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Helping and Hindering Health

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A complete listing of his writings at <http://psychologywritings.synthasite.com/>. See also material at <https://archive.org/details/orsett-psych>.

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1. HINDERING HEALTH

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1.1. COFFEE CONSUMPTION

Coffee is the most frequently consumed global stimulant, and Norway is the second highest consumer in the world (Svatun et al 2022). "Because of the high consumption of coffee, even small health effects from this popular beverage could have considerable public health consequences and is, therefore, an important topic for research" (Svatun et al 2022 p1).

Data are available from the Tromso Study (began in 1974). Thelle et al (1983) used this population data to first show a positive association between coffee consumption and serum total cholesterol (S-TC). Subsequent research in Norway and elsewhere suggested that the coffee brewing method was important (eg: boiled coffee raises S-TC but not filtered coffee) (Svatun et al 2022).

Svatun et al (2022) used recent Tromso data to understand the relationship between espresso coffee specifically (a non-filtered coffee) and S-TC. Over 21 000 adults over forty years old were surveyed in 2015-16 (the seventh round of data collection of the Tromso study - "Tromso7"). Coffee consumption was measured by four questions and covered four types - filtered coffee, boiled coffee/French plunger coffee (coarsely ground coffee for brewing), instant coffee, and espresso-based coffee (from machines, capsules or mocha pots). S-TC was analysed from non-fasting blood samples.

Overall, men drank an average of 4.9 cups of coffee per day, and women 3.8 cups. The relationship between S-TC level and amount of coffee consumed depended on the brew. Elevated S-TC was significantly positively associated with espresso coffee, with a stronger relationship for men than women. There was no relationship for instant coffee, but a positive

relationship for boiled/plunger coffee, and filtered coffee but only for women.

Concentrating on espresso coffee, the findings here were different to previous studies, in particular:

a) D'Amicis et al (1996) - A randomised controlled trial that found no significant association between espresso consumption and S-TC. But the intervention group only consumed three cups per day (Svatun et al 2022).

b) Martini et al (2021) - As above, but also a small sample (n = 21) (Svatun et al 2022).

Other studies, however, have supported Svatun et al (2022) (eg: Cornelis and van Dam 2020 - UK Biobank study).

The difference in findings between studies may be due to methodological issues, like:

i) Combined intake of different coffee brews - Svatun et al (2022) were able to adjust for this, and still found that espresso was associated with increased S-TC.

ii) The definition of espresso - Svatun et al (2022) included coffee machines, capsules, and mocha pots, all of which have different cafestol concentrations ¹.

iii) Variation in size of coffee cups - Studies tend to ask about number of cups consumed only. "There was no standardised cup size in the questionnaire for Tromso7, and, therefore, up to each subject to define. Norwegians are used to large cups of filtered coffee, and this habit could lead to large cups of espresso as well. If one cup of 'Norwegian' espresso is four times the size of a cup of Italian espresso, more diterpenes will be ingested per cup of coffee" (Svatun et al 2022 p6).

iv) The coffee production process, and the type and size of coffee beans will all influence cafestol concentrations, and so the relationship with S-TC.

v) Potential confounders - eg: adding milk or sugar to the coffee; general diet. Svatun et al (2022) did not control for these variables.

¹ Cafestol is a compound in coffee beans believed to produce physiological effects. Cafestol is a category of diterpenes.

The Tromso study has a large population sample of middle-aged and older adults, and "it captures the heterogeneous coffee habits in Northern Norway, making it possible to compare different habits in the same population" (Svatun et al 2022 p8). The data are collected with standardised methods, but "the cross-sectional design limits causal inference" (Svatun et al 2022 p8). Coffee consumption was self-reported.

1.2. PROSTATE CANCER

Prostate cancer is linked to age, Black ethnicity, a family history of the disease, genetic factors, and hormones (Perez-Cornago et al 2022).

Adiposity/obesity is also a risk factor. However, studies have found different relationships depending on the tumour behaviour (slow-growing/indolent or lethal), and the measures of total adiposity have varied (Perez-Cornago et al 2022).

Perez-Cornago et al (2022) made use of data from the UK Biobank, began in 2006 with half a million UK 40-69 year-olds. At baseline 218 237 men were free from cancer.

In 2014 the "gold standard" measures of body fat distribution were introduced - magnetic resonance imaging (MRI)- and dual energy x-ray absorptiometry (DXA)-derived estimates of adiposity. This covered 18 800 men. Otherwise, body mass index (BMI) and percentage body fat estimate through bioimpedance ² measures were used.

The outcome measure was prostate cancer death by the end of 2020 (n = 661).

The men who died were more likely to be obese/have higher adiposity than the rest of the sample. A meta-analysis of eighteen prospective studies by the researchers confirmed that increasing adiposity was associated with an increase risk of prostate cancer. It was calculated, for example, that that every 5 kg/m² higher in BMI increased the risk by 7-10%.

It was not clear in terms of physiology the reasons for the findings, but Perez-Cornago et al (2022) did see a role for differences in detection: "Men with obesity may have a delayed diagnosis of prostate cancer tumours due to their lower prostate-specific antigen (PSA) concentrations (owing to increased blood volume with higher BMI) and to the greater difficulty of performing a thorough digital rectal examination and thus their lower likelihood of undergoing a biopsy" (p10).

Table 1.1 summarises the key methodological issues

² Use of small electrical current and resistance due to fat.

of this study.

- 1. Prospective study (+) with an average follow-up of 11.6 years (+), though certain types of tumours may take even longer to develop and cause death (-).
- 2. Large cohort (+), but only a relatively small number of deaths (-).
- 3. Adiposity measured by trained staff and via "gold standard" methods in some cases (+). But only a small sub-sample measured using the "gold standard" (-).
- 4. Detailed information about the participants collected at baseline (+), but much of the health data were self-reported (-). This allowed the analysis to adjust for variables like age, neighbourhood deprivation, ethnicity, height, cigarette smoking, alcohol consumption, diabetes, and physical activity (+). Other confounders may not have been controlled for (-).
- 5. UK Biobank recruited individuals living within a "reasonable" travelling distance of twenty-two assessment centres in England, Scotland and Wales, but potential selection bias in terms of who could travel and so on, and agreed to participate (5.5% participation rate) (-). A minimum age of participation of 40 years old (+/-).
- 6. Mortality data from official sources - NHS Digital for England and Wales or NHS Central Register and Information and Statistics Division for Scotland (+/-). The misclassification of the cause of death: "obese men with prostate cancer are at increased risk of dying from several conditions, and some may die for example from cardio-vascular disease but have their cause of death recorded as prostate cancer" (Perez-Cornago et al 2022 p10) (or vice versa) (-).

Table 1.1 - Key methodological issues with Perez-Cornago et al (2022).

Predicting the progression of prostate cancer is important (ie: slow or fast growing), and there is a lot of genetic information now available from tumours which can be used. Elmarakeby et al (2021) developed a machine learning model to interpret that information ("P-NET"; "pathway-associated sparse deep neural network").

P-NET was trained and tested with 1013 prostate cancers (including 333 lethal castration-resistant prostate cancer (CRPC)). Accuracy was around 90% in terms of distinguishing lethal and non-lethal prostate cancers. Two candidate genes were found to be important in predicting advanced disease (Elmarakeby et al 2021).

1.3. HIP FRACTURES AND DIET

The relationship between hip fracture and vegetarian diet is unclear from the research (Webster et al 2022).

"Whilst diet quality varies among vegetarians, vegetarian diets are often characterised by a higher intake of fruits and vegetables including foods high in vegetable protein, which have been associated with a reduced hip fracture risk in adults in reviews of previous epidemiological studies. However, vegetarian diets have also been characterised by lower dietary intakes of nutrients that have been positively associated with bone mineral density... and are more abundant in animal products than in plants" (Webster et al 2022 p2).

Prospective studies are the best method to study this topic, but there are few of them. Webster et al (2022) reported finding only two:

a) European Prospective Investigation into Cancer (EPIC) Oxford cohort study of UK men and women - This found a greater risk of hip fracture in pescatarians, vegetarians, and vegans as compared to meat-eaters (Tong et al 2020).

No distinction was made based on the frequency of meat-eating (Webster et al 2022).

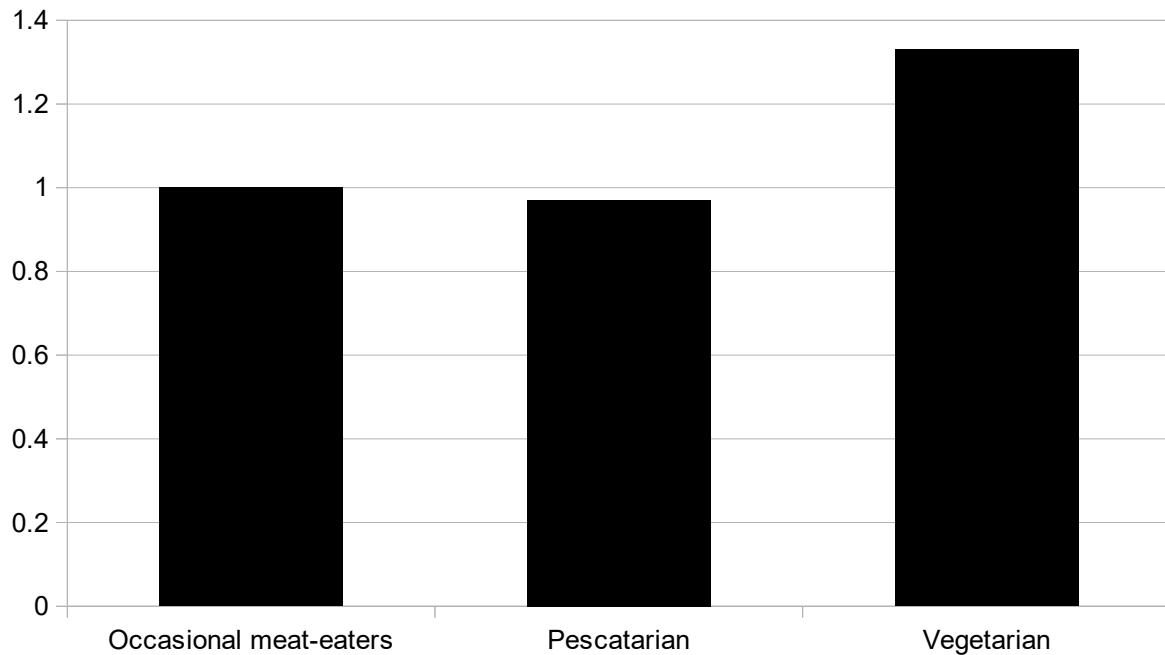
b) Adventist Health Study-2 (AHS-2) of US women - A greater risk among vegans compared to meat-eaters, but not among vegetarians (Thorpe et al 2021).

Hip fractures were self-reported by the participants (Webster et al 2022).

Webster et al (2022) noted the weaknesses of the above studies in their data from the United Kingdom Women's Cohort Study (UKWCS), which included over 35 000 women from England, Scotland, and Wales aged 35-69 years old when recruited between 1995 and 1998.

Dietary habits were measured by a self-administered 217-item food frequency questionnaire (FFQ). Based on the responses, the following categories were distinguished - "regular meat-eaters" (meat eaten five times or more per week) (46.2% of the sample), "occasional meat-eaters" (less than five times per week) (26.5%), "pescatarians" (ate fish but not meat) (12.8%), "vegetarians" (ate eggs or dairy but not meat or fish), and "vegans" (no meat, fish, eggs or dairy) (14.5% of the sample - vegetarian and vegan combined). The outcome measure of hip fracture was based on hospital attendance.

During the 22-year follow-up there were 822 hip fracture cases. In the unadjusted analysis, vegetarians had a greater risk of fracture than regular meat-eaters, and this increased risk remained after adjustment for variables like exercise, body mass index, and smoking (figure 1.1).



(Data from Webster et al 2022 figure 1).

Figure 1.1 - Adjusted hazard ratio for hip fracture (where "regular meat-eaters" = 1.00).

This study has a number of key strengths and weaknesses:

Strengths:

1. A sizeable number of pescatarians (n = 3867) and vegetarians (n = 4263) in the sample.
2. The use of hospital records for hip fractures.
3. The categorisation of participants into dietary groups based on a detailed (and validated) FFQ.
4. Long period of follow-up.

Weaknesses:

1. Because of the small number of vegans (n = 130), their combination with vegetarians meant that the researchers could not calculate the risk of hip fracture for vegans. "Since vegans may face greater challenges in achieving adequate intake of several nutrients, in particular protein and calcium, cohort studies with a high proportion of vegans are needed investigating their risk of hip fracture" (p7), asserted Webster et al (2022).

2. The participants were younger than the average age of hip fracture in women, which is 83 years old, thereby, Webster et al (2022) explained, "limiting the number of hip fractures observed. Moreover, high-energy trauma may account for more hip fractures in younger adults, whereas fragility hip fractures are more common in older adults. We could not distinguish between traumatic and fragility fractures here since information on the cause of hip fractures was not available" (p8).

3. Some confounders not controlled for (eg: use of relevant medications; alcohol consumption).

4. The FFQ was completed at recruitment only. So, the researchers "could not account for changes in the diet group or co-variates over time. Additionally, food and nutrient intake in vegetarians in recent years could differ from when data were collected at recruitment due to changes over the last two decades in the availability of vegetarian food products, such as increases in the number of available meat substitute products" (Webster et al 2022 p8). The researchers further admitted that the findings may not be generalisable to modern-day vegetarians.

1.4. HEATING WORLD

The human body cools itself by swelling the blood vessels which carry heat to the skin to radiate away, and sweating which cools by evaporation. If it is too hot the body cannot keep up these processes and the individual dies, usually from a heart attack (Royte 2021).

As the planet heats, there could be increasingly more deaths in this way (eg: "heartstroke"). For example, in the very hot summer of 2003 in continental Europe, 15 000 deaths in France, 20 000 in Italy, and overall 70 000

were attributed to the heatwave (Royte 2021).

But some areas are typically hot. However, estimates in Los Angeles, for instance, suggest that a short heat wave (2-3 days) increases the death rate by 8%, and 4-5 days by 25% above normal (many of them older Black and Latino individuals) (Borunda 2021).

Other consequences of extreme heat vary from unsafe for outdoor workers to premature, underweight, and stillborn babies, and mental health impacts. The impact will be worse for older and/or poorer individuals. For example, in Phoenix, Arizona, in 2020 the majority of heat-related deaths were outdoor victims (homeless individuals) or those living in mobile homes with poor insulation (ie: poor individuals). In other countries, water is not even available to drink nor electricity to power air conditioners (Royte 2021).

1.4.1. Oceans

Climate change is projected to produce extreme events, which, in the case of the oceans, includes marine heatwaves (ie: ocean warming) ³, low oxygen concentrations (deoxygenation), and high acidity (ie: low oceanic pH). Gruber et al (2021) worried about "compound events" (ie: "multiple extreme events that occur simultaneously or in close sequence"; p395).

1.5. LIGHTING

Peeters et al (2021) began: "We are becoming an indoor species: today, many people spend about 90% of their time indoors... For office workers, a substantial part of this indoor time is spent in an office environment. When so much time is spent in the office, it is important to provide healthy conditions that enhance people's well-being and health. Light can have a significant effect on a person's functioning, through different pathways" (p1).

Peeters et al (2021) investigated exposure to more intense daytime light in an office in two quasi-experiments. One study was performed in the spring and

³ Defined as "days on which the sea-surface temperature (SST) exceeds its local 99th percentile" (Gruber et al 2021 p395). For example, the "Blob" in north-east Pacific with SSTs up by 6° C in 2013-15 compared to 2002-12 (Gruber et al 2021). "This event had severe consequences for marine life, ranging from massive die-offs of marine birds, higher mortality of sea lions, reduced stocks of many commercially valuable fish, to pronounced shifts in zooplankton community structure" (Gruber et al 2021 p395).

one in the winter, and each lasted three weeks. One week of high illuminance in the morning (4 hours) and low illuminance in the afternoon (4 hours) (HighLow condition), one week of the opposite (LowHigh condition), and one week of constant low illuminance (LowLow condition) in a Dutch office with ten workers. High illumination was up to 1000 lux, and low illumination up to 150 lux approximately. Experience sampling was used to measure mood and alertness, for example, during the day, along with questionnaires covering sleep quantity and quality.

It was predicted that higher illumination would increase alertness. The findings, however, were unexpected. "In the spring, participants experienced more electric light as more unpleasant... In addition, particularly in spring, negative effects of more electric light on sleepiness, vitality and fatigue were found" (Peeters et al 2021 p11). This was especially so in the HighLow condition in spring (ie: high illumination in the morning). There was no impact on sleep.

Peeters et al (2021) offered this explanation for the unexpected findings: "The office in which the study took place, was an office with many windows... Therefore, daylight had a substantial influence on the illumination of the room, particularly at locations close to the windows... Perhaps the combination of daylight and more electric light simply resulted in a light level that was too high to still be experienced as pleasant. It is also possible that the specific implementation of higher illuminance on desk and eye from the recessed, ceiling-mounted luminaires in this particular office created an unpleasant light distribution, eg: with relatively dark ceilings and walls, or strong contrasts" (pp11-12). Peeters et al (2020) analysing the data on light levels found "a large variation in the light settings participants were actually exposed to. Actual exposure in realistic environments is strongly influenced by location, orientation and behaviour" (Peeters et al 2021 p13).

In the winter, later subjective onset and shorter sleep duration were reported in the HighLow and LowHigh conditions (ie: with brighter light).

Other studies have tended to find that higher illumination has a positive effect on alertness (eg: working memory performance; Huiberts et al 2015). These studies, however, "only investigated relatively short exposure (ie: 1 hour of exposure to bright light), and took place in laboratories" (Peeters et al 2021 p13).

Peeters et al (2021) continued: "It is possible that in lab-based studies, participants have lower expectations of, or give lesser weight to, comfort and pleasantness than persons working in real-life offices, where people spend considerable parts of their day" (p13).

Peeters et al's (2021) study has a number of key strengths - a real-life office situation, a reasonable length of time, different light conditions (though no HighHigh condition), and multiple measures and controls (as much as possible in a working office).

But the sample was small, and the study was within-participants (or repeated measures) with no counterbalancing of light conditions. The actual level of illumination for each individual possibly varied (ie: not controlled as desired by the researchers), Peeters et al (2021) had to admit.

1.6. AIR POLLUTION

Regulations on commercial chemicals (eg: "chemicals of emerging concern"; CECs) in the air tend to be based on the parent chemicals "with minimal consideration given to the products associated with their atmospheric transformations in the environment" (Liu et al 2021 p456).

Analysing data from laboratory and field experiments, Liu et al (2021) concluded that CECs transformed through photo-oxidation while in the air "can be more toxic and up to an order-of-magnitude more persistent than the parent chemicals" (Liu et al 2021 p456).

1.7. OBESITY AND BUILT ENVIRONMENT

The built environment, which is "all physical structures in the environment that have been made or modified by humans" (Howell and Booth 2022 p2), impacts human health by encouraging or discouraging physical activity, pollution, green space, and the "food environment" (eg: availability of appropriate food retailers or number of fast-food outlets) (Howell and Booth 2022).

For example, the "5-Ds" model has been developed to explain a preference for driving: (i) density (eg: of population, residences), (ii) diversity (of land use), (iii) design (or urban areas), (iv) destination

accessibility, and (v) distance to public transport (Howell and Booth 2022).

Howell and Booth (2022) summed up that "a growing body of research suggests that denser, more walkable urban areas are associated with improved metabolic health compared to less walkable, car-oriented suburban areas" (p8). For example, a walkable built environment has a diversity of land use and short blocks, while the unwalkable one has homogeneous land use (eg: residential only) and long blocks (Howell and Booth 2022). In a study in ten countries, Sallis et al (2016) found a difference of up to ninety minutes per week in moderate to vigorous physical activity between living in a walkable and unwalkable built environment.

"However, there is the potential for bias caused by self-selection, in that individuals who choose to live in walkable areas may be healthier and more active than those who choose to live in more car-dependent, suburban areas that are less conducive for walking. However, the opposite may also be true – individuals residing in the downtown neighbourhoods of cities may have worse underlying health than those in suburban settings for reasons that relate to structural differences in the social and racial characteristics of urban populations and to their exposure to other adverse environmental factors" (Howell and Booth 2022 p3).

Studies have found correlations between walkability of the environment and obesity, pre-diabetes and insulin resistance, diabetes, hypertension, and cholesterol levels (Howell and Booth 2022) ⁴. At the same time, these authors urged caution: "Although it is convenient to discuss the built environment's impact on health in isolation, there is a complex interplay between environmental exposures. Neighbourhood socio-economic conditions, food environments, air pollution levels, and natural features such as green space may independently influence metabolic health and must be considered when isolating the effects of the built environment" (Howell and Booth 2022 p8). For example, there is a relationship between proximity to fast-food outlets and fast-food consumption (Howell and Booth 2022).

Howell and Booth (2022) accepted three main limitations with the research on built environment and

⁴ De Miguel et al (2021) commented: "Physical activity evokes profound physiological responses in multiple tissues across the animal kingdom and is accepted to broadly improve human health. The benefits of exercise extend to patients with neuro-degeneration and brain trauma, possibly by reaching neuro-inflammation. Long-term voluntary exercise in mouse models of Alzheimer's disease (AD) and related disorders improve learning and memory, disease neuro-inflammation" (p494). Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

health:

i) Study design - eg: cross-sectional studies do not allow researchers to establish causality.

ii) Confounders - eg: self-selection of favoured built environment.

iii) Measurement of built environment variables - eg: fifty-one in Feng et al's (2010) literature review.

1.8. FUEL POVERTY

"Fuel poverty" is the product of three factors - household income, the cost of energy, and the energy efficiency of the home (Lee et al 2022). Fuel poverty varies in official definitions, but it is mainly where disposable income is below the poverty line after paying housing and energy costs, or spending a certain amount (eg: 10% of total income) on heating (Lee et al 2022).

"Homes that are cold due to fuel poverty exacerbate health inequalities. Cold homes can cause and worsen respiratory conditions, cardiovascular diseases, poor mental health, dementia, hypothermia and problems with childhood development. In some circumstances, health problems may be exacerbated to a degree that they may cause death" (Lee et al 2022 p4).

Fuel poverty is more likely in poorer households, those with dependent children and/or individuals living with disabilities, and Minority ethnicity, while the health impact will be greater for older adults, children, and those living with chronic illness and disability (Lee et al 2022).

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2. MENTAL HEALTH

- 2.1. Adolescent mental health
- 2.2. Uncertainty
- 2.3. Job quality and mental health
- 2.4. Challenging the DSM mind-set
- 2.5. References

2.1. ADOLESCENT MENTAL HEALTH

UNICEF estimated that at least 13% of 10-19 year-olds globally live with a diagnosed mental disorder (Editorial 2021).

Editorial (2021) noted some important points about adolescent mental health problems:

i) Increasing in recent years - eg: depression among US 12-17 year-olds rose from 8.5% in 2005 to 13.2% in 2017 (Twenge et al 2019).

ii) The covid-19 pandemic has exacerbated this increase (eg: Iceland; Thorisdottir et al 2021).

iii) There is evidence of treatments/interventions that are effective - eg: improving emotion coping skills (meta-analysis of ninety studies; Daros et al 2021). But, at the same time, "there is no 'silver bullet' for preventing and treating anxiety and depression in young people - rather, prevention and treatment will need to rely on a combination of interventions that take into account individual needs and circumstances. Higher-quality evidence is also needed, such as large-scale trials using established protocols" (Editorial 2021 p236).

2.2. UNCERTAINTY

Eichengreen (2016 quoted in Massazza et al 2022) described the current times as an "age of hyper-uncertainty". "Climate change, the rise in armed conflict and natural hazards, displacement and large flows of refugees, and austerity, are all believed to contribute to triggering widespread uncertainty at the individual, communal, and societal levels... Currently, the covid-19 pandemic has further exacerbated pre-existing uncertainties and generated new ones, with media outlets going as far as talking of a 'pandemic of uncertainty'

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[in "The Guardian" in 2020]" (Massazza et al 2022 p1).

Brashers (2001) defined uncertainty as a state in which "details of the situation are ambiguous, complex, unpredictable, or probabilistic; when information is unavailable or inconsistent; and when people feel insecure in their own state of knowledge or the state of knowledge in general" (quoted in Massazza et al 2022).

What is the link between uncertainty and mental health? Massazza et al (2022) performed a scoping review⁵ to answer this question. They found 101 relevant papers.

The following characteristics of the papers were noted:

i) Data and design - Over 90% of the papers reported primary data, and the cross-sectional design was most often used. Around two-thirds of studies came from the USA.

ii) Settings - There were three different settings where uncertainty was investigated: medical, disaster and conflict, and occupational and university. Over ninety papers focused on the first setting (eg: uncertainty among patients).

iii) Measurement of uncertainty - Twenty different measures were found, with the Mishel Uncertainty in Illness Scale (MUIS) being most common.

iv) Mental health outcomes - The most commonly studied, in order, were depression, anxiety, psychological distress, post-traumatic stress disorder (PTSD), and stress with forty-eight different measures being found.

In terms of the original question, the vast majority of studies (over three-quarters) found a relationship of higher levels of uncertainty and poorer mental health outcomes (a negative correlation). The researchers commented that "due to the over-reliance on a cross-sectional design, we cannot make firm claims concerning the directionality of this relationship, especially in light of the impact that mental health status can have on perceptions of uncertainty and possible inverse-causality concerns" (Massazza et al 2022 p7). the remainder of the studies found either mixed results, a positive

⁵ Scoping review describes "exploratory projects that systematically map the literature available on a topic, identifying key concepts, theories, sources of evidence, and gaps in the research" (Canadian Institutes of Health Research quoted in Massazza et al 2022).

correlation (eg: higher uncertain and better mental health), or non-statistically significant relationships.

A scoping review allows researchers to highlight the gaps and weaknesses in the literature, which here included little on coping and managing uncertainty, few studies outside of high-income countries, and the heterogeneity in measurement of uncertainty, and of mental health.

The scoping review included only papers in English, and those providing quantitative data. "However qualitative data is likely to provide a more nuanced picture of the relationship between uncertainty and mental health as well as yield important insights into the coping mechanisms and the context within which uncertainty emerges and is managed" (Massazza et al 2022 p9).

2.3. JOB QUALITY AND MENTAL HEALTH

Evidence is available about the link between employment and working conditions (job quality), and common mental health problems. For example, "an association between worse working conditions (eg: higher physical or psychological work demands and lower control in meeting these demands) and higher stress levels and worse mental health. Moreover, studies have provided evidence of mental health benefits (especially concerning anxiety and depression) following improvements in employees' degree of job control and reductions in job demands" (Belloni et al 2022 pp1-2). While a review by Barnay (2016) found irregular working hours and temporary contracts as detrimental to mental health.

But establishing a causal link between employment and mental health is "empirically challenging. "Because health may limit the freedom of individuals to choose specific jobs, and individuals can change (or lose) their job as a consequence of health changes, reverse causality is a major concern in this context... Moreover, several confounding factors are likely to be correlated with both occupation and health, eg: time-invariant factors such as education and genetic predisposition for certain jobs, as well as preference for health and mortality" (Belloni et al 2022 p2).

Belloni et al (2022) sought to overcome these problems using data from seven waves (2009-2016) of a UK longitudinal study called "Understanding Society". In

this analysis, over 8600 over 16 yr-olds who had not changed occupation type had been surveyed yearly on health, work, education, income, family and social life. The General Health Questionnaire (GHQ) was used to measure mental health problems, and it includes loss of sleep, feelings of being under stress, enjoyment of day-to-day activities, feelings of unhappiness, and feelings of worthlessness of the twelve items. A score of 0 to 36 is possible, as each item is scored 0 to 3, and a total of twelve is the cut-off point for common mental disorders.

Job quality was measured in five ways - physical environment (eg: loud noise, high temperature), work intensity (eg: working to tight deadlines), skills and discretion (eg: latitude of workers to make decisions), working time quality (eg: duration of working hours), and prospects (eg: job security). Each of the five elements were scored from 0 to 100.

The mean GHQ score was 30.8 for women and 28.1 for men. Female workers had higher levels of anxiety and depression than males. "In terms of working conditions, males tend to work in jobs characterised by poorer physical environment, higher intensity, and worse working time quality. On the other hand, they tend to score higher on the skill and discretion index" (Belloni et al 2022 p8).

By concentrating on the workers who had remained in the same occupation type over the study period, the researchers were able to assess changes in job quality and subsequent changes in mental health. Firstly, it was found that "on average, among female workers in the UK, better job characteristics such as skills and discretion and, to a less extent, working time arrangements lead to significant and sizeable improvements in mental health" (Belloni et al 2022 p14). The benefits were more pronounced for younger (16-35 years old) and older (50 years and above) female workers. There was no improvement for males.

However, all workers, Belloni et al (2022) found that "improvements in job control (corresponding to our skills and discretion index) and job demand (work intensity) are especially beneficial for workers employed in jobs inherently characterised by a combination of high psychological demands and/or low job control" (pp14-15).

Overall, the analysis showed that "working conditions are less impactful on men than they are on women... [and] that the psychological well-being of women is more greatly affected than that of men by working schedules and commuting time, physical demands, and

environmental conditions" (Belloni et al 2022 p15).

2.4. CHALLENGING THE DSM MIND-SET

The British Psychology Society (BPS) in 2013, after the publication of DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th edition) by the American Psychiatric Association, accepted the need for an understanding of "mental illness" and its experience beyond a "disease" model, including to work "in conjunction with service users, on developing a multi-factorial and contextual approach, which incorporates social, psychological and biological factors" (quoted in Johnstone and Boyle 2018).

The Division of Clinical Psychology within the BPS set up a project group, and Johnstone and Boyle (2018) outlined its work over five years to produce the "Power Threat Meaning Framework" (PTM).

The "disease" model situation is this: "Diagnosis in medicine is fundamentally an attempt to make sense of a person's presenting problems, to understand how they have come about and what might help, by drawing on research into patterns/regularities in bodily function and dysfunction. While basing diagnoses on these biological patterns is appropriate for physical problems, psychiatric diagnosis is inherently limited in its capacity to make sense of emotional/behavioural problems because it largely draws on theoretical models that are designed for understanding bodies rather than people's thoughts, feelings, and behaviour" (Johnstone and Boyle 2018 p3). Two key elements of the disease model are challenged - that overt problems are symptoms of internal pathology, and that patterns of symptoms represent discrete categories of "illness" (Johnstone and Boyle 2018).

Johnstone and Boyle (2018) explained: "Abandoning what we have called the 'DSM mind-set' is not easy, since it is deeply embedded not just in mental health services but also in fundamental Western philosophical assumptions including, but not limited to, the separation of mind from body, thought from feeling, the individual from the social group, and human beings from the natural world. These influential but not universal worldviews also inform what can broadly be described as positivism, which tends to promote a view of human beings as objects acted on by causal forces..., rather than agents who have reasons for their actions. This causal model can lead to reductionism - the view that complex human experiences

can be explained at their simplest, usually biological, level such as 'chemical imbalances'. It is also reflected in the idea of 'mental disorders' as having an independent existence, separate not only from the person but also from historical time and place" (p4).

The new approach embraces a place for psycho-social events and circumstances (eg: poverty or childhood sexual abuse), but there is still a desire to establish causal pathways (associated with the "DSM mind-set"). There is a need, argued Johnstone and Boyle (2018), for the "letting go of 'DSM mind-set' assumption about universal causal laws and instead identifying trends and associations, their directions of influence, and the processes that might underlie them" (p6).

The PTM replaces the traditional psychiatric question of "What is wrong with you?" with four others (Johnstone and Boyle 2018):

i) "What has happened to you?" - This takes account of the "operation of POWER (embodied, legal, economic/material, relational, and ideological, both proximal and distal, with impacts that are moderated by our available resources)" (Johnstone and Boyle 2018 p8).

ii) "How did it affect you?" - "The kinds of THREAT that the negative operation of power may pose to the individual, the group, and the community, with particular reference to emotional distress, and the ways in which this is mediated by our biology" (Johnstone and Boyle 2018 p9).

iii) "What sense did you make of it?" - "The central role of MEANING (as produced within social and cultural discourses and primed by evolved and acquired bodily responses) in shaping the operation, experience, and expression of power, threat, and our responses to threat" (Johnstone and Boyle 2018 p9).

iv) "What did you have to do to survive?" - The responses will include being manifest in a body that has evolved (eg: automatic physiological stress responses), or "consciously selected responses such as holding suspicious thoughts, self-blame, shame, rage, self-harm, and controlling our eating" (Johnstone and Boyle 2018 p10).

The way to deal with difficulties, according to the PTM, is "to restore the links between meaning-based

threats and meaning-based threat responses" (Johnstone and Boyle 2018 p11). For example, "paranoia" has "well-established links to experiences of bullying, violence, discrimination, and unsafe environments [which] render it 'understandable, and, indeed, adaptive' (Shevlin et al 2015...). However, behaviours and responses that promote survival in certain contexts may subsequently become problematic in their own right, for the person themselves and/or for those around them" (Johnstone and Boyle 2018 p11).

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3. AGEING

- 3.1. Longevity
 - 3.1.1. Fasting
 - 3.1.2. Gut
 - 3.1.3. Optimism
- 3.2. Paid and unpaid work
- 3.3. Unhappy cohort
- 3.4. Older adults and Tik Tok
- 3.5. References

3.1. LONGEVITY

3.1.1. Fasting

"Caloric restriction" (ie: reducing the total number of ingested calories), at least in laboratory animals, can extend lifespan. But so does intermittent time-restricted feeding (iTRF) in fruit flies (Ulgherait et al 2021). Compared to unrestricted 24-hour food access (ad libitum), twenty hours of fasting alternated with 28 hours of feeding over the lifetime, increased lifespan by 13-18%. Flies on the iTRF schedule ate more food overall⁶.

Intermittent fasting in humans benefits abdominal fat loss, and improves glucose metabolism, blood pressure, heart-rate variability and physical endurance (Helfand and de Cabo 2021).

3.1.2. Gut

Evidence is emerging that gut microbes play a role in longevity. For example, Wilmanski et al (2021) analysed the gut microbiota of 9000 US adults, and found that healthy individuals in their 80s had a profile of certain bacteria (eg: fewer of genus Bacteroides and more Akkermansia and Christensenella) associated with lower inflammation, better sugar and fat metabolism, and a lean body type (Anderson 2021).

3.1.3. Optimism

Long-term health and longevity, it is becoming

⁶ In other research, 24-hour fasting and 1-2 days ad libitum was shown to shorten lifespan (eg: Catterson et al 2018).

clear, are impacted by psychological factors, both negative (eg: depression) and positive (eg: optimism). Research is now showing that the latter, optimism ("the generalised expectation of positive future outcomes"; Koga et al 2022 p2) is associated with living past the average age of death (Koga et al 2022).

Research has suggested that "more versus less optimistic individuals take more proactive approaches to promoting their health and they are more likely to engage in healthy behaviours such as increased physical activity, healthier diet, and not smoking. This evidence suggests such behaviours may mediate the relationship between optimism and longevity. However, the association between optimism and health behaviours appears to be bidirectional and although plausible, conclusive evidence to support that optimism precedes and leads to healthy behaviours is not yet available" (Koga et al 2022 p2). Thus, Koga et al (2022) set out to establish the direction of causality with data from the Women's Health Initiative (WHI). Tindle et al (2009) had previously established the association of higher optimism with reduced mortality risk from WHI data.

The WHI includes over 160 000 women aged 50-79 years old in the USA recruited between 1993 and 1998. For their analysis, Koga et al (2022) used data on 159 255 women (average age 63 years old; 17% non-White).

Optimism was measured at recruitment by the six-item "Life Orientation Test Revised" (LOT-R) (Scheier et al 1994). Each item (eg: "In uncertain times, I usually expect the best") was scored 1 to 5, giving a total out of 30, and a higher score indicated higher optimism levels. Death was confirmed from official records (up to 1st March 2019). Other variables like lifestyle were also measured.

Overall, the mean optimism score was 17.3, with variations based on ethnicity of 17.4 for non-Hispanic White, 17.1 for Black, 16.0 for Hispanic/Latina, 16.2 for Asian, and 16.5 for American Indian and Alaskan Native. The most optimism quartile of women were "more frequently non-Hispanic White, had higher education levels, were less likely to report prevalent health conditions including depression, and had somewhat healthier lifestyle, but did not differ meaningfully with regard to age and marital status" (Koga et al 2022 p6).

During the follow-up of up to 26 years, 40% of the women had died. These women were less likely to be in the highest quartile of optimism compared to the lowest quartile. A difference in lifespan of 2.5% was calculated for these two groups.

In summary, Koga et al (2022) stated that "higher optimism levels were associated with longer lifespan and greater likelihood of achieving exceptional longevity, with no interaction by categories of race and ethnicity. Importantly, associations found in the present study were maintained after adjustment for multiple potential confounders and across various racial and ethnic groups" (p9).

This study had a large ethnically diverse cohort compared to other studies. However, the WHI has "a higher proportion of participants with a higher-than-average education level, in addition to high marriage rates, many privately insured individuals, and low co-morbidity burdens, all leading to questions of selection bias and generalisability" (Cobert and O'Donovan 2022 p2).

It also established the relationship between optimism at recruitment (Time 1) and death later (Time 2) (ie: a direction of causation). However, the researchers accepted some caution in the causal relationship. Some potential confounders were unmeasured, like heritability, childhood environment, and life experiences. Also lifestyle factors, which were measured, mediated some of the relationship between optimism and longevity. The causal relationship between optimism and longevity is "likely complex and multi-faceted" (Cobert and O'Donovan 2022 p3).

Cobert and O'Donovan (2022) pointed out that the interpretation of Koga et al's (2022) findings is influenced by the issue of optimism as a modifiable state or a stable trait: "States can vary across time as an individual encounters various situations, experiences, and interventions. Traits on the other hand, are stable, intrinsic characteristics of the individual - thus, less likely to be modifiable" (p1). The measurement of optimism once assumed that "the LOT-R represents more than a snapshot or state but has at least some stability over time..." (Cobert and O'Donovan 2022 p3).

The LOT-R includes statements that measure "pessimism" and are reverse scored. "There is debate as to whether the LOT-R should be scored as a single bipolar dimension (ranging from pessimism to optimism), or whether optimism and pessimism should be treated as separate constructs" (Cobert and O'Donovan 2022 p2). Ryff et al (2006), for example, argued for the latter, while other researchers have suggested that "the pessimism subscale within the optimism construct is important for controlling acquiescence response bias and that optimism in itself may itself require the lack of pessimism" (Cobert and O'Donovan 2022 p2).

In other research, Levine (2022) advocated the benefits of the Chinese game, "Mahjong", which "involves multiple cognitive domains including attention, memory, and calculation in conjunction with interpersonal social contact" (p1). This fits with the emerging view that "intellectual activities with social engagement are associated with a lower risk of cognitive impairment and may mitigate burdens associated with physical frailty" (Levine 2022 p1).

3.2. PAID AND UNPAID WORK

The "active ageing" approach developed by the World Health Organisation has "disproportionately focused on paid work and extending working lives..., overlooking unpaid activities, such as volunteering, housework and informal care" (Sacco et al 2021 p2). If the paid working life is extended as some governments are proposing, how will that impact the other activities? It is thus important to understand older adults' participation in these different activities. This is what Sacco et al (2021) investigated.

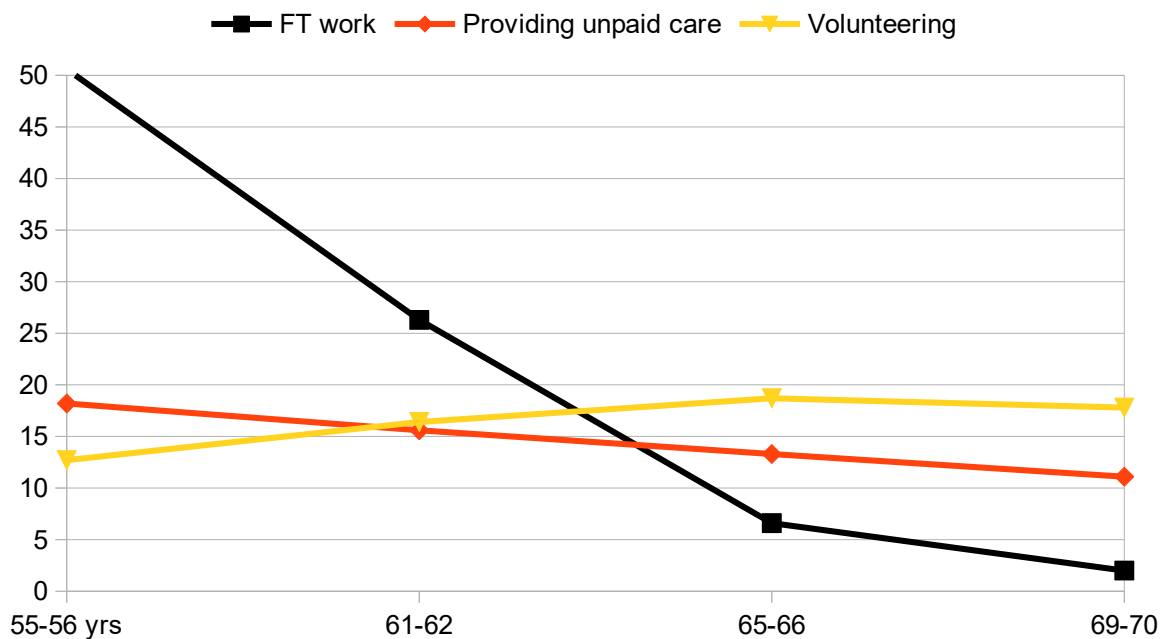
Focusing on paid and unpaid work, time is limited and so conflicts may develop. "For example, care-giving duties for an ill or disabled relative may generate conflict by competing for the time that otherwise would be dedicated to paid employment" (Sacco et al 2021 p2). This is where multiple roles have negative consequences. On the other hand, "the accumulation of multiple roles benefits individuals through the acquisition of social status, prestige, resources and personal growth" (Sacco et al 2021 p2) (table 2.1).

- Role strain theory - multiple roles can produce conflict and stress.
- Role enhancement or accumulation - having multiple roles has positive benefits.
- Role substitution - a new role compensates the loss of an old one (eg: volunteering after retirement from paid employment).
- Role extension - participation in one role encourages participation in others (eg: those in paid work also volunteer).

Table 2.1 - Different role theories.

Sacco et al (2021) used data from seven waves of the British Household Panel Survey (BHPS) covering 1996 to 2008. Responses from over 6000 55-70 year olds were relevant to this study. Paid work was categorised as none, part-time (PT), or full-time (FT) (>30 hours per week), while providing unpaid care was also grouped into three categories. Other questions covering housework, and volunteering, as well as socio-demographic variables, and health status were included.

Prevalence of paid work, and providing unpaid care both declined with age, while volunteering was the opposite (figure 2.1).



(Data from Sacco et al 2021 table 1)

Figure 2.1 - Percentage of selected age groups involved in selected activities.

Further analysis showed three distinct activity pathways in relation to paid and unpaid work for older adults:

i) "FT work and low activity" (49% of the sample) - Retirement from paid work with little replacement with other activities. Predominately "male breadwinner" model, but women in this group were "significantly more likely to live in rented housing or have a mortgage than to be outright home-owners, indicating that having to pay

rent or a mortgage may make working in full-time paid work in mid to later life a necessity" (Sacco et al 2021 p22).

ii) "PT and in-home work" (34% of the sample) - A constant pathway of PT work, providing unpaid care, and housework. Traditional female pattern. Generally lower socio-economic status and poorer health.

iii) "Multiple activities" (16% of the sample) - Greater volunteering than the other two groups. Generally higher socio-economic status and better health. "Higher income and home-ownership can provide financial security, enabling more control over when and whether they wish to retire from the paid labour market, as well as opening possibilities to employ others to undertake care and household work" (Sacco et al 2021 p22).

"Within each pathway, the declining probability of participating in the paid labour market was not paralleled by increases in the probability of engaging in unpaid forms of work (neither role substitution nor extension); the only exception being the slight increase in the probability of volunteering and civic participation in the FT work to low activity and the PT and in-home work pathway" (Sacco et al 2021 p21).

It is possible that the pathways were selected prior to age 55, but the researchers could not say (Sacco et al 2021).

Sacco et al (2021) noted that "parenthood lowers men's likelihood of being in the PT and in-home work pathway, while it is the opposite for women, indicating how child care reinforces the persistence of the gendered division of labour. Overall, our results emphasise that retirement may have different meanings for men and women's involvement in paid and unpaid activities" (p23).

Overall, a "nuanced picture" of paid and unpaid activities in mid to late adulthood. The researchers commented: "Since the promotion of paid work and volunteering in later life may mainly benefit individuals in advantaged circumstances, policies should avoid taking a blanket approach to encouraging participation in multiple activities, a key component of active ageing" (Sacco et al 2021 p1).

3.3. UNHAPPY COHORT

Ye and Su (2022) began: "One well-known demographic Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

puzzle is why baby boomers are the least happy among all birth cohorts" (p2235). Baby Boomers are individuals born between 1946 and 1964 (Ye and Su 2022).

One explanation could be that "[B]eing a member of large cohort subjects the boomers to unique formative experiences in the family, school, and labour market that have a lasting impact on individuals' sense of happiness" (Ye and Su 2022 p2236). This is called the "crowding mechanism" (eg: Macunovich and Easterlin 2010).

Ye and Su (2022) investigated this idea with data from the European Social Survey (ESS) United Kingdom subset that included nearly 20 000 respondents between 2002 and 2018. Happiness was measured by the response to the question, "Do you feel happy in general?", on an eleven-point Likert Scale ("extremely unhappy" to "extremely happy"). Responses were subsequently divided into two groups using the mid-point as cut-off. The size of the birth cohort was measured as the average number of new births per 100 000 people per year. Data were also collected on the usual demographic characteristics.

In the Boomers cohort, 83% were classed as "happy" (ie: scored 6 to 11 on the Likert Scale), but this was the lowest figure compared to the other cohorts. The youngest ("Gen Z"; born between 1997 and 2012) (90%) and oldest ("Greatest Generation"; born between 1900 and 1927) (88%) were the happiest cohorts (figure 2.2) ⁷. It seems that "individuals from smaller birth cohorts tend to be happier than those of large birth cohorts" (Ye and Shu 2022 p2252).

Cohort size was the most important variable in predicting difference in happiness between the cohorts (ie: more important than socio-economic status, marital status, and sociality factors like time spent with friends). Furthermore, "[B]oomers have achieved higher income, more college degrees, and are less likely to be unemployed than most cohorts, yet they remain the least happy even with these material benefits. These results suggest a negative effect of large cohort size on happiness is not through an economic mechanism of material deprivation" (Ye and Su 2022 p2252).

Ye and Su (2022) added: "Besides being members of a large cohort, the Boomers have two known factors against their odds: they are the most likely to separate and divorce and the least likely to socialise with friends despite having a large number of peers. Social disintegration and deprivation, not economic impoverishment, appears to be the culprit of unhappiness

⁷ There were six cohorts compared - "Greatest Generation", "Silent Generation" (born 1928-45), "Baby Boomers", "Generation X" (1965-1980), "Millennials" (1981-1996), and "Gen Z".

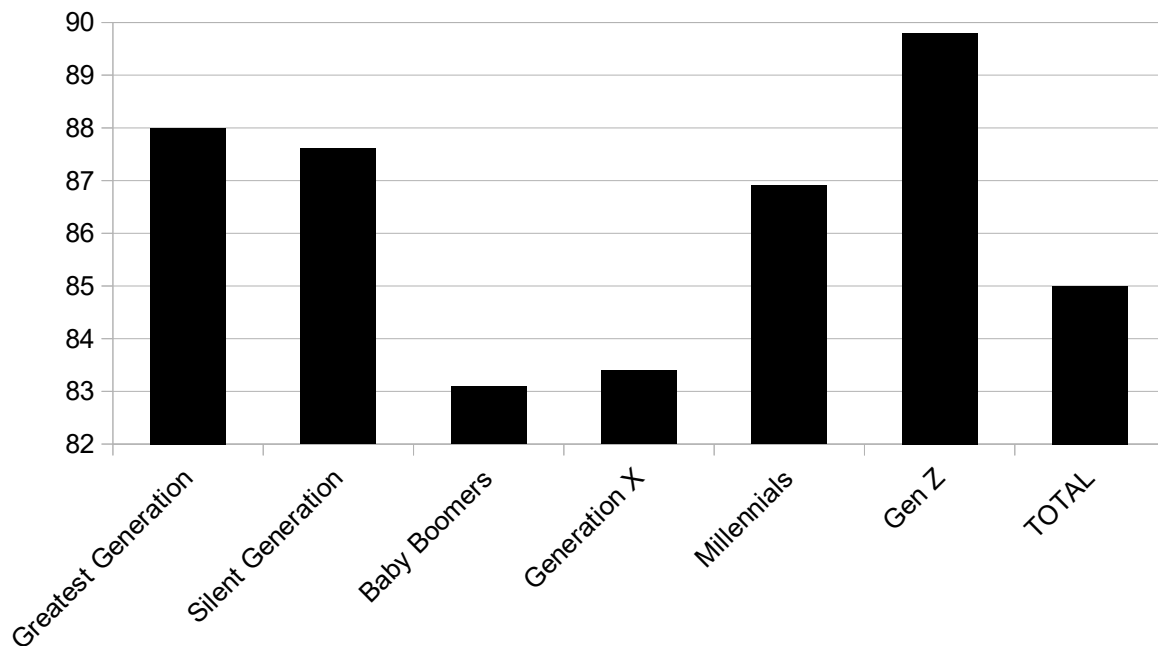


Figure 2.2 - Average level of happiness based on cohort (%).

of the UK Baby Boomers" (p2235).

3.4. OLDER ADULTS AND TIK TOK

Older adults are far from technophobes as a negative stereotype suggests, with over 80% of 50-69 year-olds and over 60% of older than that owning a smartphone in 2020 (Ng and Indran 2022).

This is manifest in older adult's use of social media, and, in particular, for Ng and Indran (2022), the use of micro-video-showing platform "TikTok" ("reputed for being the virtual playground of teenagers"; p1207).

Ng and Indran (2022) collected the most viewed videos of users aged sixty years and above, and this produced 348 videos, after excluding those not talking about ageing (ie: "older TikTok personalities"). Content analysis was performed on the videos. Three themes were distinguished:

i) "Defying age stereotypes" (71% of videos) - Videos featuring older adults challenging the traditional discourses on old age (eg: a video "depicted one user parading along the sidewalk coquettishly in a midriff-baring top, with a caption declaring unabashedly to

viewers her age of 70 years"; Ng and Indran 2022 p1210). This is an example of "glamma" (a portmanteau of "glamorous" and "grandma").

ii) "Making light of age-related vulnerabilities" (18%) - Videos of older adults joking about topics related to old age like dementia, physical debilitation, and death. For example: "One user poked fun at her own susceptibility to falls. With the text 'Me facetimeing life alert after I have fallen down the stairs and can't get up', she filmed herself sprawled lifelessly across the staircase with her spectacles shifted to the side of her face for dramatic effect" (Ng and Indran 2022 p1211).

iii) "Calling out ageism" (11%) - Videos explicitly denouncing ageist beliefs and behaviours. "Many TikTokers narrated their encounters with other users who were unwelcoming of older adults on a platform perceived as exclusive to younger people. For instance, in response to a snide remark, 'Go back to Facebook (sic) old lady' made by a fellow user on the application, a TikToker sniggered with a voiceover 'No'" (Ng and Indran 2022 p1211).

Though the number of older users has increased during the covid-19 pandemic, "they nonetheless form only a small fraction of the TikTok user base" (Ng and Indran 2022 p1213).

Ng and Indran (2022) ended: "As the older demographic expands in relation to younger groups, their visibility and representation on social media are all the more crucial. Our study reveals the potential for older adults to be put at the vanguard of a movement aimed at challenging socially constructed notions of old age through the use of social media" (p1214).

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4. FOOD STUFF

- 4.1. Food motivation
- 4.2. Expectations and cognition
- 4.3. Social influence
- 4.4. Changing diets
- 4.5. Metabolism over the life course
- 4.6. Taste of meat
- 4.7. Hangry
 - 4.7.1. Evaluation
- 4.8. References

4.1. FOOD MOTIVATION

A period of time without food produces hunger ⁸, which is an aversive state that motivates the individual to find and consume food. Hull (1943) described this model of motivation in the mid-20th century.

Subsequently, researchers have tried to identify the precise physiology of this phenomenon. Many elements are involved. Recent interest has focused on agouti-related peptide (AGRP)-expressing neurons (eg: Gropp et al 2005), which are activated by fasting and return to normal after eating. Three timescales appear to be involved with them - immediately after detection of food, in response to nutrients in the gut, and with the restoration of energy balance (Berrios et al 2021).

The motivation to find food includes areas of the hypothalamus, and the learning of food acquisition tasks (Berrios et al 2021).

The desire to eat (appetite) is "heavily regulated. This regulation is mediated by short-term feedback from the gut to ensure that amounts of food ingested can be accommodated, by longer-term feedback from adipose tissue to ensure that energy stores are adequate, and by cues from the environment to promote eating when food is obtainable, to balance the drive to eat with other competing survival drives" (Andermann and Lowell 2017 p757) (figure 4.1).

Appetite can be triggered by caloric deficiency, which is usually called hunger, but also by "the sight and smell of palatable food and to contexts related to time of day, social events, and risk/danger... Because of this, it can be difficult to determine why eating is

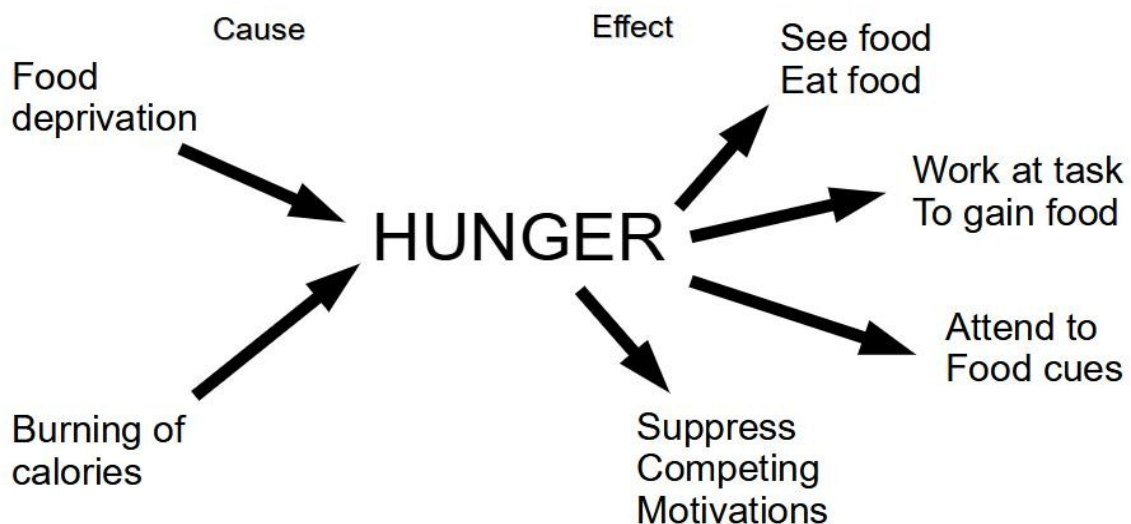
⁸ Tinbergen (1951) stated: 'Hunger, like, anger, fear, and so forth, is a phenomenon that can be known only by introspection. When applied to another. . . species, it is merely a guess about the possible nature of the animal's subjective state' (quoted in LeDoux 2021).

initiated at any given moment" (Andermann and Lowell 2017 p757).

Satiety is typically used to describe the opposite of hunger, though individuals can continue to eat beyond the "restoration of fuel storage deficits" (Andermann and Lowell 2017 p758). While satiation is used to mean "decreased desire to eat" (Andermann and Lowell 2017 p758).

Information about ingested food is transmitted from the gut and small intestine via the vagus nerve to the hindbrain, and biochemicals like cholecystokinin (CKK), peptide YY (PYY), and ghrelin are involved (Andermann and Lowell 2017). This is described as short-term feedback, whereas long-term feedback is controlled by the hypothalamus.

In the mid-20th century scientists reported "some very plump young mice" (Ingalls et al 1950 quoted in Andermann and Lowell 2017) with a mutant gene labelled "ob" (obesity). In the 1990s it was discovered that the gene was linked to the hormone leptin, which is released by fat stores in the body and communicates with the hypothalamus. Put simply, failure to produce leptin leads to obesity as satiety is not triggered. Though its role in long-term feedback is more complex than that (Andermann and Lowell 2017).



(After Andermann and Lowell 2017 figure 1 p758)

Figure 4.1 - Hunger model.

One way to deal with eating when hungry and not when hungry is the distinction of homeostatic and hedonic eating. The former describing eating for the reduction of hunger and the latter as "eating for pleasure" (ie: non-hunger eating). Andermann and Lowell (2017) observed that "these two forms of appetite regulation should not be viewed separately but, instead, as having different afferent signals but working through converging, common downstream circuitry to ultimately increase appetite. In essence, we eat to live by living to eat" (p758).

4.2. EXPECTATIONS AND COGNITION

The "mindset" (ie: thoughts, beliefs and expectations) around food influences feelings of hunger and satiety (Robson 2022).

Food expectancies are known to influence perceived taste as shown in various experiments. For example, offering the same wine in different bottles suggesting cheap or expensive not only influenced the perception of taste, but produced a physiological response in the brain (Crum et al 2011).

The perception of the amount of calories in a food affect hunger and satiety feelings. "In general, when people think they have eaten a high calorie pre-load they report greater fullness and eat less in response, whereas when people believe they have eaten a low calorie pre-load they report more hunger and eat more in response" (Crum et al 2011 p424).

Crum et al (2011) combined these last two points to test "whether subtle changes in the mindset associated with eating might influence the release of ghrelin in response to food consumption" (p425). Ghrelin is a gut peptide that is released when energy intake is required and declines when individuals have eaten (ie: put simply, it is a signal of hunger). Elevated ghrelin levels can produced weight gain through increased consumption of calories.

Crum et al (2011) recruited forty-six participants at Yale University for a "Shake Testing Study", and offered the same milkshake on two different occasions, but under different labels. The "indulgent" shake was presented as high-fat and high-calorie, while the "sensible" shake was represented as low-fat and low-calorie. Ghrelin was measured from blood samples. Participants also completed a hunger rating scale.

Crum et al (2011) summed up the findings thus: "When participants drank the indulgent shake, they had a

significantly steeper decline in ghrelin than when they drank the sensible shake. The observed pattern of ghrelin response is consistent with what one might observe if participants actually consumed beverages with differing caloric contents (ie: high vs low energy intake...). However, in this case the distinctive ghrelin profiles were psychologically mediated; they were dependent on the perceived expectancies of the milkshakes' nutritional contents as opposed to objective nutritional differences" (p427). The researchers drew a parallel with the placebo effect. The subjective rating of hunger, however, did not vary between the two milkshakes.

Dieters, not surprisingly, report being hungry more often, and this is exacerbated by the perception that "healthy" food is less filling. Brown et al (2020) wondered if expectations (specifically, "expected satiety"; ES) could be manipulated to reduce the amount eaten.

For example, Hogenkamp et al (2013) used high-calorie and low-calorie yoghurts with high- or low-calorie information attached. Subsequently, when given the chance to eat as much as they wanted, the low-calorie yoghurt/high-calorie information group ate less as compared to the low-calorie yoghurt and information group.

ES can be increased in a variety of ways research has found, including by increasing the viscosity of a drink, or using a heavier bowl to eat from (Brown et al 2020).

In another study, Brunstrom et al (2011) gave participants the same smoothie after seeing a large amount of the ingredients or not. The former reported higher levels of fullness and lower levels of hunger three hours post-consumption. Seeing the supposed ingredients produced greater ES.

Brown et al (2020) developed on this study with an omelette. Twenty-six Scottish participants were shown beforehand either large amounts of eggs and cheese purportedly to be used in the making or not before eating an omelette for breakfast. Around 10% less food was eaten subsequently during the day in the large ingredients condition (ie: when ES was higher). The level of ghrelin did not vary between the two conditions.

4.3. SOCIAL INFLUENCE

The social situation also influences eating. "If we

eat with someone who is eating a large amount then we are likely to model what they eat and consume more than we would eat if we were dining alone. We are also likely to eat a large amount if we eat in a group rather than eating alone" (Higgs and Thomas 2019 p1). This is the "social facilitation" of eating (Higgs and Thomas 2019). On the other hand, individuals can eat less if that will create a favourable social impression. This is also linked to conformity to social norms (Higgs and Thomas 2019).

These behaviours have been observed in experiments with another diner present, as well as with no other person present but environmental cues (eg: empty wrappers as a sign of how much others ate)⁹, or textual information (eg: a list of how much previous diners had eaten). This "modelling" occurs "when co-eaters are known to each other or are strangers and regardless of current hunger state, dieting status, current health goals or age" (Higgs and Thomas 2019 p1).

But there are exceptions. For example, the model has to be perceived as relevant, and the individual perceives themselves as the same social group as the model (Higgs and Thomas 2019).

4.4. CHANGING DIETS

Analysing US data for 2006 to 2016, He et al (2021) noted that the lowest income groups ate diets (eg: high added sugar) that had a high environmental cost. Switching to a healthy diet with a lower environmental impact would be unaffordable for over one-third of Black and Hispanic individuals in the lowest income group, calculated the researchers.

The global rise of obesity since the late twentieth century has been linked to fat-rich diets, and excess consumption of processed sugars and high-fructose corn syrup (HFCS) (Nunes and Anastasiou 2021).

Taylor et al (2021) found that mice fed HFCS had an increase in the surface area of the intestine which produced enhanced absorption of dietary nutrients and consequent weight gain when given a high-fat diet. The four-week HFCS-fed mice had longer intestinal protrusions (known as villi) than controls. Their weight gain was despite consuming and expending the same amount of energy

⁹ For example, in a field study, Prinsen et al (2013) allowed visitors to a work lunchroom to take chocolates from a bowl. More chocolates were taken when more empty wrappers were left around the bowl.

as controls.

4.5. METABOLISM OVER THE LIFE COURSE

Total daily energy expenditure is highest in infancy, then declines to young adulthood, where it remains stable throughout the middle years. A fourth distinct metabolic life stage is a decline after sixty years old (Pontzer et al 2021). These observations were based on data from over 6000 individuals aged eight days to 95 years old in twenty-nine countries using doubly labelled water method of measuring energy expended. Data from a further two thousand individuals were also included.

4.6. TASTE OF MEAT

Earlier humans, like the "Clovis" people (living over 10 000 years ago) in North America, ate a variety of animals, including mammoths, bison, and giant horses. Some of these are now extinct, and Newman (2019) has talked of "culinary extinctions" (ie: "extinctions brought on, at least in part, by the food preferences of humans"; Dunn and Sanchez 2022 p46).

It is possible that taste, as much as nutritional needs, was important in the hunting of animals. Looking for parallels among modern hunter-gatherers, Koster et al (2010) studied two Indigenous communities (Mayangna and Miskito) in Nicaragua. Hunters appeared to sometimes ignore easy-to-kill prey (ie: a simple nutritional needs model), and chose a mixture of "what was available and easy to obtain and what tasted good, or at least didn't taste bad" (Dunn and Sanchez 2022 p48). The tasty meats included white-lipped peccaries, collared peccaries, and pacas (always hunted if spotted), while tapirs, for instance, although full of calories and easy to kill, were ranked as less flavourful. Easy-to-kill howler monkeys were ignored because the meat was disliked. "Most of the preferred meats of the Mayangna and Miskito are from species whose meat bears the flavour of what they have eaten and that tend to eat foods with pleasing flavours" (Dunn and Sanchez 2022 p49).

4.7. HANGRY

"Hangry" (a portmanteau of hungry and angry) is "the Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

notion that people become angry when hungry" (Swami et al 2022 p1).

The limited amount of research of this topic in humans is equivocal (Swami et al 2022). For example, based on laboratory experiments, McCormack and Lindquist (2019) concluded that "individuals are more likely to experience 'greater emotionality when hunger-induced affect is conceptualised as emotions in a given context'...; that is, hungry people are more likely to experience negative emotions (eg: anger, irritability), depending on how the context guides conceptualisations of negative emotionality" (Swami et al 2022 p2). But these studies (and others) used tasks like judging ambiguous pictures (ie: low in ecological validity). Experiments are "also limited in terms measurement occasions (ie: all such studies use a pre- and post-intervention method, with no longer-term follow-up or no measurement at multiple time-points)" (Swami et al 2022 p2).

Thus, Swami et al (2022) chose to use the experience sampling method (ESM), where participants are randomly prompted to respond during a study period. In this case, twenty-one days. The participants were 121 German-speaking adults from Central Europe, of which sixty-four completed the study. Five times per day ¹⁰, prompted by a smartphone message, participants completed a short questionnaire covering current feelings of hunger, anger, irritability, and general emotional state (each scored on a 100-point scale). A final survey collected information about dietary behaviour and eating motivation, and general level of anger ("trait anger").

Overall, a higher hunger score was significantly associated with higher anger and irritability scores, and a lower pleasure score, even controlling for sex, age, body mass index (BMI), dietary behaviour, and trait anger. Both short-term changes in hunger, and general level of hunger across the study period predicted the negative emotions. The findings support the idea of "hanger".

4.7.1. Evaluation

The study was a novel way to research the topic in the real world (including collecting longitudinal data), but it was not possible to explain the findings (ie: no qualitative data gathered). Swami et al (2022) explained that "we were unable to measure the specific situational contexts that participants found themselves in. Such data

¹⁰ At 8 am, 12 pm, and 6 pm each day, and two random notifications between 9-11 am and 1-5 pm.

may help future researchers to disentangle more precisely whether some situations (eg: being alone versus being with others, being at work versus at leisure) are more likely to result in anger and irritability than others. In a similar vein, we measured anger and irritability using single-item measures. Although this is a common method in ESM studies, this meant we were unable to capture potential nuances in these affective experiences. Also of relevance, in order to minimise participant burden, we only included measures of anger, irritability, pleasure, and arousal. Of course, there are many other emotional states that could have been measured, such as excitement, contentment, and boredom. Inclusion of a wider range of emotional states in future work help to elucidate the link between hunger and arousal (eg: by examining associations between hunger and emotions that are neither negative nor high arousal)" (p12).

The measures were self-reports, and again Swami et al (2022) explained, "we did not obtain objective physiological measures to estimate participants' actual hunger, such as salivary alpha-amylase, glucose, and the gut hormone ghrelin. This is important because subjective assessments of hunger may not be the only way that emotional and behavioural outcomes are affected; rather, it is likely that physiological and neural changes underlying feelings of hunger also induce negative emotional states" (p12).

Confounding variables, like diabetes, were not controlled.

The sample was recruited via the social networks of the researchers, and were, Swami et al (2022) admitted, "unlikely to have been representative of Central European, German-speaking populations. As such, it will be important to replicate our findings with more representative and more diverse populations, so as to determine how generalisable our findings are. This is particularly important given that understandings of hunger, eating habits and styles, and attitudes toward food more generally (eg: frequency of eating, dining rituals, the symbolic meaning of hunger) may all vary cross-culturally" (p13).

The ESM collects data at a certain time point, and so misses behaviour at other times. Also participants may respond differently in completing the same questionnaire as time passes (ie: 105 times in completed study). Note also the high drop-out rate.

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5. HEALTH MISCELLANY

- 5.1. Gender differences in treatment
- 5.2. Bipolar disorder and life expectancy
- 5.3. Exercise
- 5.4. Drug-gut interactions
- 5.5. Big Pharma
- 5.6. Early intervention with common mental disorders
- 5.7. A brief word against individual level explanations
- 5.8. A representation of worry

5.1. GENDER DIFFERENCES IN TREATMENT

Sex differences in health outcomes may be due to differences in treatment. For example, in the case of out-of-hospital cardiac arrest, Blewer et al (2018) found that 39% of women compared to 45% of men received bystander cardio-pulmonary resuscitation (CPR).

Nutbeam et al (2022) found similar differences in the administration of the anti-fibrinolytic drug tranexamic acid (TXA) after traumatic injury.

Firstly, to establish the benefits of TXA, data came from the "Clinical Randomisation of an Anti-fibrinolytic in Significant Haemorrhage" (CRASH-2 and CRASH-3 trials). CRASH-2 randomly allocated 20 211 patients with traumatic injury in forty countries in 2010 to TXA or a placebo, and CRASH-3 12 737 patients in twenty-nine countries in 2019. Both men and women had a reduced risk of death after traumatic injury with significant haemorrhage with TXA than placebo. So, these data ruled out biological differences between the sexes in terms of response to such injuries.

Next, the researchers analysed sex differences in administration of TXA using data from the Trauma and Audit Research Network (TARN) registry for England and Wales for 2017 to 2020 (n = 98 879 women and 117 485 men). Controlling for differences between patients, 7% of women were given TXA compared to 17% of men.

Nutbeam et al (2022) summed up: "Tranexamic acid reduces trauma deaths to a similar extent in women and men, but women are less likely to be treated. Women are treated less frequently than men regardless of their risk of death from bleeding... or the severity of their injuries" (p196).

In terms of the methodology of this study with particular reference to the TARN registry data, there are

strengths and weaknesses:

i) Large number of patients (aged 16 years or above) (+), but there were differences between the male and female patients (eg: mean age: 73 years for women, but 59 years for men, and 65 years overall; the male sample had significant more traffic accidents: 25 vs 10%) (-).

ii) Extensive data collection in the TARN registry - from point of injury to hospital discharge or death (+). However, some data were missing (eg: time of ambulance and hospital arrival) (-). Also, Nutbeam et al (2022) admitted: "Like all registry and database studies, we rely on accurate data capture and transcription" (p197) (-).

iii) Control of confounders like age, and time to hospital after injury (+). But no control for "injury mechanisms" (ie: differences in healing physiology between men and women) (-), and patient sex (attributed by observer) not gender (self-identified) used (-).

iv) Risk of death on hospital arrival assessed by "Bleeding Audit and Triage Trauma" (BATT) score. "Although the BATT score is a new prognostic score which is not currently used in routine clinical practice, the evidence on its accuracy is reassuring" (Nutbeam et al 2022 p197) (+/-).

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5.2. BIPOLAR DISORDER AND LIFE EXPECTANCY

Premature death is a risk with many serious mental disorders, whether through natural causes (eg: cardiovascular disease) or unnatural deaths (eg: suicide) This "mortality gap" compared to the general population is evident with bipolar disorder (Chan et al 2022).

Metrics for assessing differential mortality include Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

standardised mortality ratio (SMR) and mortality rate ratios, or life expectancy and years of potential life lost (YPLL). The latter is "the difference between the observed age at death and the optimal remaining life expectancy at that age" (Chan et al 2022 p567).

Applying YPLL to individuals with bipolar disorder, individual studies suggest 10-15 years shorter lifespan than the general population (Chan et al 2022). Chan et al (2022) performed a meta-analysis to establish a definite figure.

Published studies (up to the end of March 2021) covering bipolar disorder (in individuals aged fifteen years and above) and life expectancy and/or YPLL were sought, and thirteen met the inclusion criteria. Data on 96 000 patients and life expectancy, and 129 000 and YPLL were available.

The pooled life expectancy of individuals with bipolar disorder was 66.9 years ¹¹, with a significant difference between men (64.6 years) and women (70.5 years), and between regions of the world (eg: 54.1 years in Africa and 67.3 years in Europe).

The weighted average of YPLL of individuals with bipolar disorder was 12.9 years (11.8 years for men and 10.6 years for women). The difference between regions of the world was largest (eg: 29 years in Africa compared to twelve years in Europe). Chan et al (2022) explained the difference as primarily due to access to and quality of healthcare (and mental healthcare) services. The researchers, however, warned that these differences should be treated with caution as only one or two studies were reported per region (except Europe with four studies).

The calculations by Chan et al (2022) were based on a small number of total studies (much less than with SMR), and there was not enough information to calculate YPLLs for specific causes of death, nor between types I and II bipolar disorder. Importantly, "there was significant heterogeneity among studies for life-expectancy estimates, and it could not be fully accounted for by the pre-specified study characteristics, thereby indicating the presence of other unidentified factors. Nonetheless, as data for other potentially relevant variables such as socio-economic status and deprivation, prescription of psychotropic medications and lifestyle risk factors were not reported in most included studies, sources of heterogeneity could not be further explored..." (Chan et al 2022 p575).

¹¹ Life expectancy in the general population in the global North is around 80 years.
Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

Chan et al (2022) summed up simply that the "main analyses showed that patients with bipolar disorder experienced reduced life expectancy relative to the general population, with approximately 13 years of potential life lost" (p570).

An equivalent study with schizophrenia (Hjorthoj et al 2017) found YPLL of 14.5 years (Chan et al 2022).

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5.3. EXERCISE

A "mega-study" is a collection of simultaneous randomised controlled trials (RCTs), and it overcomes the limitations of single RCTs that tend to compare a single intervention to a control group. Sometimes it is difficult to know if the results are a consequence of the intervention or the population studied in single RCTs (Royer 2021).

Milkman et al (2021) performed a mega-study on gym attendance, comparing 54 interventions. Over 61 000 members of a chain of gyms in the USA were the participants. Each gym had a specific intervention (and a control group) based on combinations of prompts to visit the gym, rewards for attendance, and information about social norms of exercising.

Overall, 45% of the interventions significantly improved gym attendance (by between 9 to 27%). The most effective individual intervention was offering a reward for returning to the gym after missing a scheduled workout, followed by higher incentives, and social norms (eg: telling participants that the majority of Americans exercised and it was growing).

Royer (2021) noted two problems with mega-studies:

i) The "winner's curse" bias (Andrews et al 2019) - "the true effect of the best performing intervention is likely to be smaller than the effect measured in one study - which means that, when the study is replicated,

the 'best' treatments are likely to differ. The winner's curse bias becomes more acute with the number of treatments being studied and therefore could be particularly amplified in a mega-study setting" (Royer 2021 p393).

ii) The problem of generalising from one mega-study where the participants are similar in demographics. Royer (2021) hoped that "the next generation of mega-studies might not only expand the number of interventions being studied, but also widen the pool of participants across different geographies, and, in doing so, might address the frequent concerns about the external validity of RCTs" (p393).

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5.4. DRUG-GUT BACTERIA INTERACTIONS

Therapeutic drugs that pass through the gut (ie: swallowed intake) interact with the bacteria in the gut. Klunemann et al (2021) found seventy bacteria-drug interactions that could reduce the microbial fitness, or alter drug availability through biotransformation (ie: the amount of the active agent of the drug reaching its target in the body).

It was known that gut bacteria can transform some drugs into active forms (eg: lovastatin), inactivate others (eg: digoxin), and produce toxic effects of others (eg: irinotecan) (Klunemann et al 2021).

Klunemann et al (2021) focused on fifteen drugs and twenty-one species of gut bacteria. Overall, there were two patterns found:

i) The gut bacteria reduced drug availability by storing the drug in its cells.

ii) Changes in the gut bacteria that produce side effects of the drugs (eg: duloxetine and weight gain).

Drugs taken for type 2 diabetes, and heart-related conditions, for example, impact the gut microbiome, and indirectly may exacerbate the disease. Forslund et al (2021) reported data from the MetaCardis cohort, which includes over 2100 European adults with conditions like metabolic syndrome, severe obesity, type 2 diabetes, and heart disease.

A variety of medication were taken singularly or in combination by cohort members, including statins, beta-blockers, and metformin. The observation data showed that medication type, dosage, and combinations impacted the gut microbiome. Anti-biotics combined with certain drugs appeared to worsen the disease, whereas statins combined with aspirin, for example, improved the gut microbiome and health.

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5.5. BIG PHARMA

Pharmaceutical companies and the industry have acquired a bad reputation as summarised in the increasingly derogatory term "Big Pharma" with behaviours like that of "Turing Pharmaceuticals". In 2015 this company obtained the rights to "Daraprim" (an anti-parasitic drug) and immediately increased the price from \$13.50 to \$750 per pill (despite production costs of a few cents) (Garber and Brownlee 2021).

Recently, six of sixteen board members of the Medicines and Healthcare products Regulatory Agency (MHRA) in the UK were found to be receiving payments from pharmaceutical companies (eg: for consultancy work) (Das 2022).

"There is no suggestion of wrongdoing... But critics raised concerns about the potential for bias - or the perception of it - and called for stricter rules on conflicts of interest for those working in pharmaceutical regulation" (Das 2022).

Purdue Pharma

"Purdue Pharma", who developed the prescription painkiller "OxyContin", has become notorious in recent years. The active ingredient of the drug is oxycodone, which is chemically very close to heroin and more powerful than morphine (Keefe 2017).

Addiction is a major concern with such a drug. Purdue used aggressive marketing to counter doctors' concerns, as well as funding research and doctors to play down the fears. For example, Russell Portenoy (pain specialist in New York) accused doctors of "opiophobia" for not prescribing OxyContin, and argued that addiction was a "medical myth" (Keefe 2017).

Table 5.1 outlines some of the strategies used by Purdue. These are quite common in the industry today, but Purdue pioneered them in the 1990s and 2000s. "The marketing of OxyContin relied on an empirical circularity: the company convinced doctors of the drug's safety with literature that had been produced by doctors who were paid, or funded, by the company" (Keefe 2017).

- Train sales representatives to overcome doctors' objections - eg: phrases memorised by representatives included "The delivery system is believed to reduce the abuse liability of the drug" (Keefe 2017).
- "Speakers' bureau" of paid clinicians to deliver presentations at medical conferences.
- Offering prescribers "all-expenses-paid trips" to pain management seminars in Florida.
- Advertisements in medical journals.
- Sponsored websites.
- Video testimonials of satisfied patients.

Table 5.1 - Example of tactics used by Purdue Pharma.

Quinones (2015) described similarities in "the tactics of the unassuming, business-minded Mexican heroin peddlers, the so-called Xalisco boys, and the slick corporate sales force of Purdue. When the Xalisco boys arrived in a new town, they identified their market by seeking out the local methadone clinic. Purdue, using I.M.S. [Inter-continental Medical Statistics] data, similarly targeted populations that were susceptible to

its product" (Keefe 2017).

Purdue resisted measures to limit OxyContin after it became clear about the role in addiction and overdoses. Psychiatrist Mark Sullivan summed up their argument: "Our product isn't dangerous - it's people who are dangerous" (quoted in Keefe 2017).

"Millions of patients found the drug to be a vital salve for excruciating pain. But many others grew so hooked on it that, between doses, they experienced debilitating withdrawal. Since 1999, two hundred thousand Americans have died from overdoses related to OxyContin and other prescription opioids. Many addicts, finding prescription painkillers too expensive or too difficult to obtain, have turned to heroin" (Keefe 2017).

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5.6. EARLY INTERVENTION WITH COMMON MENTAL DISORDERS

Accepting recall bias, most sufferers of depression and anxiety (common mental disorder; CMD) report their first episode in adolescence, so this supports "the case for early intervention to reduce later burden of disease. Indeed, the development of mental health services for youth is widely viewed as a 'best buy' for reducing the prevalence, costs and morbidity arising from mental disorders" (Moran et al 2022 p558).

Assessing whether such interventions "work" requires longitudinal research, and Moran et al (2022) reported one such study - the Victorian Adolescent Health Cohort Study (VAHCS). This was begun in 1992 in the state of Victoria, Australia, with over 2000 14-15 year-olds. Follow-up occurred every six months until age 18, and then at various intervals to wave 10 (34-35 years old) (with 1923 of the original participants).

CMD was assessed regularly with the Clinical Interview Schedule (CIS-R), and later the General Health Questionnaire (GHQ), and the Composite International Diagnostic Interview (CIDI). CMD ("caseness") was defined by the presence over two or more waves of data collection in adolescence and young adulthood.

At wave 10, 19% of respondents had had an episode of CMD in the previous year, of which half of them had reported CMD in adolescence or young adulthood. Interestingly, a number of individuals, then, developed CMD in their 30s with no prior history. "The prevailing wisdom about adult CMD has been that they are largely an extension of disorders arising during adolescence" (Moran et al 2022 pp561-562).

"With no intervention, the confounder-adjusted prevalence of adult CMD in those with adolescent CMD was estimated to be 29%" (Moran et al 2022 p561). Modelling hypothetical early intervention for adolescent CMD would reduce this figure by 4% only. More general interventions, however, like policies to encourage employment and employment stability were not modelled.

The researchers concluded that their findings "suggest the need for a life-course approach in tackling the burden of disease associated with CMD. Policymakers should recognise that depression and anxiety arise in the context of a range of adversities occurring not just in childhood or adolescence, but extending well into adulthood and that time-limited intervention across a narrow age band is unlikely to produce substantial benefits for individuals and society" (Moran et al 2022 p565).

Reference

Moran, P et al (2022) Impact of early intervention on the population prevalence of common mental disorders: 20-year prospective study British Journal of Psychiatry 221, 558-566

5.7. A BRIEF WORD AGAINST INDIVIDUAL LEVEL EXPLANATIONS

The relationship between early life adversity and later adult outcomes is of great interest. A question can be asked using "a floral metaphor (Boyce 2019): Why are some children more like orchids (exquisitely sensitive to environmental conditions, prone to either withering or flourishing), while others are more like dandelions (capable of growing well undermost conditions)?" (Pentecost 2021 p444). But Morgan et al (2014) preferred Psychology Miscellany No. 173; October 2022; ISSN: 1754-2200; Kevin Brewer

another question: "Which environment regulates for violent conduct and which for peaceful conduct?" (quoted in Pentecost 2021).

The view taken is important because it drives the points and forms of intervention advocated. For example, if maternal care can mediate the negative impact of adversity, then interventions will focus on promoting mother-child bonding (ie: an individual-level focus). While focus on genetics and epigenetics also concentrates on the individual level. If this is the case, then, for instance, the "scientists' aim is no longer to understand how unequal power arrangements inflict biological injuries. Their aim becomes to evaluate individuals' biological fitness to withstand exposure to unequal social environments" (Pentecost 2021 p445). Put simply, it distracts from structural factors.

Discussing trauma in South Africa, Pentecost (2021) argued that individual level approaches can conflate the experiences from very different times and places into universals, with terms like "epigenetic trauma". "Epigenetic trauma becomes a wide net in which all manner of 'traumatic pasts' might be captured. The definition, measurement, and translation of trauma into data-points in the end foregrounds biological markers and simplifies social and political histories... The danger is a repeated narrative of damage via epigenetic research that 'studies harm without exploring reversibility' (Meloni and Muller 2018)" (Pentecost 2021 p451).

Pentecost (2021) ended: "Rather than turning to deterministic, essentialist, or biologised notions of inherited trauma, and revisiting old pathway dependencies that end at the maternal body – this time as a site for neuroscientific intervention to target maternal investment – it is necessary to mobilize resources for structural reforms to decrease crime and violence and support a 'distributive reproductive justice': the 'affirmative making of the conditions that support collective life in the face of persistent racist, colonial, and hetero-patriarchal life-negating structures' (Murphy 2018...)" (p452).

References

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Meloni, M & Muller, R (2018) Transgenerational epigenetic inheritance and social responsibility: Perspectives from the social sciences Environmental Epigenetics 4, 1-10

Morgan, B et al (2014) Human biological development and peace: Genes, brains, safety and justice. In Leckman, J.F et al (eds) Pathways to Peace: The Transformative Power of Children and Families Cambridge, MA: MIT Press

Murphy, M (2018) Against Population, towards Afterlife. In Clarke, A.E & Haraway, D (eds) Making Kin Not Population Chicago: Prickly Paradigm Press

Pentecost, M (2021) The politics of trauma: Gender, futurity, and violence prevention in South Africa Medical Anthropology Quarterly 35, 4, 441-457

5.8. A REPRESENTATION OF WORRY

Individuals who worry will vary in the frequency and intensity of their anxiety compared to "non-worriers", but also in the content. Concerning the past, there will be rumination over past events that happened (Did) and things that could have happened (eg: "I was nearly hit by that car").

In relation to the future, there will be worries about events that will happen (eg: the bill always due on the 25th), but also things in varying degrees of likelihood that could happen.

Understanding extreme worry can be helped by exploring the worries about events that could have happened (Past), and those that could happen, particularly unlikely ones (Future) (figure 5.1).

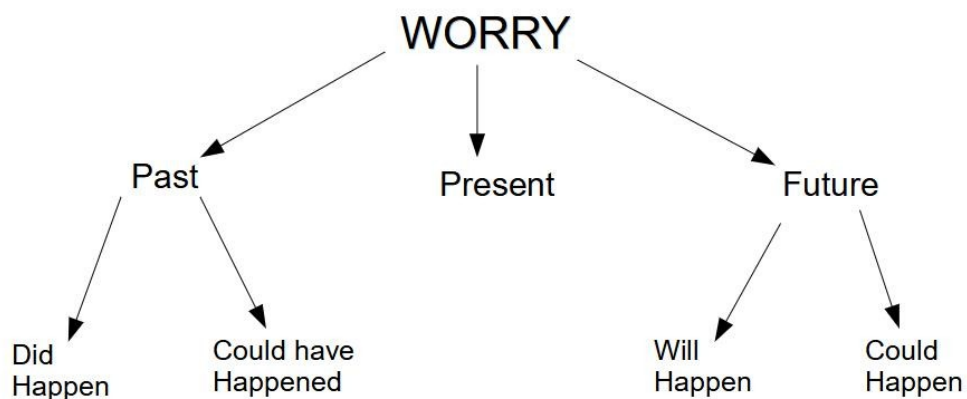


Figure 5.1 - Different focus on worry.