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Covid-19: Mostly Social Studies (February-March 2021)

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A complete listing of his writings at http://psychologywritings.synthasite.com/.

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1. COVID-19 SOCIAL STUDY

1.1. RELATIONSHIPS

The COVID-19 Social Study was begun on 21st March 2020 with a volunteer sample of UK-dwelling adults. Data were collected weekly until 21st August 2020 (Sommerlad et al 2021).

A number of different behaviours, variables, and relationships have been and are being analysed from this study.

Sommerlad et al (2021) focused on social relationships/contact and depression during the UK lockdown in March-June 2020. Over 71 000 participants were involved.

Two aspects of social relationships were measured:

a) Structural (number and type of interactions) - Two questions were used:

"(1) The number of days during the past week on which participants had at least 15 min of face-to-face social contact (including with those with whom they live).

(2) The number of days during the past week on which participants had at least 15 min of telephone or video social contact" (Sommerlad et al 2021 p2).

The response options were 0-7 days.

b) Functional (experience of the interactions) - This was measured by the Perceived Social Support Questionnaire (Kliem et al 2015), which has six items including, "There is someone very close to me whose help I can always count on" (scored on a five-point scale).

Depressive symptoms were measured by the Patient Health Questionnaire (PHQ-9) (Kroenke et al 2001). This involves nine symptoms including "little interest or

pleasure in doing things", "feeling down, depressed or hopeless", and "poor appetite or overeating" in the last two weeks (rated as 0 ("not at all") to 3 ("nearly every day")). Demographic details, and usual level of social contact were among the potential confounders measured.

Overall, 15% of the sample reported 0 days social contact and 8.5% for phone/video contact compared to 64% for daily contact and 30% phone/video contact. On perceived social support, 20% of the sample was classed as "low" and 50% as "high", while 29% of respondents scored above the threshold for depression on the PHQ-9.

There was a negative association between face-to-face contact and depression score, and likewise for phone/video contact. Higher perceived social support was associated with lower depression score, irrelevant of actual contact.

It was calculated that if having no daily face-to-face contact was an odds ratio of 1 for depression, then daily contact was 0.7, and 0.8 for daily phone/video contact. If low perceived social support was 1, then high social support was an odds ratio of 0.1 for depression.

So, in summary, the main finding was that "having more or better social relationships was associated with lower depressive symptoms and risk of depression..." (Sommerlad et al 2021 p5). This is consistent with previous research (eg: Santini et al 2015 - review of 51 studies).

Establishing the direction of an association can be difficult - low social relationships could lead to depression or depression could lead to low social relationships. But Sommerlad et al (2021) explained: "What is unique in this study is that quantity of social relationship was affected by law for everyone in the UK. While people who are depressed may usually decide not to see people socially, during this period everyone had their social contact restricted" (p5).

Note that the sample in this study was not nationally representative, but was primarily respondents to an email sent to individuals on databases of people who had consented to be contacted about health research. The majority were female (75%), White ethnicity (94%), and university educated (67%), with an average age of 49 years old.

Other methodological issues included:

i) All measures were self-reports.

ii) There was no information about study drop-outs, "which may have been higher in those with depressive symptoms" (Sommerlad et al 2021 p8).

iii) Qualitative data about the nature of social interactions were not collected.

iv) The choice of "15 minutes" of contact was based on advice by the UK Government about "social distancing" at the time of the start of the study (Sommerlad et al 2021).

Sommerlad et al (2021) ended thus: Our "findings have immediate clinical and public health relevance. The UK has already had further periods of physical and social distancing due to covid-19 and these are likely in the future, so identifying high-risk groups for negative effects is important. Social isolation is associated with other adverse cognitive... and physical effects..., so public health policy should facilitate social contact, where possible, to alleviate the burden on mental health especially for those who live alone and are accustomed to contact with others. Individuals should use digital methods of communication when in-person meetings are limited. There is need for actions to improve social connectedness throughout this and potential future pandemics... to reduce the potential for mental illness arising from social isolation" (p9).

1.2. COMPLIANCE TO GOVERNMENT RECOMMENDATIONS AND TRUST

Wright and Fancourt (2020) reported data the Covid-19 Social Study on predictors of compliance with pandemic control measures.

Non-pharmaceutical interventions (NPIs), like staying at home, and limiting groups gathering, require individuals to change their usual behaviours to comply. "Though some measures have the force of law, in democratic societies unwilling to exercise authoritarian power, compliance requires voluntary co-operation. Yet, ensuring high levels of compliance has been a challenge" (Wright et al 2020 p3).

Previous research on predicting compliance in epidemics generally as well as with covid-19 recommendations is "not always consistent", but certain variables emerge including socio-economic and demographic characteristics (eg: younger people and males lower compliance), personality traits (eg: extraverts less

compliance), pro-social motivations, and the lived environment (eg: household overcrowding) (Wright and Fancourt 2020).

Differences in findings between studies depend on the situation studied (eg: the opportunities for non-compliance), while compliance levels are not necessarily stable across time. Previous research is mostly cross-sectional (Wright and Fancourt 2020).

The Covid-19 Social Study collected data on a weekly basis, and Wright and Fancourt (2020) concentrated on data from 1st April to 31st August 2020. A seven-point response scale was used with the question, "Are you following the recommendations from authorities to prevent spread of covid-19?".

Three groupings of explanatory variables were measured:

- Demographics and socio-economic position (eg: age; gender; annual income).
- Personality traits (eg: "Big Five" [1]; optimism; risk-taking).
- Social and pro-social factors (eg: empathy; neighbourhood attachment).

Overall, the average level of compliance dropped over the study period. Specific factors associated with low compliance included younger age, low Conscientiousness, high risk-taking attitudes, low empathy, and higher income. It was observed that "the size of some of these associations was larger in later months when less stringent lockdown and household mixing measures were in place, suggesting context-specific effects. The results also showed that compliance fell faster across some groups, suggesting the importance that public health communications adopt a plurality of messages to maximise broad adherence" (Wright and Fancourt 2020 p1).

Higher income as a predictor of low compliance was an interesting factor. Wright and Fancourt (2020) explained that "individuals with higher incomes had higher initial compliance but faster decreases over time. It is possible that these individuals were able to maintain a strict compliance initially due to not facing any financial barriers such as an inability to pay bills that may have driven to rules being broken in a search

[1] Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C).

for work. However, as the pandemic continued, greater wealth and a sense of privilege or a lack of financial fear over fines may have driven a more relaxed approach to compliance. Given research showing that the non-compliance of people in positions of power has a negative impact on societal trust and others' compliance..., this highlights the importance of the consistent application of pandemic rules amongst all groups" (p13).

Wright et al (2020) considered a variety of other factors in relation to compliance using the Covid-19 Social Study data. The authors outlined the previous research on these different factors:

a) Anxiety and depression - "On the one hand, depression and anxiety are related to lower extraversion, sociability and increased risk aversion, which could increase compliance. On the other hand, depression is associated with lower self-efficacy and, in one study, lower altruism, factors which are associated with lower adherence, and depression is linked to non-compliance with medical treatments, more generally. Evidence from previous pandemics found that state anxiety was related to higher compliance" (Wright et al 2020 p3).

b) Knowledge about the disease - Increased knowledge and information could increase compliance as individuals understand the logic of NPIs, or to increased fatalism if individuals feel that infection is inevitable.

c) Loneliness - This is associated with lower compliance, but previous cross-sectional studies have "the possibility of reverse causality" (Wright et al 2020 p4).

d) Time-use - Individuals with activities that make staying at home more pleasant are more likely to comply with lockdowns, for example.

The above factors have only been examined in relation to covid-19 with cross-sectional studies (Wright et al 2020), thus the use of the longitudinal data of the Covid-19 Social Study. Data from 1st April to 22nd June 2020 covering 51 600 adults were specifically analysed by Wright et al (2020). The different variables were often measured by a single item (eg: "In the past week, how happy did you feel?"; "How would you rate your knowledge level on covid-19?"). Anxiety and depression, however,

were measured by standardised questionnaires.

Confidence in the government was the only factor significantly associated with future compliance with NPIs [2]. The researchers admitted surprise that the other variables were not significant. They stated: "One possibility is that anxiety, depression and well-being have multiple, counter-vailing effects on compliance behaviours, meaning that the net association is context specific" (Wright et al 2020 p10).

It should be noted that the measure of compliance was self-reported. "While the salience of the pandemic may mean individuals recall compliance well, responses may be influenced by social desirability concerns. Less compliant individuals are also likely to be less knowledgeable about covid-19 guidelines and so may be unable to accurately judge their own non-compliance" (Wright et al 2020 p11). Also the study measured compliance intention in the future, not specific past compliance behaviours.

It is also important to highlight again the self-selecting nature of the sample. Wright et al (2020) admitted: "It is likely that individuals who participated in the study had a higher interest in helping tackle the pandemic than the general population at large. This interest may manifest as a higher propensity to comply with guidelines. Another issue is that government guidelines became less stringent across the study period" (p11).

Confidence and trust in the official response to covid-19 in the UK has been further studied in the Covid-19 Social Study, particularly around May 2020 when Dominic Cummings, senior aide to the Prime Minister, Boris Johnson, was seen to have broken lockdown rules, and then did not resign (or was not sacked) immediately. Data from over 40 000 individuals in England, Scotland and Wales for 24th April to 11th June 2020 were reported by Fancourt et al (2020).

Confidence in the relevant government (in England the UK government, and the devolved authorities in the other two countries) was rated on a seven-point scale [3]. There was a steep decline after 22nd May 2020, when

[2] The importance of confidence and trust in the government has been shown in previous epidemics (eg: Liberia and Ebola; Blair et al 2017). While during the H1N1 influenza pandemic in the Netherlands, for example, it was found that trust and compliance only went together at the start (van der Weerd et al 2011).

[3] "How much confidence do you have in the UK GOVERNMENT that they can handle Covid-19 well? If you live in a devolved nation, we ask you to focus on the government within your country (e.g. the Scottish government / Welsh government / Northern Ireland Executive)" (Fancourt et al 2020 supplementary material).

Cummings's actions were first reported in the press, but only in England for the UK government. At the same time, there was "no evidence of a decrease in confidence in the health system or confidence in acquiring essentials [food and medication]" (Fancourt et al 2020 p464).

1.3. INTENTION TO VACCINATE

Smoking is an indicator of poor health behaviours generally, and this may include lower uptake of vaccination (Jackson et al 2020). Furthermore, "low certainty evidence suggests current smokers are around 30% less likely than never smokers to become infected with covid-19. The finding has received coverage in social and traditional media. It is possible that smokers may mistakenly interpret this as meaning a vaccine offers little benefit to them and be less likely to take up a vaccine when offered" (Jackson et al 2020 p3) (appendix 1A).

Jackson et al (2020) used the Covid-19 Social Study data to investigate if there was an association between smoking status and intentions to be vaccinate for covid-19. This was formalised as two research questions:

i) Is there a difference in negative attitudes towards vaccines in general between current, former, and never smokers?

ii) Is there a difference in intentions to take the covid-19 vaccine between the three groups?

Negative general attitudes towards vaccines was measured with the Vaccination Attitudes Examination (VAX) Scale (Martin and Petrie 2017), which has twelve items covering mistrust of vaccine benefits (eg: item: "I feel safe after being vaccinated"), concern about unforeseen effects (eg: "I worry about the unknown effects of vaccines in the future"), belief in commercial profiteering of manufacturers (eg: Authorities promote vaccination for financial gain, not for people's health"), and a preference for natural immunity (eg: "Natural immunity lasts longer than a vaccine"). Each item is scored on a six-point scale.

Intention to vaccinate against covid-19 was measured by the question: "How likely do you think you are to get a covid-19 vaccine when one is approved?", with the response options, "very unlikely" (1) to "very likely" (6).

Smoking status was categorised as "never", "ex", or "current" (subdivided into light (≤9 cigarettes per day), moderate (10-19 per day), and heavy (≥20 per day)).

Data from 7th September to 5th October 2020 covering over 29 000 participants were analysed.

Concerning the first research question, current smokers were more likely to be high VAX scale scorers (ie: negative attitudes towards vaccines), followed by former smokers and the least, never smokers.

Current smokers were less likely to intent to take the covid-19 vaccine when available (50% scored "likely" or "very likely") compared to 66% of never smokers and former smokers. This is research question number two answered.

Jackson et al (2020) explained that it was "not clear in this case whether differences are attributable to smokers being aware of the link between smoking and lower risk of covid-19 infection, or are the product of a more general mistrust of vaccines or propensity to engage in health-risk behaviours" (p8).

Note that the study asked about intention to vaccinate in the future as no covid-19 vaccines were available at the time of data collection.

1.4. GAMBLING

Research on financial crises in Greece and Iceland in the 2000s found an increase in the maladaptive coping behaviour of gambling (Fluharty et al 2020). Is this finding applicable to the covid-19 situation?

Online gambling has seen an increase in activity in 2020, according to the industry. For example, the UK Gambling Commission reported a 4% increase in new online gamblers during lockdown in spring 2020 (Fluharty et al 2020) (appendix 1B).

Fluharty et al (2020) used data from the Covid-19 Social Study for 21st March to 21st August 2020 covering around 20 000 UK adults. Gambling behaviour was measured in three ways:

a) Engagement in a list of forms of gambling (eg: "scratch cards"; playing a lottery) since lockdown started.

b) Frequency compared to pre-lockdown.

c) Frequency across mid-2020.

In response to (a), 0.5% of the sample admitted to gambling daily and 13% 1-2 times per week. Among gamblers, 9% reported an increase since pre-lockdown and during 2020 (with the majority having no change).

The demographics of the small group of high and increasing gamblers (ie: potential problem gamblers) were analysed. They were more likely to be male, over sixty years old, to be employed, have lower educational qualifications, and live in overcrowded conditions. High gambling was associated with high boredom, high frequency alcohol use, smoking, and high risk-taking attitudes.

Among those who increased their gambling during lockdown, it was found that nearly half ceased gambling after lockdown.

Most of the demographic and risk variables have been observed in other studies. However, unemployment has been associated with gambling previously. Fluharty et al (2020) considered the difference in their findings: "we did not assess whether those who were employed were on furlough and therefore not active in work during the lockdown. It is therefore possible that gambling may have increased more amongst those who were usually employed but lacked work across these months".

Data were not collected about amount spent on gambling.

1.5. INTERNATIONAL COMPARISONS

Quarantine, curfew, and stay-at-home/lockdown measures have been widely implemented in different countries. Such policies have an impact on individual mental health. Varga et al (2021) compared four Western European countries - Denmark, France, the Netherlands, and the UK - using publicly available data resources for the period March-June 2020. In the UK, the data came from the Covid-19 Social Study (table 1.1).

The outcome variables were level of worry about covid-19, general anxiety, and loneliness. The different scales and measures from each of the countries were standardised.

Worries and anxiety related to covid-19 was high in each country at the start of the lockdown, and gradually declined with reopening of shops etc. Anxiety was highest in the UK at the end of March 2020.

The prevalence of self-reported loneliness varied from 7% (in the Netherlands) to 18% overall, but was higher among younger respondents (<30 years old), and those with a previous history of mental illness.

Country	Data Source (sample size)	First Lockdown Dates (2020)
Denmark	Danish National Birth Cohort (n = 24724) Citizen Science Cohort (n = 11 494) Epinion (n = 6385)	13th March - 15th April
France	Constancies (n = 29 974) TEMPO (n = 729)	17th March - 11th May
Netherlands	Lifelines Covid-19 Cohort (n = 61 240)	16th March - 11th May
UK	Covid-19 Social Study (n = 70 538)	22nd March - 10th May

Table 1.1 - Data sources and the first lockdown dates in the four countries.

The four countries showed "more similarities than differences", though the Netherlands was lowest overall on the outcome measures, which the researchers did not believe related to the lockdown alone (comparable in length and restrictions to the other countries). Varga et al (2021) argued that the data source was key - the Lifelines Covid-19 Cohort - ie: individuals from "the northern part of the Netherlands, where covid-19 infection rates were much lower compared to national levels. This was possibly due to the delayed arrival of the virus compared to the southern part of the country, the lack of large-scale gatherings, better testing infrastructures and that there are fewer densely populated areas in the northern part of the Netherlands. Other reasons for better mental-health outcomes in the Lifelines cohort could also be the Netherlands' 'intelligent lockdown' strategy combined with high trust in the government; such factors might have helped the population maintain lower levels of worries and loneliness during the first months of the crisis" (p13).

This study used data from over 200 000 individuals, but these were not necessarily nationally representative samples. Multiple measures were taken over time, and standardised questionnaires were used in most cases. But the data were, Varga et al (2021) pointed out, "self-reported and thus prone to various biases associated with this type of data collection. The two most important are response bias (systematic error between responses and true values) and non-response bias (differences in true values between responders and non-responders). While mental-health outcomes are generally prone to under-

reporting, it is difficult to speculate whether such biased reporting exists in our study's surveys, as the surveys were largely focused on psychosocial well-being during the covid-19 crisis. We find it unlikely that response bias would significantly alter our findings. In most cohorts, an overarching theme is that the individuals who completed the surveys are generally more likely to be older, to be women and have a higher educational attainment compared to non-responders... Our data had low rates of missingness. However, we assume that those who opted not to respond to specific questions about mental health might systematically differ from those who chose to respond. Namely, it is likely that non-responders to these questions have worse outcomes compared to responders, thus biasing our observed results towards a more optimistic overview of mental health landscapes" (p15).

The data came from four high-income Western European countries. So, "future work should include a more systematic assessment of mental health outcomes across both high- and low-income countries, across various regions of the world. This is especially important as it is likely that various populations have different perceptions of public health authorities, attitudes towards governments, and possess different core ethical, moral, and cultural values, and these features might play a key role in how mental health outcomes are shaping in response to governmental interventions" (Varga et al 2021 p16).

1.6. APPENDIX 1A - VACCINATION ISSUES

A number of questions were being asked in early 2021 about vaccination including (Le Page 2021b):

- Does one dose of the two recommended lead to protection from covid-19? immediately, no, because it takes 2-3 weeks for protection to fully develop, and most vaccines were developed with two doses in mind. Also some individuals may still get ill even after vaccination (eg: 1 in 20 according to Pfizer/BioNTech; Le Page 2021b).

- Are vaccinated individuals still infectious? A high chance of yes, though there is limited evidence at this stage.

- Is one dose of two enough? Not for vaccines designed

for two doses. There are debates over the effectiveness of one dose alone for these vaccines (eg: 52% for Pfizer/BioNTech vaccine; Le Page 2021b).

Disputes between richer countries over contracts for millions of vaccine doses were put into perspective by the director-general of the WHO, Tedros Adhanom Ghebreyesus on 18th January 2021: "More than 39 million doses of vaccine have now been administered in at least 49 higher-income countries... Just 25 doses have been given in one lowest-income country. Not 25 million, not 25 000, just 25" (quoted in Le Page 2021a).

Vaccinating the vulnerable individuals first and leaving the "mixers" (individuals who meet others) unvaccinated has the potential to produce "escape variants" of the virus, according to modelling by Julia Gog (quoted in Le Page 2021d). But modelling always involves assumptions, and the issue is averting deaths now rather than what might happen in the future (Alessandro Vespignani in Le Page 2021d).

The two key issues in mid-March 2021, for The Leader (2021), were "equitable distribution of vaccines across the world and persuading those who are hesitant that vaccination is in their best interests and in the interests of those around them" (p5).

To encourage vaccination in the USA, for example, incentives were being offered, like reduced social distancing and opportunities to meet other households for fully vaccinated individuals. But there is a worry about allowing vaccinated and unvaccinated iindividuals to meet (Vaughan 2021).

The purpose of vaccination is herd immunity, but this may be challenged by issues with vaccination of children (eg: lack of clinical trial data) (Lu 2021).

A related issue is the re-opening of borders to travellers (both literally and without quarantine for the new arrivals). This is especially challenging for countries, like New Zealand, Australia, Taiwan, and Vietnam, that have had little or no community transmission of SARS-CoV-2. A situation may develop where covid-19 is eliminated in some parts of the world, while being endemic in others (ie: present and the population lives with it) (Lu 2021).

There is anecdotal and informal evidence that

vaccines help individuals with "long covid" symptoms. Sufferer, Gez Medinger surveyed 473 other "long covid" sufferers on Facebook who had received their first dose of vaccine. About half reported no change in symptoms two weeks post-vaccine, around one-fifth had got worse, but the remainder (nearly one-third) said they felt better (Wilson 2021).

With vaccination has come quantitative anti-body tests that measure the anti-body response ("immunity trackers"). These new tests record the level of anti-bodies rather than just the presence of anti-bodies or not. Thomson (2021) noted three tests on the market, and their support from groups like "Testing For All".

The tests quantify the anti-bodies that respond to the outer spike protein of the SARS-CoV-2, but they do not measure other aspects of immune function, nor the effectiveness of anti-bodies to SARS-CoV-2 variants (Thomson 2021). Also the relationship between anti-body activity in the laboratory and real-world immunity is unclear (George Kassiotis in Thomson 2021).

1.6.1. Disease Variants

Concerns over variants of SARS-CoV-2, like "P.1" that emerged in Manaus, Brazil, that could evade anti-bodies and reinfect individuals (Taylor 2021). "B.1.1.7" (that appeared in southern England) and "B.1.351" (emerged in South Africa) variants appear to be more transmissible. Data on death rates for the former suggest a higher risk (Le Page 2021c).

Variants of coronavirus are detectable in sewage before tests on humans show them - eg: Swiss sampling in mid-December 2020 detected the B.1.1.7 variant in sewage two weeks before the first confirmed human case in that country (Lawton 2021).

1.7. APPENDIX 1B - ITALIAN STUDY

Salerno and Pallanti (2021) investigated the risk of increased chronic gambling and covid-19 lockdown with a web survey in Italy in March-April 2020 (ie: during lockdown). A convenience sample of 254 adults completed the survey.

After reading a description of gambling and the different types, respondents reported their behaviour in

the past three years, or whether they had started since the lockdown began. The severity of gambling, based on the past week, was measured by the Pathological Gambling Adaptation of Yale-Brown Obsessive-Compulsive Scale (PG-YBOCS) (Pallanti et al 2005). Other measures were made of perceived stress, depression, anxiety, and psychological well-being.

Sixty respondents were classed as "pathological or chronic gamblers" according to their PG-YBOCS score, of which seven had began gambling in the previous week (ie: new gamblers). Chronic gamblers were more likely to be male, and "many of them were unemployed or business owners" (Salerno and Pallanti 2021 p5).

Salerno and Pallanti (2021) continued: "Even though it is not clear if such work situations as precariousness or unemployment play a role in the development and/or maintenance of gambling behavior, it is important to consider that during the lockdown period hospitality and travel industry was hit hard, as were the owners of restaurants and clubs who had to close, with the concern that they could no longer bear the costs of running their business. In fact, what was then a concern turned out to be a reality, with many of them finding themselves unable to reopen due to the reduction in tourism and the inability to meet operating costs" (p5).

Business owners and unemployed individuals as high risk can be explained by prospect theory (Kahneman and Tversky 1979). In situations of gains, individuals prefer certainty to a gamble (eg: prefer £100 certain gain to a 30% chance of £200 gain), but the opposite in a situation of losses (eg: £100 certain loss less preferred to a 30% chance of no loss or £200 loss). As losses increase, individuals become more risky. This can be applied to the specifics of gambling, or to life.

Non-gamblers were less stressed, depressed and anxious than gamblers, and had higher psychological well-being scores. This fits with the previous research that shows "gambling as a means to cope with negative emotions in people characterised by high psychological distress..." (Salerno and Pallanti 2021 p5)

The following methodological limitations are noted with this study:

i) The study was an anonymous web survey, which did allow collection of data during the lockdown, but not the further exploration of gambling patterns, motivation and severity as with face-to-face interviews.

ii) The PG-YBOCS is a well-established measure, but it was originally designed as part of a semi-structured interview rather than as self-reported. The self-rated version, however, is seen as reliable and valid (Salerno and Pallanti 2021).

iii) No data collected on "pre-existing psychological vulnerability factors" for gambling, like substance abuse, or family-related stress.

iv) The sample was recruited via social media, and via snowball sampling (ie: respondents forwarded the invitation to participate to their social media friends).

2. HEALTHCARE HEROES (OR VIRAL HEROISM)

2.1. NOT HELPFUL

During the covid-19 pandemic, the idea of healthcare workers as heroes has emerged in the media. Although this is a representation of gratitude, Cox (2020) raised concerns: "The challenges faced by healthcare workers in the current pandemic are substantially greater than those encountered in their normal work, and it is understandable that the language of heroism has been evoked to praise them for their actions. Yet such language can have potentially negative consequences" (p510) [4].

Urmson (1958) described heroic actions as "supereregatory" - ie: "morally excellent actions that go beyond the duty of the agent: they are actions which are good, but not strictly required" (Cox 2020 p510) [5]. There is a personal cost to this action (Cox 2020).

At one level, Cox (2020) argued, healthcare workers are always performing heroic actions (eg: risk of needlestick injury and infection when treating individuals with HIV/AIDS or working in environments with drug-resistant pathogens). "In the covid-19 pandemic, the risks to healthcare workers are appreciably greater than those encountered in normal practice. In addition to risk of contracting the infection, other costs include 'physical and mental exhaustion, the torment of difficult triage decisions, and the pain of losing patients and colleagues' [Editorial 2020]" (Cox 2020 p511) [6].

Hopkins (2021) was blunt: "While at first it seemed that physicians were described as heroic because they were doing something especially good, it turns out that they are simply doing what they are supposed to do

[4] Hopkins (2021) noted that the term "hero" has been used generally to describe "a person notable for courageous acts, for nobility of character, for having special abilities, for having special achievements, for being a role model, for being chosen by destiny to accomplish great things, for being so famous as to be remembered for ages, for mythically exemplifying psychological development, and for simply being the protagonist of a story" (p3).

[5] This term supererogatory "essentially marks someone as a kind of utilitarian saint or utility hero — an unusually caring person who prioritises others' happiness and suffering over their own individual happiness and suffering in order to achieve a greater good while under no formal requirement to do so" (Hopkins 2021 p3).

[6] Hopkins (2021) quoted this example from New (1974): "A doctor in a plague-struck town has a duty to look after his patients, but a doctor who comes to help from the next province does not have a duty to do so. Both may be saintly or heroic, but only the second is so beyond the call of duty" (pp3-4).

professionally" (p10).

Kraft-Todd and Rand (2019) distinguished four elements of heroism generally - the risk/cost; the good achieved; how common the behaviour is; and whether the behaviour is expected as part of the job. The researchers created scenarios based on these elements (eg: jumping on a grenade to save fellow soldiers), and asked participants recruited online to rate them. Two elements were significantly associated with heroism - how common the action is, and the risk/cost to the individual. So, performing risky/costly acts, which are uncommon, were perceived as heroic (Hopkins 2021).

The language of "healthcare heroism" can stifle discussion of what is expected of such workers (ie: the "normal" duty of care or duty to treat). "This duty of care is a 'special' positive moral duty, which arises from the relationship between the healthcare worker and the patient. Special duties have two key characteristics: (1) typically they are role related, and are signified by an overt acceptance of the duty, and (2) they can obligate people to incur greater risk in performing the duty than we might expect others to" (Cox 2020 p511). Sokol (2006) criticised this concept as "in the medical context, [it] is often invoked as a sort of quasi-biblical commandment, akin to 'do not lie' or 'do not murder'" (quoted in Cox 2020). Attempts, though, to define the limits of the duty to care/treat have proved difficult. For example, one working group "could not reach consensus on the issue... particularly regarding the extent to which healthcare workers are obligated to risk their lives" (Singer 2003 quoted in Cox 2020) [7].

There is a reciprocal relationship (or social contract) involved where the duty to care is in exchange for individual benefits (eg: financial remuneration; public trust and esteem), and institutional obligations (eg: appropriate protective equipment). Reid (2005) noted that "the public play a role in supporting a healthcare system when they pay taxes or vote for governments that support the healthcare system. In times of pandemic, the public also fulfil their obligations to healthcare workers by following public health guidance — for example, by adhering to social distancing measures, or by

[7] In terms of the professional obligation, the American Medical Association Ethics Code in 2016 stated: "Because of their commitment to care for the sick and injured, individual physicians have an obligation to provide urgent medical care during disasters. This obligation holds even in the face of greater than usual risks to physicians' own safety, health, or life. However, the physician workforce is not an unlimited resource. Therefore, when providing care in a disaster with its inherent dangers, physicians also have an obligation to evaluate the risks of providing care to individual patients versus the need to be available to provide care in the future" (quoted in Hopkins 2021).

taking actions to minimise the spread of infection such as covering their mouth when coughing" (Cox 2020 p512).

Cox (2020) went to the heart of the matter: "A public narrative that concentrates on individual heroism fundamentally fails to acknowledge the importance of reciprocity. Individual heroism does not provide a firm basis on which to build a systematic response to a pandemic: there must be recognition of the responsibilities of healthcare institutions and the general public" (p512).

2.2. PERCEPTIONS OF HEROISM MORE GENERALLY

Franco et al (2018) described heroism as "long ignored" by researchers, but in the 21st century it is experiencing "a renaissance of interest".

Zimbardo's (2007) book, "The Lucifer Effect" was important in the renewed interest, and it moved the focus from the human capacity for evil to the possibilities of heroism (Franco et al 2018).

Heroism is simply defined along the lines of of pro-social behaviour in the face of personal risk. But Franco et al (2011) refuted such a simple definition, and argued that heroism is a complex behaviour with many paradoxes. They stated: "Heroism is a social attribution, never a personal one; yet the act itself is often a solitary, existential choice. It is historically, culturally and situationally determined, thus heroes of one era may prove to be villains in another time when controverting evidence emerges; yet some heroes endure across the centuries. Moreover, the very same act accorded hero status in one group, such as suicide bombing, is absolutely abhorrent to many others" (Franco et al 2011 p99).

These writers favoured the "banality of heroism" (Franco and Zimbardo 2006) (or "small-h heroism"; Farley 2011 quoted in Franco et al 2018), which holds that "contrary to the idea of the heroic elect (Hughes-Hallet 2004), most people are capable of heroism with the right mindset and under certain conditions that call for heroic action" (Franco et al 2011 p100).

Franco and Zimbardo (2006) also talked of the "heroic imagination" to describe "the idea that it is possible to nurture a mind-set to help others in need, care for others compassionately, and to develop confidence in one's own ability to take heroic actions" (Franco et al 2018 p386).

The key ways of investigating the perceptions of heroes include:

a) Asking participants to think of a personal hero and explain the choice - eg: Sullivan and Venter (2010) found common characteristics including intelligent, loving, caring, talented, creative, and motivated.

b) Listing the traits of heroes - eg: Allison and Goethals (2011) found that eight trait clusters ("Great Eight") emerged from asking college students - smart, strong, caring, selfless, charismatic, resilient, reliable, and inspiring.

c) Hypothetical scenarios - eg: rushing into a burning building to save a trapped individual.

Franco et al (2011) presented three types of heroic action:

i) Martial (military) heroism - "physical risk duty-bound heroes" who go "above and beyond the call of duty". This is not just in war, but includes police officers, firefighters, and paramedics in everyday life.

ii) Civil heroism - "physical risk non-duty-bound heroism" (eg: emergency rescue of a civilian by a stranger).

iii) Social heroism - not necessarily involving physical risk, but other risks, like serious financial consequences or social ostracism, in "the preservation of a community-sanctioned value or standard that is perceived to be under threat" (Franco et al 2011 p100).

Franco et al (2011) outlined five elements of their operational definition of heroism:

- An act in the service of others in need;
- Voluntarily performed;
- Some awareness of the costs/risks involved;
- A willingness to accept "anticipated sacrifice";
- No anticipation of external gain.

Using these criteria, the researchers searched for "heroic" categories in newspapers and books, and on television over the last 100 years, and these were categorised into twelve heroic sub-types:

1. Duty-bound physical risk heroes.

2. Non-duty-bound physical risk heroes.

3. Religion figures - a long life of religious service.

4. Politico-religious figures - individuals affecting political and social change.

5. Martyrs - risking one's life for a cause.

6. Political or military leaders - leading in a time of difficulty (eg: war).

7. Adventurer/explorer/discoverer.

8. Scientific (discovery) heroes.

9. Good Samaritan - strangers helping those in immediate need.

10. Odds beater/underdog - "Individuals who overcame handicap or adverse conditions and succeed in spite of such negative circumstances, thereby provide a social, moral model for others" (Franco et al 2011 p102).

11. Bureaucracy heroes - standing firm on principles within an organisation.

12. Whistle-blowers - reporting illegal/unethical activities in an organisation.

Franco et al (2011) highlighted three paradoxes with heroic action:

a) A tension between praise and criticism - eg: the individual who runs into a burning building to save another is described as "foolhardy" at that moment, but as a hero when having succeeded.

b) Public vs personal - An act has to be seen by others to be lauded as heroic, yet the decision of the individual to act is personal. "The intensely public nature of the ascription of heroic status — perhaps viewed by millions as a viral video on the Internet — belies the profound interiority of the decision to act in a heroic manner. While the hero may later be lauded by throngs, this moment of decision is often taken in

complete aloneness, even if it is in the presence of others" (Franco et al 2011 p103).

c) Heroism both like and unlike altruism - Heroism and altruism are both pro-social behaviours, but Franco et al (2011) argued that "the level of risk incurred in altruism is considerably lower than the minimum risk threshold for heroic status" (p103). Thus, heroism can be described as "altruism plus risk" (Franco et al 2011).

Using the aforementioned conceptualisation of heroism, Franco et al (2011) collected data from 3 696 adults recruited via the Internet. Participants were presented with brief hypothetical scenarios (eg: "a civilian rescues someone from a burning building"), and asked if each was "heroic", "altruistic", or "neither heroic, nor altruistic". There were also real-life cases rated on a five-point scale ("not at all heroic" to "extremely heroic"). For example: "Robert G Falconer rescued Fred Johnson from burning in his home. Seeing flames in Johnson's house from his home across the street, Falconer went into Johnson's home and dragged Johnson out of the house" (Franco et al 2011 p105). Further questions included asking participants to define heroism.

In terms of the scenarios and cases, there was a high level of agreement among participants over military and civil heroism. For example, civilian fire rescue was categorised as heroic by 96% of respondents, and the reminder saw it as altruistic (except a very small number who chose the neither category). The social heroism cases, like politico-religious figures, had less agreement (eg: 75% chose heroic, 18% altruistic, and the remainder neither). Franco et al (2011) summed up that "the physical risk hero is viewed as more heroic than social heroes. These findings suggest that the prototypicality or centrality... of the immediate physical risk associated with martial and civil heroism overrides considerations more closely associated with social heroism such as overall risk accepted, length of risk period, and so forth" (p109). This can be called the "heroic imagination" in the public mind (Franco et al 2011).

Franco et al (2011) continued: "Broadly speaking, the descriptive and inferential results suggest that the taxonomy can be reduced to six primary heroic types: civil, martial, good Samaritans, politico-religious figures, whistleblowers, and those who challenge problematic bureaucracies" (p109).

Note that the majority of respondents to the survey were White American young adult males. The historical examples of heroism used were from the USA. Both these facts limit the generalisability of the findings (Franco et al 2011). The survey investigated heroism in retrospect (ie: when the outcome was known). But how to study it in "real-time"?

Related to this point, "examinations of personality after heroic act/status may not capture an individual's state prior to the event, as it is quite possible that the heroic action, the event that engendered that action, and its consequences, have enough emotional power to profoundly change a hero's outlook (both positively and negatively) and may even create long-term character changes" (Franco et al 2018 pp390-391).

3. EFFECTS AND ISSUES

3.1. SPREAD OF COVID-19

Covid-19 spreads more widely in densely populated areas, like slums and shantytowns (defined by the United Nations as "communities characterised by insecure residential status, poor structural quality of housing, overcrowding and inadequate access to safe water, sanitation and other infrastructure"; quoted in Sahasranaman and Jensen 2021). Around 30% of urban populations globally live in such areas, according to United Nations data, but this is 55% in sub-Saharan Africa, 31% in South Asia, and 21% in Latin America (Sahasranaman and Jensen 2021).

Sahasranaman and Jensen (2021) investigated the spread of covid-19 in slum and non-slum areas of the six largest cities in the global south (Mumbai (India), Cape Town (South Africa), Rio de Janeiro (Brazil), Dhaka (Bangladesh), Lagos (Nigeria), and Manila (Philippines)). Data on number of covid-19 cases were used in this modelling study.

The distribution of cases was not equal in a country, state/province, or city. A small number of neighbourhoods in the cities accounted for the majority of cases - those neighbourhoods were slums. Key in these areas was high average population density; "a critical mediator of the dynamics of infectious spread in a city, and that the urban poor in slums are starkly worse off in terms of epidemy outcomes" (Sahasranaman and Jensen 2021 p4).

The spread of covid-19 is reduced by physical distancing, and policies in slum areas to aid this have been successful (eg: Dharavi in Mumbai) (Sahasranaman and Jensen 2021).

"The immediacy of the crisis and its current impacts

on slum settlements requires health departments in developing countries to prepare specific guidelines for physical distancing in high-density settlements that are clearly communicated and can be implemented by slum dwellers, so that their exposure risks are minimised. Other immediate measures mooted to protect residents of slum settlements include institution of slum emergency planning committees, guarantee of payments to the poor, implementing strategies for healthcare, mobility, and solid waste collection, and training and deployment of community health workers" (Sahasranaman and Jensen 2021 p8).

3.2. EQUALITY ISSUES

3.2.1. Inequality

Editorial (2021) made this observation: "One of the consequences of the covid-19 pandemic has been to illuminate far-reaching health and socio-economic inequalities in many countries. The pandemic's impact has fallen disproportionately on the most vulnerable individuals and along racial, ethnic, occupational, and socio-economic lines. Inequalities in people's protection from and ability to cope with this pandemic and its tremendous societal costs stress the importance and urgency of the societal changes needed to protect population health and well-being in the future" (pe82).

Marmot et al (2020) gave a partial explanation for the inequalities as the last decade of austerity in the UK. They also advocated for government policies in this "once-in-a-generation opportunity", to "tackle the disadvantages faced by many that this pandemic has so devastatingly exposed" (quoted in Editorial 2021).

3.2.2. Deaths

In the UK, covid-19-related deaths in care homes have been high. Mukaetova-Ladinska et al (2021) speculated on the reasons - "insufficient testing in care homes to detect the virus and stop it from spreading. Also, elderly care home residents may not always show typical symptoms of covid-19. Joint use of audio and video devices including mobile phones (not sanitised adequately before sharing) has also been mentioned as a source of passing on the viral infection. Additional factors, including social isolation, poor sleeping

pattern, anxiety and psychological distress, may have all aggravated the problems in care homes" (p150).

3.2.3. Domestic Violence

Mittal and Singh (2020) provided a mini-review on domestic violence against women and covid-19 and lockdowns.

i) In crisis situations generally, violence against women increases - eg: during historical plagues; in countries after natural disasters. Economic insecurity is a key factor (Mittal and Singh 2020).

ii) Covid-19:

a) Increased reports of domestic violence cases in various countries during lockdowns - eg: a 5% increase despite a drop in overall crime in Australia (Mittal and Singh 2020).

On the other hand, women have found it harder to report violence as "the lockdown imposed to deal with covid-19 has granted greater freedom to abusers. It has become easier for the abusers to enforce control tactics by limiting the access of the victims to phones, internet, and other people" (Mittal and Singh 2020 p4).

b) Tackling the issue:

- eg: finding out - Bradbury-Jones and Isham (2020) recommended "constantly asking if people feel safe at home. However, it is very crucial that the people asking these questions have the time and emotional resources. It is often possible that the victims may communicate in subtle and indirect ways, which can be easily missed" (Mittal and Singh 2020 p4).

- eg: making sure support are available and/or continue to remain open.

- eg: "alerting system" in "uncommon" places and ways, like in groceries and pharmacies (as In France), or the use of code words (as In Australia) (Mittal and Singh 2020).

3.3. EFFECTS OF COVID-19

3.3.1. Male Reproduction

SARS-CoV-2 uses transmembrane serine protease 2 (TMPRSS2) and the receptor angiotension-converting enzyme-2 (ACE2) to infect host cells. Though it is "primarily a respiratory disease", damage to other organs that involve ACE2, like the cardiovascular system, the gastro-intestinal tract and the liver, has been reported in covid-19 patients (Tian and Zhou 2021).

The testis also express ACE2 in different cell types (Tian and Zhou 2021). Does this mean that SARS-CoV-2 can impair the male reproductive system?

There is preliminary evidence of abnormal levels of sex hormones and declining sperm quality in men during and after recovery from covid-19 (Tian and Zhou 2021). For example, Ma et al (2021) reported decreased sperm number in males recovering from covid-19. Talking generally, Tian and Zhou (2021) stated that the "duration and severity of these abnormalities and their potential impact on progeny are not known" (pR41).

But not all studies agree. For example, post-mortem tissue samples of covid-19 patients who died from severe symptoms do not all find the virus in the testis (Tian and Zhou 2021). "However, human tissue from autopsies studies is difficult to obtain and often inadequate for investigations of molecular mechanisms" (Tian and Zhou 2021 pR42).

There is research with SARS-CoV-1, which caused infections ("SARS") in 2003, and shares many characteristics of SARS-CoV-2, showing an impact on male reproduction (eg: virus detected in testicular tissues) (Tian and Zhou 2021).

Traditionally animal models like rhesus macaques "fail to mimic human reproduction physiology" (Tian and Zhou 2021 pR42).

Tian and Zhou (2021) considered the possible mechanisms of SARS-CoV-2 affecting male reproduction:

i) Direct invasion of sperm cells by the virus.

ii) The virus affects hormones linked to sperm production, say.

iii) A secondary viral infection-induced inflammation that affects the testes.

iv) Viral infection-triggered fever that affect reproductive physiology.

These mechanisms could work together in any combination, and any medications for covid-19 could also have an impact on the reproductive system (Tian and Zhou 2021).

Tian and Zhou (2021) favoured indirect effects (eg: iii and iv above). "Because of the low levels of ACE2 and TMPRSS2 expressed in the testis, the probability of SARS-CoV-2 infection in an ACE2-dependent manner remains relatively low" (Tian and Zhou 2021 pR42). Furthermore, Tian and Zhou (2021) reported no support for the sexual transmission of SARS-CoV-2 virus based on six small cohort studies and one case report available at the time of their writing. Such studies, however, "suffer from small sample sizes and the demographics of patients in convalescence after mild infection may have introduced selection bias" (Tian and Zhou 2021 pR39).

3.3.2. Neurocognitive Disorders

Just under 2% of over 65s have a first diagnosis of dementia between 14-90 days after covid-19 diagnosis (Mukaetova-Ladinska et al 2021).

Using the wider term of Neurocognitive Disorders (NCDs), which covers mental disorders caused by non-psychiatric illness, most commonly dementia, risk factors for post-covid-19 diagnosis include the societal experience of living with and with the pandemic (eg: social isolation; limited access to healthcare), and previous diagnosis of mental disorders (Mukaetova-Ladinska et al 2021).

Delirium is a risk for older adults. It is "an acute state of confusion, characterised by altered level of consciousness, disorientation, inattention and other cognitive disturbances" (Mukaetova-Ladinska et al 2021 p151), with adverse outcomes (included delayed neurocognitive recovery). "Under-detection of delirium during covid-19 infection may also contribute to the rise of NCD irrespective of the infectious agents, that is SARS-CoV-2 or other untreated medical conditions due to the access to medical care, or being undetected as it is the case for hypoactive delirium" (Mukaetova-Ladinska et al 2021 p151) [8].

What are the mechanisms by which covid-19 could lead

[8] Hypoactive delirium has key symptoms of drowsiness and inactivity, while hyperactive delirium is characterised by restlessness and agitation (Hosker 2017).

to NCDs? Possible answers are (Mukaetova-Ladinska et al 2021):

a) Hypoxic brain injury - ie: a shortage of oxygen to the brain.

b) The virus enters the brain via the blood circulation.

c) SARS-CoV-2 could enter the brain through the olfactory nerves.

d) Damage to the brain from the immune system's reaction to the virus.

e) Long-term stress of the pandemic affects the brain.

3.3.3. Drugs

EMCDDA (2020) outlined the effects of covid-19 and travel restrictions/confinement on "drug markets": "The most noticeable developments are linked to the emergence of new trafficking routes, on the one hand to compensate for disruptions caused by the suspension halting of commercial flights and on the other hand to avoid the more stringent control measures that were introduced at borders. While distribution appeared mostly unaffected, purchasing drugs by using mobile applications and through the darknet appears to be playing an increasing role in some countries" (p2).

The effect on drug use and drug-related harms is seen in the increased consumption of psychoactive drugs and the mental health problems associated with insecurity, and in the reduction of drug-related health services as the focus of health services was upon covid-19.

Ismael et al (2021) worried about "a risk for collision of two epidemics: covid-19 and substance use" (p2).

There are a number of strands of research on these two "pandemics":

i) Increased risk of covid-19:

a) Other infections - eg: chronic alcohol use increased the risk of bacterial and viral lung

infections, and impaired the immune system (Ismael et al 2021).

b) Covid-19 - eg: a study of over 73 million US electronic health records found that individuals diagnosed with opioid use disorder had an increased risk of infection (over ten times greater) than control. and of serious symptoms (over twice as great) than non-opioid use disorder-covid-19 patients (Wang et al 2021).

ii) Use of substances during covid-19 - eg: web-based surveys in various countries have found increased alcohol and tobacco use during lockdown (eg: France and Belgium) (Ismael et al 2021).

iii) Relapse - eg: Kim et al (2020) found that 17% of individuals registered with a London alcohol care service in a telephone survey had relapsed during lockdown (ie: classed as abstinence prior to lockdown in March 2020).

Ismael et al (2021) conducted a retrospective study in a small Brazilian city in Sao Paulo state in 2020. A sample of 993 individuals with mild covid-19, after recovery, were asked about their substance use at three time-points: the last month pre-covid-19, during the infection (acute phase), and 2-3 months post-infection (follow-up phase). A comparison sample without covid-19 was created. Substance use covered alcohol, tobacco, cannabis, and non-medical use of benzodiazepines and analgesics. Potential confounders measured included lifetime diagnosis of psychiatric disorders as well as the usual demographic characteristics (eg: age, gender, educational level).

The study had three main aims:

a) To compare pre- and post-covid-19 substance use - Alcohol was used most frequently in the pre-covid-19 and follow-up phases, but it was lower in the latter phase, and non-medical use of analgesics in the acute phase. The other substances did not change in frequency of use.

b) To see whether pre-covid-19 substance use was associated with covid-19 symptoms - There was no association overall, but a small number of specific associations (eg: alcohol use and loss of taste or smell symptoms).

c) To see if the covid-19 symptoms associated with

post-covid-19 substance use - "The number of covid-19 symptoms
was neither associated with post-covid acute phase or post-covid follow-up phase substance use" (Ismael et al 2021 p5).

This study could not replicate a vulnerability to covid-19 for substance use disorders, or an increase in substance use pre- and post-covid-19.

But this study had only a 50% response rate from those approached to participate. Data were collected via a dedicated web platform, and were reetrospective. Ismael et al (2021) explained: "Online surveys could pose a challenge for achieving a high response rate among people who are less active online. In the present study, this could be the reason for a significantly lower response rate among older individuals. Thus, our findings are not generalisable to older adults" (p7).

The city involved was in "partial lockdown" (ie: many shops and industries still continuing with business) during the study period.

3.3.4. Dream Content

Anxieties and worries can be manifest in dream content. This idea fits with the "dream continuity hypothesis" (Domhoff 2003), for example, which "posits that the content of dreams is often a reflection of the dreamer's concerns in their waking state" (Kilius et al 2021 p2). Another idea is that dreams help an individual deal with potential threats (eg: "threat simulation theory"; Revonsuo 2000).

Dream content during the covid-19 pandemic has been studied with dream diaries, and online surveys, for example.
Kilius et al (2021) used the latter in their study of 71 University of Toronto students in Canada in mid-2020. The participants were asked to "describe a dream you remember having during the covid-19 isolation period (March 16th - July 25th 2020)" (pp2-3). Follow-up questions asked about the setting of the dream, and the emotions experienced. There were also general questions about their dreams compared to pre-pandemic.

The content of the dream described was coded with the Hall-Van de Castle Dreaming Coding System (HVdC) (Hall and Van de Castle 1966), which has categories including:

- Characters
- Social interactions
- Descriptive elements
- Settings
- Emotions experienced.

In terms of the dreams before and during the pandemic, around 80% reported changes (eg: more stressful or vivid content) (figure 3.1). There was an increase in nightmares reported, particularly by female participants.

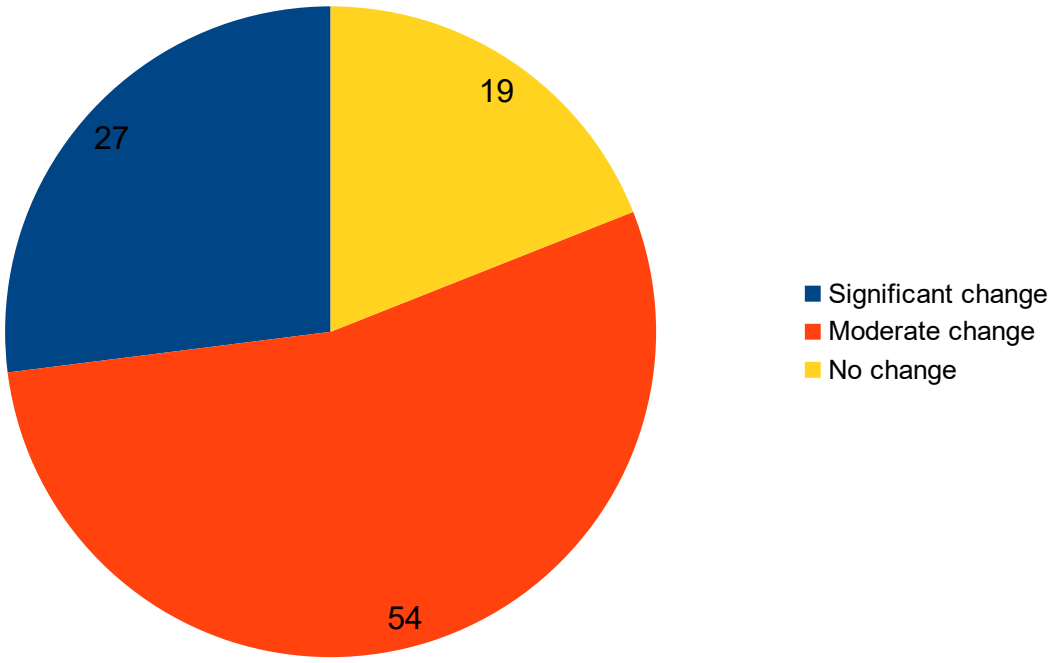

Figure 3.1 - Percentage of participants reporting a change in dream content from pre-pandemic to during lockdown.

Analysing the specific dreams outlined, more were described as a "bad dream" than as good or neutral (figure 3.2). Anxiety, confusion, and fear were common emotions.

Among female participants, their dreams during covid-19 lockdown were "significantly more likely to be aggressive rather than friendly..., were more likely to be the recipients of aggressive interactions than the initiators..., and were more likely to experience physical aggression than verbal aggression" (Kilius et al 2021 p4).

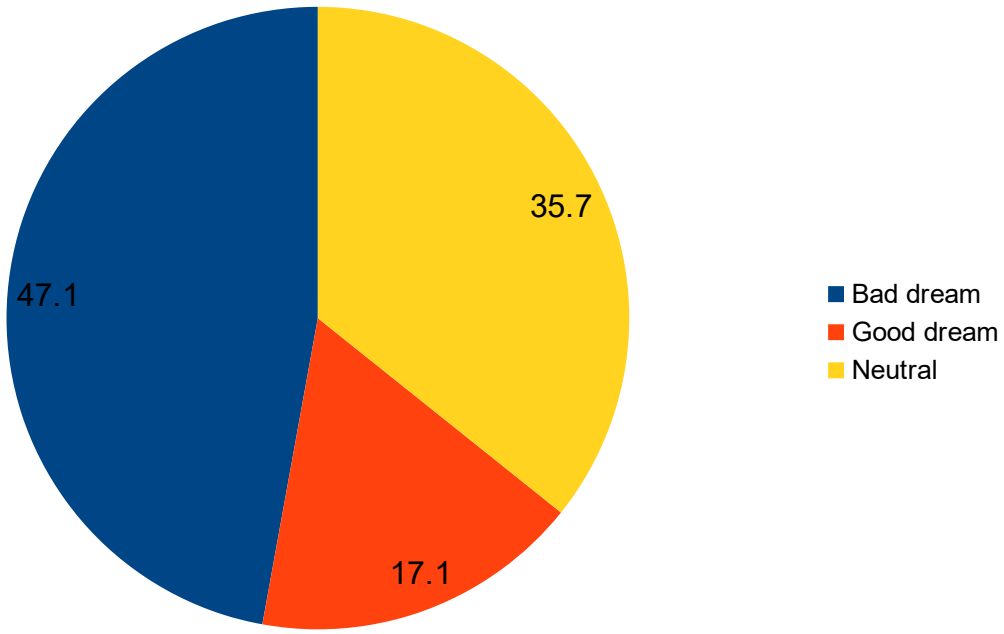

Figure 3.2 - Description of dream outlined (%).

Overall, "themes demonstrating an awareness of the external environment, especially academic, financial, and contagion-based concerns were highly prevalent. Covid-19 safety protocols were commonly reported in dreams. Individuals dreamed of being unable to return home, of PPE [personal protective equipment], and of personal danger from exposure to the virus while completing common tasks (such as grocery shopping or travel)" (Kilius et al 2021 p4).

Kilius et al (2021) ended: "Dreams can serve as a form of storytelling, and a way for individuals to express their subjective realities while permitting a degree of separation from their own conscious emotions... Our findings identify emotional themes of anxiety, academic worry, and heightened negative emotions experienced by females that may reflect the most salient concerns intruding on the dreams of university students during the time of university lockdown" (p8).

In terms of the methodology of this study, some points to note include:

a) The participants were asked to remember any dream from around three months ago, whereas most studies use last dream remembered (Kilius et al 2021).

b) The volunteer sample was relatively small, and mostly female (51 of 71 participants). Individuals whose dreams had not changed may not have volunteered to participate.

c) The coding of dream content was a qualitative analysis, and there is always subjectivity in the process. This is not a problem if the aim of the study is to explore the experiences and meanings of the dreams.

d) A comparative sample of student dream reports collected between 1947 and 1950 (Domhoff 2003) was created.

e) The HVdC is a commonly used method to categorise dream content.

3.3.5. Political Polarisation

Political polarisation can be divided into ideological polarisation, "which mostly considers differences in political views, [while] affective polarisation is more of an identity-based comparison between in- and out-groups" (Jungkunz 2021 p1).

A key factor in the recent increase in polarisation is rapid social change as produced by globalisation in the 21st century, producing two groups: "1) the 'winners' of globalisation who we find mostly among the higher educated and who are described as cosmopolitan, more tolerant towards out-groups and leaning towards green and left-wing parties; and 2) the 'losers' of globalisation who are often found among the lower educated or within the working class and who are considered as more closed-minded and susceptible to right-wing populist parties" (Jungkunz 2021 p2). Covid-19 is likely to increase this divide.

At the same time, political polarisation has led to different reactions to covid-19. For example, in the USA, "Republicans believe that the pandemic is less severe and they are much less willing to engage in health protection measures like hand washing or social distancing" (Jungkunz 2021 p2). While in Canada, say, where there is cross-party consensus about how to handle the pandemic, this type of polarised reaction is not seen (Merkley et al 2020).

Jungkunz (2021) investigated covid-19 and affective polarisation in Germany with two hypotheses - (i) cross-

party consensus on how to handle the pandemic will lead to less polarisation, and (ii) personal relevance will influence the attention to the behaviour of political elites (ie: whether there is consensus about dealing with the pandemic).

Data were collected online in April-May and July-August 2020. Individuals were asked about their attitudes towards different groups in society using vignettes, as well as general questions about themselves and covid-19. A comparison from October 2017 was available for attitudes towards others.

In relation to the first hypothesis, there was a slightly stronger polarisation between AFD (right-wing populist party) voters and supporters from other parties (ie: centrist and left-wing) as compared to 2017 data. But this polarisation decreased with higher economic distress, which indirectly supported the second hypothesis. This means that "experiencing economic distress increases the awareness of political debate and the responsiveness to government decisions. Thus, in times of broad cross-party consensus, this can translate into public opinion so that it makes people less hostile towards other partisans" (Jungkunz 2021 p1).

4. MENTAL HELP AND PSYCHOLOGICAL RESILIENCE

4.1. MENTAL HEALTH HELP SEEKING

It is predicted that mental health issues would rise with covid-19 and its consequences (eg: lockdowns; unemployment), as is the case with previous societal disruptions and economic downturn. Early self-reports in 2020 supported this view. Yet hospital presentations for common mental illnesses have been less (Carr et al 2021).

Carr et al (2021) used "a large primary care longitudinal dataset, broadly representative of the UK population, to investigate the incidence of primary care-recorded common mental illnesses, self-harm, psychotropic medication prescribing, and general practitioner (GP) referrals to mental health services, and event rates of all psychotropic medication prescribing and self-harm episodes between January 2019 and September 2020" (pe125). Data came from the Clinical Practice Research Database (CPRD) Aurum and GOLD databases covering individuals aged ten years and above in the four nations of the UK (n = 14.2 million).

The following outcome measures were used:

- New diagnoses of depression and anxiety (common mental illnesses).
- New prescriptions for anti-depressants and benzodiazepines (most common psychotropic medications).
- New GP referrals to specialist mental health services.
- Self-harm presentations.

In April 2020, compared with expected/average rates, a reduction of nearly half in in primary-care recorded new cases of depression and anxiety were found, while prescriptions were down by around one-third, and self-harm presentations. Referral to mental health services was less than a quarter of the expected number. All these

measures had reached expected levels by September 2020. Carr et al (2021) explained: "In early March, 2020, health services were required to balance infection control with access to care for patients, and GPs were advised to minimise the number of face-to-face patient contacts. The initial recovery in rates of primary care contact after May, 2020, among all demographic groups, towards expected rates by September, 2020, suggests that GPs adapted rapidly to increasing demands for care" (pe132).

The largest decline in these indicators in April 2020 was seen in deprived communities. "By contrast, before March, 2020, people registered with practices located in more deprived areas had the highest incidence of depression, anxiety disorders, and self-harm" (Carr et al 2021 pe132).

Carr et al (2021) voiced their concern for the future: "Previous research suggests that symptoms of mental illness can increase if treatment needs are not met. Possible consequences of this unmet need include increased numbers of admissions to psychiatric units and presentations to emergency departments for mental illness, self-harm, and drug and alcohol misuse, and heightened suicide risk. Ongoing monitoring to assess whether rates continue to increase beyond expected levels is important for ensuring health services can meet future demand" (pe133).

4.2. STRESS AND COMPLIANCE

The COVIDiSTRESS global survey collected data from over 170 000 individuals in 48 countries in March 2020. It surveyed respondents about their stress and worry about covid-19, and the relationship of these concerns to trust and compliance with preventive measures.

Overall, greater reported stress and worry about covid-19 were associated with less trust and compliance with government measures, but "there were marked differences between countries" (Lieberoth et al 2021 p27). For example, participants in Western European nations showed a stronger relationship than in other parts of the world. Participants in Japan reported being the most compliant with covid-19 preventive measures.

An important finding was that "while concern about the disease itself was a source of mental distress and perceived pressure, other factors including, for example, working conditions and children's education during lockdown must also be taken into consideration to fully

understand the psychological impact of covid-19" (Lieberoth et al 2021 p27).

Trust in the government's policies for covid-19 was associated with less stress reported, but only in countries with strict preventive measures. Lieberoth et al (2021) sought to explain this relationship: "Strict measures may instil a belief that all possible courses of action are being employed to alleviate the situation... [While] "it is plausible that governments will be more likely to implement stronger measures when they perceive a mandate from the populace combined with great concern. Factors like cohesion within society and the ability of each country to withstand downstream economic consequences will probably also play a role in this dynamic" (p28). In other words, trust in government and demand for strict measures to alleviate fears go hand in hand.

A finding that was contrary to expectations was that social support negatively associated with stress and compliance. "Among people with higher levels of social support, stress was associated with less compliance with local preventive measures, while among people with lower levels of social support, stress was associated with more compliance" (Lieberoth et al 2021 p28). Lieberoth et al (2021) explained that "previous studies would suggest that people tend to adopt behavioural measures to prevent the spread of the virus if they experience significant stress at the epicentres of pandemics, but our findings add the nuance that the psychological buffering role of social support may actually counteract the role of stress as a driver of cautious behaviour in the public sphere. Rather than looking at this phenomenon as a function of individual stress levels, this buffering mechanism could come into play when groups oppose government restrictions for political or practical reasons, or when younger adults converge on the need to retain their social life in the face of pandemic curfews" (p29).

The COVIDiSTRESS survey sample was online volunteers collected "as quickly and conveniently as possible", with more female respondents, and "presumably due to the use of online media for recruitment, a younger demographic" (Lieberoth et al 2021 p29).

4.3. PSYCHOLOGICAL RESILIENCE

Individuals with pre-existing mental disorders

reported deterioration in their conditions with covid-19 infection (Blanc et al 2021), while one in five of all survivors developed anxiety and depression in the three months of post-infection (Mukaetova-Ladinska et al 2021).

So, increased psychological distress both among infected and non-infected individuals has been observed in studies. Blanc et al (2021) focused on psychological resilience (PR) as a key factor distinguishing those who suffer mental health problems and those who do not during the pandemic. These researchers found 150 scientific publications in their rapid review of PR and covid-19, and categorised them into psychiatric epidemiological research, and models of interventions to improve PR.

Concerning the former category, PR is negatively associated with depression and anxiety as a generalisation. In an online German survey (Petzold et al 2020), for example, certain strategies proved helpful, including maintaining a healthy lifestyle and social contacts, encouraging self-efficacy (ie: the belief that the individual can achieve their goals), and gathering information about medical treatment in preparation if needed (Blanc et al 2021). Similar factors emerged from a US study (Kilgore et al 2020) - "greater resilience was predicted by a set of multiple modifiable factors including the number of days per week spent outdoor in the sunshine, daily exercise, perceived support from closed and loved-ones, sleep quality, perceived care and support from a significant close ones, and frequency of prayer" (Blanc et al 2021 p31).

Blanc et al (2021) grouped the factors related to PR that could be taught into different levels:

a) Individual level - eg: stress management skills; minimal media consumption; maintaining social networks; self-preservation and purpose (eg: physical fitness; creative activities).

b) Institutional and community levels - For example, among Haitians "traditional, natural, and culturally specific interventions" (eg: complementary healing practices) proved helpful (Blanc et al 2020).

In the USA, medical staff benefited from policies to meet their basic needs (eg: discounted or free food; free parking at work) (Blanc et al 2021).

To sum up, PR is helped by others (social support), something to do (physical/creative activities), and purpose/meaning (eg: spiritual beliefs).

4.3.1. Exercise

Physical activity (PA), particularly outdoors, is viewed as a buffer against psychological distress during lockdown. Research generally shows that regular PA is associated with psychological well-being (Jenkins et al 2021).

Jenkins et al (2021) investigated this relationship specifically during the covid-19 lockdown in New Zealand (NZ) in April 2020. A group of 759 adults was recruited via virtual snowball sampling on social media. The short online survey, estimated to take twelve minutes to complete, covered the following areas:

a) Weekly PA - The International Physical Activity Questionnaire-Short Form (IPAQ-SF) (Craig et al 2003) has seven items, like "During the last seven days, on how many days did you do vigorous activities like heavy lifting, exercise classes, or fast cycling for at least ten minutes at a time?".

b) Nature-based PA - "In the past seven days, have you participated in any nature-based physical activity?".

c) Psychological well-being - A WHO-based measure of five items (eg: "I woke up feeling fresh and rested"; "I have felt calm and relaxed").

d) Motivational quality - The Behavioural Regulations in Exercise (BREQ-3PA version) (Markland and Tobin 2004) has 24 items covering different types of motivation. For example, intrinsic motivation (eg: "I am physical active because I enjoy it"), and external regulation (eg: "I take part in physical activity because my friends/family/partner say I should").

There were two research questions for this study:

i) The relationship between weekly PA and psychological well-being, and the role of nature-based PA - Weekly PA significantly predicted psychological well-being, and nature-based PA did not moderate the relationship.

It was expected that the context of PA (ie: in nature or not) would influence the relationship as previous research had suggested that PA in nature boosted psychological well-being further. Jenkins et al (2021) made the following observation: "The effect of physical distancing requirements during the NZ lockdown may have

influenced these results. In NZ, people were asked to maintain a two-metre distance from others at all times. This constant need to ensure physical distance from others may have introduced a novel source of anxiety that is not usually present in nature-based PA, leading to decreased enjoyment in such natural settings. For example, many nature-based walking tracks in NZ are too narrow to maintain a two-metre distance when passing others. In addition, the phenomenon of 'exercise shaming' people who were perceived as being too physically active outdoors during lockdown periods may have influenced these findings" (p8).

ii) The role of motivation in the relationship between weekly PA and psychological well-being - The following types of motivation mediated the relationship: negatively by introjected regulation (eg: "I feel ashamed when I miss a physical activity session"), and positively by intrinsic motivation. So, "if an individual was physically active on the basis of ego or guilt, then they were less likely to experience positive psychological well-being. Conversely, if an individual was physically active on the basis of enjoyment or love of the PA activity itself, they were more likely to experience psychological well-being. It should be noted, however, that effect sizes were significant-yet-small, and so we should be cautious when interpreting these results" (Jenkins et al 2021 p8).

In summary, PA is beneficial to psychological well-being during lockdown, especially if the PA is intrinsically motivated rather than by motivated by shame or guilt.

Methodological considerations with the study by Jenkins et al (2021):

(+) Real-time survey during lockdown (ie: not retrospective over a long period of time).

(+) Standardised questionnaires used to measure variables.

(+) Opportunist - ie: "insights into relationships between PA, nature, motivation, and psychological well-being in a unique life situation" (Jenkins et al 2021 p9).

(-) But not generalisable to non-pandemic-lockdown situations.

(-) A cross-sectional design, which precludes establishing causality.

(-) No pre-pandemic baseline or comparison data.

(-) No measurement of the amount fo nature-based PA, so Jenkins et al (2021) admitted, "we cannot speculate on the relationships between dose of nature-based PA and motivation or psychological well-being. For instance, participants may have engaged in a single, 20-min bout of nature-based PA during the week, while the rest of their PA may have been non-nature-based. Understanding the extent to which participants engaged in nature-based PA would facilitate more nuanced data analysis and an evaluation of a 'dose-response' effect for nature-based PA" (p9).

(-) Convenience sample, not representative of general NZ population, and had higher levels of PA, and "were predominantly highly-educated females" (Jenkins et al 2021 p9).

5. CARERS OF INDIVIDUALS WITH LEARNING DISABILITIES

Adults with learning disabilities (AWLDs) have a higher risk of severe covid-19 symptoms than the general population (eg: five times more likely to die based on UK data March-May 2020; McMahon et al 2020).

This increased risk presents a "significant challenge" for staff supporting AWLDs. McMahon et al (2020) surveyed such staff in the Republic of Ireland in May 2020. In total, 285 staff responded to requests for volunteers on health and social care Facebook forums. The focus was upon the mental health of these individuals, and the questionnaires included the Copenhagen Burnout Inventory (CBI) (Kristensen et al 2005), which has nineteen items covering general, work-related, and client/patient burnout (table 5.1). Each of the three sub-scales are standardised to a 0-100 scale with ≥50 classed as burnout. Other measures covered depression and anxiety. Three other variables were measured - level of challenging behaviour of clients, fear of contacting covid-19 at work, and perceived support from employer.

Personal burnout

- How often are you emotionally exhausted?
- How often do you think, "I can't take it anymore"?

Work-related burnout

- Are you exhausted in the morning at the thought of another day at work?
- Do you feel that every working hour is tiring for you?

Client/patient burnout

- Does it drain your energy to work with clients?
- Are you tired of working with clients?

(Source: Kristensen et al 2005 table II p200)

Table 5.1 - Examples of items from CBI.

The vast majority of respondents were female (90%), and nearly half were nurses. The mean CBI scores were in the low 50s for personal and work-related, but much less for client/patient burnout. Working with clients with challenging behaviour increased these scores.

There were mild levels of depression and anxiety, particularly related to contacting covid-19, while

feeling supported helped. Home care workers and personal assistants had the poorest scores.

Note that the sample was self-selected via Facebook, and there were no pre-covid-19 data for comparison.

Willner et al (2020) surveyed 244 carers in the UK, of which 107 related to AWLDs, 100 children with LDs, and 37 children without LDs (eg: autism). The participants were recruited via three charities relating to LDs in April-June 2020. The questionnaire included measures of anxiety, depression, and stress.

Among carers of children in the study, there were differences between the two groups. Willner et al (2020) summed up: "Carers of children with intellectual disability had higher scores on all clinical variables than carers of the small group of children with autism and/or challenging behaviour but not intellectual disability, but in no case was the difference significant" (p1526). The carers of AWLDS had lower scores generally.

Overall, stress worsened the anxiety and depression, while social support reduced it. The carers with the poorest mental health had four variables - high general stress, high carer-related stress, low household income, and living in a small house (eg: no garden; no room to escape to). Social support was only a limited benefit here.

Willner et al (2020) gave this overview: "The major findings of this study are that carers of children and adults with intellectual disability reported mental health problems well in excess of what might have been expected on the basis of the pre-pandemic literature, particularly in households with more severe challenging behaviour and greater financial pressures, and at the same time experienced lower levels of social support relative to parents of children without intellectual disability" (p1530).

Embregts et al (2021) reported a qualitative study with direct support staff of AWLDs in the Netherlands. Eleven individuals recorded weekly audio messages in March-May 2020 describing their day. There were 34 messages in total, which the researchers analysed for themes (finding four over-arching ones):

i) Emotional impact - This theme had four sub-themes that covered the emotions of working during the covid-19 pandemic, including "fear of becoming infected". For example, interviewee 9 said: "My biggest fear is that my

partner and I will both become infected with the coronavirus. In that case, I don't know what to do with our children" (p484).

There was also a "sense of responsibility" for the individuals who needed care, "frustration and disappointment", and fluctuating emotions ("overwhelmed by emotions"). Interviewee 1, for instance, made this observation: "Talking about appreciation, ha, funny to mention. My wife who works in the hospital comes home almost every day after work with flowers, mugs, plants, chocolates, and more of those things – gifts. All donated by the business community to our heroes in healthcare. The present authors in the intellectual disability field do not see generous donors waiting to shower us with praise" (p484).

ii) Cognitive impact - This theme with its four sub-themes covered the challenges faced by the staff, like "coping", as summed up by interviewee 3: "Yes, you start to think differently, like 'oh, a service user is coughing, what if he's infected with the coronavirus?' You should just not think about it because otherwise I think you're going to go crazy" (p485). The other sub-themes were "reflection", "creativity", and "perseverance" (table 5.2).

- Reflection

"I am asking myself, and I just don't know, like, okay, what if everything goes back to normal, can the present authors keep that sense of a 'we-feeling' and the extra activities that are being offered to the service users now? Can the present authors continue with this, or does it really depend on the corona mindset? That's an issue I'm dealing with right now" (Interviewee 7; p485).

- Creativity

"Now the present authors are discussing with the managers how the present authors can possibly arrange the family visiting. So we're asking our whole team for tips on how the present authors can have contact with family and people with intellectual disabilities at a safe, appropriate distance" (Interviewee 3; p486).

- Perseverance

"Some colleagues are ill for a long time already, so yes, the present authors don't know when they'll return. As a result, many shifts are still open, and the present authors try to fill them with the fixed support staff. But I've been working on a contract for 36 hr, so I sometimes have to work more" (Interviewee 3; p486).

Table 5.2 - Quotes from Embregts et al (2021) representing the sub-themes from "cognitive impact".

iii) Practical impact - Three sub-themes captured the everyday changes to the staff's work with covid-19: "impact of preventive measures", "experiencing time pressure", and "a lack of face-to-face team meetings and increased use of digital consultation".

iv) Professional impact - "Despite the reported fear, time pressure and frustrations, direct support staff described that they were satisfied with the level of collaboration in their team. Indeed, a positive atmosphere and feelings of connectedness with their colleagues were cited. However, there were some preconditions for this strong collaboration to function: no covid-19 infections in the group home, not too many gaps in the work schedule and working with familiar colleagues (no temporary support staff)" (Embregts et al 2021 p487).

The recording of audio messages (diaries) was a clever way to collect data during lockdown, and with busy staff. However, the researchers could only give general instructions at the start of the study, and could not ask specific questions about the things said. The participants were volunteers recruited via five service-providers.

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