## Thursday 10 September

## Life Course: Later Life

### COGNITIVE PERFORMANCE TRAJECTORIES AFTER AGE 50 BY RELIGIOUS AFFILIATION AND RELIGIOUS PRACTICE: RESULTS FROM THE IRISH LONGITUDINAL STUDY ON AGEING

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**Background** Religious participation has been shown to be associated with a number of health outcomes in later life. Research into religion and cognitive decline has been inconclusive, although there is some evidence for a protective effect. There is a lack of evidence on mechanisms around this relationship, and what the implications are for those who are not religious. We aimed to assess whether religious affiliation or religious practice was associated with cognitive trajectories, and to test possible mechanisms for an association.

**Methods** Data came from the Irish Longitudinal Study on Ageing (TILDA), a nationally representative study of the over 50s population in Ireland. A total of 7,331 had available data on all measures of interest. We used Latent Growth Class Analysis (LGCA) to identify different latent trajectory classes for cognition using the Mini Mental State Examination (MMSE) measure. Five waves of data collection were used to identify latent class trajectories. We then used multinomial logistic regression to assess the likelihood of membership to each trajectory class by religious affiliation or non-affiliation, and by level of religious attendance. We tested three possible mediation pathways to explain observed relationships; depressive symptoms, social network and smoking.

**Results** Three MMSE trajectory classes were identified using LGCA. These included a 'high steady' class, a 'medium declining' class and a 'low declining' class. There were no differences in class membership by religious affiliation or non-affiliation. Women who attended religious services were less likely to be in the low declining MMSE class (relative risk ratio=0.73, 95% confidence interval=0.55; 0.96). This effect was fully mediated by depressive symptoms, social network and smoking. No effects were found for men.

**Discussion** Cognitive trajectories after age 50 are not uniform. Being religious or nonreligious in the over 50s in Ireland is not associated with the type of cognitive trajectory experienced. However, frequent religious attendance in women who are religious appears to have a small protective effect. This effect appears to be driven through better mental health, more social participation and lower rates of smoking.

### SOCIOECONOMIC DIFFERENTIALS AND COGNITIVE HEALTH IN LATER LIFE: THE MEDIATING BIOLOGICAL AND PSYCHOLOGICAL PATHWAYS

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**Background** The socioeconomic gradient in relation to physical and cognitive health has been already documented. However, substantial gaps remain in understanding the potential mediating pathways linking socioeconomic disparities to late-life cognitive health. We assessed the socioeconomic differentials and the biopsychosocial mechanisms associated with the late-life cognition in a representative subsample of the English population.

**Methods** Participants were 1,273 ELSA core members, aged 65 and older at the time of recruitment, from the Harmonised Cognitive Assessment Protocol (HCAP) a sub-study of from the English Longitudinal Study of Ageing (ELSA) completed in April 2018. The respondent interview incorporated an assessment of a broad range of cognitive domains (memory, language, executive function, psychomotor speed, and problem-solving) and complemented well the existing longitudinal data on health, cognition, biomarkers, genetics, lifestyle, health-care utilisation, and economic resources across 16 years of follow-up. We used structural equation modelling to estimate direct and indirect pathways between education (low, medium, high) and wealth (tertiles) as markers of SES, Apolipoprotein E (APOE) status, inflammatory markers (serum fibrinogen and C-reactive protein [CRP]), chronic conditions, measured in 2010 in relation to depressive symptoms (≥4 on the Center for Epidemiologic Studies Depression Scale) and the overall latent factor of cognitive performance based on multiple domains measured in 2018.

**Results** Our findings suggest that medium ($\beta$=2.15, standard error (SE=0.35), p≤0.001) and higher levels ($\beta$=3.33, SE=0.59, p≤0.001) of education were linked with a higher overall cognitive score in later life, while increased levels of wealth did not. Depressive symptomatology was interlinked with lower cognitive health( $\beta$=-1.01, SE=0.25, p≤0.001), while APOEe4 and inflammatory markers were not directly associated with the overall cognitive factor. However, the overall inflammation was indirectly associated with overall cognition in later life, via a positive association with chronic conditions ($\beta$=0.39, SE=0.19, p=0.042), and depressive symptoms ($\beta$=0.08, SE=0.03, p=0.020).

**Conclusion** We found that education and specific psychosocial risk factors were directly associated with late-life cognition. In contrast, biological factors such as overall inflammation contributed indirectly via the development of chronic conditions and depressive symptoms. These findings support evidence for the psychosocial paradigm, which may be able to explain how life gets under the skin, influencing both physical and cognitive health in later life; indicating the imperative need to reduce socioeconomic inequalities.

### SOCIOECONOMIC TRAJECTORIES OF EARLY ADULTHOOD AND THEIR CONTRIBUTION TO LATER LIFE CARDIOMETABOLIC HEALTH, 1970 BRITISH COHORT STUDY (BCS70)

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**Background** Cardiovascular health shows significant socioeconomic inequalities, however there is limited understanding of how these inequalities are generated across the life course. Early adulthood (age 16–24y) is an important period for development of cardiovascular risk factors such as obesity and atherosclerosis, as well as for changes in behavioural risk factors. In

this study we assess the contribution of early adulthood trajectories through education, employment or inactivity (age 16–24y) to cardiovascular health in mid-adulthood (age 46y).

**Methods** Participants are from BCS70 (n=7,061) with data on education participation and economic activity during early adulthood and cardiometabolic outcomes at age 46y. Longitudinal latent class analysis was used to identify groups following different socioeconomic trajectories across ages 16–24y, based on participation in education, employment within different occupational classes, unemployment or inactivity. Cardiometabolic outcomes (waist circumference, systolic blood pressure (SBP), log-HDL cholesterol, log-triglycerides, HbA1c) at age 46 were regressed on early adulthood socioeconomic trajectory class, with and without adjustment for adult socioeconomic position (SEP) (age 46). All models were adjusted for sex, childhood SEP, adolescent health and early adulthood partnership and parenthood.

**Results** Six classes of early adulthood socioeconomic trajectory were identified, and labelled according to the primary activity engaged in: (1) Continued education, (2) Managerial employment, (3) Skilled non-manual employment, (4) Skilled manual employment, (5) Partly skilled employment, (6) Inactive. There was an increasing trend in waist circumference and triglycerides across classes 1–6 at age 46. Compared to the 'Continued education' class, waist circumference showed an increase of 1.87 cm (95%CI 0.84,2.91) in class 2, to 3.94 cm (95%CI 2.35,5.52) in class 6, and triglycerides an increase of 9.69% (95%CI 3.26,16.53) in class 2 to 14.27% (95%CI 3.88,25.7) in class 6. Compared to the 'Continued education' class, SBP was higher in classes 2–5, e.g. an increase of 1.18 mmHg (95%CI 0.06,2.29) in class 2, and HDL cholesterol lower in classes 2–6, e.g. -3.51% (95%CI -5.71,-1.25) in class 2. No difference was seen in HbA1c levels across classes. Adjustment for occupational social class at age 46 resulted in only a small attenuation of these coefficients.

**Conclusion** Identification of socioeconomic trajectories allows assessment of socioeconomic exposures across the transitional period of early adulthood. These findings support the hypothesis that these exposures of early adulthood may contribute to development of behaviours or psycho-social factors which persist through adult life; further research is needed to understand these pathways, and the extent to which early adulthood socioeconomic trajectories are mediated by SEP in later life.

| OP74 | ASSOCIATIONS OF FREE-LIVING SITTING TIME AND PHYSICAL ACTIVITY WITH GRIP STRENGTH AND STANDING BALANCE PERFORMANCE IN THE 1970 BRITISH COHORT STUDY |

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**Background** Many physical activity (PA) guidelines now include recommendations on strength and balance training, reflecting growing recognition of the importance of maintaining physical capability for healthy ageing. However, these recommendations are not widely communicated and are often targeted at older adults where most research evidence has been generated. Less well understood is whether there are benefits of greater levels of participation in physical activity and of reducing sedentary time for strength and balance earlier in adulthood. We therefore aimed to examine the associations of sitting time and time spent physically active with grip strength and standing balance performance in middle-age.

**Methods** A total of 4,726 men and women from the 1970 British Cohort study, with data on free-living sitting and activity (ascertained over 7 days using a thigh-mounted accelerometer (activPAL3 micro)), grip strength and standing balance performance at age 46 years were included in analyses. Linear and multinomial logistic regression models were used to test associations of sitting time, time spent in moderate-vigorous physical activity (MVPA) and total PA time with maximum grip strength and standing balance performance, respectively. Models were adjusted for wear time, sex, body mass index, height, disability, self-rated health, malaise, smoking and education.

**Results** Greater time spent sitting was associated with weaker grip strength in both sexes and this was maintained after adjustment for potential confounders and MVPA time (fully-adjusted regression coefficient: -0.51 kg (95% CI: -0.63, -0.39) per 1 hour of sitting per day). Positive associations between total PA time and grip strength were observed in confounder-adjusted models but were fully attenuated after adjustment for sitting time. There was only weak evidence of an association between sitting time and balance performance. However, there was evidence to suggest that participants who spent more time in MVPA and total PA had higher relative risks of successfully balancing for 30 seconds with their eyes closed (vs poor balance performance). However, these associations were not maintained after adjustment for potential confounders.

**Conclusion** In a national sample of middle-aged adults there was a robust association between greater time spent sitting, measured using a gold-standard assessment, and muscle weakness. Associations of PA time with grip strength and balance performance were attenuated in fully-adjusted models. This highlights the potential importance of promoting less sitting and activities that specifically benefit muscle strength and balance performance in midlife to ensure that people maintain all important aspects of their physical capability as they age.

## Friday 11 September

## Non-Communicable Disease: Treatment

| OP75 | THE POTENTIAL IMPACT OF COGNITIVE REHABILITATION ON THE FUTURE BURDEN OF POST-STROKE COGNITIVE IMPAIRMENT IN IRELAND TO 2035: PRELIMINARY RESULTS USING A MODEL-BASED APPROACH |

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**Background** Post-stroke cognitive impairment (PSCI) is a frequent consequence of stroke, and reduces quality of life and