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Changes in early childhood irritability and its association with adolescent depressive symptoms and self-harm in a nationally representative UK birth cohort

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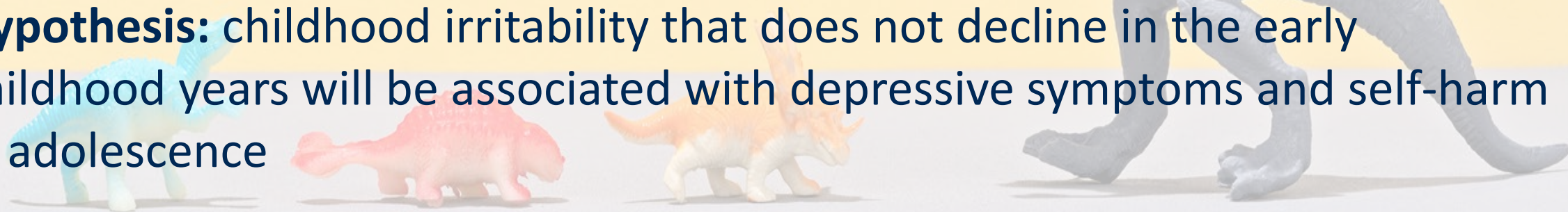
Background

- Irritability → *“elevated proneness to anger relative to peers, in response to frustration or reward omission”*
- Changes during development - normative, may be adaptive, but can also be problematic
- Depressive disorders and self-harm increase during adolescence
- Prior irritability is associated with future depression and self-harm

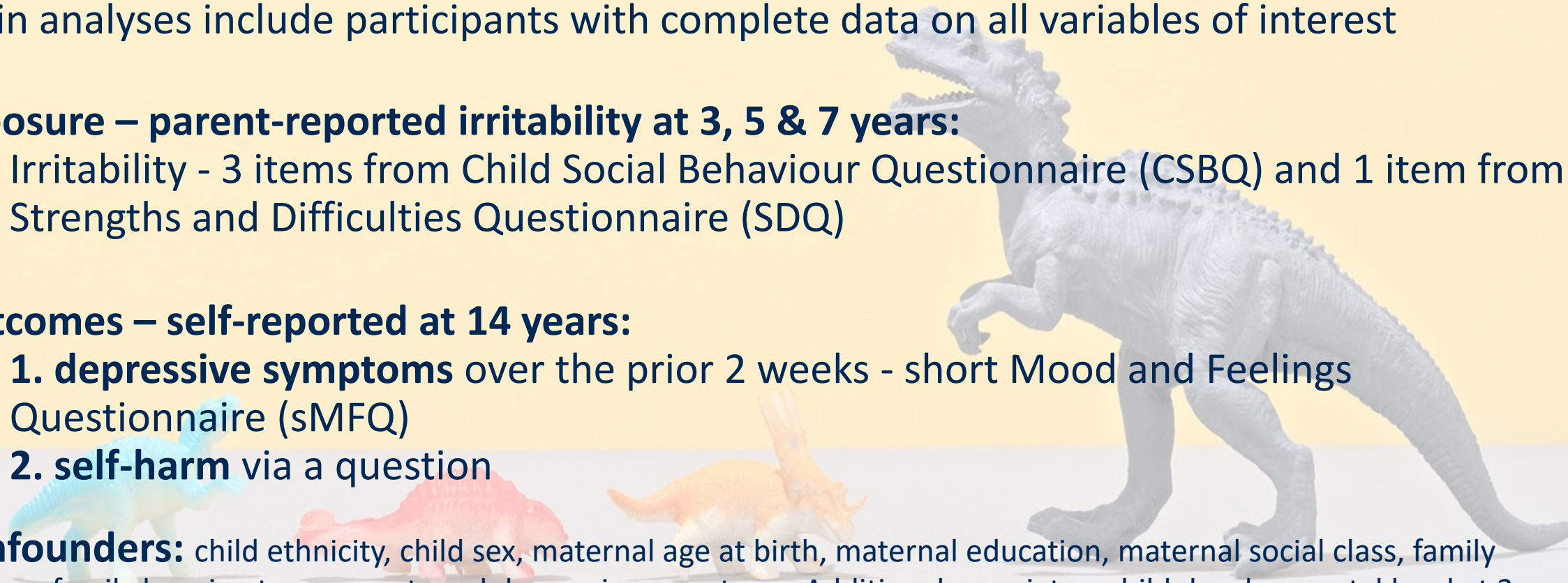


Early childhood irritability and depressive symptoms in adolescence

- There are normative developmental changes in irritability in childhood
- Need to consider early childhood irritability in relation to subsequent depression and self-harm
- **Hypothesis:** childhood irritability that does not decline in the early childhood years will be associated with depressive symptoms and self-harm in adolescence

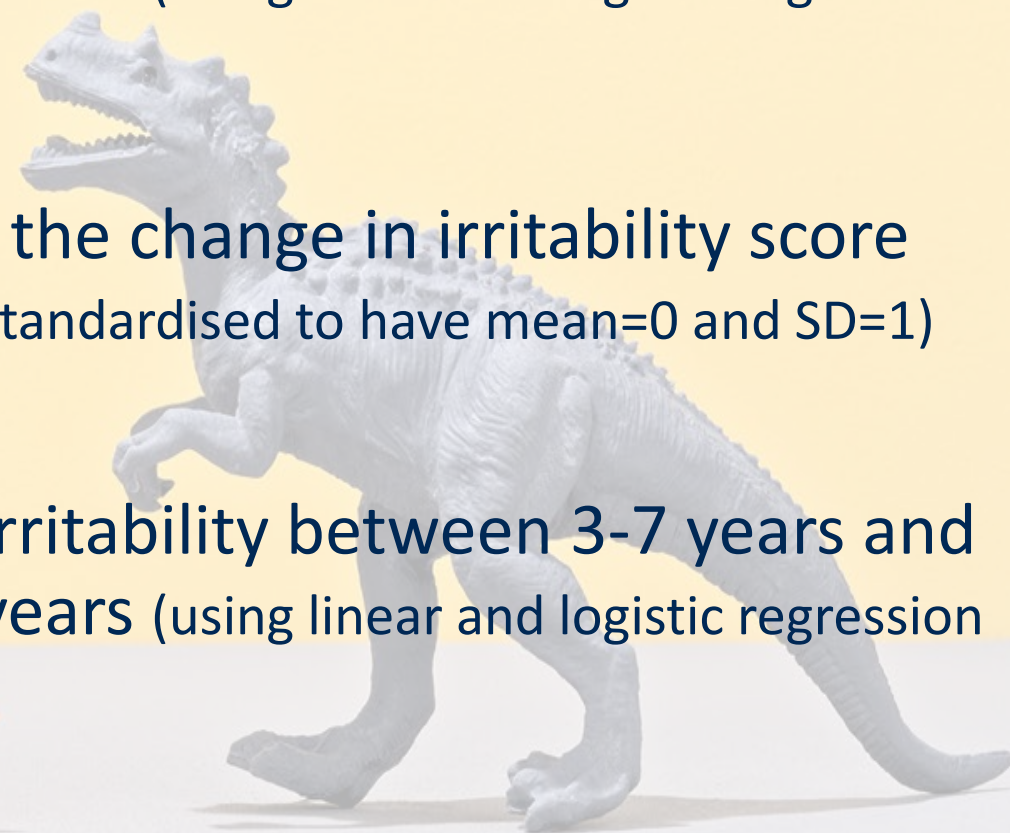


Methods

- Millennium Cohort Study (MCS) ongoing UK longitudinal population-based birth cohort study ~18500 participants
 - Main analyses include participants with complete data on all variables of interest
 - **Exposure – parent-reported irritability at 3, 5 & 7 years:**
 - Irritability - 3 items from Child Social Behaviour Questionnaire (CSBQ) and 1 item from Strengths and Difficulties Questionnaire (SDQ)
 - **Outcomes – self-reported at 14 years:**
 - **1. depressive symptoms** over the prior 2 weeks - short Mood and Feelings Questionnaire (sMFQ)
 - **2. self-harm** via a question
 - **Confounders:** child ethnicity, child sex, maternal age at birth, maternal education, maternal social class, family income, family housing tenure, maternal depressive symptoms. Additional covariates: child developmental level at 3 years, child emotional and behavioural difficulties at 3 years
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Statistical analyses

1. Investigated whether irritability at 3, 5 and 7 years are associated with depressive symptoms and self-harm at 14 years (using linear and logistic regression respectively)
 2. Used multi-level mixed models to calculate the change in irritability score between 3 to 7 years for each participant (standardised to have mean=0 and SD=1)
 3. Tested the association between change in irritability between 3-7 years and depressive symptoms and self-harm at 14 years (using linear and logistic regression respectively)
- Missing data: multiple imputation of missing confounder and outcome data with analyses repeated in imputed samples



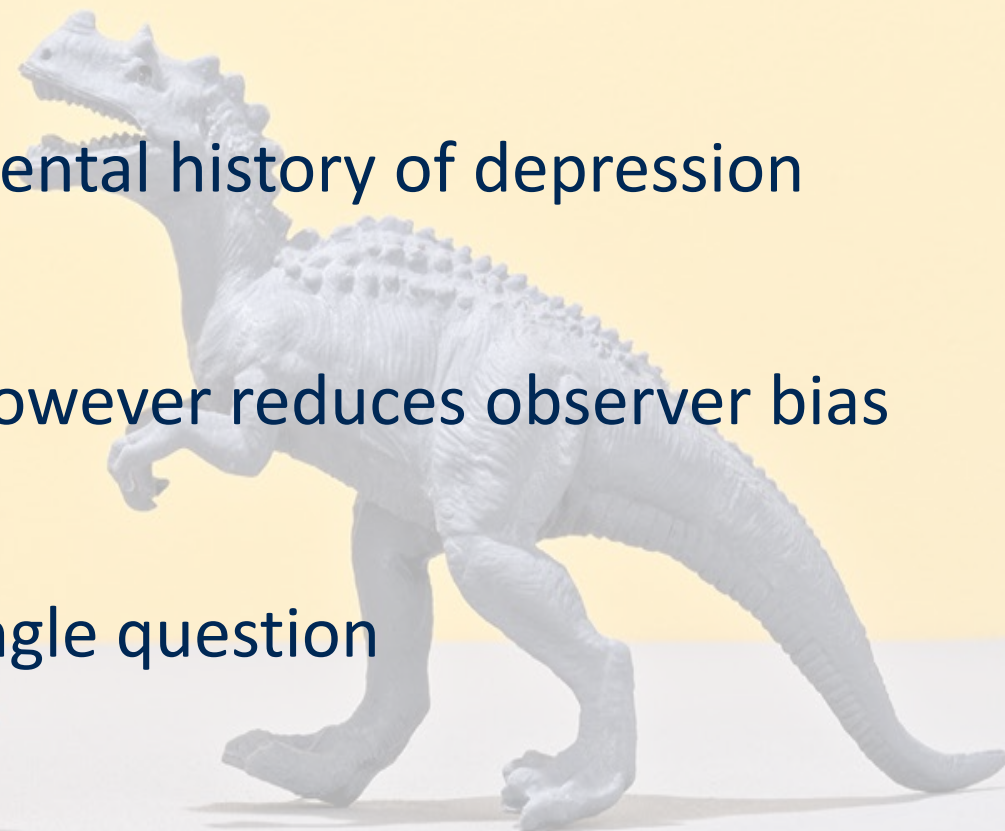
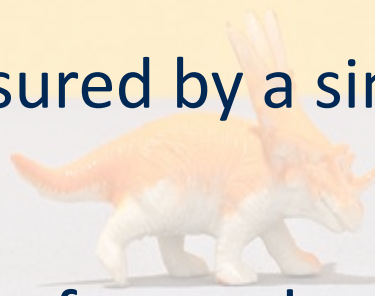
Results

- 6162 had data on all three irritability measures, outcomes and all covariates
- 7225 had data on one irritability measure, outcomes and all covariates

Model	<u>Irritability at 3 years</u> <u>n=6162</u>		<u>Irritability at 5 years</u> <u>n=6162</u>		<u>Irritability at 7 years</u> <u>n=6162</u>		<u>Change in irritability</u> <u>n=7225</u>	
	Depressive symptoms Coef. (95% CI), p-value	Self-harm Odds ratio (95% CI), p-value	Depressive symptoms Coef. (95% CI), p-value	Self-harm Odds ratio (95% CI), p-value	Depressive symptoms Coef. (95% CI), p-value	Self-harm Odds ratio (95% CI), p-value	Depressive symptoms Coef. (95% CI), p-value	Self-harm Odds ratio (95% CI), p-value
Univariable model	0.15 (0.06-0.24), p=0.001	1.06 (1.02-1.10), p=0.004	0.25 (0.15-0.35), p<0.001	1.08 (1.04-1.13), p=0.001	0.26 (0.18-0.35), p<0.001	1.09 (1.05-1.14), p<0.001	0.22 (0.08-0.37), p=0.003	1.09 (1.01-1.16), p=0.019
Fully adjusted model	0.02 (-0.08-0.12), p=0.742	1.02 (0.97-1.07), p=0.410	0.20 (0.09-0.30), p<0.001	1.06 (1.01-1.12), p=0.037	0.21 (0.11-0.30), p<0.001	1.08 (1.03-1.14), p=0.003	0.31 (0.17-0.45), p<0.001	1.12 (1.04-1.20), p=0.002

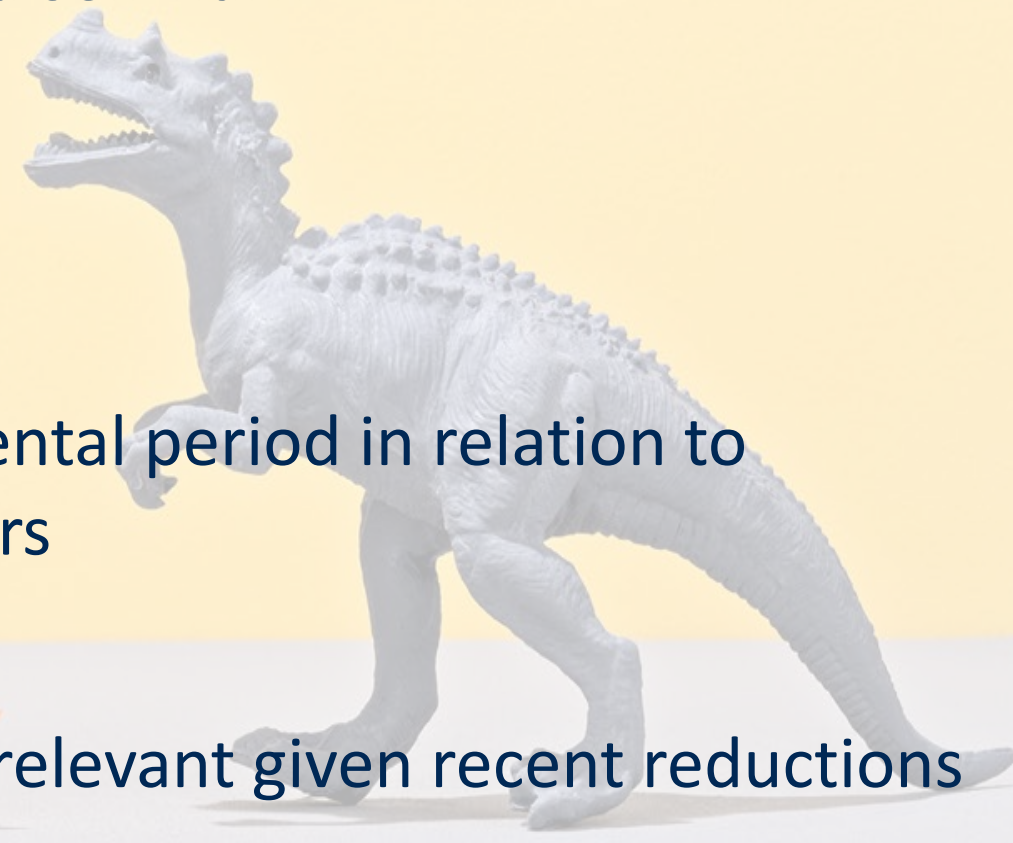
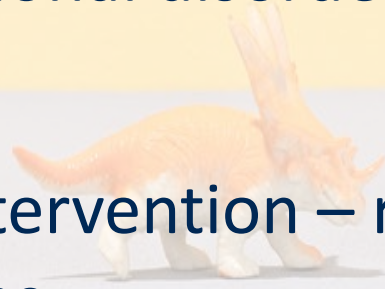
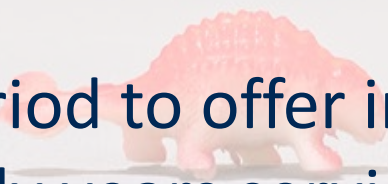
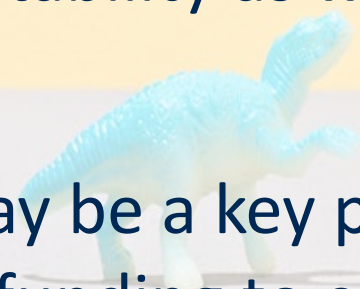
Strengths & Limitations

- Missing data – multiple imputation did not alter findings
- Genetic confounding – only adjusted for parental history of depression
- Both outcomes measured by self-report – however reduces observer bias
- Self-harm at 14 years was measured by a single question
- Irritability measured using items from other questionnaires – similar to previous studies



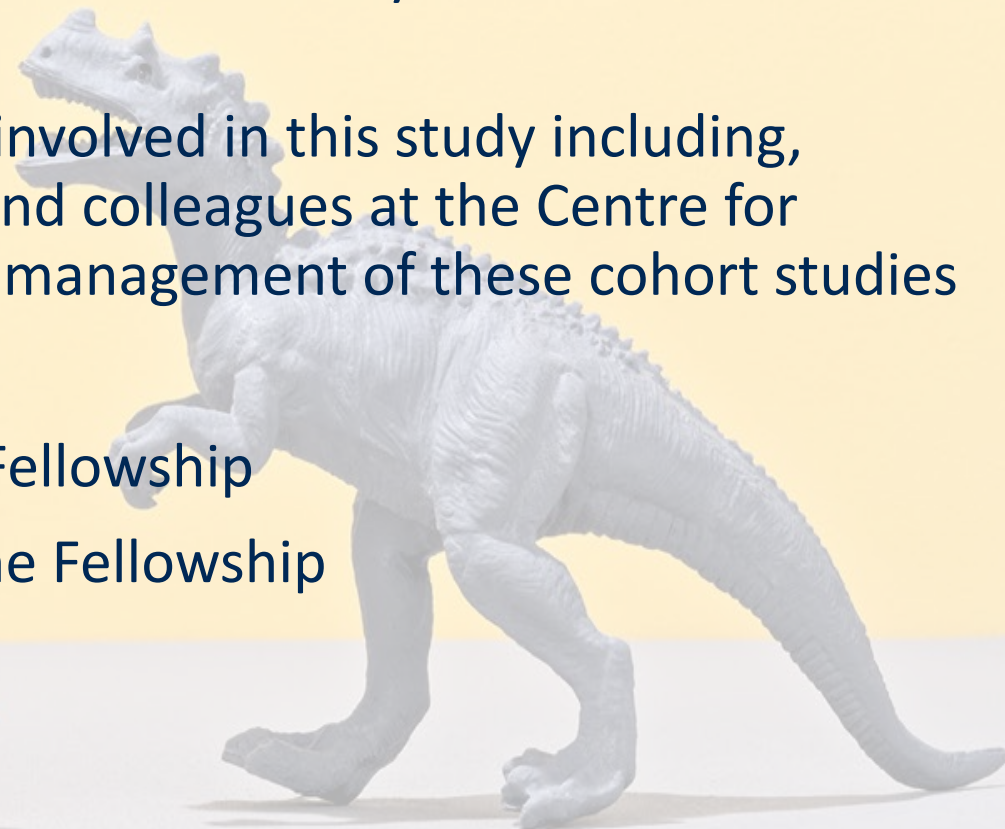
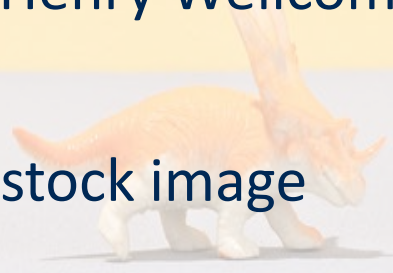
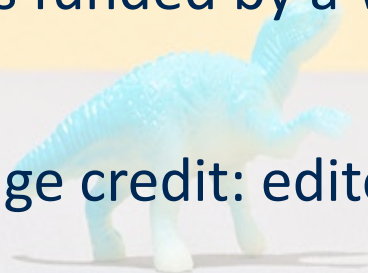
Conclusions and Implications

- Changes in irritability in the pre-school to early childhood years are important and may be related to future depression and self-harm
- This is in keeping with previous literature
- The early years are an important developmental period in relation to irritability as well as later emotional disorders
- May be a key period to offer intervention – relevant given recent reductions in funding to early years services



Acknowledgements

- We are grateful for the cooperation of the Millennium Cohort Study families who voluntarily participate in the study
- We would also like to thank the many stakeholders involved in this study including, academics, policymakers and funder communities and colleagues at the Centre for Longitudinal Studies involved in data collection and management of these cohort studies
- RS is funded by a Wellcome Trust Clinical Research Fellowship
- FS is funded by a Wellcome Trust Sir Henry Wellcome Fellowship
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Thank you for listening!

