Childhood cognitive ability was assessed using a set of standardised tests at age 15. Linear regression models estimated the association between childhood cognitive ability and log-transformed balance at each age. Adjustments were made for sex, childhood socioeconomic position, current physical activity, height and weight. Analyses were performed using STATA v14.1.

Results Men had better median balance times than women at age 53 [Men: 5 (interquartile range: 3–10); Women: 4 (3–7)], 60–64 [M: 3.7 (2.5–5.6); W: 3.3 (2.3–4.8)], and 69 [M: 3.0 (2.0–5.0); W: 2.9 (1.9–4.3)], but a decline in median balance times with age was observed in both sexes. In sex-adjusted and fully-adjusted models, higher childhood cognitive ability was associated with better balance times, although this association weakened with increasing age. A one standard deviation increase in childhood cognitive ability was associated with fully-adjusted mean differences in log-balance times (ln(s)) of 0.12 (95% CI: 0.08–0.15), 0.05 (95% CI: 0.02–0.09) and 0.04 (95% CI: 0.001–0.08) at ages 53, 60–64 and 69, respectively.

Conclusion Balance performance decreased with age, and was consistently lower in women than men. Higher childhood cognitive ability was associated with better balance performance at all ages but the strength of this association weakened over time. Further research should examine how the associations of other neurodevelopmental factors with balance change with age. Interventions earlier in life may help to maintain balance performance from midlife.

OP10 RESIDENTIAL MOBILITY DURING CHILDHOOD AND LATER RISKS OF PSYCHIATRIC MORBIDITY, VIOLENT CRIMINALITY AND PREMATURE DEATH: A NATIONAL REGISTER-BASED COHORT STUDY

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10.1136/jech-2017-SSMAbstracts.10

Background Links between childhood residential mobility and pernicious trajectories through to adult maturity are incompletely understood. We therefore carried out a comprehensive investigation of the relationships between residential relocation during upbringing across a broad range of later adverse outcomes.

Methods Using interlinked registers, a national cohort of n=1,475,030 persons born in Demark during 1971–1997 was followed up from 15th birthday to a maximum age of early 40 s for risks of psychiatric morbidity, substance misuse, violent criminality, and natural and unnatural mortality. All cross-municipality residential moves during each age-year between birth and 15th birthday were measured. Survival analyses (© SAS Institute Inc.) was used to estimate incidence rate ratios (IRRs) associated with relocation during each age-year of upbringing. Parental socioeconomic status was delineated according to income, educational attainment and employment status.

Results Elevated risks were observed for virtually all outcomes examined, with excess risk seen among those who experienced multiple versus single relocations in a year. For attempted suicide, violent offending, substance misuse, personality disorders and unnatural deaths, we observed especially sharp spikes in risk linked with multiple relocations in a year during early/mid-adolescence. For example, diagnosis for substance misuse from age 15 was over six times more likely among adolescents who moved two or more times at age 14 than for their peers (IRR 6.35; 95% CI 5.82, 6.92). With violent offending and attempted suicide, our two primary outcomes, we found a risk gradient with increasing age at exposure among higher as well as lower socioeconomic groups. A consistent pattern of markedly elevated risk was not seen among all psychiatric illnesses examined; thus, eating disorders and obsessive compulsive disorder were not strongly linked with residential mobility during upbringing.

Conclusion As with other register-based studies, potential for residential confounding is a limitation of this investigation. Nonetheless, whatever causal mechanisms are implicated, frequent residential change is a strong marker for serious familial adversities. Heightened vigilance is therefore indicated for relocated youths. Health, educational and social services should be mindful of the potential psychosocial needs of adolescents who have recently moved homes or who have relocated more than once over a short period, and effective risk management will require close cooperation between multiple public agencies. When addressing the vulnerabilities of troubled young people, the possible harmful impact of residential relocation during childhood should be considered for individuals from affluent or middle class backgrounds, as well as those who grew up in deprived families.

OP11 LIFE COURSE SOCIOECONOMIC POSITION AND THE PREVALENCE OF TYPE 2 DIABETES IN LATER LIFE. A CROSS-SECTIONAL ANALYSIS FROM THE IRISH LONGITUDINAL STUDY OF AGEING

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10.1136/jech-2017-SSMAbstracts.11

Background A substantial body of research has pointed to an association between socioeconomic position (SEP) and the prevalence of type 2 diabetes (T2D), whereby those in lower social classes are disproportionately affected by the disease. However few studies have examined the contribution of SEP trajectories across the life course to the development of T2D. We investigate the independent and synergistic effects of childhood and adult SEP, as well as the effect of social mobility, on T2D risk in later life.

Methods Cross-sectional data from The Irish Longitudinal Study of Ageing (TILDA) (n=4998), a nationally representative probability sample of adults aged 50 and older, were analysed. Prevalent diabetes was defined using subjective (self-reported doctors diagnosis) and objective data (medications usage and glycated haemoglobin testing). SEP was classified as a three level variable (low, intermediate, high) based on fathers occupation in childhood (origin SEP) and respondents primary occupation in adulthood (destination SEP). A 5-level social mobility variable was created from cross-classification of origin and destination SEP ('Stable High' 'Stable Intermediate', 'Stable Low' 'Upwardly Mobile' and 'Downwardly Mobile'). Logistic regression was employed to assess the relationship between SEP variables and T2D. All analyses were adjusted for age and age^2, and stratified by sex.

Results Mean (SD) age of the sample was 63.0 (9.2)y and 46.4% were male. Prevalence of T2D was 9.5% (95%CI: 8.6%–10.6%). 53.4% of the sample were classified as 'Low SEP' in childhood which decreased to 33.7% in adulthood. Compared to high SEP, low SEP in both childhood (Odds Ratio (OR): 1.84, 95% CI: 1.00–3.37) and adulthood (OR: 1.78, 95% CI: 1.02–3.13) was independently associated with T2D in women. When classified according to social mobility, women classified as 'Stable Low' were at greatest risk of T2D (OR: 2.51, 95% CI: 1.24–5.06) compared to those classified as 'Stable High'. No associations were noted between any SEP variables and T2D in men.

Conclusion This study confirms a strong association between low socioeconomic position and T2D in women which persists from childhood through to adulthood. These findings support the critical period hypothesis which suggests that social disadvantage experienced in early life may have long lasting health consequences – in this case an increased risk of T2D. As many risk factors for T2D result from poor health behaviours which are likely adopted in early life, interventions to reduce T2D and its causes at a population level should recognise high-risk groups at all stages of the life course.

OP12 CUMULATIVE LIFECOURSE ADVERSITY AND ADAPTATION IN LATER LIFE

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10.1136/jech-2017-SSMAbstracts.12

Background Although exposures to cumulative socioeconomic disadvantage and adverse events over the lifecourse are associated with impaired physical and psychological health, the role of adverse events has received less attention. Furthermore, it is unclear to what extent their effects on later-life functioning depend on whether their primary harm was to the self or another person and their timing in the lifecourse, for example, during 'critical' or 'sensitive' periods.

Methods We used data on 5231 respondents aged 50+years over seven waves of the English Longitudinal Study of Ageing (2002–2015) to investigate adaptation in later life using cross-sectional CASP-12 scores, subjective life satisfaction and (CES-D) depression as outcomes. Cumulative lifecourse adversity was measured by counts of 16 types of adverse events occurring within five stages over the lifecourse (ages 0–5, 6–15, 15–30 and 31–50) using retrospective life history data. We fitted linear and logistic multilevel random intercept models in Stata 14 (for repeated observations nested within individuals) to evaluate the extent to which adverse events influence later life wellbeing and whether these associations differ according to self-versus-other orientation. Models were adjusted for labour market status, physical frailty score based on the cumulative deficit model, income, wealth and other household variables. Finally, we tested the association between cumulative adversity and trajectories of CASP-12 scores over time using a latent growth curve model.

Results CASP-12 scores were reduced by −0.49 (95% CI: −0.56 to −0.42) for each additional adverse event. This effect was similar for events occurring in each life stage and similar results were found for subjective life satisfaction and depression outcomes. Self-oriented events occurring in childhood had a greater ($p<0.001$) negative association (−0.62, 95% CI: −0.79 to −0.45) with later life wellbeing when compared with other-oriented events (−0.14, 95% CI: −0.32 to 0.03). Conversely, other-oriented events in adulthood exerted a greater influence. Total adverse life events were not associated with trajectories of CASP-12 by age.

Conclusion Adverse events occurring at all stages of the lifecourse were found to independently influence adaptation in later life. These age-dependent effects differed according to their self- or other-orientation, however. Our results support the theory of allostasis, in which previous exposure to stressors results in excessive allostatic load, susceptibility to future stressors, maladaptation and functional decline.

OP13 THE CHANGING PREVALENCE OF BIRTHS AFTER SUBFERTILITY AND FERTILITY TREATMENT IN ENGLAND 1991–2013: EVIDENCE FROM THE CLINICAL PRACTICE RESEARCH DATALINK

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10.1136/jech-2017-SSMAbstracts.13

Background We describe the prevalence of births after subfertility and fertility treatment seen in primary care in England between 1991 and 2013 and and examine the impact of changing maternal characteristics over time.

Methods Data from the Clinical Practice Research Datalink (CPRD) Mother-Baby dataset were used, comprising records from >600 general practices across England, linked to index of multiple deprivation (IMD). 4 40 623 mothers registered for ≥18 months prior to the birth of their child were included; 2 39 781 first-time mothers were analysed separately to assess changes in primary infertility.

Fertility history was identified using details of diagnoses, referrals and prescriptions in GP records, and grouped as: 'no evidence of fertility problems' and 'any subfertility' (comprising 'untreated', 'ovulation induction' (OI), and 'Assisted Reproductive Technologies' (ART), such as IVF). Change in the prevalence of births by fertility group and population characteristics was assessed using chi-squared trend tests. Direct age-standardisation (to 1991 study population) accounted for changing population structure.

Results Overall, 4.7% of mothers experienced subfertility (1991: 1.7%–2013: 6.3%), comprising: untreated 2.6% (1991: 0.6%–2013: 3.5%), OI 0.8% (1991: 0.6%; peaking in 1995: 1.3%; 2013: 0.5%), and ART 1.3% (1991: 0.5%–2013: 2.4%) (all $p<0.001$ for trend). Women now tend to have children later – 13.5% of mothers were >35 years in 1991, rising to 27% by 2013. Age-adjusted 2013 figures were 3.1%, 1.8%, 0.2% and 1.1%, for all, untreated, OI and ART respectively.

6.6% of first-time mothers experienced subfertility (1991: 2.1%–2013: 9.7%): comprising untreated 3.6% (1991: 0.8%–2013: 5.2%), OI 1.0% (1991: 0.7%–2013: 0.6%), and ART 2.0% (1991: 0.7%–2013: 3.9%) (all $p<0.001$ for trend). Age-adjusted 2013 figures were 7.0%, 3.9%, 0.4%and 2.7%, for all, untreated, OI and ART respectively. Subfertility was more prevalent in more advantaged women, with growing disparity suggested (age-adjusted 2.1% in IMD1 vs 1.3% in IMD5 in 1991, increasing to 5.1% vs 1.4% by 2013).