## Supplementary Material

**Cohort descriptions**

*Doetinchem Cohort Study*

The Doetinchem Cohort Study (DCS) is a prospective population-based cohort study that started in 1987 and has been following over 12,000 participants in Doetinchem, the Netherlands, with follow-up of 8,000 participants for over 30 years. The study aims to investigate the lifestyle and environmental determinants of chronic diseases and ageing in a life course perspective. Depression information was obtained using the LIDAS. For a detailed description of DCS, see Picavet et al., 2017.

*The Hoorn Studies*

The Hoorn Studies comprise two population-based cohort studies (The Hoorn Study and The New Hoorn Study) initiated in 1989 and 2006 in Hoorn, the Netherlands. The studies aim to investigate the effects and interplay of genetic and environmental factors on a wide range of health outcomes, including cardiovascular disease, cancer, diabetes, and respiratory diseases. Participants have been followed prospectively and have been assessed at regular intervals on a range of clinical, lifestyle, and environmental factors. Biological samples have also been collected from participants at various time points. Depression information was obtained from the LIDAS. For a detailed description of the Hoorn Studies, see Rutters et al., 2018.

*The Hoorn Diabetes Care System cohort*

The Hoorn Diabetes Care System cohort is a prospective cohort study focused on studying the development and course of type 2 diabetes. Since its initiation in 1996 nearly 13,000 individuals have been included in the study with over 70,000 follow-up visits as of 2015. Participants with type 2 diabetes are followed over time with repeated measures on a range of demographic, physiological, lifestyle, clinical, mental health, and genetic outcomes. Depression information was obtained from the LIDAS. For a detailed description of the Hoorn Diabetes Care System cohort, see Heijden et al., 2017.

*Longitudinal Aging Study Amsterdam*

The Longitudinal Aging Study Amsterdam (LASA) is a prospective cohort study of older adults in the Netherlands. The study began in 1992 and includes over 5,000 participants. Participants are assessed every 3 years on a range of physical, cognitive, emotional, and social functioning measures. The data also include genotype and mental health data. Depression information was obtained using the DIS across multiple measurement waves, the CIDI, and the CES-D. For a detailed description of LASA, see Hoogendijk et al., 2020.

*Lifelines*

Lifelines is a multi-disciplinary prospective population-based cohort study examining in a unique three-generation design the health and health-related behaviors of 167,729 persons living in the north of the Netherlands. It employs a broad range of investigative procedures in assessing the biomedical, socio-demographic, behavioral, physical and psychological factors which contribute to the health and disease of the general population, with a special focus on multi-morbidity and complex genetics. Depression information was obtained through the LIDAS instrument and the MINI v5.0. These data were either collected or prepared in van Loo et al., 2022, 2023. Lifelines genotype data were collected as part of Francioli et al., 2014. For a detailed description of Lifelines, see Sijtsma et al., 2022.

*MOod Treatment with Antidepressants or Running*

The MOod Treatment with Antidepressants or Running (MOTAR) study is a randomized controlled trial where depression and anxiety patients were assigned one of two treatments, antidepressant medication or running therapy, to investigate their impact on symptoms, biological aging and metabolic stress. Depression information was assessed using the CIDI across two measurement waves. For a detailed description of MOTAR, see Lever-van Milligen et al., 2019.

*MooDFOOD*

MooDFOOD is a 'Multi-country cOllaborative project on the rOle of Diet, Food-related behavior, and Obesity in the prevention of Depression'. It is a multidisciplinary consortium involving 13 organizations across 9 European countries, aimed at targeting food-related behaviors and nutritional status of people prone to overweight and obesity with the goal of preventing depression. The MoodFOOD sample is subclinical consisting of people with mild depressive symptomatology (PHQ-9 >= 5) but no current depressive episode, and BMI >= 25. For BIONIC, only the Dutch samples were included. Depression information was obtained at a baseline measurement with the MINI v5.0 and updated across three follow-up measurements, including one with where the LIDAS was administered. For a detailed description of the MooDFOOD project and its findings, see Bot et al., 2019; Cabout et al., 2017.

*Nijmegen* Biomedische Studie

The Nijmegen Biomedische Studie (NBS) is a population-based study established in 2000 and expanded throughout several data collection waves. Set in the eastern part of the Netherlands, the study aims to investigate a wide range of demographic, clinical, biochemical, and genetic characteristics in the general Dutch population. Depression information was obtained through the LIDAS instrument. For a detailed description of NBS, see Galesloot et al., 2017.

*Netherlands Study of Depression and Anxiety*

The Netherlands Study of Depression and Anxiety (NESDA) is a longitudinal cohort study that aims to investigate the etiology, course, and consequences of depressive and anxiety disorders. The study began in 2004 and includes over 3,300 participants with a current or remitted depressive or anxiety disorder, as well as their siblings and healthy controls. Participants are assessed every 2 years on a range of clinical, psychosocial, and biological measures. Depression information was obtained through the CIDI across several measurements. For a detailed project description, see Penninx et al., 2021.

*Netherlands Study of Depression and Anxiety sibling cohort*

The Netherlands Study of Depression and Anxiety sibling cohort (NESDAsib) is a side branch of the NESDA project comprising 367 full siblings of the NESDA cohort. Depression information was obtained through the CIDI. For a detailed description of NESDAsib, see (Penninx et al., 2021).

*Netherlands Study of Depression in Older Persons*

The Netherlands Study of Depression in Older Persons (NESDO) is a prospective cohort study that aims to investigate the determinants, course, and consequences of depression in older persons. The study began in 2007 and includes over 500 participants aged 60 years and older with a current or recent diagnosis of depression. Participants are assessed every 2 years on a range of clinical, psychosocial, and biological measures. The study has been used to study the impact of depression on physical health, cognitive function, and quality of life. NESDO findings have been used to develop and evaluate interventions to improve the lives of older adults with depression. Depression information was obtained using the CIDI across three measurement waves. For a detailed description of NESDO, see Comijs et al., 2011.

*Nutrition Questionnaires plus*

The Nutrition Questionnaires plus (NQplus) study is a prospective cohort study that aims to investigate the dietary determinants of cardiometabolic health in Dutch adults. The study began in 2011 and includes over 2,000 participants aged 20–70 years. Participants are assessed every 2 years on a range of dietary and health measures, including mental health. Depression information was obtained using the LIDAS. For a detailed description of NQplus, see Brouwer-Brolsma et al., 2018.

*Netherlands Twin Register*

The Netherlands Twin Register (NTR) is a population-based cohort of over 200,000 twins and twin-families from across the Netherlands. NTR respondents are periodically invited to participate in lab and questionnaire measurements, resulting in a vast array of biological and behavioral data. NTR-Biobank (Boomsma et al., 2008; Willemsen et al., 2010) includes around 10,000 participants with genotyping and biomaterials. Additional genotype either in blood or buccal DNA is available in an extra 15,000 samples. Depression information was obtained from the LIDAS, the CIDI, and the ASR-ASEBA, BDI, and HADS. For a detailed description of the NTR, see Ligthart et al., 2019.

*Tracking Adolescents’ Individual Lives Survey*

The Tracking Adolescents’ Individual Lives Survey (TRAILS) and TRAILS clinical cohort (TRAILS-CC) are a prospective population-based and clinical cohort study of adolescents in the Netherlands. The studies aims to investigate the development of adolescents into young adults, with a focus on mental health, social-emotional development, and health behaviors. The population cohort consists of N = 2,230 and TRAILS-CC of N = 543 participants who were born in 1996 or 1997; participants have been followed prospectively since they were 11 years old. Depression information was obtained using the LIDAS. For a detailed description of the TRAILS and TRAILS-CC studies, see (Oldehinkel et al., 2015).

**Brief instrument descriptions**

*Depression assessment in cases and controls:*

LIDAS: Lifetime Depression Assessment Survey (Bot et al., 2017; Fedko et al., 2020). Self-report depression questionnaire based on the CIDI short form that collects information on lifetime depression symptoms and episode characteristics through which lifetime MDD status was determined in accordance with DSM-5 criteria.

CIDI: Composite International Depression Inventory (Kessler et al., 1998). Structured diagnostic interview that collects information on lifetime depression symptoms and episode characteristics through which lifetime MDD status was determined in accordance with DSM-5 criteria.

MINI: Mini-international neuropsychiatric interview (Sheehan et al., 2018). Brief structured diagnostic interview that collects information on lifetime depression symptoms and episode characteristics through which lifetime MDD status was determined in accordance with DSM-5 criteria.

DIS: Diagnostic Interview Schedule (Robins et al., 1981). Structured diagnostic interview that collects information on lifetime depression symptoms and episode characteristics through which lifetime MDD status was determined in accordance with DSM-5 criteria.

*Controls only:*

CES-D: Center for Epidemiological Studies Depression scale (Radloff, 1977). Self-report depression scale that collects information on lifetime depression symptoms through which controls were selected. Individuals with CES-D sum scores < 10 were included as controls.

ASR: Adult Self Report - Achenbach System of Empirically Based Assessment (Achenbach et al., 2017). A self-report depression scale that collects information on lifetime depression symptoms through which controls were selected. ASR sum scores were converted to T-scores and individuals with scores < 60 were included as preliminary controls. Provided no other indication of depression was found (in BDI and HADS), they were included as controls.

BDI: Beck’s Depression Inventory (Beck et al., 1961). A self-report depression scale that collects information on lifetime depression symptoms through which controls were selected. BDI sum scores were converted to T-scores and individuals with scores < 60 were included as preliminary controls. Provided no other indication of depression was found (in ASR and HADS), they were included as controls.

HADS: Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). A self-report depression scale that collects information on lifetime depression symptoms through which controls were selected. HADS sum scores were converted to T-scores and individuals with scores < 60 were included as preliminary controls. Provided no other indication of depression was found (in ASR and BDI), they were included as controls.

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