

## Research Idea

# Mental health crisis in midlife - a proposed research agenda

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## Abstract

There is a growing amount of evidence indicating increased levels of psychological distress, suicide rates and decreased well-being in midlife (age 45-55). We refer to this phenomenon as the 'midlife mental health crisis'. As there is little empirical evidence or theoretical grounds to explain the midlife mental health crisis, we propose a research agenda.

In order to facilitate further research, we consulted members of public, mental health professionals and researchers on potential reasons for the midlife mental health crisis. Subsequently, we translated those into research questions testable with the British birth cohorts. We propose a series of studies using three statistical modelling approaches: descriptive (what is the midlife mental health crisis?), predictive (who is at increased risk of experiencing the midlife mental health crisis?) and explanatory (what are the processes leading to the midlife mental health crisis?).

## Keywords

midlife crisis; adult mental health; life course mental health; psychological distress

## Introduction

Common mental disorders (including depression and anxiety) are the leading cause of non-fatal disease burden, measured by years lived with disability (Whiteford et al. 2013), and their prevalence has increased over the last three decades across high-income countries (GBD 2015). There is a growing amount of evidence showing that they tend to increase in prevalence from early-30s—with some studies indicating an increase already from early-20s—to mid-40s or mid-50s (Blanchflower and Oswald 2008, Spiers et al. 2012, Blanchflower 2020, Bell 2014, Sacker and Wiggins 2002, Gondek et al. in press). Likewise, a rise in the incidence of suicide and a drop in well-being have been observed at this age, suggesting that is a particularly vulnerable phase of life (Blanchflower 2020, National Statistics 2017). We refer to this phenomenon—of worsening mental health and well-being between early-adulthood and midlife—as the 'midlife mental health crisis'. Processes underlying the midlife mental health crisis are unclear, with overall little theory or empirical evidence to draw on when explaining mental health trajectory in adulthood.

To facilitate further research, we consulted members of the public, mental health professionals and researchers on potential reasons for the midlife mental health crisis. Subsequently, we translated those suggested reasons into research questions that can be tested using the British birth cohorts: the 1946 MRC National Survey of Health and Development (NSHD) (Wadsworth et al. 2006), the 1958 National Child Development Study (NCDS) (Power and Elliott 2006) and the 1970 British Cohort Study (BCS70) (Elliott and Shepherd 2006).

For brevity, we outline recommendations for future research based on the NCDS and the BCS70 due to greater comparability of those two cohorts. These datasets measured mental health (as psychological distress) using the Malaise Inventory (NCDS: at age 23, 33, 42, 44/45, 50; BCS70: at age 26, 30, 34, 42, 46) (Rutter et al. 1970). The NCDS and BCS70 include rich information from birth up to mid-adulthood, among those born in 1958 and 1970 respectively, on factors that tend to be associated with mental health: socioeconomic circumstances, health, employment, education or family life (Power and Elliott 2006, Elliott and Shepherd 2006).

## Research agenda

To guide future research on midlife mental health crisis, we propose a series of studies using three statistical modelling approaches: descriptive, predictive and explanatory (Shmueli 2010). These will help to address the following research questions:

- **Descriptive – Study 1**

- What is the midlife mental health crisis?

- **Predictive – Study 2**

- Who is at increased risk of experiencing the midlife mental health crisis?

### • Explanatory – Study 3

- What are the processes leading to the midlife mental health crisis?

### **Describe - what is the midlife mental health crisis?**

In descriptive modelling, the focus is on “summarizing or representing the data structure in a compact manner” (Shmueli 2010, p. 291). This approach can be used to further describe what the midlife mental health crisis is. First, we recommend plotting age trajectories of survey items capturing individual symptoms, in addition to their aggregated sums typically used in research. For instance, one study based on the NCDS and BCS70, found that fatigue and low mood increased between early-adulthood and midlife, whereas panic and tension showed less change across age (Gondek et al. in press). The multilevel regression framework, commonly used in plotting age trajectories of aggregated measures of psychological distress, can also be used to capture individual variability in trajectories of each symptom.

Another step to better understanding the midlife mental health crisis is to investigate how heterogeneous this phenomenon is. Namely, if it is likely to affect the majority of the population—hence shifting the entire distribution towards higher distress—or it is more specific to certain subgroups of the population, for instance to those who have been particularly prone to experiencing mental health problems at earlier ages. The latter can be investigated with finite mixture models, which classify individuals according to their propensity to report psychological distress at ages 23-50 in NCDS and BCS70 (Colman et al. 2007a).

Identifying potential sub-populations will facilitate the next step in the research agenda—prediction, where characteristics of those experiencing the midlife mental health crisis will be studied. For instance, as seen in Fig. 1, there is a declining proportion of those with no symptoms and an increase in the proportion of those with any number of symptoms between age 30/33 and 42. Subsequently, the proportions of both, those with no symptoms and with four or more symptoms increased between the ages of 42 and 46/50. Whereas, individuals who had between one and three symptoms declined proportionally at these ages. This indicates somewhat heterogeneous processes in midlife, affecting sub-groups differently depending on the number of symptoms they experienced.

Likewise, individuals vary greatly in their longitudinal trajectories of psychological distress, which tend to diverge with age—producing a ‘fanning out’ of psychological distress in midlife (see Fig. 2 for the span of individual age trajectories in NCDS and BCS70 and the study by Bell and colleagues (Bell 2014)). Latent class analysis, would help to identify typologies of longitudinal psychological distress between early-adulthood and midlife, characterising stability in psychological distress throughout this age. For instance, a similar analysis was conducted by Colman and colleagues using the NSHD, which identified six distinct profiles between age 13 and 53 with an absence of symptoms (44.8%) and repeated moderate symptoms (33.6%) being the most common profiles (Colman et al.

2007a). Other subgroups included: adult-onset moderate symptoms (11.3%), adolescent symptoms with good adult outcome (5.8%), adult-onset severe symptoms (2.9%), and repeated severe symptoms over the life course (1.7%) (Colman et al. 2007a). Such typologies can be used as an outcome in the predictive step of the research agenda, in order to investigate if these subpopulations differed in key characteristics.

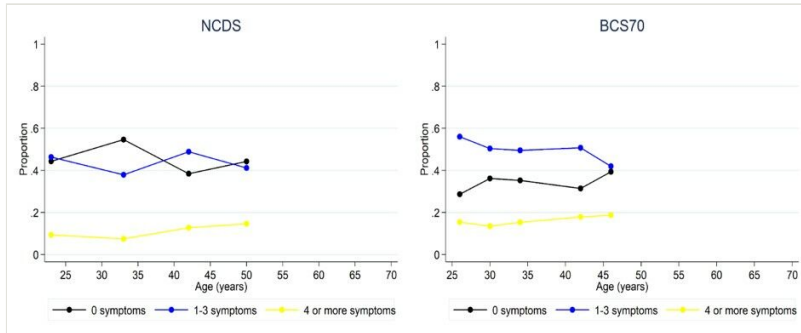


Figure 1. [doi](#)  
 Age distribution of participants with varying proportions of symptoms in the NCDS and BCS70.

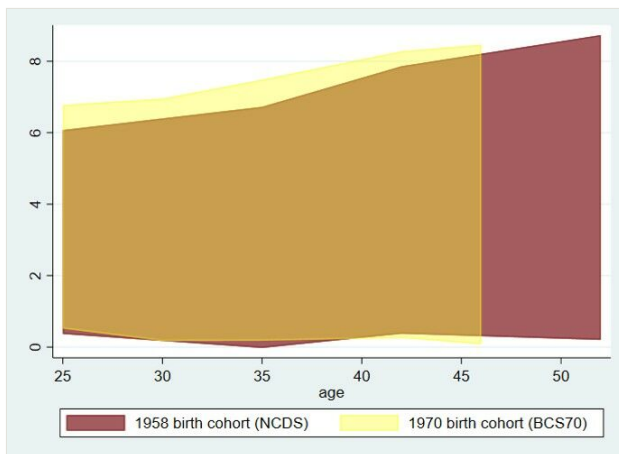


Figure 2. [doi](#)  
 Span of individual age trajectories of psychological distress, measured as a continues outcome, in the NCDS and BCS70.

## Predict - who is at increased risk of experiencing the mental health crisis?

The objective of predictive modelling is prediction of a given outcome, based on the available information (Shmueli 2010). This involves identifying variables, which are likely to be associated with the outcome but are not necessarily causally related to it (Shmueli

2010). In the present context, this will help identify characteristics that make one susceptible to experiencing mental health midlife crisis, but these 'risk factors' should not necessarily be targets of intervention. This step will also facilitate generating hypotheses for the third step of the research agenda, in which specific causal relationships with the midlife crisis will be studied.

In this phase, we recommend using outcomes derived through the descriptive step of the research agenda—in addition to summary scores obtained with the Malaise Inventory. These outcomes include cross-sectional latent classes obtained at each studied age (NCDS: at age 23, 33, 42, 44/45, 50; BCS70: at age 26, 30, 34, 42, 46) as well as longitudinal latent profiles modelled across age 33-50. This will help to further understand whether there are any crucial differences in characteristics across subgroups of the population varying in their propensity to experience psychological distress at each studied age and longitudinally. Predictors of the increase in mental health problems between early-30s and 40s/50s may be additionally studied by controlling for psychological distress at preceding age, i.e. at age 33 when psychological distress at age 42 is used as the outcome in the NCDS. After consultation with researchers, mental health professionals and members of public, we identified a list of variables that may be associated with the midlife mental health crisis and can be operationalised by information captured in NCDS and BCS70 (see Table 1). When building predictive models, we recommend considering methods commonly used in machine learning settings, such as lasso or Ridge regression, to remedy limitations of stepwise regressions traditionally used in epidemiology and public health research (Tibshirani 1996, Duncan 2011, Walter and Tiemeier 2009).

Table 1.

Key potential reasons for the midlife mental health crisis consistently identified by researchers, mental health professionals and members of public

**Work factors:** high demands, increasing responsibilities, insecurity, uncertainty about progress

**Family factors:** increased care demands for children and older relatives, role and structural changes

**Physical health:** decline in physical health, unhealthy behaviours, increased distress

**Social factors:** loneliness, lack of time for hobbies, social capital

**Adverse events:** divorce, poor socioeconomic circumstances

**Early life factors:** general vulnerability to distress (e.g. low cognitive scores, poor child mental health, poor academic achievement, parental death and family characteristics)

**Personality and identity** (e.g. neuroticism, identity confusion)

## Explain - what are the processes leading to the midlife mental health crisis?

The final step within the proposed research agenda is to test causal processes leading to the midlife mental health crisis. We suggest selecting variables, from the pool of identified predictors in step 2, which potentially lie on the causal pathway between age (33-36 – 54)

and psychological distress and are malleable hence can be targeted by interventions. Estimating the proportion of the effect of age on psychological distress captured by these variables (i.e. mediators), allows for quantifying potential benefits of intervening on these variables (VanderWeele 2013). Contrary to the predictive modelling in step 2, confounding structures of the causal relationships need to be carefully considered (Rudolph et al. 2019). For instance, when studying employment status as a potential mediator of the relationship between age and psychological distress, factors such as cognitive ability, family structure or physical health, should be accounted for. A similar analysis was conducted by Ploubidis and colleagues, who examined the role of potential mediators in explaining differences between the 1958 and 1970 birth cohorts in psychological distress at age 42 (hence they studied year-of-birth – psychological distress association) (Ploubidis et al. 2017).

## Conclusion

The proposed research agenda comprises three consecutive steps, where each step addresses an overarching research question in order to increase our understanding of the mental health midlife crisis. We acknowledge that further research questions may arise, for instance, related to differences across the birth cohorts or other potential predictors not yet captured in existing research. However, this agenda provides a comprehensive guide to using existing cohort data as the means to advance our understanding of the midlife mental health crisis—a phenomenon of great importance for public health.

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## Author contributions

DG and BM conceived, planned and carried out the project. All authors discussed the outcomes of the project, read and contributed to the final manuscript.

## Conflicts of interest

The authors declare that they have no conflict of interest.

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