expressions of opinion or advice were often interpreted as threats in the context of the emergency room where clinicians had the power to force and decide involuntary care. Similar findings were found in a more recent Norwegian interview study; here patients talked about hidden and subtle forms of coercion which they called "voluntary coercion", implying a lack of real choice with regard to voluntary admission (Norvoll & Pedersen, 2016). As demonstrated by these examples, informal coercion can be affected by power imbalance, such as between a patient and a health professional or between an employee and an employer (Szmukler & Appelbaum, 2008), contributing to unintentional (perceived) coercion. Notably, the use of power can take subtle forms, such as social influence, and social relations can serve as powerful sources of informal pressure by fostering a sense of mutual obligation and responsibility

(Tucker & Anders, 2001). Moreover, perceived coercion is associated with perceived loss of control over one's circumstances and ethical and moral evaluations of the intentions behind the act (Kinner et al., 2017; Aguilera-Serrano et al., 2017; Nyttingnes, 2018). For instance, when clients felt they were listened to by relevant clinical and judicial authorities, they reported low levels of perceived coercion even though they had been subjected to formal/objective coercion (i.e., involuntary admission) (Hoge et al., 1997; Steadman & Redlich, 2006). Having a voice and feeling that authoritative figures have your needs in mind is referred to as procedural justice and has been found to be a consistent predictor of the level of perceived coercion (e.g., Lidz et al., 1995; McKenna et al., 2001). These findings resonate well with Wertheimer suggestion that coercion fundamentally is a moral issue (Wertheimer, 1993).

In a study on perceived coercion in the admission to a substance use treatment facility, Opsal and colleagues (2016), compared a group of patients that were involuntarily admitted and a group of patients that were voluntarily admitted, on a range of different internal and external sources of pressure and coercion. The self-subscale represented 'self-awareness' and self-criticism with items such as 'I feel pressured to participate…because I know that I'm an addict/alcoholic…' and '…because I feel horrified and ashamed of the person I have turned into'. External sources of coercion include family, the legal system, the health system, finances and employment. The results demonstrated that the group who were voluntarily admitted showed significantly higher scores on internal sources of perceived coercion (i.e., self-subscale) in comparison to the involuntarily admitted group. No between-group difference was found for external sources of pressure. Interestingly, this suggests that those who 'volunteered' to admit to treatment, did not willingly do so merely out of greater insight, but also because of a negative evaluation and shaming of themselves as their behaviours deviated from their 'ideal self' and accepted norms and expectations in society. Indeed, it has been recognised that perceived coercion can arise from the stigmatisation of a person who

does not comply with expected requirements (Anderson, 2011). To summarise, it has been recognised that sources of perceived coercion and pressures can come from internal and external sources and are predominately from informal influences, such as internal and social pressures and norms, rather than from legal pressure (Klag et al., 2006; Steadman & Redlich, 2006; (Szmukler & Appelbaum, 2008). Perceived coercion may therefore arise with or without direct use of force/pressure.

A number of limitations were identified in reviewing the studies of perceived coercion above. They were often heterogeneous in design, variables and results, done with patients with varying degrees of mental health difficulties or substance use disorder and the diverse and observational nature of these studies make it hard to control for the effect of the independent variable (level of coercion), as they could not ethically be randomized or manipulated by the researcher (Newton-Howes & Mullen, 2011). Thus, the effect of 'actual' coercion may be affected by uncontrolled variables. For instance, the rate of perceived coercion has been found to increase with increasing illness severity (Opsal, 2016). The definition of perceived coercion was often inconsistent across studies, and except for one study presented above (i.e., Opsal, 2016), none considered the wide range of pressures experienced in different aspects of mental health care. To get a better understanding of these methodological constraints it is useful to have a closer look at how perceived coercion is measured.

Perceived coercion scales. Scale development is a critical component in building new knowledge in social sciences (Morgado et al., 2017). A number of scales have been developed to measure the level of perceived coercion in different aspects of mental health care. An extensive overview of all of the scales is beyond the purpose of this chapter, but I will compare some of the main scales to highlight some key similarities and differences.

The most well-known perceived coercion scale in mental health research is the MacArthur Perceived Coercion Scale (MPCS) (Gardner et al., 1993). The MacArthur research network were pioneers in developing a structured interview and scale to operationalise perceived coercion during the admission process, resulting in a conceptualisation of perceived coercion as the self-reported absence of autonomy. They discovered that even though words like "pressure" and "coercion" were rarely used by the patients, coercion was often implied by reports of lack of control, choice and freedom (Hoge et al., 1993). A procedural justice subscale was added in response to evidence highlighting the strength of procedural justice in predicting levels of perceived coercion (e.g., Lidz et al., 1995), with items covering the experience of fairness, respect, trust and whether they were given a chance to state their opinion, being taken seriously and if others acted out of concern from them. The Coercion Experience Scale (CES) has been developed to specifically measure seclusion and restraint (Bergk et al., 2010); here respondents are asked to rate both the unpleasantness and the stressfulness of different restrictive and coercive measures. The Perceived Coercion Questionnaire (Klag et al., 2006) is specifically developed for patients undergoing addiction treatment and includes six subscales which measure internal (Self) and external (Family, Legal, Finance, Health, and Work) forms of coercion and pressure. The comprehensive inclusion of different sources of pressure offers advantages in painting a more realistic picture of the multiple factors that impact on a person's experience of coercion.

Comparing these scales reveal the context-specific aspect of each scale: they have all been developed for different types of restrictive practices and client groups, with no generic scale being used across different care practices, and they all appear to have a slightly different conceptualisation of what perceived coercion involves. For instance, even though the MPCS has been adapted to other settings such as outpatient treatment (Swartz et al., 2002), it has mainly been used for admission processes, the CES has been developed for seclusion and

restraint (Bergk, et al., 2011; Bergk et al., 2010) and the PCQ is developed specifically for patients undergoing addiction treatment. Moreover, whereas the MPCS mainly measures level of autonomy, the CES separates the unpleasantness of restrictive practices from how stressful they were and defines 'coercion' as the absence of physical mobility, whereas the PCS assesses a number of internal and external sources of pressure that can lead to perceived coercion; thus, we do not know whether they represent similar 'pressure' and 'coercion'. As early noted by Lidz et al., (1993), perceived coercion scales should ideally capture a meaningful range of coercion, including personal, historic and context-specific aspects; thus, even though a generic scale would be useful for direct comparison it might be difficult to develop in practice. Supplementing quantitative data with qualitative data, either as part of the scale validation procedure or as a mixed method study appear essential in achieving a comprehensive definition of what perceived coercion means for a certain situation and population.

Qualitative findings. Qualitative studies have been particularly helpful in identifying factors that may contribute to perceived coercion. Some common themes that have been reported are feelings of disrespect, humiliation, being dehumanised, isolated, rejected, disempowered and scared (Newton-Howes & Mullen, 2011; Katsakou & Priebe, 2007; Seed et al., 2016). This suggests that the negative emotional impact of restrictive practice is an important aspect of perceived coercion. Some studies have also reported positive evaluations such as feelings of protection and safety; often in relation to patients having an influence on decisions about their medication (e.g., Seed et al., 2016). Notably, the strong association of coercion with factors of procedural justice and feeling humiliated suggests that coercion is an emotionally loaded moral issue. For instance, one may be deprived of autonomy but approve of the overall morality of the situation or action taken. Even though qualitative data comes with inherent limitations such as subjectivity and limited generalisability beyond the sample

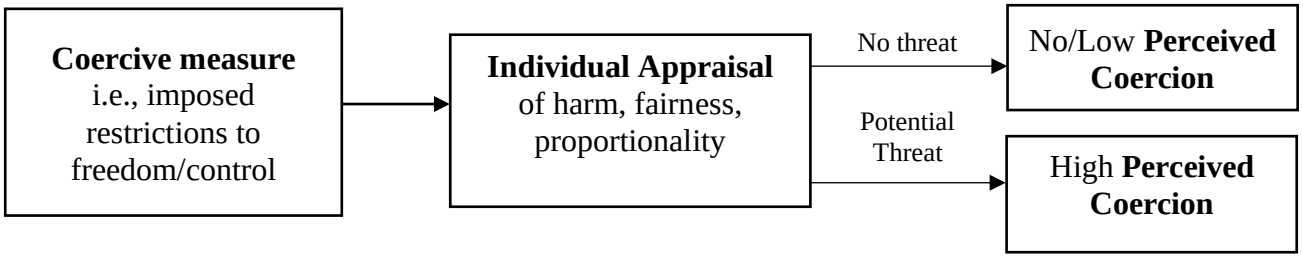
characteristics of a study, they have helped researchers to define perceived coercion as an emotive, subjective, complex and context-dependent experience.

The Appraisal Model of Experienced Coercion

There are few formalised models explaining perceived coercion. In his PhD, Nyttingnes (2018) developed a model to understand the relationship between the use of coercive measures and experienced coercion in mental health care, which serves as a helpful framework for summarising the existing literature. Nyttingnes (2018) defines experienced coercion as an individual negative emotionally charged state, which is a result of 1) freedom restrictions that are affected, ordered or enabled by mental health care and 2) the appraisal of the legitimacy of the freedom restrictions. The appraisal of legitimacy is impacted by several factors such as proportionality/the degree of freedom restrictions and the decision-maker's intent/procedural justice. If appraised as legitimate this may lead to low or no experienced coercion, whereas if appraised as illegitimate this may result in high experienced coercion. Thus, similarly to appraisal models for emotions and coping (see overview of the transactional stress-coping model below), the model suggests that if a stressor (i.e., coercive measure) is appraised as not legitimate (i.e., potential threat) this will lead to a negative emotional state (i.e., perceived coercion). Notably, this model is centred on coercion in mental health care and thus needs further development and validation for use in other settings; however, it is useful in that it neatly captures the influence of individual appraisal in determining the level of perceived coercion.

Figure 1

Visual representation of the relationship between coercive measures, appraisal and perceived coercion



Note. Adapted and simplified version of Nyttingnes (2018)' Appraisal Model of Experienced Coercion

Applying the Perceived Coercion Concept to Healthcare Workers during the COVID-19 pandemic

Healthcare professionals have an obligation and a duty of care to their patients, including COVID-19 patients, and face stressful and complex ethical dilemmas if they do not feel capable or safe working with this patient group (Royal College of Nursing (RCN), 2020; Wright et al., 2020; Zhu et al., 2020). Health professionals are not only required to keep their patients and the public safe; they are also accountable for their own safety (American Nurse Association (ANA), 2015; RCN, 2020). Using the definition of perceived coercion as described above, healthcare professionals may worry that failure to comply with the expectations of them working on the frontline are followed by unfavourable evaluations from their employer and the public, and thus may interpret the "proposal" to work on the frontline as a threat. A proposition to work with COVID-19 patients, leave them with two alternatives which both leave them worse off than before the proposition, relative to the baseline, namely (i) either having to put themselves, patients and loved ones at risk of infection (if adequate PPE is not provided), or (ii) refusing to work and still putting their patients at risk whilst

risking professional sanctions and stigmatisation. Internal standards from values that led them to the caring profession, expectations from the public and within the profession, including expectations that nurses and doctors sacrifice themselves for their patients and the media attention presenting HCWs as heroes (Freer, 2021) may further complicate these issues and contribute to health professionals feeling pressured, or coerced, to put themselves at risk (Zhu et al., 2020).

As discussed, perceptions of coercion may arise from experiencing a lack of choice, freedom or influence/control with regards to one's situation and is commonly reported when individuals experience a situation that they feel is forced on them without justification, feel excluded from the decision-making process or when they do not have the opportunity to express their viewpoint. Specifically, coercion refers to unwanted restrictions of freedom, and not the restrictions and reductions of freedom that humans regularly and willingly submit to, such as marriage and work contracts (Szmukler & Appelbaum, 2008). This is a relevant distinction in understanding perceived coercion in the context of healthcare workers, who as part of their chosen employment has willingly submitted to contribute with their expertise during emergencies, however with the expectation and legal obligation that their employers ensure their safety in doing so.

In a novel situation such as COVID-19, deciding the characteristics of the moral baseline situation may present challenges. Let's say that a fair moral baseline in their situation is as proposed by healthcare organisations (RCN, 2019): HCWs must respond with their expertise in a health emergency whilst being protected from undue hazards by their employer. When government and health managers are not able to keep HCWs safe, this introduces a grey zone, as professional responsibilities in a situation where they cannot be protected from physical and psychological harm is currently undefined. A grey zone then permits the misuse

of power and unintentional coercion (including subtle social and hierarchical influences); as unintentional coercion can have similar consequences for the coerce as intended coercive acts, this requires careful attention.

Current evidence from the COVID-19 pandemic supports the notion that HCWs may have experienced coercion and pressures on the frontline of the pandemic. Evidence shows that HCWs feel they have no choice but to work during pandemics due to a sense of (professional) obligation (Matsuishi et al., 2012) and perceive their jobs on the frontline as part of their social and moral responsibility (Cai et al., 2020). During the COVID-19 pandemic, 50% of nurses and 55% of doctors reported they felt pressured to care for COVID-19 patients without adequate PPE (RCN, 2020b; British Medical Association (BMA), 2020). This was recently highlighted in a BBC article, reporting that doctors felt pressured to work in hazardous situations with inadequate risk assessments (*BBC*, 2022). Moreover, similar to previous infectious disease emergencies such as SARS, MERS, and Ebola, even though most HCWs acquiesced to these pressures, a minority refused to work with COVID-19 patients because of a fear of infection (Venkat et al., 2015; Joseph, 2020). As a result, a number of guidelines were developed to guide healthcare staff on their rights, or lack thereof, to refuse, and there have been numerous discussions on whether we (the population at large) have the right to expect HCWs to put themselves at risk (e.g., Zhu et al., 2020). As such, there is reason to believe HCWs experienced perceptions of coercion and pressures during the COVID-19 pandemic.

The Impact of Perceived Coercion on Psychological Wellbeing

Research on mental health outcomes associated with the experience of coercion is inconsistent (Newton-Howes & Mullen, 2011), although several prospective studies have found significant negative effects from higher levels of perceived coercion, such as post-

traumatic stress symptoms (Whitecross et al., 2013), worse quality of life and psychosocial functioning (Link et al., 2008), less positive outcomes of community treatment orders (Swanson et al., 2003), less willingness to be readmitted to hospital and to engage with treatment procedures such as medication and mental health support (Kaltiala-Heino et al., 1997) and a higher likelihood to make a suicide attempt after discharge (Jordan & McNiel, 2020). Notably, some of these findings have not been replicated (e.g., Kaltiala-Heino et al., 1997) and the effect has often been small in size (e.g., Jordan & McNiel, 2020). Inconsistent findings have also been found, such as Priebe and colleagues (2011) who found that perceived coercion was associated with more favourable outcomes. These small effects and inconsistencies may again reflect the methodological issues discussed above, with heterogeneous study designs, variables and definition of key variables. Moreover, the observational and prospective nature of these studies does not allow researchers to draw causal links, and the uncontrolled settings of the studies make it hard to determine the influence of uncontrolled confounding variables. For instance, interview studies have shown that factors such as feeling respected may prevent the negative effects of coercion (Seed et al., 2016). An interesting longitudinal study by Link and colleagues (2008) showed that self-reported coercion increased felt stigma and through stigma led to lower self-esteem. Notably, they highlighted that it is the perception of coercion that derived perceived stigma and reduced quality of life rather than vice versa. Thus, on balance, current evidence suggests that higher levels of perceived coercion carry a potential risk for poorer prognoses and negative mental health outcomes.

Applying the Transactional Stress-Coping Framework to Understand the Relationship between Perceived Coercion and Psychological Distress

Evidence demonstrating high rates of psychological distress in HCWs during and following the pandemic (e.g., Naushad et al., 2019) makes it important to test for the possible predictive effect of perceived coercion on these mental health outcomes. Indeed, with perceived coercion being described as an emotionally charged and moral phenomenon, associated with negative emotions such as fear, embarrassment and shame, it appears likely that it may have a negative impact on someone's wellbeing if unresolved. One way we can start to understand the relationship between perceived coercion and psychological distress is through Lazarus´ and Folkman´s Transactional Stress-Coping framework (1984). They distinguish between primary and secondary cognitive appraisal processes, which are simultaneously influencing each other. Primary appraisals determine the meaning and significance of the *transaction* to one's wellbeing; a situation that exceeds an individual's capacity to cope may be appraised as a threat, triggering stress or other negative emotions; if appraised as a challenge, such as in situations with sufficient resources, there is potential for reward and subsequent positive emotions. This process appears similar to the appraisal model of perceived coercion, which distinguishes between objective coercion and perceived coercion, and where the appraisal of a stressor (e.g., as legitimate/a threat), rather than the stressor itself (i.e., coercive act), determines whether negative emotions (i.e., high perceived coercion) are elicited. Secondary appraisal is then initiated, which involves an assessment of one's coping resources (e.g., self-efficacy), ability to cope, situational variables (e.g., level of control, resources available) and coping style (i.e., how they have coped with similar events in the past). If a stressor is experienced as outside of one's control and there are limited resources to draw upon, this can further contribute to threat appraisal and negative emotions. If substantial efforts are required to resolve the stressor, coping actions are enacted (Biggs et al., 2017).

Lazarus and Folkman (1984) suggest that there are two main coping strategies, namely, problem-focused coping (PFC), which aims to directly manage the stressor, and emotion-focused coping (EFC), which aims to regulate emotions arising. They specify that neither of these coping strategies are inherently more effective but rather that their effectiveness depends on how well they correspond with the appraisals, the situational conditions and the duration of use. For instance, EFC strategies such as distancing oneself from the stressor or avoidance may have short-term adaptive effects if the appraisal generates intense emotional distress, when the stressor is appraised as being uncontrollable or when insufficient resources exist to support PFC (Ben-Zur, 2009). However, only relying on EFC is not considered beneficial in the long run, because it may increase anxiety as it does not encourage individuals to address the stressor (Ben-Zur, 2009). A third cognitive appraisal (reappraisal) process then happens to determine whether the coping efforts have been successful or if the situation has changed for the better. If not, this cycle of transactions continues.

Some people have criticised the dual taxonomy as some coping strategies such as seeking support can be classified as both EFC and PFC and evidence shows that positive and negative emotions can exist at the same time in a stress process (Biggs et al., 2017). Taking this into account, Folkman's revised model (2008) includes two other coping strategies, namely meaning-focused coping (MFC), which includes drawing on one's values and beliefs to reorder life priorities and ascribing positive meaning to events, and future-oriented coping/proactive coping. Folkman described these as coping strategies that can contribute to positive emotions which helps sustain coping efforts over time by restoring personal resources that influence the cognitive appraisals.

In line with this, the pressures and expectations experienced by HCWs to work under highly stressful conditions, being exposed to risky and potentially morally injurious events, during

the COVID-19 pandemic, alongside the lack of control and accompanying potentially damaging consequences of refusing to perform this hazardous work, are likely to have resulted in experiences of coercion (the 'stressor') and threat appraisals. With the novelty, danger, scale and length of the pandemic straining most healthcare workers' personal and environmental resources, HCWs may estimate their ability to cope with the stressor (i.e., perceived coercion) as low or requiring high and perhaps overwhelming effort, thus turn to maladaptive coping, such as avoidance, resulting in psychological distress.

There is, to the best of our knowledge, no present research examining how perceived coercion may impact psychological wellbeing in HCWs during a global pandemic. Investigating this relationship is crucial to developing a better understanding of the contributors to poor mental health seen in frontline HCWs during pandemics (Krishnamoorthy et al., 2020) and other large-scale emergencies (Allan et al., 2020).

Aims & Research Questions

The present study aims to establish the extent to which healthcare workers experienced perceived coercion and pressures in response to working on the frontline during the COVID-19 pandemic and whether level of perceived coercion and pressure predicted levels of psychological distress, whilst considering the influence of other factors. These aims will be achieved by addressing the research questions outlined below.

Two studies were conducted: scale development and evaluation to develop a context-appropriate perceived coercion scale (Study 1) and a mixed methods approach to understanding contributors to and relationships between perceived coercion and psychological distress (Study 2). One of the main advantages of a sequential mixed-methods approach is that it draws upon the respective strengths of both quantitative and qualitative

methods, allowing us to address the research questions in a more comprehensive and robust way (Ivankova et al., 2006). As demonstrated above, a combination of quantitative and qualitative studies has been integral to our current understanding of perceived coercion. Scale development have been essential in the investigation of experiences of coercion in new populations and mental care practices and have allowed researchers to measure the level of perceived coercion and make comparisons between groups (e.g., voluntary vs involuntary admission). Qualitative investigations have allowed researchers to understand people's lived experience of this sensitive topic and have aided the conceptualisation of perceived coercion as a complex, multi-faceted and subjective experience, which is closely embedded in situational and interactional factors. Similarly, even though pandemic-related research has tended to rely on quantitative data (i.e., epistemological studies), the benefit of supplementary qualitative data in understanding the nature and impact, and particularly social implications, of large health emergencies has been emphasised (Teti et al., 2020; Sanata et al., 2021). A more detailed discussion of the research methods used to address the research questions follows below.

Question 1: To what extent did healthcare workers experience coercion and 'pressure' in their work with COVID-19 patients during the pandemic? Two stages were involved in establishing the extent to which HCWs experienced perceived coercion/pressure, including (1) defining perceived coercion by developing a set of items that represented the unique experiences of coercion and pressure in frontline HCWs as part of a scale development process and (2) using this preliminarily validated scale as part of an online survey to measure levels of perceived coercion. An Exploratory Factor Analysis (EFA) and reliability analysis, and a later Confirmatory factor analysis (CFA), were used to assess and confirm the underlying structure of perceived coercion items and the reliability of the perceived coercion construct for frontline HCWs across the Norwegian and UK groups. Descriptive data from

the administered validated perceived coercion scale was used to establish the extent to which HCWs experienced coercion and pressure in their work during the pandemic. Using an online survey allowed us to access a large pool of HCWs in a time and cost-effective way, however relying on online questionnaires also introduced a sampling bias, as it excludes those who do not have access to computers and technological means and rather captures those who are able to, interested in and motivated to seek out online platforms about relevant topics (Jones et al., 2008: Sipes et al., 2020). Thus, descriptions of the perceived coercion concept captured in the present study may not represent the healthcare workforce as a whole

Question 2: What factors contributed to experiences of coercion and pressure in healthcare workers during the COVID-19 pandemic? In order to explore some of the factors that might contribute to experiences of coercion and pressure in HCWs during the pandemic, online focus groups were used. Online focus groups can be conducted either synchronously (i.e., occur in real-time and require participants and researchers to contribute at the same pre-arranged time) or asynchronously (i.e., normally use online discussion boards or forums and allow participants and researchers to read and reply to each other's postings at times of their own choosing). Asynchronous virtual focus groups (AVFG) are often used when factors such as cost, time or access to participants can make conducting face-to-face research difficult (Williams et al., 2012), which represented the characteristics of the present study including the time-sensitive nature of COVID-related research, the governmental restrictions limiting face-to-face contact and the limited resources within the research team. AVFGs also offered unique benefits for research conducted with HCWs who have varying work schedules (shift work), limited time and excessive workloads, including the longitudinal design (facilitated over several weeks) and the opportunity for participants to respond from a place and at a time convenient to them (Ranieri et al., 2019; Williams, 2012). Moreover, even

though the written format can make expression and interpretation of emotions more difficult, removing the time pressure for respondents would enable them to reflect on their personal stories, thus have a better chance to provide reflective accounts of experiences that are rich with emotive detail (Mann & Stewart, 2000; Tates et al., 2009). With perceived coercion/pressure being defined as a highly emotive experience, this was deemed important. Moreover, in line with an exploratory approach, the researcher had more time to consider the participants' responses during the data collection process, which allowed for a greater opportunity to check participants' meanings throughout the study and for a greater co-research process (Williams et al., 2012). Lastly, the anonymity of AVFGs is particularly useful when researching sensitive topics which have stigma attached to it, such as experiences of coercion (Link et al., 2008). Healthcare workers who question and, in some cases, refuse to work on the frontline to protect their own safety, may experience taboo and stigma as this has been their assumed responsibility. Expressing aspects of the self that is seen as taboo/stigmatised can have negative social consequences and thus often remain hidden in offline research (McKenna, 2009). Thus, this may have offered HCWs a space where they can express themselves freely and not need to worry about the social risks involved (Williams et al., 2012).

Questions 3 and 4: How are these contributing factors associated with perceived coercion and psychological distress? To what extent can levels of perceived coercion and perceived pressure predict coping style and levels of psychological distress (i.e., anxiety, depression, stress) in healthcare workers during the pandemic? Given the absence of related previous research on the potential relationships between perceived coercion, coping and psychological distress in healthcare workers, we initially took a hypothesis-generating, qualitative approach. On the basis of the themes identified, we generated a path model to test the relationship between perceived coercion and pressures with coping style, psychological

distress and other identified variables, which was tested using structural equation modelling. The flexible and open-ended nature of this unique combination of exploratory and explanatory approaches allowed us to get an in-depth investigation of the topic (Swedberg, 2020), develop a working definition of perceived coercion for HCWs and identify key variables to include in the path model. This dynamic approach of revisiting and reframing second-stage research questions is recommended for sequential mixed-method research (Tashakkori & Creswell, 2007), allowing us to test more specific predictions based on the qualitative results.

In sum, a unique combination of scale validation processes and mixed methods methodology allowed for a comprehensive investigation of perceived coercion in a novel context and is a solid springboard for future research. Understanding the nature and role of perceived coercion in health emergency responses is important in preparing and planning for future health emergencies and to protect the health of an essential workforce when we need them the most.

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Part 2: Empirical paper

The COVID-19 Wellbeing Study: Perceived Coercion and Psychological Wellbeing in Frontline Healthcare Workers

Abstract

Aims. The aims of the present study are to establish the extent to which healthcare workers experienced perceived coercion and pressures in response to working on the frontline during the COVID-19 pandemic and whether the level of perceived coercion and pressure predicted levels of psychological distress.

Method. Two cross-sectional studies were conducted in UK and Norway, including a scale development and validation study, to develop a context-appropriate perceived coercion scale (Study 1), and a sequential mixed-methods study consisting of asynchronous virtual focus groups (AVFG) and an online survey (Study 2).

Results. An Exploratory Factor Analysis of the PPCS-HCW scale demonstrated three moderately correlated subscales: Internal Perceived Pressure, External Perceived Pressure and Perceived Coercion; this factor structure was confirmed in the Norway and UK groups. Four higher-order themes were identified from the qualitative data including an enhanced sense of responsibility, low perceived level of control, staff cohesion and social support, and ways of coping. Drawing on the themes of collegial support and coping strategies (i.e., avoidance coping) and further theoretical considerations, a conceptual path model of the association between perceived coercion and psychological distress with the inclusion of avoidance coping as a potential mediator and perceived social support as a potential moderator was tested. No direct effect of perceived coercion/pressures with psychological distress was found. Though no specific indirect effect was found for each of the perceived coercion subconstructs, a total indirect effect was found via avoidance coping and a moderated mediation effect was found for perceived coercion (subscale). This suggested that elevated avoidance coping mediated the association between greater perceived coercion and higher psychological distress, but only for individuals with low perceived social support.

Discussion. The results highlight the importance of team cohesiveness and encouraging healthcare workers' sense of agency by inclusion in planning and decision-making about their roles and responsibilities during health emergencies in order to promote positive coping strategies and psychological wellbeing.

Introduction

The COVID-19 pandemic has led to significant challenges for healthcare systems around the world, including a widespread shortage of patient resources and limited personal protective equipment (PPE) for healthcare workers (Burki, 2020; Tabah et al., 2020). Whilst countries around the world enforced national restrictions, including restricting contact with others, healthcare workers (HCWs) were expected to take on frontline roles, managing stressful and unfamiliar work conditions, high levels of uncertainty and exposing themselves to an infectious and potentially fatal virus (e.g., Allan et al., 2020; Kisely et al., 2020; Morgantini et al., 2020). Recent evidence shows that health professionals indeed were at higher risk of infection in comparison to the general public (Houlihan, et al., 2020).

Psychological Impact on Healthcare Workers during Large-Scale Pandemics/Epidemics

Evidence of the psychological impact of working as a healthcare worker at the forefront of current and previous infectious disease pandemics indicates the presence of depressive symptoms, anxiety, emotional exhaustion/burnout and post-traumatic stress symptoms (Matsuishi et al., 2012; Wu et al., 2009; Hsu et al., 2006; Maunder, 2004; Muller et al., 2020; Allan et al, 2020; Krishnamorthy et al., 2020; Lai et al., 2020; Cai et al., 2020). Rather than merely being a result of high demand and exposure to high-risk situations, factors such as lack of strict and consistent infection control guidelines, PPE and collegial support, poor management, increased media coverage, stigmatization and isolation, lack of access to structured mental health offers and exposure to morally injurious events have all been associated with negative psychological impact (Chan & Huak, 2004; Chan et al., 2005; Wu et al., 2009; Bai et al., 2004; Muller et al., 2020; Morgantini et al., 2020; Krishnamoorthy et al., 2020; Nguyen et al., 2020; Denning et al., 2021; Lamb et al., 2021). In comparison to

previous infectious disease outbreaks, the duration of the COVID-19 pandemic makes the risk of mental health impact and burnout particularly high (Denning et al., 2021).

Perceived Coercion

Potentially linked to psychological wellbeing and not yet well-understood, is the possibility that having to take on frontline roles during the pandemic is associated with experiences of coercion. The term 'coercion' has often been used synonymously with pressures exerted by a person or organisation on an individual with the intention of making the latter act in accordance with the wishes of the former (Szmukler & Appelbaum, 2008). Contemporary accounts have tended to understand coercion in the context of conditional proposals, which may be experienced as a threat if refusal to comply leads to deprivation of rights or somehow makes you worse off, rather than direct use of force (Rhodes, 2000; Anderson, 2006). Such perceptions may arise from experiencing a lack of choice, freedom or influence/control with regards to one's situation and are commonly reported when individuals experience a situation that they feel is forced on them without justification, feel excluded from the decision-making process or when they do not have the opportunity to express their viewpoint. Unintentional coercion may arise and is a particular risk in situations where there is a power imbalance, such as between an employee and an employer (Szmukler & Appelbaum, 2008). For instance, healthcare professionals may worry that failure to comply with expectations of working on the frontline may be followed by unfavourable evaluations from their employer.

Perceived coercion has been widely studied in the literature on detention in the context of mental health crises, where evidence shows that individuals who were involuntarily and voluntarily admitted to a psychiatric hospital, with varying levels of deprivation of liberty, report high levels of perceived coercion (Bindman et al., 2005; Prebble et al., 2015). Rather

than solely being a reflection of restrictive measures, individuals' appraisals of coercion have been found to be influenced by circumstantial factors such as perceived loss of control over one's circumstances, feeling dehumanised and whether it was perceived as ethically/morally justified (Kinner et al., 2017; Aguilera-Serrano et al., 2017). It has been recognised that sources of perceived coercion and pressures can come from internal (e.g., ideal-self appraisals) and external (e.g., family, workplace) sources, and are predominately from internal influences rather than from legal pressure (Klag et al., 2006). Thus, perceived coercion may arise from circumstantial stressors and concerns of negative judgement from oneself or others, with or without direct force/pressure.

Applying the Perceived Coercion Concept to Healthcare Workers during the COVID-19 pandemic

Healthcare professionals have a legal obligation and a duty of care to their patients, including COVID-19 patients, and face stressful and complex ethical dilemmas if they do not feel capable or safe to work with this client group (Royal College of Nursing (RCN), 2020a; General Medical Council, 2019; Wright et al., 2020; Zhu et al., 2020). Health professionals are not only required to keep patients and the public safe; they are also accountable for their own safety (ANA, 2015). With overwhelmed resources, health professionals have had the onerous choice of caring for Covid-19-patients and putting themselves, their patients, and their loved ones at risk of infection or refusing to provide care for patients, still putting their patients at risk whilst also risking receiving professional sanctions and negative judgments. Expectations from self, based on values that led them to the caring profession, expectations from the public, including historical expectations that nurses and doctors sacrifice themselves for their patients, and the recent media attention on HCWs as heroes, may have further complicated these issues and contributed to health professionals feeling pressured to put themselves at risk (Zhu et al., 2020).

Evidence suggests that HCWs feel they have no choice but to work during pandemics due to a sense of (professional) obligation (Masuishi et al., 2012) and perceive their jobs on the frontline as coming from social and moral responsibility (Cai et al., 2020). Fifty per cent of nurses and 55% of doctors reported they felt pressured to care for COVID-19 patients without adequate PPE (RCN, 2020b; British Medical Association, 2020); this was recently highlighted in a BBC article, reporting that doctors felt pressured to work in hazardous situations with inadequate risk assessments (BBC, 2022). Moreover, similar to previous pandemics such as SARS, MERS, and Ebola, even though most HCWs acquiesced to these pressures, a minority refused to work with COVID-19 patients because of a fear of infection (Venkat et al., 2015; Joseph, 2020). A number of guidelines were developed to guide HCWs on their rights, or lack thereof, to refuse, and there have been numerous discussions on whether we (the population at large) have the right to expect HCWs to put themselves at risk (Zhu et al., 2020). As such, there is reason to believe HCWs had the experience or perception of coercion and pressures during the COVID-19 pandemic.

The Impact of Perceived Coercion on Psychological Wellbeing

Research on mental health outcomes associated with the experience of coercion is inconsistent (Newton-Howes & Mullen, 2011), although several prospective studies have found significant negative effects from higher levels of perceived coercion, such as post-traumatic stress symptoms (Whitecross et al., 2013), worse quality of life and psychosocial functioning (Link et al., 2008), less positive outcomes of community treatment orders (Swanson et al., 2003), less willingness to be readmitted to hospital and to engage with treatment procedures such as medication and mental health support (Kaltiala-Heino et al., 1997) and a higher likelihood to make a suicide attempt after discharge (Jordan & McNiel, 2020). Whether HCWs perceive their circumstances as arising from coercion may therefore

negatively impact their psychological wellbeing. According to Lazarus and Folkman´s Stress-Coping model (Biggs et al., 2017), when a stressor is appraised as being outside of the individual's control, this may lead to 'threat appraisal'. The extent to which maladaptive coping strategies are deployed as a result of appraised threat may contribute to negative affect and psychological distress (Biggs et al., 2017). For instance, if a stressor (i.e., perceived coercion) is uncontrollable and there are limited resources available, avoidance coping is common (Rayburn et al., 2005), and even though avoidance coping can have positive effects in the short term, it is related to psychological distress in the long-term (Biggs et al., 2017). In line with this, the pressures and expectations experienced by HCWs to work under highly stressful circumstances, being exposed to high-risk and morally injurious events, during the COVID-19 pandemic, alongside the accompanying potentially damaging consequences of refusing to perform this hazardous work, are likely to have resulted in experiences of coercion (the 'stressor') and lack of control. The resulting threat reactions and maladaptive coping in turn are likely to have contributed to psychological distress amongst these essential frontline workers.

The Present Study

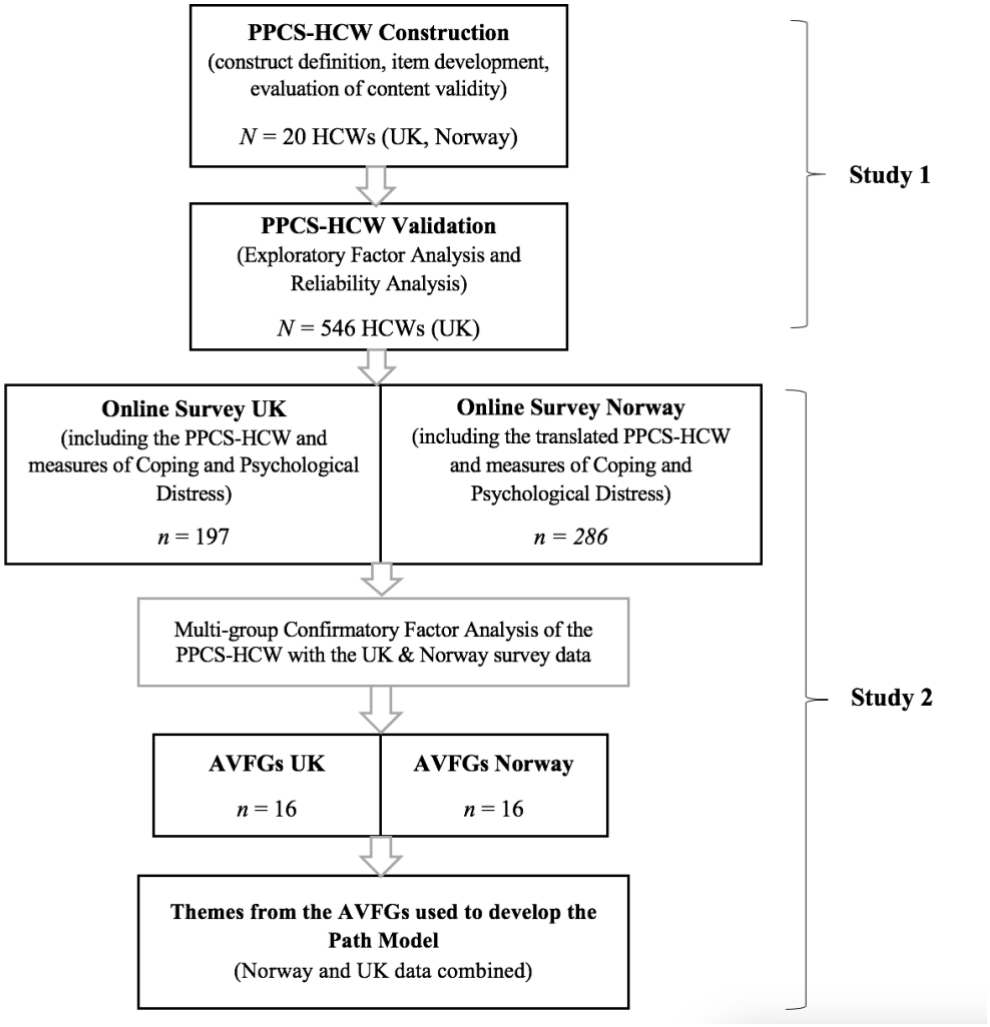
There is, to the best of our knowledge, no present research examining how perceived coercion may impact psychological wellbeing in HCWs during a global pandemic. Investigating this relationship is crucial to developing a better understanding of the contributors to poor mental health seen in frontline HCWs during pandemics (Krishnamoorthy et al., 2020) and other large-scale emergencies (Allan et al., 2020). As part of a larger project examining contributors to mental health amongst HCWs, the current study aims to fill this gap. Specifically, by developing and validating a pandemic-specific perceived coercion instrument for HCWs (Study 1) and conducting an online survey and online focus groups (Study 2), we aim to answer the following research questions:

1. To what extent did healthcare workers experience coercion and ‘pressure’ in their work with COVID-19 patients during the pandemic?
2. What factors contributed to experiences of coercion and pressure in healthcare workers during the COVID-19 pandemic?
3. How are these contributing factors associated with perceived coercion and psychological distress?
4. To what extent can levels of perceived coercion and perceived pressure predict coping style and levels of psychological distress (i.e., anxiety, depression, stress), considering other contributing factors, in healthcare workers during the pandemic?

The studies below attempt to address these questions using scale development and evaluation methods (Study 1) and a mixed methods approach to understanding contributors to and relationships between perceived coercion and psychological distress (Study 2). Using a sequential mixed method design, the last research question will be revisited and reframed based on the qualitative results. The temporal order of the different study components is demonstrated in Figure 2.

Figure 2

The Temporal Order of Study Components



Note. HCWs= Healthcare Workers, PPSC-HCW= Pandemic-related Perceived Coercion Scale for Healthcare Workers, AVFGs= Asynchronous Virtual Focus Groups

Study 1: The Development and Validation of the Pandemic-related Perceived Coercion Scale for Healthcare Workers Scale

Method

A cross-sectional observational study included nurses, doctors and other hospital staff in the UK during the early stages of the COVID-19 pandemic was conducted. The study was approved by the University College London Research Ethics Committee. All participants provided (electronically) informed consent prior to the completion of measures.

Participants and Procedure

The sample consisted of 546 HCWs from across the United Kingdom who worked on the frontline during the COVID-19 pandemic, between July and October 2020 and January and May 2021. Healthcare workers aged ≥18 years who had experienced working on the frontline of the pandemic were invited to participate. Frontline was defined as having worked directly with or in the same environment as confirmed or possible COVID-19 patients. To examine perceived coercion in a wide range of HCWs from different sectors, the survey was distributed in a number of ways: (i) by contacting staff employed at a large London teaching hospital and NHS Mental Health Trust who had consented to be contacted as part of a SARS-CoV-2 Acquisition in Frontline Healthcare Workers (SAFER, Nastouli et al. in press) study by email, (ii) advertisement emails sent out through these organisations, and through other universities and colleges involved in training NHS staff in the UK and (iii) using social media platforms (Twitter, Facebook, Instagram and WhatsApp). Although convenience sampling was used, we attempted to encourage participation across ethnic groups by distributing advertisement for the study through organisations and social media groups that represented different ethnic backgrounds.

Scale Development

To capture pandemic-specific answers, most of the items in the Pandemic-related Perceived Coercion Scale for Healthcare Workers (PPCS-HCW) were developed in consultation with frontline HCWs. Items for the PPCS-HCW were initially adapted from the MacArthur Admission Experience Survey (Gardner et al., 1993) and further items were developed based on other perceived coercion scales (e.g., 30-Item Perceived Coercion Questionnaire, Coercion Experience Scale, the Visual Analogue Coercion Ladder scale). In the process of scale development, nurses and doctors (n=10) were interviewed to understand

the nature of coercion and which aspects of coercion were most important to assess in the context of the COVID pandemic. Additional items were also developed based on these interviews.

An initial pool of 15 PPCW-HCW items was then piloted for face and content validity in a different group of HCWs (n= 10). Incorporating the feedback from the pilot and further evaluating the items, two items that were based on the original MacArthur Perceived Coercion scale were excluded. These items ("I chose to work with COVID-19 patients" and "I was willing to work with COVID-19 patients" adapted McArthur item "It was my idea to…") were judged to be less relevant in the healthcare context because the majority of HCWs had not been offered a choice in working with COVID-19 patients.

In line with past perceived coercion scales the resulting 13-item scale was intended to assess three distinct aspects of coercion: (i) perceived coercion and perceived pressures of working with COVID-19 patients, including (ii) internal (e.g., internally generated standards and beliefs) and (iii) external (e.g., the public, the profession, management, peers) sources of pressure. The PPCS-HCW instructions asked participants to indicate how strongly they agreed or disagreed with a number of statements, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Statistical Analyses

An exploratory factor analysis (EFA) and reliability analysis were conducted to explore the factor structure and the internal consistency of the PPCS-HCW. The suitability of the data for factor analysis was established by investigating the factorability of the correlation matrix, sample size, and the Kaiser-Mayer-Olkin Measure of Sampling Adequacy. Principal

axis extraction (PAE) is recommended in exploratory research (Bandalos, 2018) and was used to extract factors from the data. As recommended by Thompson and Daniel (1996) multiple criteria were considered in deciding the number of factors to retain, including eigenvalues (and scree plot of eigenvalues), parallel analysis (adapted from Patil et al., 2017), the total variance accounted for my retained factors, factor loadings, cross-loadings, and inter-factor correlations. Oblique rotation was chosen to allow for correlation between factors.

Factors that consisted of three or more items with salient pattern coefficients ≥.40 were considered adequate for inclusion (Bandalos, 2018; Tabachnick & Fidell, 2013). The resulting items within each factor were then investigated for cross-loadings, internal consistency and the presence of a common theme with a coherent interpretative and theoretical basis. Items with cross-loadings were considered for exclusion, however, if they nonetheless had interpretative, theoretical and practical relevance, they were retained. Factors with an internal consistency reliability > .70 were considered adequate (Field, 2013). Analyses were conducted on IBM SPSS (Version 27).

Results

Descriptive Statistics

The participants' (*N* =546) ages ranged from 18 to 72 years, with a mean age of 41 (SD = 11.4). Despite attempts to encourage participation across ethics groups, the final sample was predominantly White (79.6%). Other participant characteristics are presented in Table 1.

Table 1

Participant Characteristics in Exploratory Factor Analysis

Participant Characteristics	*PPCW-HCW* (N =546)	
	n	%
Country, *n* England	522	95.6
Gender*		
Male	95	18.0
Female	430	81.3
Other	4	0.8
Ethnicity*		
White	421	79.6
Asian/Asian British	46	8.7
Black/African/Caribbean/Black British	16	3.0
Mixed / Multiple ethnic groups	14	2.6
Other ethnic groups	32	6.0
Current Role*		
Nurse	187	35.3
Doctor	118	22.3
Allied Health Professional	69	13.0
Healthcare worker/Support worker	51	9.6
Midwife	25	4.7
Other	80	15.1
Primary workplace*		
A&E	44	8.4
ICU	31	5.9
COVID Ward	16	3.0
Acute Medical Ward	19	3.6
Haematology	52	9.9
Obstetrics & Gynaecology	21	4.0
NHNN	56	10.6
Other Hospital Departments	65	12.4
GP service	14	2.7
Community/Outpatient	33	6.3
Other	175	33.3
Redeployment*, n Yes	51	9.6
Diagnosed COVID-19, n Yes	164	31.1

Note. *=variable with missing data (<4% of cases missing). Allied Health Professional= Dieticians, Occupational therapists, Operating Department Practitioners, Paramedics, Physiotherapists, Radiographer, Speech and language therapists, and Osteopaths (NHS England). Role Other = e.g., pharmacist, dentist, physiologist, advanced care practitioner, manager, ward sister, ambulance care attendant/technician, research nurse, clinical research fellow, clinical scientist, theatre practitioner. Other hospital departments (primary workplace) = virology, anaesthetics, dermatology, operating theatre, surgical wards, head and neck, neonatal, imaging/ultrasound. Other (primary workplace) =

pharmacy, primary care, prehospital, hospice, psychiatry/mental health, ambulance, care home, cancer centre / McMillian Cancer centre, dental hospital, clinical research facility.

Factor Analysis

Thirteen participants were excluded with listwise exclusion due to one or more missing values for individual items, leaving a total of n=534 included in the factor analysis. Two items ("I had more influence than other health professionals on deciding whether I..."; "I did not feel professionally obliged to…") were excluded on the basis of being poorly correlated with other items in the correlation matrix, showing poor communalities (<.40) and/or poor factor loadings (<.40). As such, the final scale consisted of 11 items.

The resulting correlation matrix was determined to be appropriate for factor analysis, with the Keiser-Meyer-Olkin statistic (KMO = 0.86) indicating sampling adequacy well above the recommended threshold ('meritorious' according to Hutcheson & Sofroniou, 1999). A consideration of the various criteria for establishing the number of factors to retain (especially parallel analysis) suggested a 3-factor solution for the PPCS-HCW, which accounted for 55.8% of item variance. Table 2 shows the factor loadings after rotation.

As can be seen in Table 2, items that loaded on the first factor appear to represent internal and informal pressures related to the healthcare worker role, including concerns about deviating from professional expectations and internal standards. The fact that the 'the public expected me to work with patients with COVID-19 in spite of the risk' item loaded on this factor may indicate that, unlike expectations from professional colleagues (including superiors), 'the public' was represented as a nameless/faceless influence, linked with internalised and possibly increased, standards about being a good colleague and health professional during the pandemic. This would be in line with the reported pressure of HCWs

to fulfil the narrative of ‘heroes’ and their increased public attention and recognition (Freer, 2021).

Table 2

Factor Loadings and Factor Correlations for Oblimin Rotated Three-Factor Solution for PPCS-HCW

Item		Rotated Factor Loading		
	Mean (SD)	1	2	3
Internal Perceived Pressure				
I worried about not living up to my profession if I refused	4.1 (2.2)	.64	-	-
I worried about the potential burden on my colleagues if I refused	4.8 (1.9)	.68	-	-
I worried about what others would think of me if I refused	4.0 (2.0)	.60	-	-
The public expected me to work with patients with COVID-19 in spite of the risk	5.3 (1.8)	.49	-	-
Perceived Coercion				
I had a lot of control over whether I worked with patients with COVID-19	4.7 (1.9)	-	.72	-
If I wished to, I could have refused to work with patients with COVID-19	4.5 (2.0)	-	.67	-
My peers expected me to work with patients with COVID-19 in spite of the risk	4.3 (2.0)	-	.58	-
Superiors expected me to work with patients with COVID-19 in spite of the risk	4.5 (2.1)	-	.56	-
External Perceived Pressures				
Somebody forced me to work with patients with COVID-19	2.3 (1.7)	-	-	-.82
Somebody pressured me to work with patients with COVID-19	2.6 (1.8)	-	-	-.75
I worried about the potential personal consequences of refusing*	3.5 (2.0)	-	-	-.45

Cumulative Variance (%)		40.6	48.7	55.8
Cronbach's alpha (α)		.76	.79	.82
		Factor Correlations		
	1	1.00		
	2	0.40	1.00	
	3	-0.38	-0.38	1.00

Note: *indicates items that remained cross-loaded with different rotation methods (i.e., Promax, Varimax). The factor in which they were eventually retained was dictated by a higher loading for that factor and/or conceptual similarity with other items within the factor.

The second factor represented experiences of coercion (i.e., control, freedom) in working on the frontline. The fact that the "peers/superiors expected me to work in spite of the risk" items loaded on this factor, suggests that a sense of autonomy is closely intertwined with the professional culture and the collective and authoritarian opinion in the workplace. The third factor represented the experience of external and more formal pressures. Even though the 'I worried about the potential personal consequences of refusing' item represents an informal source of pressure (i.e., concern), the factor structure suggests it reflects HCWs' concern about formal consequences of refusing to work with COVID-19 patients, such as sanctions and disciplinary action.

The moderate inter-factor correlations suggest adequate independence of the subscales. All three subscales revealed Cronbach's alpha greater than .70, suggesting good internal consistency (see Table 2). In sum, consistent with the literature on perceived coercion, the analysis revealed three underlying scales in the PPCS-HCW that appear to correspond to previously described sub-components of perceived coercion, namely perceived coercion *per se*, and internal and external sources of perceived pressure.

Summary

- An EFA of the PPCS-HCW scale demonstrated three moderately correlated subscales: Internal Perceived Pressure, External Perceived Pressure and Perceived Coercion.
- The subscales showed good internal consistency and are similar to other perceived coercion scales in the literature, which divides perceived coercion and perceived pressures and look at different internal and external sources of pressure.

Study 2: A Cross-Sectional Investigation of the Association between Perceived Coercion and Psychological Distress in Healthcare Workers during the COVID-19 Pandemic

This study aimed to understand the nature of and extent to which healthcare workers (HCWs) experienced perceived coercion during the pandemic and whether levels of perceived coercion can predict coping style and psychological distress. Given the absence of related previous research on the potential relationships between perceived coercion, coping and psychological distress, we initially took a hypothesis-generating, qualitative approach. On the basis of the themes identified, we generated a path model, which was tested using structural equation modelling (SEM). Using a sequential mixed-methods design allowed us to address the research questions in a dynamic, comprehensive and robust way (Ivankova et al., 2006). The original plan for the present study was to compare several European countries, testing the moderating effect of country on the relationships between perceived coercion/pressures, avoidance coping and psychological distress, using SEM Multiple Group analysis. However, due to several logistical difficulties that only became evident after data collection had started (recruitment challenges and difficulties securing resources to complete this study), this was not possible. Instead, the recruitment effort was focused on two main countries, namely the UK and Norway.

Method

The present study employs a cross-sectional mixed-method research methodology consisting of an online survey and online asynchronous virtual focus groups (AVFGs). The study was conducted online in order to access a wide range of healthcare participants in the context of the COVID-19 restrictions. As part of a larger international collaboration, longitudinal data was obtained from those willing to repeat the survey 3-months after the initial completion of the survey, however, due to the low response rate to the follow-up

survey (n = 83, 17.0%) these were not included in the present study. As such, the study presented here only consists of cross-sectional data obtained in two phases between July 2020 and May 2021.

Participants and Procedure

Online Survey

As part of a larger project examining contributors to mental health amongst HCWs, a comprehensive online survey was used to measure the constructs of interest, namely perceived coercion/pressures, coping and psychological distress. Healthcare workers aged ≥18 years and who had experienced working on the frontline of the COVID-19 pandemic in the UK and Norway were invited to participate. Eligible HCWs were clinicians who had interacted directly or indirectly with confirmed/suspected COVID-19 patients in a healthcare setting during the pandemic and who provided informed consent to participate in the study. Participants were recruited primarily through social media (Twitter, Facebook Instagram, and WhatsApp). To reach a wide range of HCWs, advertisement was also shared through newsletters and emails disseminated by universities and/or professional and charitable organisations that agreed to distribute the survey. Although convenience sampling was used, we attempted to encourage participation across ethnic groups by contacting organisations and social media groups which represent HCWs from minority backgrounds.

The online survey was accessed by clicking on the study link provided in the advertisement, which directed participants to the survey's home page with study information and consent form. All participants provided informed consent before proceeding to the main survey. Participants who completed the online survey were invited to leave their email address if they wished to take part in an online focus group. The online survey was completed using

Qualtrics, a general data protection regulation (GDPR) compliant data collection tool (ISO 27001 certified).

Measures

The online survey consisted of two sections concerning (1) demographic details and background information and (2) questionnaires to measure perceived coercion and perceived pressures, psychological distress, and coping styles. As part of a larger study, participants were asked to complete a number of additional questionnaires (relating to perceived stress, perceived risk, post-traumatic growth, and compassion fatigue). However, only the constructs of direct relevance to the research questions outlined above are described here.

Pandemic-specific Perceived Coercion Scale for Healthcare workers (PPCS-HCW). As described in Study 1, the PPCS-HCW was conducted by the research team to assess the extent of perceived pressures and perceived coercion. Briefly, the scale consists of 11 items rated from 1 (*strongly disagree*) to 7 (*strongly agree*) (see Study 1 for items and subscales). In the present study, the reliability of the complete internal perceived pressures subscale showed marginal reliability (4 items, $\alpha = .68$), with one item (i.e., 'the public expected me to...') demonstrating poor item-total correlation ($r = .23$) and contributing to worsened reliability score. Dropping the item led to acceptable to good reliability (3 items, $\alpha = .74$). The perceived coercion (4 items, $\alpha = .72$) and external perceived pressure (3 items, $\alpha = .80$) subscales showed good reliability.

In order to assess whether the perceived coercion construct had similar meaning across the UK and Norway groups, measurement invariance of the PPCS-HCW scale was tested with multi-group Confirmatory Factor Analysis (CFA). Achieving measurement invariance across

three steps (i.e., configural, metric and scalar) would suggest psychometric equivalence of perceived coercion and perceived pressures across the UK and Norway groups. Results showed an acceptable fit of the configural (baseline) model (*X2* (60) = 197,81, p < .001; CFI = .92; TLI = .88; RMSEA = .07), suggesting that the organisation of the constructs was adequately supported in both countries. Metric invariance was achieved, suggesting that each item contributed to the latent construct to a similar degree across the Norwegian and UK samples (Appendix 7). Full scalar invariance was not supported; however, full measurement invariance is rarely supported. Thus, it is common practice to accept some violation of measurement invariance by releasing constraints on one or more factor loading or intercept (Putnick & Bornstein, 2016). Partial scalar invariance was established with a minimum of two intercepts restricted in each factor (Appendix 7; Putnick & Bornstein, 2016), suggesting that the mean differences in the latent constructs capture the mean differences in the shared variance of the items. In sum, measurement invariance of the PPCS-HCW was achieved across the UK and Norway groups.

The Depression, Anxiety and Stress Scale (DASS-21). DASS-21 (Lovibond & Lovibond, 1995) was used to indicate the presence of psychological distress. DASS-21 is a well-validated screening instrument which provides independent measures of depression, anxiety and stress, and is measured on a scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much or most of the time*). The scale has been translated into a number of languages, including Norwegian. The subscales are calculated as the sum of the items multiplied by two (Lovibond & Lovibond, 1995). In this sample, the subscales showed good to excellent reliability: anxiety (7 items, α = .86), depression (7 items, α = .93) and stress (7 items, α = .91). In the path model, the stress, anxiety and depression subscale scores were used as observed variables, which together formed the latent variable, psychological distress.

Brief COPE. The Brief Coping Orientation to Problems Experienced Inventory (Brief-COPE, Craver, 1997) was used to indicate individuals' tendency to use specific coping strategies in the context of the COVID-19 pandemic. The Brief-COPE consists of 28 items that assess how participants cope with stress, measured on a scale from 1 (*I haven't been doing this at all)* to 4 (*I've been doing this a lot*). The Brief-COPE consists of 14 conceptually district subscales and has been translated to a number of languages, including Norwegian. Several different factor structures have been suggested to group the subscales into higher-order factors, ranging from two to four factors (Taylor & Stranton, 2007). The present study grouped the coping strategies to measure avoidance coping (self-distraction, denial, venting, behavioural disengagement, self-blame, substance use) and approach coping (active coping, planning, use of emotional support, use of instrumental support, positive reframing, acceptance) (Eisenberg et al., 2012). As suggested by Carver and colleagues, the composition of higher-order factor should be tested for unique samples, and thus the composition and reliability of the scale was tested in a confirmatory factor analysis and reliability analysis in the current study. Both analyses suggested improved reliability with the removal of Substance Use (i.e., low factor loading= .30, item-factor correlation < .30, and a slight increase in reliability when item the was deleted, α = .72. to α= .74). Thus, substance use was removed for psychometric, as well a conceptual reason (particularly due to potential underreporting or lack of relevance to healthcare frontline working). The scores of the remaining five subscales were used as observed variables in the path model; together these formed the latent variable avoidance coping.

Perceived Social Support. Perceived Social Support was measured with a one-item scale asking participants to rate how supportive they felt their team had been during the COVID-19

pandemic from 1 (*strongly disagree*) to 7 (*strongly agree*). This measure was used as an observed variable in the path model. High perceived social support was indicated by scores of and above the median (Mdn=6), and low perceived social support was indicated by scores below six.

Asynchronous Virtual Focus Groups

With COVID-19 restrictions hindering face-to-face contact and HCWs having high workloads and different work shifts, the use of asynchronous virtual focus groups (AVFGs) to collect qualitative data offered many advantages as they allowed participants to respond from their homes at any time convenient to them (Zwaanswijk & Dulmen, 2014; William, et al., 2012). AVFGs are held online over a longer time period than usual focus groups, with a set of questions per week over a period of several weeks (Ranieri et al., 2019). Considering the many commitments of HCWs during the pandemic, the period was restricted to three weeks, with the final week used for feedback and to allow for last comments and responses. All participants who expressed an interest in taking part in the focus group, by adding their email address at the end of the survey, were eligible to participate. Participants were divided into groups based on their work role and perceived coercion scores (high and low perceived coercion). A total of three AVFGs/country was conducted simultaneously, limited to 6-10 participant's/group. AVFG participants were registered into a virtual learning environment under a chosen alias/pseudonym to preserve anonymity. Participants were asked to engage in a written discussion about a different question (see Table 3) each week for three weeks. Discussion boards were moderated two times per day by the researchers to monitor the content of what was posted, in order to monitor risk, delete inappropriate posts and/or probe and clarify participants' responses. The AVFG data was downloaded directly as text from the virtual learning environment platform for analysis.

Table 3

Focus Group Questions Divided by Participation Week

Week	Question(s)
Week One	1. Can you tell us how you felt when you were asked to work with confirmed or suspected COVID-19 patients? How have your thought/feelings changed about working with this patient group between then and now, if at all? 2. From our survey, some individuals reported that they experienced pressure and/or felt coerced to work with COVID-19 patients. Reflecting on your own personal and environmental circumstances (i.e., workplace, work role, commute, living, family, media, or other circumstances) what factors played a role in whether you perceived working with COVID-19 patients as coercive? 3. How has working on the frontline of the COVID-19 pandemic influenced the way you view your work role?
Week Two	1. How have your experiences of working with COVID-19 patients /at the forefront of the pandemic impacted your psychological wellbeing? 2. What have you done to try to cope with this situation? In what ways have these coping strategies been similar/different from what you did before the pandemic? 3. What has helped you feel supported in context of the pressures you´ve been working in?
Week Three	4. What has it been like hearing about each other's experiences over the last two weeks? 5. Please let us know if there is anything else that you would like to make us aware of. Is there anything important that you feel we should know and/or that we have not asked about?

Data Analysis

Thematic Analysis

Thematic analysis was used to identify and categorise key themes and patterns of meaning in the data (Braun & Clarke, 2006). Both an inductive and deductive approach was used, where participant responses were viewed through a stress-coping interpretative lens. This allowed us to better understand the subjective experiences of HCWs and the meaning they attributed to their experiences whilst also focusing our questions and analysis on creating a picture of what influenced HCWs' appraisals of perceived coercion and pressures and how these appraisals influence and are influenced by coping. The six phases of thematic analysis were followed (Braun & Clarke, 2006), including familiarising oneself with the data, systematically coding the data that appeared prevalent and interesting, and collating them into

higher-order, intermediary and sub-themes. The themes were reviewed and checked in relation to the entire dataset. Themes and subthemes were explored by two researchers with one principally analysing the data and the second overseeing the emerging themes. Any disagreements were discussed and resolved within the wider research team. All of the researchers involved in the analysis used the interpretative reflexive process to monitor their own biases in the process, as suggested by Braun and Clarke (2020). The Norwegian and UK focus groups were analysed separately by different researchers, and an additional bilingual researcher was involved as a primary coder of the UK data and the secondary coder of the Norwegian data.

Statistical Analysis

The quantitative study aimed to ascertain the specific pattern of associations between the various latent constructs of interest, whilst also considering the contribution of other variables highlighted in the qualitative study and existing literature on the psychological impact on HCWs during pandemics. Structural equation modelling (SEM) has a number of benefits in relation to this, as it enables the exploration of the interrelationship between multiple independent variables on dependent variables. Moreover, using latent variables in path analyses makes it possible to account for measurement error, and test for measurement invariance (Kline, 2015; Geiser, 2012) which offered advantages with the use of a newly developed measure (i.e., PPCW-HCW) and cross-cultural data. In the current study, we used the standard two-phase approach to SEM, namely a measurement phase, and a structural phase. The multiple group Confirmatory Factor Analysis (CFA) (measurement invariance), latent factor analysis, mediation, moderation and moderated mediation analysis were conducted within a SEM (latent variable) framework using AMOS version 28 software. Specific indirect effects were tested by multiplying the path coefficients of the predictor-to-mediator and mediator-to-outcome paths, and the total indirect effect was calculated by

adding the specific indirect effects together. The significance of indirect effects was estimated by calculating bias-corrected bootstrapped 95% confidence intervals (2000 bootstrap samples). The index of moderated mediation (Hayes, 2015) computed as the product of the interaction-to-mediator path coefficient and the mediator-to-outcome path coefficient. The threshold for statistical significance was set at $p < 0.05$.

Model fit. Model fit was tested through chi-square (X^2), the Comparative Fit Index (CFI), the root mean square error of approximation (RMSEA), and the Tucker-Lewis Index (TLI). Values of ≥ .90 for CFI and TLI are considered to indicate acceptable fit, although values ≥ .95 are considered as evidence of more 'superior fit' (Byrne, 2013). Values of <.05 on the RMSEA are generally considered indicative of a close-fitting model, however, values up to .08 and .10 are considered acceptable (Kline, 2015).

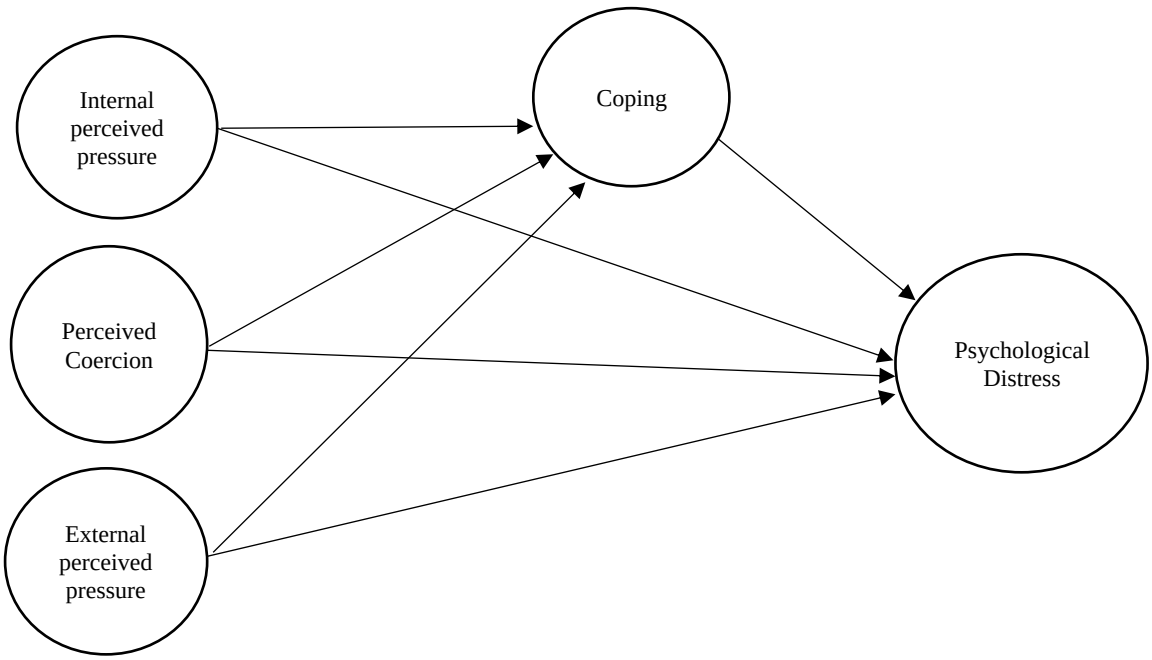
Variables. The final model included 18 manifest variables that served as indicators for 5 latent variables (PC, IPP, EPP, Avoidance Coping, Psychological Distress. Three latent predictor variables, perceived coercion, external perceived pressure and internal perceived pressures measures were regressed onto a latent mediating variable, avoidance coping, and a latent dependent variable, psychological distress. Avoidance coping was formed by five manifest variables, including the scores of the COPE Brief subscales Self-Distraction, Behavioural Disengagement, Venting, Self-Blame and Denial (Eisenberg et al., 2012). Psychological Distress was formed from three manifest variables, including the scores on the Stress, Anxiety and Depression subscales of the DASS-21 (Lovibond & Lovibond, 1995). Subscales were used as observed variables, as opposed to individual item scores (i.e., second-order latent variables) to avoid too many parameters and to safeguard statistical power. Interaction terms were created by multiplying composite scores, the sum of the indicators of each of the latent predictor variables, with the scores of the perceived social support variable

(Low=0, High=1). As advised by Jose (2013) the variables were not centred before computing the interaction terms.

In a sensitivity analysis at the end of the result section, some additional variables were added to assess the vulnerability of our findings to the possibility of Type 1 error. Consistent with previous research, these included job role, years of experience and country of resistance (Kisley et al., 2020; Hummel et al., 2021). Other established variables such as gender, household income, forced redeployment status and ethnicity (Kisley et al., 2020) were excluded as covariates because they did not capture sufficient variability in the sample. Despite a range of initiatives to attract a diverse sample, the majority of the sample were classified as White/White European (89.9%), identified as female (69.2%), had a yearly household income of >£50,000 (76.1%) and had not experienced forced redeployment (75.4%).

Figure 3

Theoretical model depicting links among Perceived Pressure, Perceived Coercion, Coping and Psychological Distress



Sample size and statistical power. Even though there is a lack of consensus on the required sample to retain good statistical power in SEM, a large sample has typically been expected (Kline, 2015). What constitutes as a large sample size varies, but above 200 participants are typically deemed acceptable unless the model is complex, and distributions are severely non-normal. For complex models, it is recommended to establish a sufficient sample size based on the number of parameters in the model (Jackson, 2003). The most lenient condition of 5:1, suggests a sample size being five times as big as the number of parameters. In the present study, the most complex model has 78 parameters and would require 390 participants, and thus our sample size of 484 satisfied this condition. In the sensitivity analysis, the parameters increased to 117 requiring 585 participants, however as the purpose of this analysis was to compare the results with an adequately powered model, this was not a major concern.

Results

AVFG Data

Three focus groups with a total of n=16 HCWs were conducted in each country (N=32). Due to the similarities of the themes that emerged in the UK and Norwegian data, and in the interest of space, the results are discussed and presented together under common themes in the present paper. Even though the themes mostly were common across UK and Norway, there were some areas where they diverged which have been duly annotated for clarity. For individual thematic maps and relationships between themes see Appendix 8. Four higher-order themes, with a varying number of intermediary and sub-themes, emerged from the data. The themes extrapolated from the data are presented in Table 4.

Table 4

Themes emerging from the AVFGs with Norwegian and UK participants

Higher Order Themes	Intermediary Themes	Subthemes
Sense of responsibility	Valorised role as HCW	Expectations to self-sacrifice
		Work pressures
		Increased recognition
		Professional pride
	Professional duty/obligation	Wanting to contribute*
	Role outside of work	Adjustments and restrictions
		Fear of transmission
		De-prioritising self
Perceived level of control	Availability of options	
	Involvement in decision-making	Distant leadership
	Level of familiarity	
Staff Cohesion and Support	Pulling together	Sense of community
	Social support	
	Feeling valued	
Coping	Approach and Avoidance	Taking things in own hands
		Helplessness
	Adaptations to routines	
	Changed perspectives	

*This theme was identified as a higher-order theme in the Norwegian data but not in the UK data

Sense of responsibility

Valorised role as HCW. HCWs reported an increased sense of responsibility related to their role as HCWs during the pandemic. This appeared to arise from a combination of increased work pressures and demands on the healthcare systems and expectations to 'work as normal' in extraordinary circumstances, including minimisation of risk and an expectation to self-sacrifice own health to keep the public safe (tautology). These pressures were talked about in relation to expectations from immediate colleagues, as well as the general profession, the public and the government.

I don't feel pressured by any particular person, but rather by the role as a healthcare worker [Nurse, 41yo, Norway]

As I was quite outspoken, many staff on my day unit came to me privately telling me, senior staff and colleagues, told them there was no reason to be scared of getting sick and they were being difficult at a time when we had to be heroes and just get on with it. [Nurse, 45yo, UK]

Some spoke about the increased attention directed towards HCWs, particularly the attention from the media. Whilst this was validating and led to greater recognition of their work, it has also increased the pressure to fulfil increased expectations of their role and a narrative of HCWs as 'heroes'.

I wouldn't say that I experienced pressure to work with infectious patients, but the picture created by media of us as "heroes" had a big impact on me, I think…I was constantly looking for reassurance with regards to infection control measures in practice…and when every available channel spoke about "heroes' in the healthcare system we of course wanted to match this… [Healthcare worker, 51yo, Norway]

It was evident that HCWs were proud of their colleagues/profession, their skillsets and how they stood up to the COVID-19 challenges, which may have further led to a sense of responsibility to contribute to their professional community and uphold standards of care.

I have never asked questions or reflected much on whether I want or need to work with covid-patients. … I suppose I instead have felt greater pride in my profession and the responsibility we carry, not least the importance it has for the care and treatment of patients, whether infectious or not. [Nurse, 34yo, Norway]

Role outside of work. HCWs also reported a strong sense of responsibility outside of their workplace, including fear of transmitting COVID-19 to vulnerable others and/or loved ones, and feeling it was their responsibility to prevent this from happening. This included

following strict and restrictive procedures at home, such as having extensive cleaning routines, and self-isolating to protect their loved ones.

I had a system for undressing and showering both for myself and my kindergarten aged children every time there was a local outbreak. I have never done that many 60-90 degrees machine washes before…Absolutely no visits, when advised against it. If my mother-in-law comes anyway, she can make the coffee herself and visit her grandchildren while I sit in the bedroom in fear of infecting her as she is quite fragile. [Nurse, 41yo, Norway]

Healthcare workers spoke about having to de-prioritise their own social life and leisure activities to ensure they were able to work, for instance, due to fear of bringing COVID-19 into the workplace or needing to quarantine.

I have also had to limit my life a lot since the pandemic started. I have done this to avoid quarantining or getting sick as this would mean I wouldn't be able to work. So I have sacrificed a lot of my spare time so that I wouldn't burden the hospital … [Nurse, 30yo, Norway]

Some participants reflected on the cumulative pressure of restricting life at home and work during the pandemic.

I have not experienced coercion in my work with COVID-19 patients. On the other hand, I have experienced pressure in relation to restricting both work and private life in order to protect others…Never before have I experienced such pressure between work and private life… [Manager, 36yo, Norway]

Professional duty. Healthcare workers also reported an inherent motivation to undertake the work due to a sense of professional duty and 'a calling' to work.

I think it comes from self-imposed moral obligation. That, again, is probably indoctrinated by professional ethics, upbringing and the environment I grew up in…but I also didn't think there were any other alternatives. Society's expectations worked normatively, 'you do your duty'…I think most people with relevant education felt called to community service. It's easier to feel a call to action when it's against a common enemy, as long as the enemy is a threat to us all [Doctor, 57yo, Norway]

One theme that came up more frequently in the Norwegian data than in the UK data, was an interest to work with this patient group, due to their commitment to their profession, including learning and gaining relevant experience. Many also spoke of how they chose the profession based on personal values of wanting to help and that they derived meaning from being able to contribute and make a difference.

I have in no way felt coerced when it comes to working with this patient group, rather I pursued it because I found it exciting and rewarding both in terms of being able to contribute and for my own learning. [Medical Student, 36yo, Norway]

Even though most agreed they had a professional duty to take on frontline roles, many emphasised that they did not feel that it was their duty to work under unsafe circumstances. Having to put themselves at serious risk in order to do their job was not something they willingly chose going into their profession. Several participants used the analogy of soldiers not being required to go to war without weapons:

I thought, if I were a soldier, they would make sure I have all I need to go into battle and be as safe as possible. Here I am being asked to ignore my own safety and that of my family. I have been in emergency situations before…I worked in the ICU where most victims were evacuated to…it was stressful and heart-breaking, but I didn't hesitate because I was safe and yes, then it is my job. [Nurse, 45yo, UK]

Perceived level of control

Availability of options. Participants spoke about how they, to varying degrees, experienced a (lack of) choice in working with COVID-19 patients. Most of the participants reported that they did not have a choice in working with COVID-19 patients because 'it was their job' and there was 'no other option'. Having completed relevant qualifications and there being nobody else to do the job, many felt they did not have a 'valid' reason to say no; their understaffed and under-resourced workplaces made refusing an even more impossible choice.

I guess working as a doctor in Intensive Care Medicine it was clear from the start to me that this would be part of my role and having worked with other patients with infective diseases (mainly influenza, but sometimes others as well) before there was no perceived difference initially and we all just did what we had to. I didn't really think I had any choice on the other hand either as there was nobody else to do this job if I didn't do it. [Doctor, 50yo, UK]

…. I accepted though I felt pressured, but when I got the emails confirming this it became clear that my name was down to do at least a month in Covid Hight Dependency Unit. I didn't feel I had the ability to decline at all. [Doctor, 32yo, UK]

Some spoke about threats of disciplinary action if they did not do as they were told.

The changes would come out of the blue and without any prior communication, for example, we were told we would be disciplined for wearing masks and PPE one day and the very next day there was an email sent (upon changes in government guidelines) that said we would be disciplined for NOT wearing face masks (which they provided in small numbers). [Psychotherapist, 32yo, UK]

Some HCWs reported having the option to refuse and/or volunteering to work with COVID-19 patients; as previously this appeared to mainly be reported by participants who were keen to gain experience, (e.g., students) and participants who wanted to take an active role in managing the pandemic (related to Approach Coping below).

(Un)involvement in decision-making. HCWs spoke about the mental health benefits of being involved in the decision to work with COVID-19 patients and/or in developing guidelines and procedures as this contributed to a greater feeling of control.

To start with we were very much in control about how our clinics were set up and organised which did help with stress levels, however more recently that control has been taken away and has led to increased stress levels as I have been expected to run my clinic as I did before covid, …[Healthcare Assistant, 21yo, UK]

Being uninvolved in the decisions was often talked about in relation to a distant and disjointed leadership, where decisions were made for them and not with them and did not adequately reflect their needs and the circumstances, they worked in. Some examples were being offered free pizzas or talking therapies without addressing the underlying source of stress, namely limited PPE and resources.

*I agree…, the management support was non-existent, I sat in on a meeting with the director of nursing for my trust, and she said she would arrange pizza to be delivered again to staff. What none of our management team seemed to realise what that we didn't want pizza (or another f***** badge!). We wanted people, hands, actual physical help.* [Nurse, 34yo, UK]

A few HCWs reflected on the protective and motivating effect of having a present leadership who joined them 'on the ground' and encouraged collaborative decision-making.

The best thing was when the managers fought back. First of all they realised value of people on the ground and what would work and what not. … they grouped together and as a body fed back what was stupid and unworkable and what the real pressures on the ground were. [Doctor, 61yo, UK]

Level of familiarity. The benefit of being familiar with the patient group/area of work was discussed in relation to an increased sense of control of the situation. This involved HCWs who worked on wards such as ICU, A&E and those who had experience working with viral infections and acute medicine.

I was 'fortunate' in that although an odd and scary experience I was still 'on home turf' - I am just amazed by those of you who were redeployed whilst this was all happening! [Doctor, 30yo, UK]

On the other hand, those who experienced forced redeployment spoke about the difficulties of adjusting to an unfamiliar patient group, different procedures and new colleagues in a time of high distress.

I did find it hard to cope, as I was moved to an environment where I knew nobody and I did not see my usual working environment or familiar staff. [Nurse, 45yo, UK]

Staff Cohesion and Support

Pulling together. Strong team cohesiveness, where HCWs pulled together to support each other in managing the challenging and unpredictable day-to-day circumstances was frequently reported. Pulling together to 'fight a common enemy' appeared to have been a unifying and motivating factor in working during the pandemic.

There was also a strong sense of comradery at work despite some of the poor conditions we were asked to work in - a sense of 'being in it together', my work colleagues in some ways became my work family and this was helpful in helping keep my psychological wellbeing in a good place. [Psychotherapist, 32yo, UK]

Many also spoke about the social value of their workplace, as one of the few acceptable social arenas, bringing them closer together.

I agree with the social aspect. It has been nice to have a place where you are 'allowed' to be with others. In addition, you get a unique sense of togetherness when you go through such a demanding and unpredictable time. [Medical Student, 36yo, Norway]

Social support. Nearly all the participants shared an appreciation for the social and emotional support they received from colleagues, and how this helped them cope with the stressors of the pandemic.

My team were fantastic, we all pulled together and supported each other in ways we couldn't have dreamt of. Covering shits, constant emotional support, bringing in treats for each other, sharing the load among us all when it came to work. We thoughts we did all this before covid, we were barely touching the surface compared to how close we became during. [Nurse, 34yo, UK]

Being able to discuss shared experiences with colleagues, as opposed to other people in their support system who had not gone through the same experiences, played a unique role in providing validation and reassurance, making colleagues the main source of emotional support during the pandemic.

Being able to discuss a shared experience with colleagues I work closely with has been key. [Doctor, 30yo, UK]

Feeling valued. With public attitudes and the media showing greater recognition of HCWs during the pandemic, many participants reported feeling more valued and appreciated for the work they do. However, several participants emphasised how this became problematic when it was not sustained over time and not reflected in the actions of their employer and the

government, paradoxically, making them feel more underappreciated and undervalued than before the pandemic.

This feels like a complex issue because I am grateful for the applause, it was helpful at the beginning when we didn't know what we were in for. I was pleased that the politicians and authorities realised the importance of my job…Now, one year later, I am pissed off and sad. Nothing is going to change for us healthcare workers, we get praise, but no more pay, no compensatory / risk bonus, no better hours.…. I'm sad because I realise that we can work ourselves to death in this profession, and no one will appreciate the work we do. [Nurse, 30yo, Norway]

I worry that, while not having any attention was bad, having the attention and then being forgotten might be worse. [Other, 43yo, UK]

Coping strategies

Coping style. HCWs reported using a range of different coping strategies during the pandemic which could broadly be divided into active/approach coping and avoidance coping. With regards to approach coping, it was reported that in the absence of timely and consistent guidelines, many HCWs 'took things into their own hands' including acquiring information and deciding on best practice. This was also often spoken about in relation to acquiring emotional and informational support from colleagues. Many participants stated that they preferred to actively contribute to the frontline rather than passively watching from the side-line, as this felt more constructive and helped them cope with their worries.

Personally, I think it has felt productive to take an active role in the situation rather than taking a passive role as a spectator, as I think it is more tiring and challenging not to contribute or do anything [Medical Student, 36yo, Norway]

Other HCWs reported that having to work on the frontline left them feeling helpless and powerless about the situation they were in. In order to manage these feelings of helplessness, several HCWs indicated that they turned to self-distraction techniques, tried to push difficult feelings away, expressed negative feelings to colleagues and thought of ways to escape (e.g., self-isolating, leaving work role, see Changed Perspectives subtheme). Some participants spoke about noticing an urge to give up or withdraw, but deliberately put things in place to avoid this from happening.

What was an issue is when we were railroaded into actions we knew were scientifically and morally wrong. Then I felt angry and powerless. [Doctor, 61yo, UK]

I have focused on taking care of and supporting my colleagues, which has given me a sense of mastery. This way, I am able to push away the frustration and rather use it for something positive. [Nurse, 30yo, Norway]

Adaptations to routines. HCWs reported a number of ways they increased, reduced and/or adapted their coping strategies. Many had lost routines and leisure activities that had previously been vital in managing stress and promoting wellbeing. Some were able to adapt and/or deliberately increase existing and new coping techniques, such as seeing friends and family more often (online), using their social network at work, exercising regularly and doing yoga and meditation.

For example, before the pandemic, I used to run 15 miles a week, but I have barely run at all since March 2020. This is partly because social running has stopped…and partly because I simply felt under too much pressure and running became a burden rather than a release. Last summer I realised that the reduction in physical activity and time spent outside was having an adverse effect on me, and instead I started cycling to work. [Other, 43yo, UK]

Changed perspectives. Several participants spoke about how working during COVID-19 had made them realise the importance of a work-life balance, motivating them to be more boundaried with work and prioritise life outside of work, such as family.

…. It has definitely impacted on my views of priorities in life and how vital a work-life balance is. [Doctor, 30yo, UK]

Some spoke about having left or wanting to leave their profession due to fatigue, needing a way out and feeling their relationship with their profession has changed for the worse as a result of the pandemic.

I've always been very proud of and happy to work as a nurse. Committed and loved working. In the last year this has probably changed somewhat, I have been more tired, frustrated, and several times wondered if I could manage this for the rest of my life. There are so many demands, we are often poorly staffed, and there are so many expectations of us from everyone. It sometimes feels like you have to sacrifice a lot, both time with family and friends as well as my own health. [Nurse, 28yo, Norway]

To summarise, whereas many participants denied having experienced 'coercion', they willingly discussed the negative effects of having limited choice and control with regard to their situation, feeling excluded from the decision-making, and having limited opportunities to express their viewpoint and refuse to do the job, suggesting the presence of perceived coercion in the sample. This may reflect a culture of, and expectation to, 'self-sacrifice' *(*Freer, 2021); where HCWs are expected to risk their own health and wellbeing for the patients. It may also reflect the common finding in the perceived coercion literature, where direct reports of perceived coercion are rare but rather implied by perceived lack of control, choice and influence (Lidz et al., 1993); particularly as 'coercion' may be an unfamiliar term used in the context of HCWs' right to refuse. It appears that expectations from self and others

contributed to an enhanced sense of responsibility and professional obligation to work on the frontline, and an enhanced sense of responsibility to protect others, both at work and home. Many participants reported an intrinsic motivation to work and felt that the expectation to work on the frontline was reasonable, however, it was emphasised that it felt unjust having to work in unsafe circumstances and this not being matched with fair compensation. Many participants reflected on how working on the frontline had contributed to feelings of helplessness, distress and fatigue. The resourcefulness of HCWs was evident in the results; they were able to take things into their own hands and use each other as a reliable and helpful resource when external resources were not available; the protective effects of social support and team cohesiveness were consistently reported in all focus groups. In situations were taking an active role was not possible, or they felt unable to contribute in ways that felt satisfactory, many HCWs spoke about feeling helpless. Many turned to coping techniques such as needing to distract with other activities, expressing their negative feelings to colleagues, and if not resolved, feeling that the only way out is to leave the profession. These strategies, self-distraction (doing other activities to think about it less), disengagement ('give up') and venting (expressing negative feelings) are often in the coping literature referred to as 'avoidance' coping strategies.

Survey Data: questionnaire measures

Theoretical Considerations

The AVFG results suggested that coping style and social support may affect levels of perceived coercion and/or psychological distress in response to working on the frontline during the COVID-19 pandemic. Particularly, qualitative reports of feelings of helplessness when other resources (i.e., external, internal) were not available appeared particularly relevant in relation to the Stress-Coping framework presented above (Biggs et al., 2017). As

specified below, if a stressor (i.e., perceived coercion) is uncontrollable and there are limited resources available, avoidance coping is common (Rayburn et al., 2005); even though avoidance coping can have positive effects in the short term, it is related to psychological distress in the long-term (Biggs et al., 2017). Moreover, most, if not all, of the participants reflected on the positive impact of social support from colleagues on their ability to handle stress. Avoidance coping and perceived social support were therefore considered for inclusion in the predictive model of the relationship between perceived coercion/pressures and psychological distress. The existing literature on the role of avoidance coping and social support in relation to psychological distress, as highlighted below, were used to predict the nature and direction of the relationships with perceived coercion/pressures (i.e., the stressor) and psychological distress in the model.

Avoidance Coping. Research suggests that ways of coping under stressful conditions play an important role in *mediating* the relations between stressful events and adaptive outcomes. Relatively uncontrollable stressors predict greater use of avoidance coping and avoidance has been found to partially mediate the relations with subsequent depressive symptoms (Rayburn et al., 2005). With perceived coercion being characterised as the absence of control in deciding one's circumstances, higher levels of perceived coercion/pressure may represent a stressor which leads to increased use of avoidance coping. Moreover. literature on learned helplessness theory illustrates that when people encounter unwanted events beyond their control, a sense of helplessness arises (Seligman, 1972), which may further relate to avoidant coping strategies such as disengagement (e.g., Dweck, 1975). Coping processes can also interact with contextual and individual parameters in their contribution to psychological adjustment. For instance, cancer patients who experienced low social support in combination with greater use of avoidance coping evidenced more severe symptoms of post-traumatic

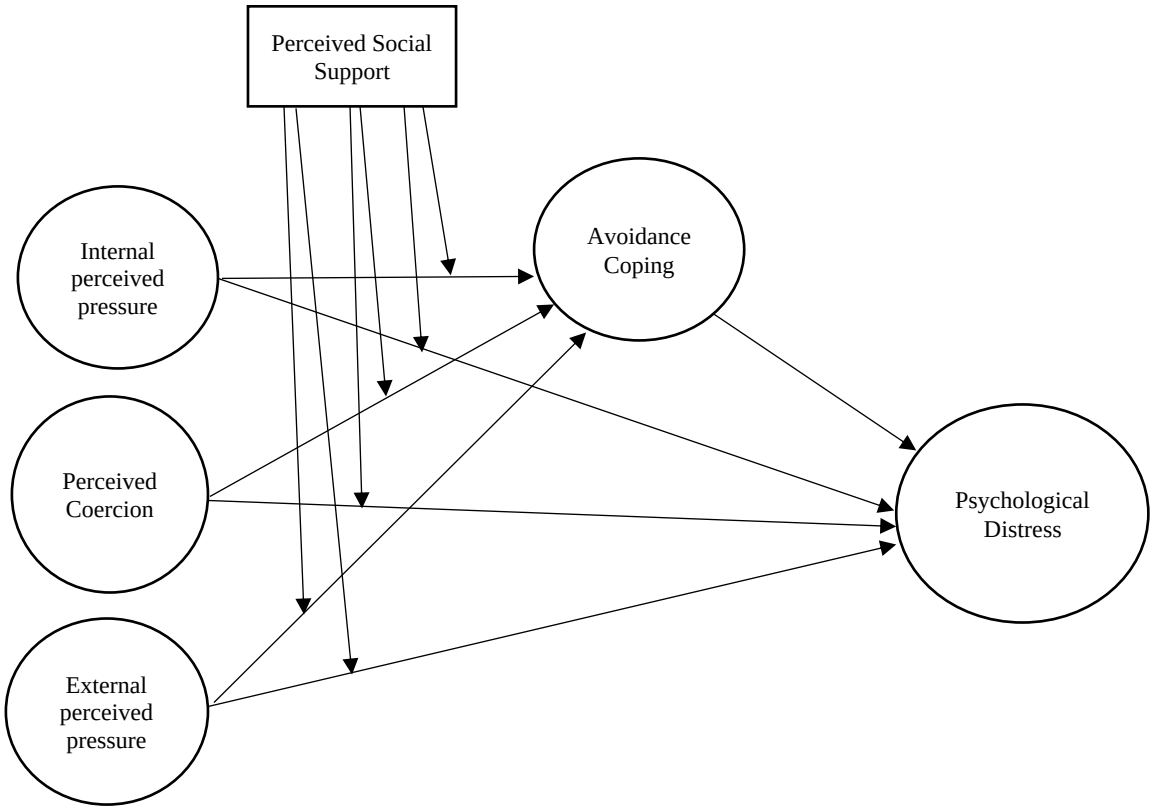
stress (Jackson et al., 2002). Based on these findings, avoidance coping appears to be categorised as a possible *mediator*, and thus may mediate the relationship between perceived coercion/pressure (i.e., the stressor) and psychological distress, such that higher levels of perceived coercion is associated with higher levels of psychological distress via elevated avoidance coping scores.

Perceived Social Support. An unsupportive social context has been found to prompt engagement in avoidance-oriented coping under stress, which in turn predicts an increase in distress (e.g., Manne et al., 2005). On the other hand, positive social context has been found to predict greater use of approach-oriented coping, which in turn predicts a reduction in depressive symptoms (Holahan et al., 1997). These findings are in line with the stress-buffering theories on the *moderating* role of social support in the relationship between a stressor and psychological outcomes (e.g., Kawachi & Berkman, 2001). The buffering hypothesis of social support predicts that social support buffers the individual from the effects of stress on psychological adjustment (Cohen and Wills, 1985; Jose, 2013), suggesting that interpersonal relationships can protect people from, or 'buffer' one against, the negative effects of stressful events. This buffering effect has been suggested to be particularly strong for 'well-structured' teams, including clarity in team and individual goals, regular meetings and recognition of the skills of their members (Buttigieg et al., 2011). This appears similar to the common goal of fighting a common enemy and the appreciation showed for their profession and colleagues demonstrated in the qualitative data. How a stressor is interpreted and whether individuals respond with avoidance coping and/or subsequent psychological distress may therefore depend on levels of social support stress. Based on these findings, perceived social support may *moderate* the association of perceived coercion/pressure (i.e., the stressor) with avoidance coping and/or psychological distress.

Drawing on the AVFG findings and the theoretical perspectives presented above, a refined conceptual path model with the inclusion of avoidance coping as a potential partial mediator and perceived social support as a potential moderator (see Figure 4) is presented below.

Figure 4

Refined conceptual model depicting links among perceived pressure, perceived coercion, avoidance coping, perceived social support and psychological distress



Descriptive Analysis

All participants had completed the data apart from n=2 missing for the Perceived Social Support item, which were excluded using listwise deduction. Descriptive statistics of the study subjects are presented in Table 5. Despite attempts to encourage participation across ethnic groups, the final sample was predominately classified as White/White European

(89.9%). There was a similar number of nurses (37.5%) and doctors (39.3%) in the sample and most of the healthcare staff worked in hospital wards (85.4%).

Mean scores on the PPCS-HCW items indicated that the majority of the participants scored somewhere in the middle ranging from 3 (*somewhat disagree*) to 5 (*somewhat agree*) on the three subscales. To better understand the extent to which HCWs experienced coercion and pressure in their work with COVID-19 patients, their scores were categorised into low, moderate and high by examining their median, cumulative percentages and the meaning of the scoring options. Total scores up to10 on the IPP/EPP and 15 on the PC were considered low, between 11-15 on the IPP/EPP and 16-21 on the PC were considered moderate, and 16 and above for IPP/EPP and 22 and above for PC were considered high. The majority of the participants indicated low levels of external perceived pressure (60.7%), with 24.8% indicating moderate levels and 14.5% indicating high levels. In contrast, the majority of participants (47.8%) showed high levels of perceived coercion with 35% indicating moderate levels and 17.2% indicating low levels. A similar number of participants indicated low (29.4%), moderate (36.2%) and high (34.4%) levels of internal perceived pressures. In sum, to answer the first research question, HCWs showed varying degrees of perceived coercion and perceived pressures, with a majority of participants showing higher levels of perceived coercion and lower levels of external perceived pressures.

With regards to levels of psychological distress, even though the majority of HCWs fell within the normal range of depression (53.6%), anxiety (61.7%) and post-traumatic stress (66.7%), a substantial proportion of HCWs showed moderate (18.4%; 15.7%; 10.8%) and severe/extremely severe levels (16.8%; 14.9%; 13.1%) of depression, anxiety and stress, respectively.

Table 5

Participant characteristics (N=483)

Variables	Mean (SD)	Min	Max
Demographics			
Country of residence, n UK (%)	197 (40.8)	-	-
Age, years	40.3 (11.2)	22	70
Gender, n female (%)	334 (69.2)	-	-
Ethnicity, n white (%)	434 (89.9)	-	-
Marital status, n married/in a relationship (%)	339 (70.2)	-	-
Education, n postgraduate degree (%)	243 (50.3)	-	-
Annual household income, n > £50,000/yr (%)	367 (76.1)	-	-
Workplace factors			
Role			
Nurse, n (%)	181 (37.5)	-	-
Doctor, n (%)	190 (39.3)	-	-
Other, n (%)	112 (23.2)	-	-
Workplace			
A&E, n (%)	57 (11.8)	-	-
ICU, n (%)	147 (30.4)	-	-
COVID-19 ward, n (%)	47 (9.7)	-	-
Other Inpatient, n (%)	162 (33.5)	-	-
Outpatient, n (%)	24 (5.0)	-	-
Other, n (%)	175 (36.2)	-	-
Years of Experience, years	15.4 (10.6)		
Redeployment, yes (%)	119 (24.6)	-	-
Perceived Coercion Subscales			
Internal Perceived Pressure (IPP)	13.2 (4.8)	3	21
Perceived Coercion (PC)	20.4 (5.2)	4	28
External Perceived Pressure (EPP)	9.5 (5.0)	3	21
Psychological Distress			
Stress	12.0 (10.4)	0	42
Anxiety	7.1 (8.2)	0	38
Depression	11.0 (10.9)	0	42
Avoidance Coping			
Self-Distraction	4.7 (1.5)	2	8

Denial	2.7 (1.1)	2	8
Behavioural Disengagement	2.9 (1.4)	2	8
Venting	3.7 (1.3)	2	8
Self-Blame	3.9 (1.6)	2	8
Perceived Social Support (PSS)	5.5 (1.6)	1	7
n high PSS (%)	311 (64.4)	-	-

Note: All data provided as mean (SD) unless indicated otherwise. SD= standard deviation. Participants could choose several workplaces, which is reflected in the n (%) above. High PPS ≥ 6.

Bivariate correlations between indicator variables are reported in Table 6. As can be seen, indicator variables of internal perceived pressures (i.e., ipp1-ipp3), external perceived pressure (i.e., epp1-epp3) and perceived coercion (i.e., pc1-pc4) were positively associated with the indicators of psychological distress (i.e., stress, anxiety, depression), except Pc4 (perceived coercion freedom item). Moreover, except for several of the perceived coercion items, they were positively associated with most of the avoidance coping variables, including self-distraction, denial, disengagement, venting, and self-blame. Perceived social support was negatively associated with all indicator variables of perceived pressure, perceived coercion, psychological distress and avoidance coping. This confirmed the relationship and direction of the relationships between key variables in the structural models.

Measurement Model

The first part of the measurement phase is to test the measurement model. An initial Confirmatory Factor Analysis measurement model was completed, in which all latent factors were allowed to covary to test for the adequacy of the relations of the five latent factors to the 18 observed (indicator) variables used in the study. Based on modification indices, theoretical considerations and similarity in wording/reverse coding, residual covariances were added between items that were reverse coded (i.e., PC freedom and PC control items) and items that were similar in wording/meaning (i.e., the EPP ‘somebody forced me…’ and ‘somebody

pressured me…' items). The model fit indices showed a satisfactory fit of the model to the data (X_2 (123) = 329.08, p < .001; CFI = .94; TLI = .93; RMSEA = .06). All factor loadings for the latent variables were significant (p < .001). The correlation coefficients between the latent factors were significant (p < .01), suggesting shared variances of at least 16%, except for PC-avoidance (3%) and PC-psych distress (6%). The individual factor loadings and the visual output from Amos are reported in Appendix 9.

Structural Models

The initial structural model reflected three partial mediations specified with direct paths from internal perceived pressure (IPP), external perceived pressure (EPP) and perceived coercion (PC) to psychological distress and with indirect routes via avoidance coping. Moderation was specified with paths from perceived social support (PSS) and the interaction terms (PSS x PC, PSS x IPP, and PSS x FPP) to avoidance coping and psychological distress (see Figure 4). Perceived coercion, internal perceived pressure and external perceived pressure were allowed to covary as they represent subgroups of a common construct that are related to each other. In the first structural model, no direct effect from perceived coercion (β = -.02, p = .843), external perceived pressure (β = -.02, p = .867), or internal perceived pressure (β = .21, p = .072) to psychological distress was found. The association of external perceived pressure and perceived coercion with avoidance coping was moderate in effect size (β = 0.37, p = .023; β = 0.39, p = .031*).* No significant association was found between internal perceived pressure and avoidance coping (β = 0.29, p = .095). The association of avoidance coping and psychological distress showed a strong effect size (β = 0.831, p <.001). This suggested that there were low to no direct effects of the perceived coercion/pressure constructs on psychological distress, but rather a potential indirect effect through avoidance coping.

Table 6

Bivariate Correlations among primary study variables (N=483)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Ipp1	1																	
2. Ipp2	.47**	1																
3. Ipp3	.51**	.48**	1															
4. Pc1	.33**	.27**	.37**	1														
5. Pc2	.40**	.23**	.27**	.62**	1													
6. Pc3	.24**	.18**	.29**	.37**	.39**	1												
7. Pc4	.16**	.05	.19**	.27**	.24**	.46**	1											
8. Epp1	.49**	.29**	.30**	.25**	.36**	.20**	.14**	1										
9. Epp2	.33**	.20**	.25**	.30**	.35**	.22**	.32**	.66**	1									
10. Epp3	.51**	.46**	.50**	.35**	.30**	.27**	.18**	.56**	.51**	1								
11. Stress	.25**	26**	.21**	.15**	.15**	.125**	.09	.28**	.22**	.35**	1							
12. Anxiety	.30**	24**	.27**	.19**	.20**	.10*	.07	.38**	.34**	.44**	.73**	1						
13. Depression	.26**	.25**	.23**	.15**	.16**	.14**	.08	.34**	.26**	.38**	.80**	.71**	1					
14. Self-Distraction	.15**	.19**	.08	.08	.12*	.01	-.03	.16**	.12**	.15**	44**	.32**	.40**	1				
15. Denial	.20**	.15**	.18**	.09*	.07	-.04	-.03	.26**	.23**	.28**	.40**	.47**	.43**	.28**	1			
16. Disengagement	.20**	.17**	.21**	.09*	.08	.03	.04	.29**	.23**	.32**	.60**	.52**	.63**	.34**	.46**	1		
17. Venting	.13**	.21**	.09*	.09	.06	.06	.05	.20**	.18**	.22**	.45**	.39**	.40**	.39**	.31**	.31**	1	
18. Self-Blame	.19**	.23**	.21**	.13**	.13**	.08	.02	.15**	.15**	.23**	.48**	.43**	.52**	.39**	.37**	.44**	.39**	1
19. Social Support	-.26**	-.15**	-.21**	-.15**	-.26**	-.22**	-.19**	-.40**	-.39**	-.33**	-.34**	-.35**	-.36**	-.14**	-.20**	-.29**	-.16*	-.15**

Note: Pearson correlations were used for correlations involving one or two continuous variables. *, $p < .05$; **, $p < .01$. Ipp1= I worried about not living up to my profession if I refused, Ipp2= I worried about the potential burden on my colleagues if I refused, Ipp3= I worried about what others would think of me if I refused, Pc1= My peers expected me to work with patients with COVID-19 in spite of the risk, Pc2= Superiors expected me to work with patients with COVID-19 in spite of the risk, Pc3= I had a lot of control over whether I worked with patients with COVID-19, Pc4= If I wished to, I could have refused to work with patients with COVID-19, Epp1= Somebody pressured me to work with patients with COVID-19, Epp2 = Somebody forced me to work with patients with COVID-19, Epp3= I worried about the potential personal consequences of refusing.

With the close to zero standardised coefficients and high p-values for the association of perceived coercion (β = -.02, p = .843) and external perceived pressure (β = -.02, p = .867) on psychological distress, these paths were constrained to zero (i.e., removed) in a second structural model to allow for the test of a full mediation effect of external perceived pressure and perceived coercion with psychological distress via avoidance coping. This approach is in line with the exploratory nature of the study and allows for a more parsimonious account of the relationship among variables as not including paths that are not significantly different from zero can help with the precision of estimating the remaining paths (Jose, 2013). If the model fit of the constrained model is not significantly worse than the first structural model, based on the chi-square difference test, then the second model would be preferred. In line with this, the chi-square associated with the second structural model was not significantly worse than the first structural model, in which all direct paths were included, (p = .854). The other model fit indices of the second structural model remained unchanged (Table 7). Thus, the second model testing for partial mediation for internal perceived pressure and full mediation for external perceived pressure and perceived coercion was preferred.

Table 7

Summary of Data Model Fit Statistics

Model	Parameters	X2	df	*p*	CFI	TLI	RMSEA
Measurement model (CFA)	48	329.08	123	< .001	0.94	0.93	0.06
Structural Model 1	78	479.54	175	< .001	0.96	0.95	0.06
Structural Model 2	74	480.88	179	< .001	0.96	0.95	0.06
SM2 with Covariates	117	715.31	231	< .001	0.94	0.92	0.07

Note. CRI = comparative fix index; SRMR = standardised root-mean-square residuals; RMSEA = root-mean-square error of approximation; CI = confidence interval; CFA = confirmatory factor analysis.

In results from the second and final structural model (Figure 5), showed that the association of external perceived pressure and perceived coercion with avoidance coping was significant and moderate in effect size (β = 0.37, p = .020; β = 0.39, p = .026). Even though the association of internal perceived pressure with avoidance coping and psychological distress was small in effect this was not significant (β = 0.28, p = .099; β = 0.21, p = .059). Bias-corrected bootstrapped confidence intervals with 2000 samples were then used to estimate the statistical significance of total and specific indirect effects. Even though a significant total indirect mediation effect was found, no specific mediation effect was found for the individual indirect paths (see Table 8).

Table 8

Indirect Effect for Psychological Distress in Second Structural Model

				95% Confidence Level	
Model	Indirect Path	*B*	Std.error	Lower	Upper
M2	EPP → AC → PD	1.98	1.24	-0.63	4.11
M2	PC → AC → PD	2.60	1.85	-0.62	6.15
M2	IPP → AC → PD	1.44	1.47	-1.42	4.24
M2	Total indirect effect	6.03**	2.06	2.46	10.68

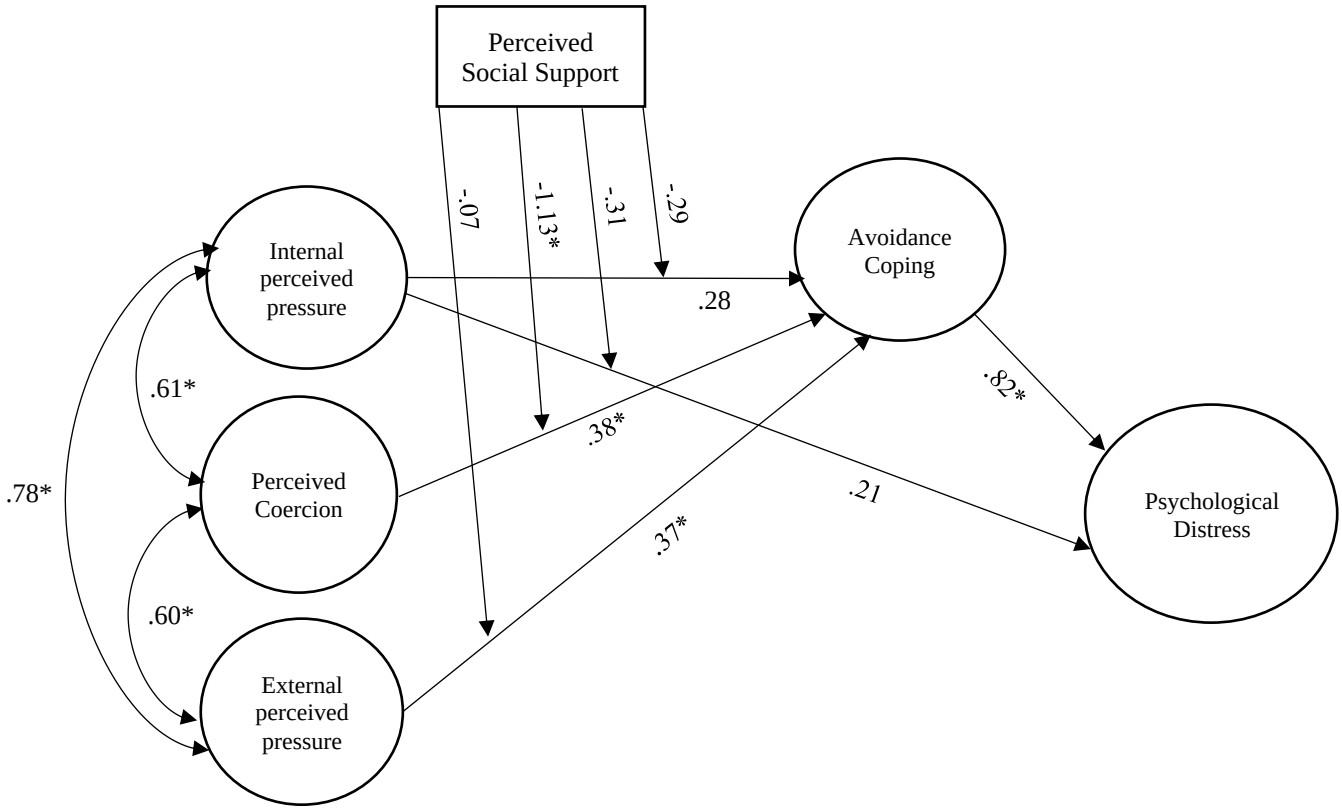
Note. EPP = External Perceived Pressure, PC = Perceived Coercion, IPP = Internal Perceived Pressure, AC = Avoidance Coping, PD = Psychological Distress.. ** = p < .01.

In terms of moderation, the association between the PC x PSS interaction term and avoidance coping was significant (β = -1.13, p = .006). The PCxPSS interaction was associated with lower avoidance coping, such that perceived coercion was positively associated with avoidance coping at lower levels of perceived social support. No association was found between FPP x PSSh and avoidance coping or IPP x PSSh and avoidance coping. Based on these findings, a moderated mediation model was computed to test whether a potential

indirect association of perceived coercion with psychological distress via avoidance coping varied as a function of perceived social support. The index of moderated mediation (Hayes, 2015) was negative and significantly different from zero (*b*= -.84, SE= .47, 95% CI [-1.86, -.10]). indicating that the association of perceived coercion with psychological distress via avoidance coping decreased as perceived social support increased.

Figure 5

Final Structural Model



Note. Standardised path coefficients. *Paths that are significant p <.05.

Sensitivity Analysis

The second structural model was tested with the inclusion of Covariates as part of a sensitivity analysis. The sensitivity analysis was completed to establish whether a defined and

measured set of potential covariates would significantly impact the results. Thus, we repeated the analysis while including country, profession, and years of experience as additional predictors in the path model presented in Figure 5. Adding these controls had no significant effect on the results. All the path coefficients and effects reported earlier persisted after controls, and no effects reported as non-existent emerged as statistically significant in the sensitivity analysis (Appendix 10). Moreover, adding the covariates led to worsened model fit indices (Table 7). Altogether, this suggested that the control variables did not have a strong predictive value and would add unnecessary extra parameters and compromise on degrees of freedom which would challenge the power of the analysis; these variables were therefore not included in the final model.

Discussion

The present study aimed to establish the extent to which HCWs experienced perceived coercion and pressures in response to working on the frontline during the COVID-19 pandemic and the relationship of perceived coercion and perceived pressures with coping and psychological distress. The aim was addressed by two studies where we 1) developed and validated a new perceived coercion scale and 2) used quantitative and qualitative methods to better understand the extent and nature of perceived coercion and its relationship with other variables.

The structure of the perceived coercion construct was confirmed across both countries, including three subscales: internal perceived pressure, external perceived pressure and perceived coercion. Descriptive statistics summarising the perceived coercion subscales revealed that almost 50% of the participants showed high perceived coercion scores. Most participants showed low scores for external perceived pressure, suggesting that experiences

of external pressure to work with COVID-19 patients were less common. Similar findings were reflected in the focus group responses. Although direct reports of being externally compelled against one's will to work with COVID-19 patients were uncommon in the focus groups, experiences related to perceived coercion and pressure - namely a lack of control, lack of inclusion in decision-making and indirect pressures (e.g., work pressure and expectations from others) – were present in participants' accounts. The tendency to infer the presence of coercion by reports of lack of control, choice and freedom, rather than reports of more direct (external) coercion, is consistent with the existing perceived coercion literature in mental health care (Hoge et al., 1993).

The qualitative data suggested that a heightened sense of responsibility arising from factors such as professional duty, work pressures, expectations to work and self-sacrifice, and increased recognition of HCWs, combined with a perceived lack of control in working under unsafe circumstances (leading to a sense of injustice), contributed to direct and indirect experiences of pressure and coercion in taking frontline roles. Interestingly, the culture of 'self-sacrifice' within the profession, was also indicated in Study 1 where items such as 'peers/superiors expected me to work in spite of the risk' loaded on the same factor as perceived control and freedom to refuse (i.e., perceived coercion), demonstrating how intertwined a sense of autonomy and ability to refuse is with HCWs' professional culture and work environment. Several participants reported that working on the frontline had negatively impacted their ability to cope effectively, whilst the a possible protective effect of social support from colleagues on experiences of coercion/pressures and psychological distress was indicated. Avoidance coping and perceived social support were therefore included in the refined path model.

The findings from the latent path analysis were partly consistent with our predictions in the conceptual model, which were 1) a direct effect from perceived coercion/pressures to psychological distress, 2) an indirect route via avoidance coping, and 3) a moderating effect of perceived social support. Even though the association of perceived coercion and external perceived pressure with avoidance coping was moderate, and the association of avoidance coping with psychological distress was strong, no specific indirect effect of perceived coercion/pressure with psychological distress via avoidance coping was found. A significant indirect effect was, however, found when adding all the specific indirect effects together (i.e., total indirect effect). Moreover, the association between perceived coercion and avoidance coping was moderated by perceived social support, such that perceived coercion was positively associated with avoidance coping among participants with low social support. A moderated mediation analysis showed that elevated avoidance coping mediated the association between greater perceived coercion and higher psychological distress, but only for individuals with low perceived social support. Notably, the fact that the majority of participants indicating high levels of perceived coercion (47.8%) and only a small portion of the participants reported lower levels of social support (35.6%), may have contributed to the nonsignificant results found for a specific indirect effect between perceived coercion and psychological distress. The findings of a total indirect effect, in the absence of specific indirect effects, may also be due to the fact that the perceived coercion subscales were allowed to covary in the model and showed relatively strong correlations.

The fact that no direct effect between perceived coercion constructs and psychological distress was found, is inconsistent with the existing perceived coercion literature in mental health care, which shows a small direct effect of perceived coercion on psychological distress (e.g., Whitecross, Seeary, & Lee, 2013). The difference in the population and context studied

may explain these inconsistent findings. Another possibility is that the lack of direct effects may reflect some of the issues that came with a prolonged data collection period, such as relying on retrospective reports of perceived coercion (looking back at when they were asked to take the role on the frontline) compared with more 'live' reports of levels of psychological distress. Interestingly, the present study did not find a direct or indirect effect of internal perceived pressure on psychological distress. This might suggest that internal perceived pressures were ego-syntonic (e.g., upholding professional identity in times of high pressure), and thus were less likely to be experienced as stressors that could lead to avoidance coping and psychological distress.

Even though no specific indirect effect was found between perceived coercion/pressures and psychological distress via avoidance coping, the significant association of external perceived pressure and perceived coercion with avoidance coping is consistent with the current coping literature, which suggests that an uncontrollable stressor (e.g., perceived coercion) predicts greater use of avoidance coping (Biggs et al., 2017). The strong association of avoidance coping and psychological distress is also consistent with current evidence (e.g., McGarrity et al., 2019). Moreover, the moderated mediation found for perceived coercion and psychological distress via avoidance coping, is in line with the social support 'buffer' theory, where social support acts as a stress buffer for avoidance coping and distress (Taylor & Stanton, 2007), and findings suggesting that low social support in combination with greater use of avoidance coping is associated with higher levels of psychological distress (e.g., Jackson et al., 2002. It is also consistent with recent COVID-19 evidence suggesting high prevalence of anxiety, depression and post-traumatic stress (e.g., Lamb et al., 2021) and the protective effect of team commitment and social support from colleagues (Frankel et at., 2022; Lamb et al., 2022). The present findings extend the existing literature on perceived

coercion by applying the concept in a novel context, and by using a mixed method methodology, demonstrating the nature of and contributing factors of perceived coercion and highlighting specific variables that influence the association between perceived coercion and psychological distress.

Strengths and Limitations

To our knowledge, the present study is the first empirical investigation of perceived coercion as a potential stressor implicated in distress among HCWs during a large-scale health emergency. Our participants included a wide range of HCWs from all healthcare sectors, including outpatient, prehospital (i.e., care provision prior to hospital arrival) and hospital sectors in two European countries with publicly funded healthcare systems, supporting the generalisability to similar healthcare contexts. A strength of the study is the complementary qualitative data which partially guided the quantitative (path analytic) results. This multi-method approach showed that HCWs experienced multifaceted stressors during the pandemic, with the qualitative data highlighting predictive models as well as ensuring the interpretation of the findings justly represented HCWs' experiences. The benefit of qualitative COVID-19-related research in offering rich descriptions of how the pandemic affected HCWs' everyday life, relationships, coping and perspectives offer important context in supporting the development of appropriate interventions for future pandemics. The duration of the pandemic introduced some challenges, in that the nature and severity of the stressors (including perceived coercion) might have changed across different phases of data collection. Alternatively, this also offered a unique opportunity to define perceived coercion/pressure in a novel context as part of the scale development during the first wave and test the context-specific concept and its relationship with psychological distress in a new sample during the second wave.

The present study presents a number of limitations that needs to be considered. Firstly, a combination of COVID-19 fatigue and survey fatigue made recruitment difficult during the second wave. Mainly relying on recruitment via online and social media platforms meant that most of the participants represented a particular population with access to and regular use of social media, and those who had time, resources and/or motivation to seek out platforms to share their experiences. Moreover, the resulting sample size presented challenges for the type of analysis that was possible to complete (whilst being adequately powered) and restricted the number of variables and parameters that could be involved in the model. Secondly, with the low response rate and exclusion of the follow-up data, it was not possible to establish true direct and indirect effects of perceived coercion on psychological distress in the absence of longitudinal data.

Thirdly, despite efforts to recruit a diverse sample, the current sample was represented by common WEIRD characteristics, with the majority of participants being white, having completed higher levels of education, living in industrialised and democratic countries, and having a yearly household income of >£50,000. The generalisability of the present study to HCWs from minority backgrounds, lower socioeconomic status and non-democratic countries are limited; particularly as emerging evidence has highlighted the disproportionate impact of the COVID-19 pandemic on HCWs from BAME and deprived backgrounds as well as from countries with varying degrees and duration of restrictions (Kirby, 2020; Public Health England, 2020).

Lastly, caution may also be taken in the interpretation of the qualitative data. The response rate on individual questions varied considerably, with some questions being answered by a

small number of participants. There was also a tendency of some participants to respond in a question-answer fashion rather than engaging in discussion; the AVFGs may therefore have lost rich perspectives on some topics. This might be due to a number of factors such as the fatigue and time pressure of HCWs or general difficulties establishing a safe space for disclosing personal experiences and responding to strangers online. Yet, the flexibility and accessibility of the forum granted the participants extra time and space for reflection in light of one´s own experiences. Moreover, the anonymous nature of the forum is believed to have offered security to express honest opinions, as HCWs reported experiencing pressure and stigma internally within the profession and may not have felt safe to express themselves freely in other formats.

Future Directions

Having acknowledged the strengths and limitations of the study, its results offer interesting directions for future research. It would be important to confirm the findings with a larger and more diverse sample and to compare models across countries and/or across time points to get a better understanding of the impact of perceived coercion on coping style and psychological distress. Investigating perceived coercion in more diverse samples would be of particular importance in order to represent the diverse healthcare workforce in UK and Norway. Moreover, longitudinal data would allow researchers to more confidently infer the predictive power of perceived coercion on psychological distress, and specifically the indirect effect via avoidance coping. The present study is part of an international collaboration with a large pool of data that will allow the research team to further investigate the presence and impact of perceived coercion across countries with unique pandemic characteristics (e.g., national restrictions, demographics, and healthcare systems). Moreover, while the focus of the present study was to identify levels of perceived coercion and pressures during the

COVID-19 pandemic, future studies could examine the psychological impact of participants in different (natural) conditions of higher and lower levels of perceived control and pressures (e.g., forced redeployment). It would also be beneficial for future qualitative research to consider a format that encourages more discussions, such as focus groups over video, synchronous focus groups (i.e., occur in real-time, typically through chat rooms) and/or individual interviews, however, it would be important to consider stigma and group pressures to uphold a professional standard or status quo.

Implications and Recommendations

The present study proposes several implications for crisis management and protective measures for HCWs' mental health in future pandemics. Particularly, the results highlight the importance of ensuring that HCWs experience a sense of agency and involvement in decision-making about their roles and responsibilities during unfamiliar and high-risk emergencies. This would require adequate healthcare resources and workforce levels, more flexible staffing models, information and training and a cooperative and compassionate leadership which is present 'on the ground' with the staff. By encouraging staff's involvement and agency in the pre-planning and response to a crisis, HCWs may feel less powerless and more able to engage in proactive and adaptive coping to manage the stressors.

The confirmed stress-buffering effect of perceived social support on avoidance coping also highlights the importance of providing time and space for peer support during a health crisis and for healthcare staff to come together informally or formally to discuss and reflect on shared experiences. However, caution must be taken in offering these interventions as several HCWs reported that their colleagues had been a key source of pressure to conform and to "not make a fuss". Several participants reflected on the therapeutic effect of discussing their experiences in a confidential forum, and thus this could be considered an available, safe and

affordable intervention. A safe space for HCWs to bring different perspectives could also be achieved by offering face-to-face or online reflective practice with a trained facilitator. For instance, the Heads and Hard model has been adapted to reflective groups during COVID-19 with a particular focus on peer resources (Association of Clinical Psychology, 2020). These interventions may not only offer therapeutic benefits for healthcare staff but may also contribute to developing a more compassionate culture within the profession.

The indirect accounts and high levels of perceived coercion demonstrated in the present study have also highlighted the importance of addressing a potentially harmful culture within the healthcare profession, with normalised expectations of HCWs to de-prioritise their own health and wellbeing for the benefit of the wider public and healthcare providers. With the pandemic creating an important opportunity to reflect and learn from long-standing health system challenges that the crisis has magnified (Reed, 2022), it appears to be a good time to also reflect on the potentially damaging effects of a professional culture of "self-sacrifice" and healthcare systems who "relies on the goodwill of staff". With evidence of high levels of anxiety, depression, post-traumatic stress, burnout and healthcare staff considering leaving their profession after the pandemic (Allan et al., 2020; Denning et al., 2021), the unsustainability of these practices and the importance of change on a systemic and individual level appears crucial.

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Part 3: Critical Appraisal

Introduction

I will start with reflecting on what motivated me to conduct this research in order to bring context on views and experiences I may have brought with me into the project. I will then discuss two main areas of the research project which has been challenging and my learning process in relation to managing these. The first is a reflection on the challenges of conducting time-sensitive research, including balancing quality with what is achievable in a limited time frame and under substantial time-pressure, and some reflections on what I might have done differently. The second is on the challenges of conducting COVID-19-related research with regards to designing the research (balancing psychometric usefulness and implication of the research with the possible burden placed on healthcare workers), the recruitment process and being a healthcare worker living in and working during the COVID-19 pandemic.

Research topic: Interest and experiences

Having a number of friends and acquaintances working as doctors and nurses during the first wave of the pandemic, I was startled by their response to being asked to work in unsafe circumstances; they often showed a sense of determination and willingness but when asked more questions about their feelings related to this, many spoke of not having a choice, that it was part of their job, and the fear and hopelessness in relation to this. Following the media picture in the UK and Norway, similar accounts emerged from healthcare workers in both countries. During the same period, a colleague, Dr Veronica Ranieri, had developed a protocol to investigate whether the general public experienced perceived coercion in response to the national restrictions imposed during the COVID-19 pandemic. My previous experience in working on an adult psychiatric ward and constantly juggling the compulsion and possible harmful consequences of involuntary admission and other restrictive practices such as

restraint and seclusion, I was familiar with the concept of perceived coercion. In discussions with Dr Ranieri, we started to apply the perceived coercion concept to different areas and situations that emerged during the pandemic, and particularly in understanding experiences of essential workers. From this, a keen interest in understanding how healthcare workers navigated the lack of control and autonomy in working with a novel infectious disease and under circumstances that could put them and their families at risk, led to the current research project. In comparison to Dr Ranieri who had previously conducted research in the field of perceived coercion (e.g., Ranieri et al., 2020), I had to quickly top up my knowledge base in this area as we were operating in a critical time schedule.

Reflections on doing time-sensitive/critical research

The overall aim of the research project was to understanding healthcare workers perceptions of and response to having to work on the frontline in potentially unsafe circumstances. For many this would have been a novel stressor with a unique set of thoughts and emotions attached to it. It was important for us to ensure that we captured a snapshot of the real-time challenges, thoughts and feelings faced by healthcare workers at early stages of the pandemic, as this would help us build a realistic picture and understanding of the initial thoughts and reactions. We hoped this could provide a unique opportunity to inform urgent policy and national decision making as well as to secure relevant data for future research and planning. In order to achieve this, and to avoid retrospective bias, the research had to be conducted rapidly. This became particularly time-pressured with the need to first develop a context-relevant perceived coercion scale, as there was no existing generic perceived coercion scale that was suitable for the context in which the research was carried out. We ensured that many of the recommended procedures for scale development was followed, such as having direct input from the target population (i.e., healthcare staff who had been working

on the frontline during the first wave of the pandemic), testing the items for face and content validity and conducting exploratory factor analysis, however inevitably some elements of people's experiences of pressures and coercion may have been missed in the process. For instance, items representing procedural justice was not included in the scale, as it was not thought to be relevant in the context of healthcare workers' role at the time. However, as the pandemic and the research evolved, stories of healthcare workers reporting that their voices were not heard, that their needs were not respected and considered, and that decisions were made for them rather than with them, it became evident that the scale might have benefitted from including items that represented procedural justice. On reflection, and on getting a deeper understanding of the perceived coercion literature as part of the conceptual introduction writeup, including items on procedural justice may have enhanced our understanding of what contributed to experiences of coercion and pressures, particularly in context of norms and procedures for decision in groups and teams.

Being in a research project where I had to make quick decisions about design and methodology within a novel research area, I was challenged to change my way of working. Generally, I am someone who show strength in taking a wide perspective and I often feel the need to have a comprehensive and detailed understanding of a topic area before I am able to make decisions or take a stance. Working in a context that did not allow for this was one of the biggest challenges throughout the research project as it brought up a lot of anxiety for me. Initially, it contributed to a lot of critical thoughts and feelings towards the decisions made. Later in the process, however, the experiences of managing the pressures and my own anxiety have humbled me with regards to the high standards and expectations I had for the research project and it has grounded me in the reality of research. Research can be messy and is constantly evolving with a range of situational and uncontrollable factors impacting on the

process. Navigating this in a way that was realistic, by reflecting on the limitations and strengths of the project as it was evolving, without feeling that the quality and integrity of the project was compromised, was a useful learning experience and something I will take with me in future research projects. Particularly helpful was bringing to mind the purpose and possible implications of the research and how a time-critical project could bring important perspectives for policy makers and managers in handing the current and future pandemics.

Reflections on conducting COVID-related research

A similar dilemma arose in deciding what measures and variables to include in the online survey and in deciding the length of the AVFGs. Using an exploratory and open-ended approach, as part of a larger international study, we included a variety of variables known to impact on healthcare workers mental health during previous pandemics. This resulted in a comprehensive survey, and thus introduced concerns about the potential burden placed on the healthcare workers, particularly as we would expect the opportunity cost during COVID-19 to be particularly large. Even though reports from previous health emergencies/pandemics/epidemics show that healthcare workers are willing to contribute to relevant research in hope of long-term benefits, the time spent filling out the survey would mean less time spent working on wards and/or relaxing after a long day at work. Reports of COVID-19 fatigue on the medical wards made this dilemma particularly apparent. As a research team we constantly discussed and re-evaluated the psychometric usefulness and implication of the project with the potential burden placed on healthcare workers throughout different stages of the project.

The extent and duration of the pandemic combined with a large number of studies interested in the wellbeing of healthcare workers led to further issues such as ‘survey fatigue’. With the perceived coercion instrument being developed and validated during the first wave, by the

time we were ready to recruit for our mixed method study, many healthcare workers had already conducted several studies and hospitals started to ban further surveys in order to protect the wellbeing of their staff. A combination of this and possibly the length of the survey led to significant recruitment challenges. Substantial effort was put into finding alternative venues for recruitment and follow-up with emails and invitations. Incentives were included to encourage participation, however only at later stages of recruitment and thus with limited effect. Knowing the important implication for our research and having spent a lot of time and resources in developing a context-specific scale, struggling to recruit for the main study contributed to feelings to disappointment and forced us to think differently with regards to our analysis. For instance, to protect the power of the study, fewer variables could be included in the final analysis. On reflection, it might have been helpful to have conducted a shorter survey in the hope for a higher response rate, however, this would also have meant that the investigation would have been more restricted from the onset. These cost/benefit analyses are useful learning experiences for future research.

Even though I did not work directly on the frontline, my position as a trainee clinical psychologist/healthcare worker during the pandemic would have exposed me to some views more than others. For instance, I had a six months placement in a medical hospital coming into frequent contact with healthcare staff who had been or were working on COVID-19 wards. Hearing their stories as part of my job contributed to my motivation and passion for the project but might also have introduced bias during the analysis and interpretation of findings, such as availability bias. Even though measures were put in place to control for this, such as including researchers from different backgrounds and cross-checking the themes in the qualitative analysis, it would be unreasonable to ignore the possible impact of this in shaping some of the findings. Moreover, as many of us had difficult experiences in relation to

COVID-19, it was sometimes hard to engage with the research project and navigate own emotions related to personal experiences of living through COVID-19. General COVID-19 fatigue and working with emotive data from the qualitative study further contributed to difficult and sometimes negative feelings in response to the projects. Several people in the research team, including myself, had to take a break from it in order to re-set and bring back new perspectives and motivation. Navigating the pressures of the research with personal wellbeing was in many ways reflecting the themes of the project, which made it important for us to check in with each other and write reflective journals in order to be able to separate personal experiences from those accounts emerging from our data.

Bringing it all together, the research project came with a unique set of challenges, including navigating a new and topical research area, the time pressures of the project and the influence of own experiences of living through COVID-19. Being a detail-oriented person who finds it hard to make decisions without a comprehensive understanding of different aspects of a topic, I was frequently challenged to adapt my working-style and perspective towards the project. Constantly approaching the evolving project with a cost benefit analysis, was a unique opportunity for learning different aspects of research – particularly as it included a range of methodologies and analysis which all had their own set of strengths and weaknesses that were uniquely impacted by situational factors. The benefit for doing an exploratory project, leading into an explanatory analysis, whilst navigating all of the above challenges was helpful as it allowed us to build a more open-ended and realistic picture of perceived coercion/pressures within the healthcare workforce, whilst also allowing us to build a more realistic picture of what research entails.

Appendices

Appendix 1: Ethical Approval UK

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH

15th July 2020

Professor Sunjeev Kamboj
Department of Clinical, Educational and Health Psychology
UCL

Cc: Professor Sarah Edwards, Dr Veronica Ranieri & Ms Andrea Stoltenberg

Dear Professor Kamboj

Notification of Ethics Approval with Provisos
Project ID/Title: 7335/004: The COVID-19 Wellbeing Study: Perceived coercion and psychological wellb the COVID-19 pandemic

Further to your satisfactory responses to the Committee's comments, I am pleased to confirm in my capacity as Chair of the UCL Research Ethics Committee (REC) that your study has been ethically approved by the UCL REC until **15th July 2021.**

Ethical approval is granted on the following provisos:

1. Clarify if the anonymised data that will be retained for 10 years will be made available to other researchers during this time, and if so this needs to be made explicit in the information sheets and consent forms. Please clarify this before the study commences.

2. Norwegian ethical approval is obtained and submitted to us for record before the study commences.

As you will be submitting a modification at a later stage to include Ireland in this study, please submit the ethical approval from Dundalk Institute of Technology University when you submit the amendment request.

Also, in view of the fast developments of the pandemic, the numerous projects being initiated and the constantly changing framework, please provide us with regular updates **every 3 months** regarding the ethical aspects of your project and the specific problems (if any) that you have encountered. At the end of the study, as part of the final report you have to submit to the UCL REC, please include alongside a brief outline of the research outcomes, any experiences which would be valuable for informing the fast-track COVID review process, and in turn subsequent fast-tracked studies.

Ethical approval is also subject to the following conditions:

Notification of Amendments to the Research
You must seek Chair's approval for proposed amendments (to include extensions to the duration of the project) to the research for which this approval has been given. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical

Office of the Vice Provost Research, 2 Taviton Street
University College London
Tel: +44 (0)20 7679 8717
Email: ethics@ucl.ac.uk
http://ethics.grad.ucl.ac.uk/

approval by completing an 'Amendment Approval Request Form'
http://ethics.grad.ucl.ac.uk/responsibilities.php

Adverse Event Reporting – Serious and Non-Serious
It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Joint Chairs will decide whether the study should be terminated pending the opinion of an independent expert. For non-serious adverse events the Joint Chairs of the Ethics Committee should again be notified via the Ethics Committee Administrator within ten days of the incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Joint Chairs will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Final Report
At the end of the data collection element of your research we ask that you submit a very brief report (1-2 paragraphs will suffice) which includes in particular issues relating to the ethical implications of the research i.e. issues obtaining consent, participants withdrawing from the research, confidentiality, protection of participants from physical and mental harm etc.
In addition, please:

- ensure that you follow all relevant guidance as laid out in UCL's Code of Conduct for Research: https://www.ucl.ac.uk/srs/file/579
- note that you are required to adhere to all research data/records management and storage procedures agreed as part of your application. This will be expected even after completion of the study.

With best wishes for the research.

Yours sincerely

[redacted]

Professor Lynn Ang
Joint Chair, UCL Research Ethics Committee

Appendix 2: Ethical Approval Norway

From: Stoltenberg, Andrea
Sent: 05 December 2020 14:50
To: VPRO.Ethics <ethics@ucl.ac.uk>
Cc: Alaska, Lola <l.alaska@ucl.ac.uk>; Ranieri, Veronica
Subject: Application 7335/004: Norway REC approval

Good afternoon,

As agreed, here is evidence of our approved REK application in Norway (application number: 170928). The document is in Norwegian, but the conclusion 'Godkjent med vilkår' means approved with provision. These have now been fulfilled. Please find the below email translated to English:

'REK hereby confirms that we have received your updates submitted on 19.11.2020 and that conditions 1 and 2 dated 08.10.2020 have been fulfilled.

We wish you good luck with the implementation of the research project'.

Please can you confirm that we can start data collection in Norway?

Let me know if you need any more information.

All the best,

Andrea Stoltenberg
Trainee Clinical Psychologist, 2nd Year

Research Department of Clinical, Educational and Health Psychology
University College London
1-19 Torrington Place
London WC1E 7HB

The Covid-19 Wellbeing Study:
http://thecovid19wellbeingstudy.org/

From: <noreply@rekportalen.no> on behalf of Hilde Eikemo
Reply to: Hilde Eikemo
Date: Tuesday, 1 December 2020 at 19:33
To: Roger Almvik
Subject: Bekreftelse på at vilkår er oppfylt

Hei

REK bekrefter herved å ha mottatt din tilbakemelding innsendt 19.11.2020, og at vedtak 1 og 2 i vedtak datert 08.10.2020 er oppfylt.

Vi ønsker lykke til med prosjektgjennomføringen.

Vennlig hilsen

Hilde Eikemo, REK midt

Appendix 3: Participant Information Sheet and Consent form Online Survey

The COVID-19 Wellbeing Study: Perceived Coercion and Psychological Wellbeing - HCW-SF

Introduction
The COVID-19 Wellbeing Study:
Perceived coercion and psychological wellbeing during the COVID-19 pandemic

Department:
Psychology & Language Sciences / Science & Technology Studies

Name and Contact Details of the Researcher(s):
Dr Veronica Ranieri T: -
Ms Andrea Stoltenberg T:-
Prof Sarah Edwards E: -
Prof Sunjeev Kamboj E: -
Name and Contact Details of the UCL Data Protection Officer: Alexandra Potts data-protection@ucl.ac.uk The study has been approved by the UCL Research Ethics Committee as application 7335/004 YOU CAN ALSO DOWNLOAD A COPY OF THIS INFORMATION SHEET FROM www.thecovid19wellbeingstudy.org

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You are being invited to take part in a research project. Before you decide, it is important for you to understand why the research is being done and what participation will involve. Please take your time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. The data collected for this project will also form part of a clinical psychology doctoral thesis for Veronica Ranieri and Andrea Stoltenberg. Thank you for reading this.

1. What is the project's purpose?

The aim of the study is to understand the lived experiences of healthcare workers who have worked on the frontline of the COVID-19 pandemic. We would like to primarily understand how these experiences, and other background factors, have impacted on your perceptions of coercion and psychological wellbeing. Previous research has identified that an individual's perceptions or appraisal of a situation may impact on their psychological wellbeing and coping mechanisms. When a situation is perceived negatively, it can lead to experiences of psychological distress and differences in the type or frequency of coping mechanisms we use to help manage the situation. We are, therefore, interested in understanding the extent to which you perceived working on the frontline as coercive or pressured, and your psychological wellbeing.

2. Why have I been chosen?

We are inviting you to take part as someone who has worked as a frontline healthcare worker during the COVID-19 pandemic. We are inviting all individuals aged 18 years or older who are ordinary resident in the UK, Italy or Norway, who have experienced working on the frontline (i.e. working directly with or in locations with confirmed/suspected COVID-19 patients) during the pandemic to participate.

3. Do I have to take part?

Participation in this study is voluntary. You may discontinue participating in the survey at any time without giving a reason by leaving the survey's webpage. Your data will only be

stored should you complete the survey.

4. What will happen to me if I take part?

If you would like to take part, we would ask that you fill in the online survey over the next few pages. The survey will ask questions relating to perceived coercion, psychological wellbeing, coping mechanisms, costs and healthcare usage and questions about your circumstances. We think that it may take you fifteen minutes to fill it out.

We would also like to invite you to repeat part of the survey (looking at perceived coercion, psychological wellbeing and coping only), and an online focus group to better understand your experiences. If you would like to take part in the second part of the study, please include your email address on the last page of the online survey. We will store email addresses separately from the survey data and will contact you using the email address you provide at a later time.

5. What are the possible disadvantages and risks of taking part?

We do not expect that taking part in this survey will place you at risk of harm. However, you may feel some emotional distress during or after the survey due to the nature of the topic. Should you experience significant distress, arising during or as a consequence of the research, please tell us. We will urge you to contact a health professional such as your General Practitioner and can redirect you to services available in your area. On our website www.thecovid19wellbeingstudy.org you will also be able to find multiple contact details for organisations providing support, such as the Samaritans on 116 123; SANEline on 0300 304 7000 and the The Mix for those under 25, on 0808 808 4994.

6. What are the possible benefits of taking part?

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help shape future clinical practice, government policy, and research, in relation to supporting individuals during pandemics.

7. What if something goes wrong?

Should you encounter any difficulties during the online survey, please contact Veronica or Andrea.

Should you have any concerns regarding the overall conduct of the study, please contact Professor Sarah Edwards or Professor Sunjeev Kamboj.

Should you feel that your concern is not adequately addressed by the research team and wish to raise a complaint, please contact the Chair of the UCL Research Ethics Committee at ethics@ucl.ac.uk

8. Will my taking part in this project be kept confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any ensuing reports or publications. Any identifiable information (ie. your email) will be stored on UCL's Data Safe Haven, a GDPR-compliant, encrypted system for the duration of the study. The data will be analysed by the research team.

9. What will happen to the results of the research project?

The results of this research may feature in peer-reviewed publications, national or

international conferences or media. You will not be identifiable in any ensuing reports or publications. We will add any outputs from the study onto our website for you to access once analysed and written.

10. What if I change my mind and would like to withdraw my information?

As this is an anonymous survey, we will be unable to identify your data from it to withdraw it. If you have left your email address in the final page to take part in a follow-up survey or qualitative sub-study, we can delete your email address from our records at any time. Should you wish to withdraw your email address, please email this request in writing to Veronica at or Andrea at .

11. Local Data Protection Privacy Notice

Notice:

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk

This 'local' privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our 'general' privacy notice found at https://www.ucl.ac.uk/legal-services/privacy/ucl-general-privacy-notice-participants-and-researchers-health-and-care-research-studies

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

The categories of personal data used will be as follows: age, geographical region, employment status and household income, psychological and physical health, and healthcare resource usage

The lawful basis that would be used to process your personal data will be performance of a task in the public interest. The lawful basis used to process special category personal data will be for scientific and historical research or statistical purposes.

Your personal data will be processed so long as it is required for the research project. We will anonymise all personal data you provide, and will endeavour to minimise the processing of personal data wherever possible.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

12. Who is organising and funding the research?

The research is led by researchers at University College London (UCL). UCL is sponsoring the research.

Thank you for reading this information sheet and for considering taking part in this research study.

Consent form

The COVID-19 Wellbeing Study
Perceived coercion and psychological wellbeing during the COVID-19 pandemic

Department:
Psychology & Language Sciences / Science & Technology Studies

Name and Contact Details of the Researcher(s):
Dr Veronica Ranieri T: -
Ms Andrea Stoltenberg T: -
Prof Sarah Edwards E: -
Prof Sunjeev Kamboj E: -

Name and Contact Details of the UCL Data Protection Officer: Alexandra Potts data-protection@ucl.ac.uk

This study has been approved by the UCL Research Ethics Committee as application 7335/004

Please complete this form after you have read the Information Sheet about the research.

Thank you for considering taking part in this research. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in.

I confirm that I understand that by selecting each box below I am consenting to this element of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.

1 *I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction.

- ○ Yes (1)

2 *I consent to participate voluntarily in the study. Data from incomplete surveys will not be kept.

I understand that my personal information (such as age, gender, geographical region, emotional and physical wellbeing scores and healthcare resource usage data) will be used for the purposes explained to me. I understand that according to data protection legislation,

‘public task’ will be the lawful basis for processing, and ‘research purposes’ will be the lawful basis for processing special category data.

○ Yes (1)

---

3 *I understand that I will be unable to withdraw my data after I complete the anonymous survey. Should I wish to take part in a repeat of part of the survey (looking at perceived coercion, psychological wellbeing and coping only), and/or further online focus group or interview, I will provide an email address of my choosing for the researcher to contact me on. This email address will be stored separately from my survey data and will not be used to identify me.

○ Yes (1)

---

4 *I understand that my data gathered in this study will be stored anonymously and securely. I understand that the information I have submitted will be published as peer-reviewed publications and I can access a copy of these online or on www.thecovid19wellbeingstudy.org. It will not be possible to identify me in any publications.

○ Yes (1)

---

5 *I understand that my information may be subject to review by responsible individuals from University College London for monitoring and audit purposes.

I understand the potential risks of participating and the support that will be available to me should I become distressed during the course of the research.

I understand that no promise or guarantee of benefits have been made to encourage me to participate.

I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future.

I am aware of who I should contact if I wish to lodge a complaint.

○ Yes (1)

Appendix 4: Participant Information Sheet and Consent form Online Focus Group

Participant Information Sheet

The COVID-19 Wellbeing Study:
Perceived Coercion and Psychological Wellbeing in Frontline Healthcare Workers

Department:
Science & Technology Studies / Psychology & Language Sciences

Name and Contact Details of the Researcher(s):
Dr Veronica Ranieri T: -
Ms Andrea Stoltenberg T: -
Miss Josephine Harris T: -
Prof Sarah Edwards E: -
Prof Sunjeev Kamboj E: -

UCL Research Ethics Committee Approval ID Number: 7335/004

You are being invited to take part in a research project. Before you decide, it is important for you to understand why the research is being done and what participation will involve. Please take your time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. The data collected for this project will also form part of a clinical psychology doctoral thesis for Andrea Stoltenberg. Thank you for reading this.

1. **What is the project's purpose?**
   The aim of the study is to understand the lived experiences of those who are frontline healthcare workers during the COVID-19 pandemic. We would like to primarily understand how your experiences of working on the frontline of the pandemic have impacted your perceptions of coercion, your perceptions of your work-role and your psychological wellbeing.

2. **Why have I been chosen?**
   We are inviting you to take part as someone who has experienced working as a frontline healthcare worker during the COVID-19 pandemic. We are inviting individuals who are aged 18 years old or older, who have experienced working with confirmed/suspected COVID-19 patients, and who are ordinary resident in the UK or Norway to participate.

3. **Do I have to take part?**
   Participation in this study is voluntary. You may discontinue participating in the focus group at any time without giving a reason.

4. **What will happen to me if I take part?**
   If you would like to take part, we would ask that you take part in a two-week focus group hosted online with 6-9 other individuals. You will not be able to see the other participants though will be able to interact with them in writing. Once a week for two weeks, we will post some questions onto an online platform that is accessible only to the participants and

the researchers. The questions will ask about your experiences and perceptions regarding your work role during the pandemic and how it has impacted on your emotional wellbeing. We ask that you kindly write about your experiences and views on this platform and, if you like, interact with what other participants say too. You may write as little or as much as you like and can access the online platform at any time of the day or night.

5. **What are the possible disadvantages and risks of taking part?**
   We do not expect that taking part in the online focus group will place you at risk of harm. However, you may feel some emotionally distress during the study due to the nature of the topic. Should you experience significant distress, arising during or as a consequence of the research, please tell us. We will urge you to contact a health professional such as your General Practitioner and can redirect you to services available in your area, such as the Samaritans (phone number: 116 123).

6. **What are the possible benefits of taking part?**
   Whilst there are no immediate benefits for those participating in the project, participants from previous studies that used this method reported that they found it helpful to write down their experiences and share these with others who could relate. We hope that this work will help shape future clinical practice, government policy, and research, in relation to supporting healthcare workers during large-scale emergencies like a pandemic.

7. **What if something goes wrong?**
   Should you encounter any difficulties during the online focus group, please contact Andrea.

   Should you have queries regarding the overall conduct of the study, please contact Prof Edwards or Prof Kamboj.

   Should you feel that your concern is not adequately addressed by the research team and wish to raise a complaint, please contact the Chair of the UCL Research Ethics Committee at ethics@ucl.ac.uk

8. **Will my taking part in this project be kept confidential?**
   All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any ensuing reports or publications. Any identifiable information (i.e., your email) will be stored on UCL's Data Safe Haven, a GDPR-compliant, encrypted system for the duration of the study. The data will be analysed by the research team.

9. **Limits to confidentiality**
   We would ask you and your fellow online focus group participants to respect each other's confidentiality and not divulge information about each other or content from the focus group to individuals outside of the focus group. Confidentiality will be respected by the researchers unless there are compelling and legitimate reasons for this to be breached, such as danger to yourself. If this was the case, we would inform you of any decisions that might limit your confidentiality.

10. **What will happen to the results of the research project?**

The results of this research may feature in peer-reviewed publications, national or international conferences or media. You will not be able to be identified in any ensuing reports or publications. We will add any outputs from the study onto our website for you to access once analysed and written.

11. What if I change my mind and would like to withdraw my information?

You will be able to withdraw your data until these have been analysed and anonymised. After the data have been analysed and anonymised, we will be unable to identify you from the analysis to withdraw your data. Should you wish to withdraw your data, please email this request in writing to Andrea.

12. Local Data Protection Privacy Notice

Notice:

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk

This 'local' privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our 'general' privacy notice found at https://www.ucl.ac.uk/legal-services/privacy/ucl-general-privacy-notice-participants-and-researchers-health-and-care-research-studies

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

The categories of personal data used will be as follows: age, gender, ethnicity, geographical region, employment, psychological and physical health.

The lawful basis that would be used to process your *personal data* will be performance of a task in the public interest. The lawful basis used to process *special category personal data* will be for scientific and historical research or statistical purposes.

Your personal data will be processed so long as it is required for the research project. We will anonymise all personal data you provide and will endeavour to minimise the processing of personal data wherever possible.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

13. Who is organising and funding the research?

The research is led by researchers at University College London (UCL). UCL is sponsoring the research.

Thank you for reading this information sheet and for considering taking part in this research study.

Consent form

UCL Research Ethics Committee Approval ID Number: 7335/004

Title of Study: *The COVID-19 Wellbeing Study:* Perceived coercion and psychological wellbeing during the COVID-19 pandemic

Department: UCL Division of Psychology & Language Sciences / Institute of Science & Technology Studies

Name and Contact Details of the Researcher(s):

Ms Andrea Stoltenberg -
Dr Veronica Ranieri -
Ms Josie Harris -
Prof Sarah Edwards -
Prof Sunjeev Kamboj -

Please complete this form after you have read the Information Sheet about the study.

Thank you for considering taking part in this research. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in.

I confirm that:

- I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction and would like to take part in an online focus group.
- I consent to participate voluntarily in the study.
- I understand that I will be able to withdraw my data prior to my data being analysed and anonymised. I understand that if I decide to withdraw, any personal data I have provided up to that point will be deleted unless I agree otherwise.
- I understand that my personal information *(ie age, gender, geographical location, health status)* will be used for the purposes explained to me. I understand that according to data protection legislation, 'public task' will be the lawful basis for processing and 'research purposes' will be the lawful basis for processing special category data.
- I understand that my data gathered in this study will be stored anonymously and securely. I understand that the information I have submitted will be published as peer-reviewed publications and I can access a copy of these online or on www.thecovid19wellbeingstudy.org. It will not be possible to identify me in any publications.
- I understand that my information may be subject to review by responsible individuals from University College London for monitoring and audit purpose
- I understand the potential risks of participating and the support that will be available to me should I become distressed during the course of the research.
- I understand that no promise or guarantee of benefits have been made to encourage me to participate.
- I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future

Appendix 5: Questionnaires

Removed for copyright reasons. You can access the initial version of the questionnaires in the supplementary material of our published protocol:

Ranieri, V., Sem Stoltenberg, A., Pizzo, E., Montaldo, C., Bizzi, E., Edwards, S., & Kamboj, S. (2021). COVID-19 welbeing study: a protocol examining perceived coercion and psychological well-being during the COVID-19 pandemic by means of an online survey, asynchronous virtual focus groups and individual interviews. *BMJ Open, 11*(1), e043418. doi:10.1136/bmjopen-2020-043418

Appendix 6: Topic Guide – Asynchronous Virtual Focus Groups

Topic Guide - Asynchronous Virtual Focus Groups

Participants who have agreed to taking part in the AVFGs will be asked to answer questions and to engage with other participants' responses. The AVFGs will each run over 2 weeks. Each week new questions will be posted by the researchers. The AVFG forum will be reviewed and moderated twice daily and additional prompting questions may be posted by the researcher depending on the level of group activity and engagement. Suggestions for prompts are included below.

Week 1: Experiences of working on the frontline
(These questions will explore experiences of working on the frontline, perceptions of coercion and views of their work role)

Introductory text: Welcome to week one! Healthcare workers like yourself have worked under difficult circumstances at the forefront of the COVID-19 pandemic for over 12-month now. Looking back, …

Main Questions: Can you tell us how you felt when you were asked to work with confirmed or suspected COVID-19 patients? How have your thought/feelings changed about working with this patient group between then and now, if at all?

From our survey, some individuals reported that they experienced pressure and/or felt coerced to work with COVID-19 patients. Reflecting on your own personal and environmental circumstances (i.e., workplace, work role, commute, living, family, media, or other circumstances) what factors played a role in whether you perceived working with COVID-19 patients as coercive?

How has working on the frontline of the COVID-19 pandemic influenced how you view your work role?

Week Two: Psychological Impact
(Building on themes discussed thus far)

Introductory text: Welcome to our second week. Last week we discussed how you felt about working with COVID-19 patients and how this was impacted by your circumstances. This week, we are interested in understanding more about how these experiences have affected your psychological wellbeing.

Main Questions: How have your experiences of working with COVID-19 patients and being at the forefront of the pandemic impacted on your psychological wellbeing? What have you done to try to cope with this situation? In what ways have these coping strategies been

similar/different from what you did before the pandemic*? What has helped you feel supported in context of the pressures you´ve been working in?

Ending prompt:
What has it been like hearing about each other's experiences over the last two weeks?

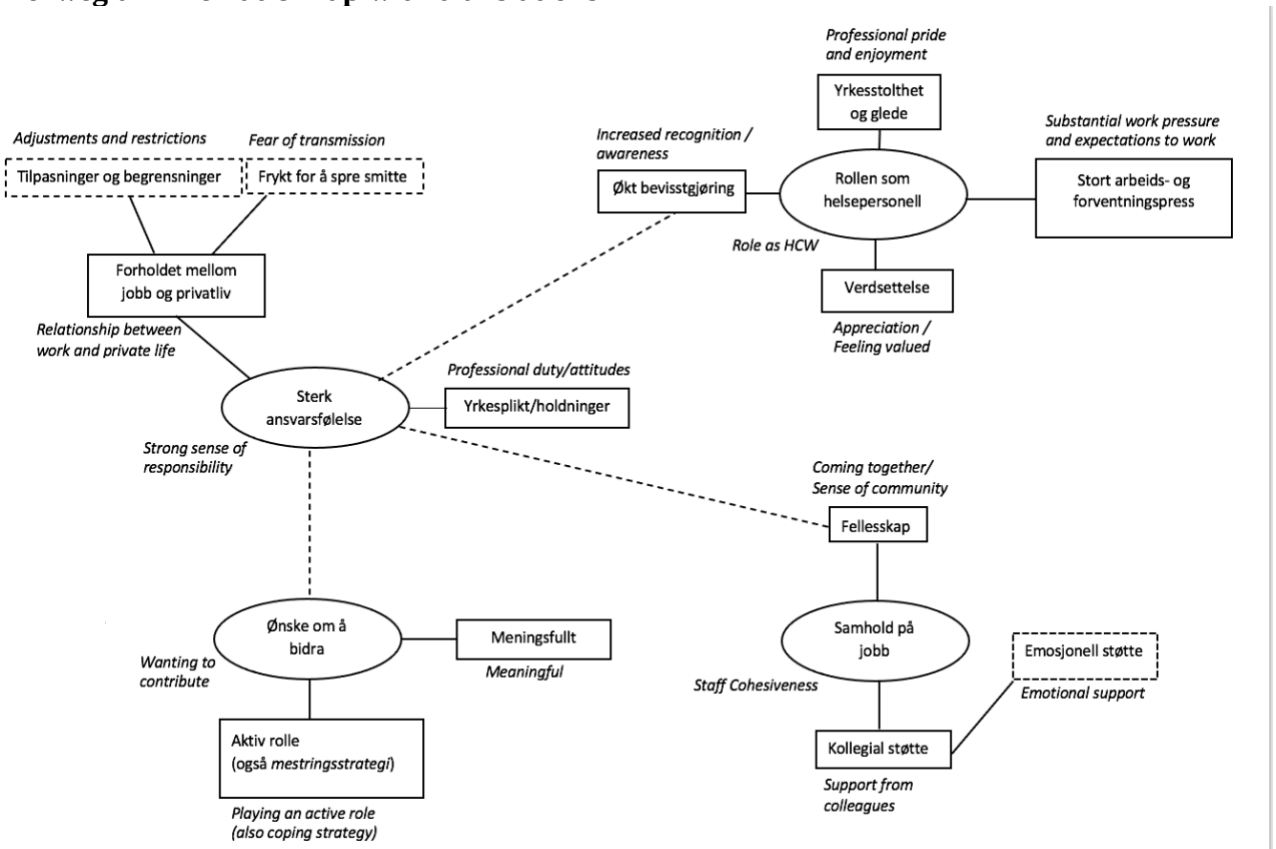
Appendix 7: Measurement Invariance Analysis

Model	Model description	chi-square	df	CFI	RMSEA	Gamma hat	Mc NCI	MC	Δchi-square	Δdf	sig.	ΔRMSEA	ΔCFI	ΔMc NCI	Δgamma hat	Decision
M1	Configural invariance	197,81	60	0,922	0,069	0,946	0,867	-	-	-	-		-	-	-	Accept
M2	Metric invariance	207,56	67	0,921	0,066	0,942	0,865	M1	9,75	7	0,203	0,003	0,001	0,002	0,004	Accept
M3	Scalar invariance	264,82	74	0,892	0,073	0,922	0,821	M2	57,26	7	0,000	0,007	0,029	0,044	0,021	Reject
M4	Partial scalar invariance	213,42	70	0,919	0,065	0,940	0,862	M2	5,85	3	0,119	0,001	0,002	0,003	0,002	Accept

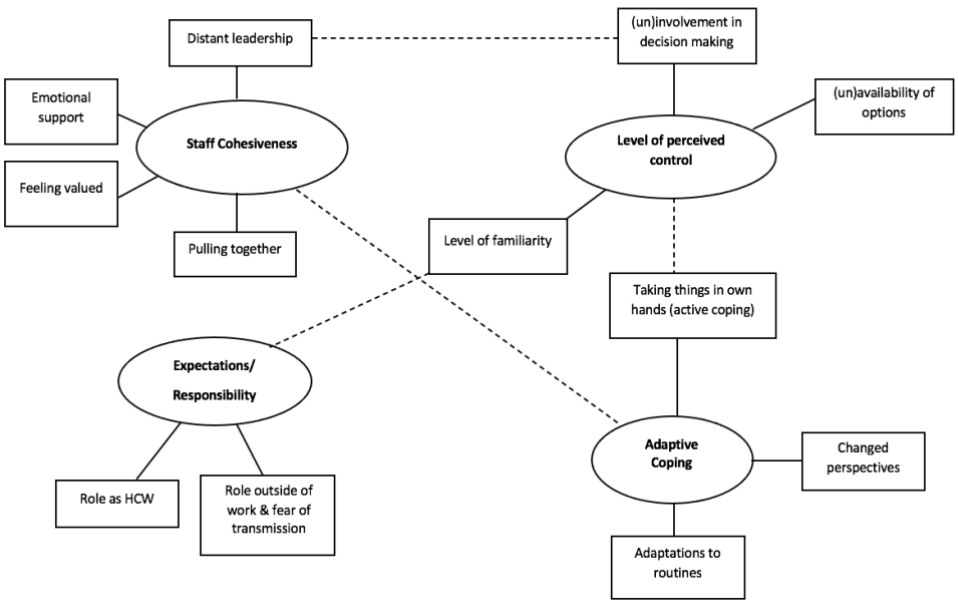
Note. The results are computed with an excel calculator derived from Mike Crawson's google drive for Testing measurement invariance AMOS (Nov, 2020): https://drive.google.com/file/d/1HKDwg2oOilQtQdgBFP3DAiHnRBp4z9DG/edit. MC= Model Comparison. Thresholds for measurement invariance: Δ chi-square p > .05, ΔRMSEA < .01, ΔCFI < .01, Δ Mc NCI < .02, Δ gamma hat < .001

Appendix 8: Thematic Maps

Norwegian Thematic Map with translations

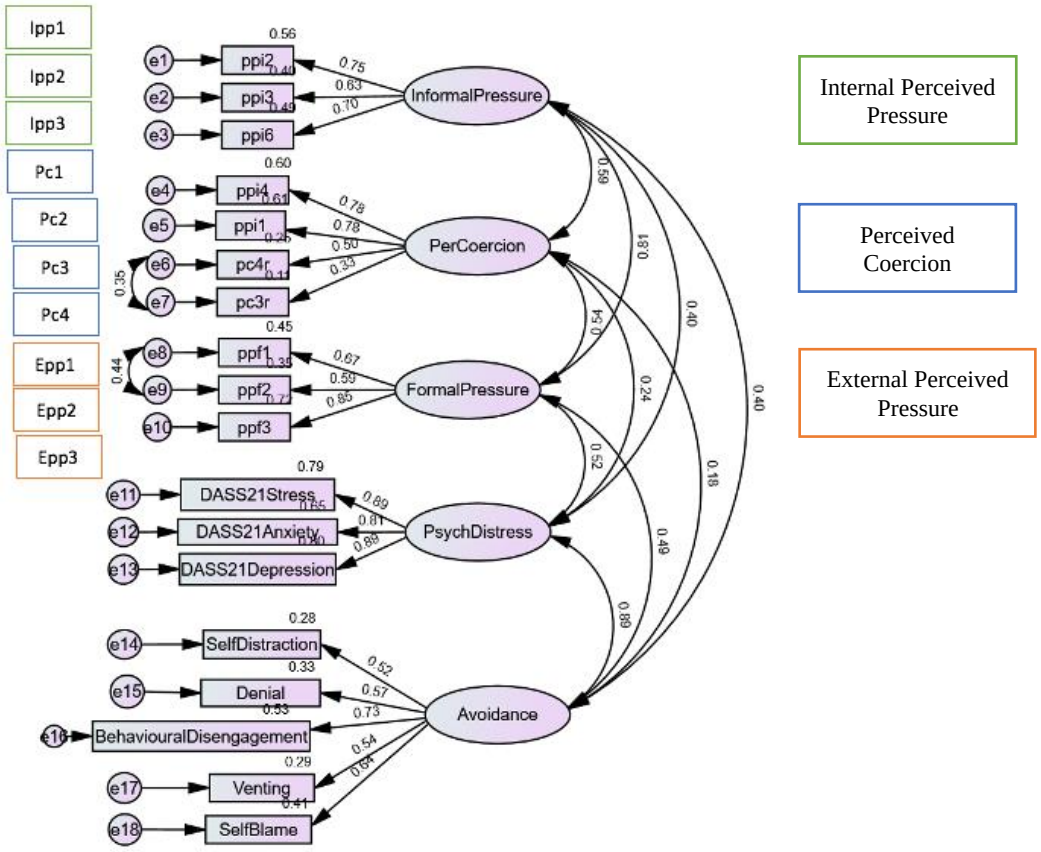


UK Thematic Map



Note. Circles= Higher-Order Themes, Solid Rectangles= Intermediary Themes; Dotted Rectangles = Subthemes; Dotted lines= suggested associations between themes; Solid line= relationship between themes, intermediary themes and subthemes; Italic writing=English translation.

Appendix 9: CFA individual factor loadings and visual output from Amos



Note. New labels shown in boxes next to relevant item/factor. Ipp1= I worried about not living up to my profession if I refused, Ipp2= I worried about the potential burden on my colleagues if I refused, Ipp3= I worried about what others would think of me if I refused, Pc1= My peers expected me to work with patients with COVID-19 in spite of the risk, Pc2= Superiors expected me to work with patients with COVID-19 in spite of the risk, Pc3= I had a lot of control over whether I worked with patients with COVID-19, Pc4= If I wished to, I could have refused to work with patients with COVID-19, Epp1= Somebody pressured me to work with patients with COVID-19, Epp2 = Somebody forced me to work with patients with COVID-19, Epp3= I worried about the potential personal consequences of refusing.

Appendix 10: Standardised Coefficients from Latent Path Analysis Predicting Avoidance Coping and Psychological Distress

Variables	Avoidance Coping						Psychological Distress					
	Structural Model 1		Structural Model 2		Sensitivity Analysis		Structural Model 1		Structural Model 2		Sensitivity Analysis	
	β	*p*	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
IPP	.29	.095	.28	.099	.28	.091	.21	.072	.21	.059	.07	.484
FPP	.37	.023	.37	.020	.39	.008	-.02	.867	-	-	-	-
PC	.39	.031	.38	.026	.35	.027	-.02	.842	-	-	-	-
PSS	1.45	.003	1.40	.004	1.37	.003	.04	.910	.18	.348	.02	.902
IPP x PSS	-.28	.360	-.29	.346	-.32	.290	-.33	.105	-.31	.110	-.12	.515
FPP x PSS	-.06	.774	-.07	.770	-.11	.579	.02	.911	-	-	-	-
PC x PSS	-1.19	.006	-1.13	.006	-1.02	.007	.15	.588	-	-	-	-
Avoidance	-	-	-	-	-	-	.83	<.001	.82	<.001	.81	<.001
Country (UK)	-	-	-	-	.06	.302	-	-	-	-	.21	<.001
Nurse	-	-	-		-.01	.852	-	-	-	-	.12	.003
Doctor	-	-	-	-	-.02	.815	-	-	-	-	-.08	.056
Yrs of Exp	-	-	-	-	-.14	.008	-	-	-	-	.02	.612

Note. IPP= Internal Perceived Pressure, EPP= External Perceived Pressure, PC= Perceived Coercion, PSS= Perceived Social Support. Standardised coefficients and significance levels. Country (UK=1, Norway=0). Nurse (Nurse=1, Doctor=0, Other=0). Doctor (Doctor=1, Nurse=0, Other=0). Social Support (High Social Support =1, Other Social Support = 0). *, $p < .05$; **, $p < .01$; ***, $p < .001$.