

# **Adolescent School Bullying Victimization and Later Life Outcomes**

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# School Bullying in England

- Bullying is widespread in secondary schools: 40% - 50% of pupils experience bullying at some point
- Potential to be very costly
- RCT evidence indicates bullying in schools can be reduced (Tofi and Farrington, 2011)
- Recent gov investment of 4.6 million to support anti-bullying efforts

## English children among the unhappiest in the world at school due to bullying

Violence and poor relationships with teachers puts English children 14th out of 15 countries surveyed for happiness at school as charity calls for action

Sally Weale *Education correspondent*

Wed 19 Aug 2015 00:01 BST

   16,519  2,273



▲ An estimated half a million 10- and 12-year-olds are being physically bullied at school, according to a study by the Children's Society. Photograph: Phil Boorman/Corbis

Children in England are unhappier at school than their peers in almost every other country included in a new international survey, with widespread bullying causing huge damage to their wellbeing.

An estimated half a million 10- and 12-year-olds are physically bullied at school, according to a study by the Children's Society, which found that 38% of children surveyed had been hit by classmates in the last month.

In an international comparison of children's happiness in 15 countries, the

# Background

- **Dominant view of bullying**
  - Bullying is widespread and has adverse effects
    - depression, stress, low self-esteem, anxiety
    - lower academic performance, higher truancy
- **Alternative view**
  - Bullying is character forming in long run?
    - Are there positive long term outcome effects?
- **Little quantitative work on long run outcomes**
  - Little causal research
- **Most studies use simple (low-threshold) narrow definition of bullying**
  - “Any” bullying
  - In practice, bullying is a heterogenous treatment

# Contribution

- Long run outcomes, as well as school test scores
  - Wages, unemployment, mental health (age 25)
  - Higher education (age 18-21)
  - High stakes school tests (A-levels age 18, GCSEs at 16)
- Wide range of “treatments”
  - Type, frequency, and repetitiveness
    - Extensive and intensive margin
- Estimating treatment effects
  - Selection on observables – OLS/PSM/IPWRA
  - Attenuation
    - IV for measurement error using x-reports
  - Tests for selection on unobservables
    - **TO DO:** IV using within-school relative characteristics –

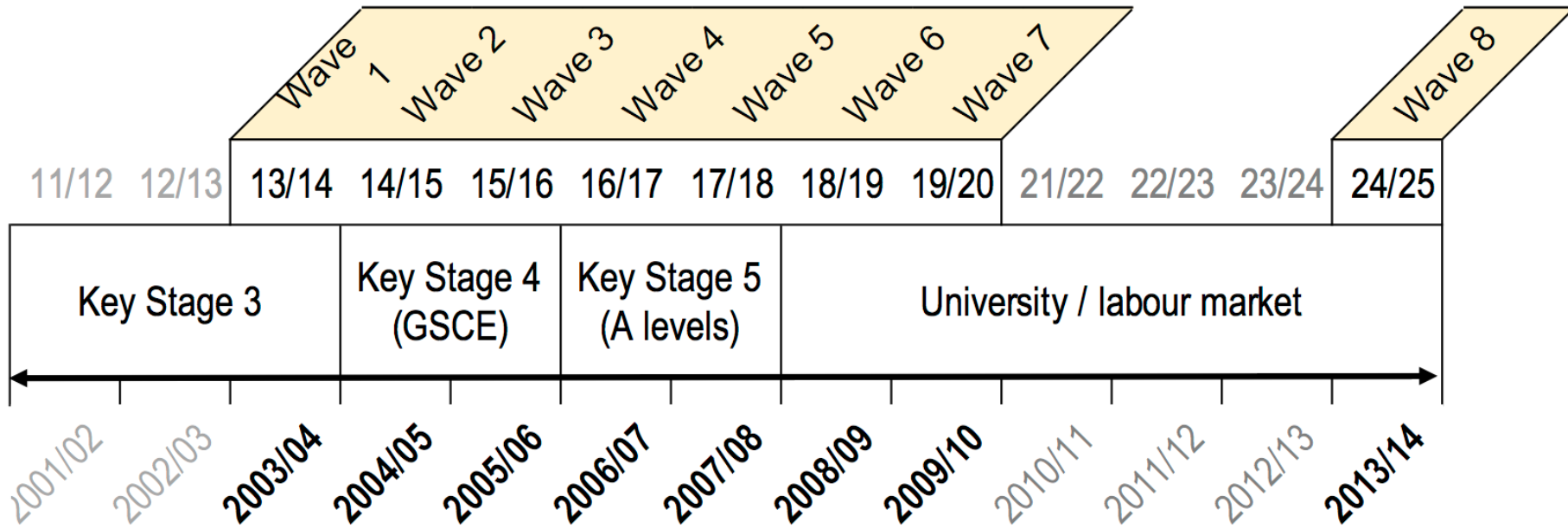
# Literature

- UK research
  - Brown and Taylor (**Econ Educ Rev**, 2008) seminal paper
    - Never/sometimes/frequently at 7/11 – Mother report only
    - Uses contemporaneous vars as IVs for education outcomes
    - Only OLS results reported for age-42 wage outcomes (-3%)
  - Vignoles & Meschi (2010) - OLS using LSYPE up to age 16
    - significant small reductions in test scores at 16
- Danish work
  - Eriksen, Skyt-Nielsen, Simonsen (**JHR**, 2014)
    - Dk survey + registers for follow-up
      - “Any bullying”, OLS effect 14% of SD of age 16 test scores
      - IV (using % kids from whose parents had criminal backgrounds )  
imprecisely zero
- US work
  - Sarzosa and Urzua (**NBER** 2015) uses S Korean data
    - Being bullied at 15
    - Age 18 smoking, drinking, college, life sat, physical/mental health
    - % bullies + randomisation of students to classrooms
      - 50% increase in mental health problems

# Our data

- Longitudinal Study of Young People in England
  - Cohort study (similar to NLSY) drawn from NPD
- 1990/91 birth cohort – from 14 to 21, then 25
  - Approx 10% kids from approx 10% schools  $\approx$  18k obs
    - Oversamples ethnic minorities
    - Child and parent interviews (later mixed methods)
    - Non-response in W1  $\approx$  20%, Attrition W2+  $\approx$  10% per wave
      - Sample weights available
    - Matched to NPD admin data
- 5 bullying types
  - name calling, exclusion, extortion, threaten, violence
    - 6 frequencies (never ..... every day), 3 waves (1,2,3)
    - Cross report from parent for each own report

# Our data- timeline



# Bullying variables

- The following is reported by both parent and child in Waves 1 to 3
- *Non-violent types:*
  - Name calling
  - Social exclusion
- *Violent types:*
  - - Threats of violence
  - - Actual violence
  - - Possessions taken off them
- Frequency of each type - 7 frequencies
  - every day (200 instances), couple/few times a week (100), once or twice (60), once a month (10), less often than this (5), it varies (mean of the others), none (0)



# Bullying treatments

1. Does the child report being bullied in any of the three waves?

Binary treatment - child report of bullying (OLS, PSM)

Instrument with parent report analogue - measurement error? (IV)

2. Multi-valued treatment with 9 discrete categories

- Combinations of type and frequency of child reports (IPWRA)
- type: [none - violent - non-violent]
- add up frequency over 3 waves: [none - moderate - high]
  - none
  - moderate = bottom 3 quartiles of frequency over 3 waves
  - high = top quartile of frequency over 3 waves

3. Use PCA to reduce type\*frequency\*wave vars into one continuous variable

- Bullying factor: continuous treatment - summary of child bullying variables (OLS)
- Instrument with parent report analogue - measurement error? (IV)

# Raw data

- Little difference in bullying by parental background
  - Or ability
- But bullying *reflected* in psych traits
  - External LOC and poor work ethic
- Big outcome differences
  - Prob of 5+ GCSE's at 16
    - Age 16 gold standard
  - But not on Age 18 tests
    - conditional on 5 GCSEs
- Large mental health differences at 25
  - No apparent income difference at 25

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	Never bullied	Bullied once	Bullied repeatedly
5+ A*-C GCSE	0.74	0.68	0.65
Any A-levels?	0.53	0.48	0.53
Best A-level points	232	228	225
University degree	0.39	0.35	0.35
Unemployed	0.09	0.11	0.12
Mental (ill)health (GHQ)	1.74	2.44	2.92

# Who gets bullied?

- Girls more than boys
- Children of sole parents
- White pupils more than ethnic minorities
- Little difference by level of prior attainment
- Little difference by SES overall

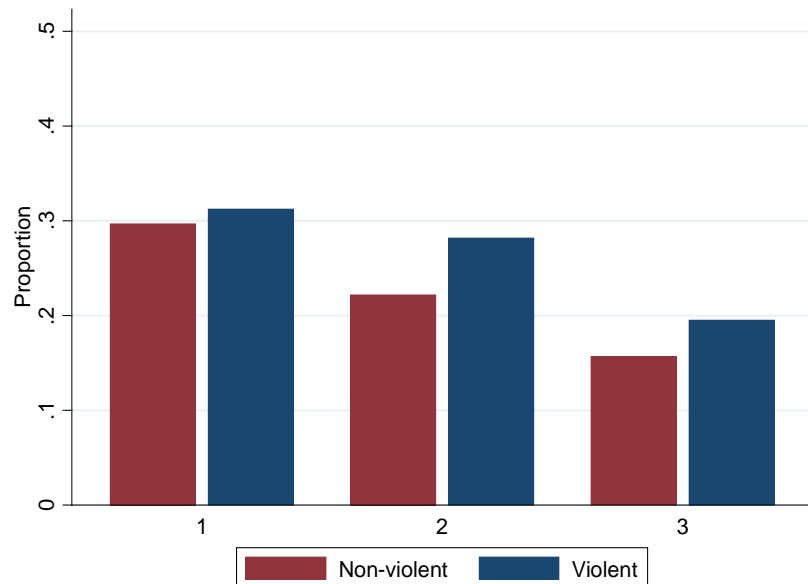
(although, somewhat higher among those with parents with HE/degree)

- marginalised pupils: SEN, FSM

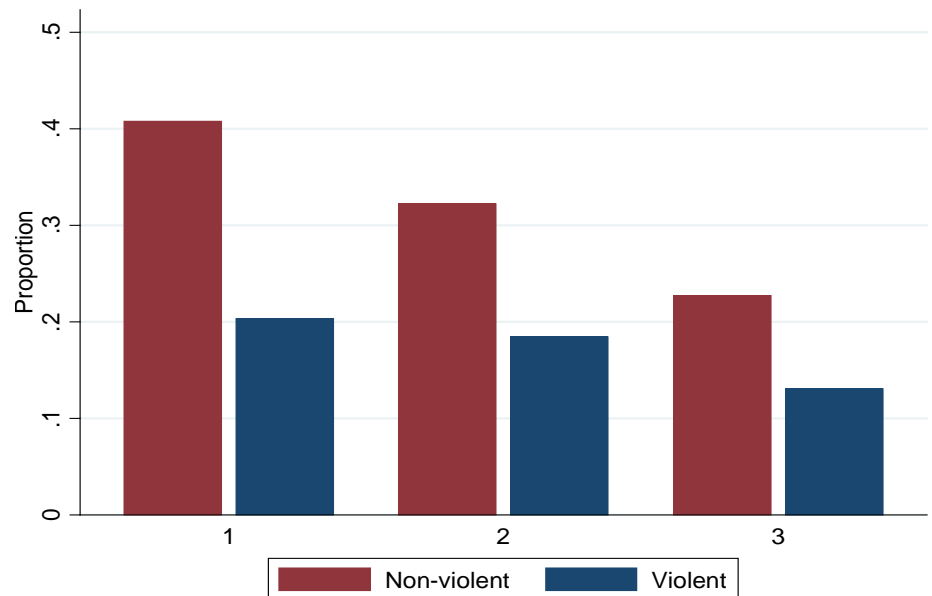
# Raw data

- Incidence (% bullied) falls across waves
- Some gender differences in victimisation
  - Girls much more prone to non-violent
  - Much less prone to violence

Boys



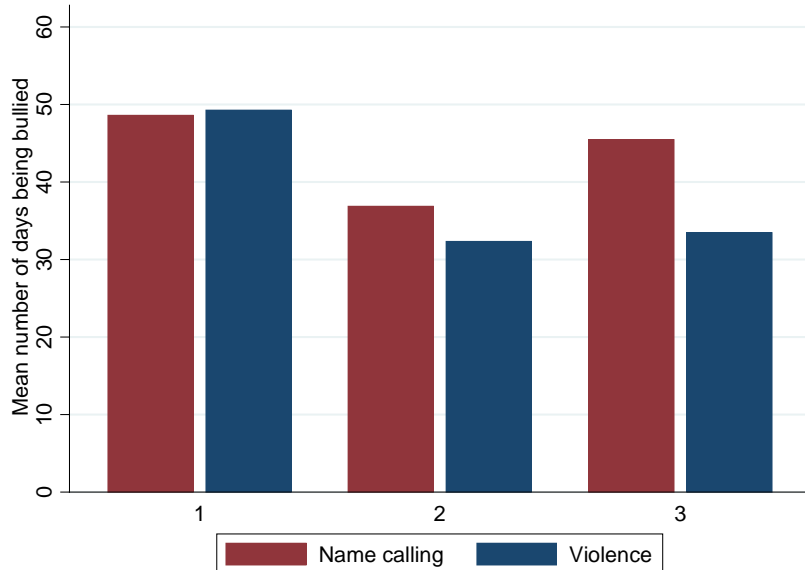
Girls



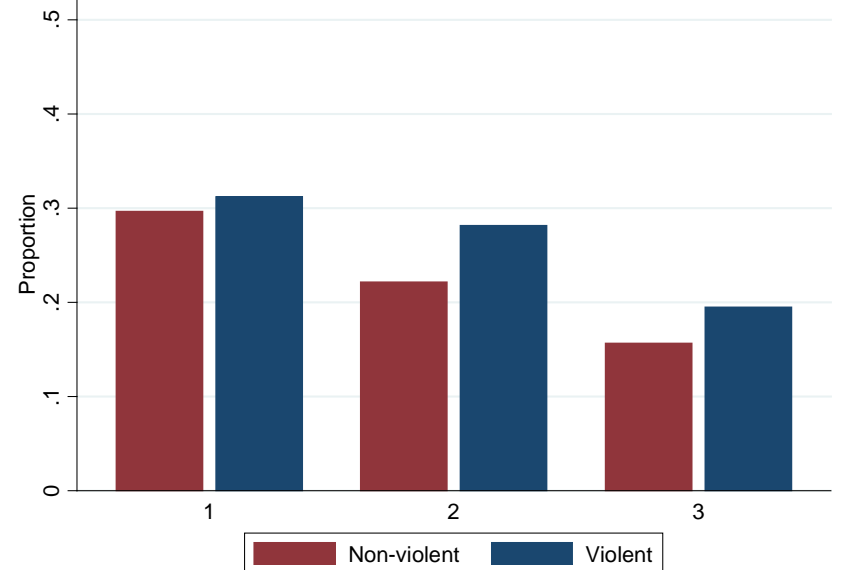
# Raw data

- Intensive margin (days bullied) also falls across waves for all types
- Boys tend to experience a higher number of instances, especially for violent bullying.

## Boys

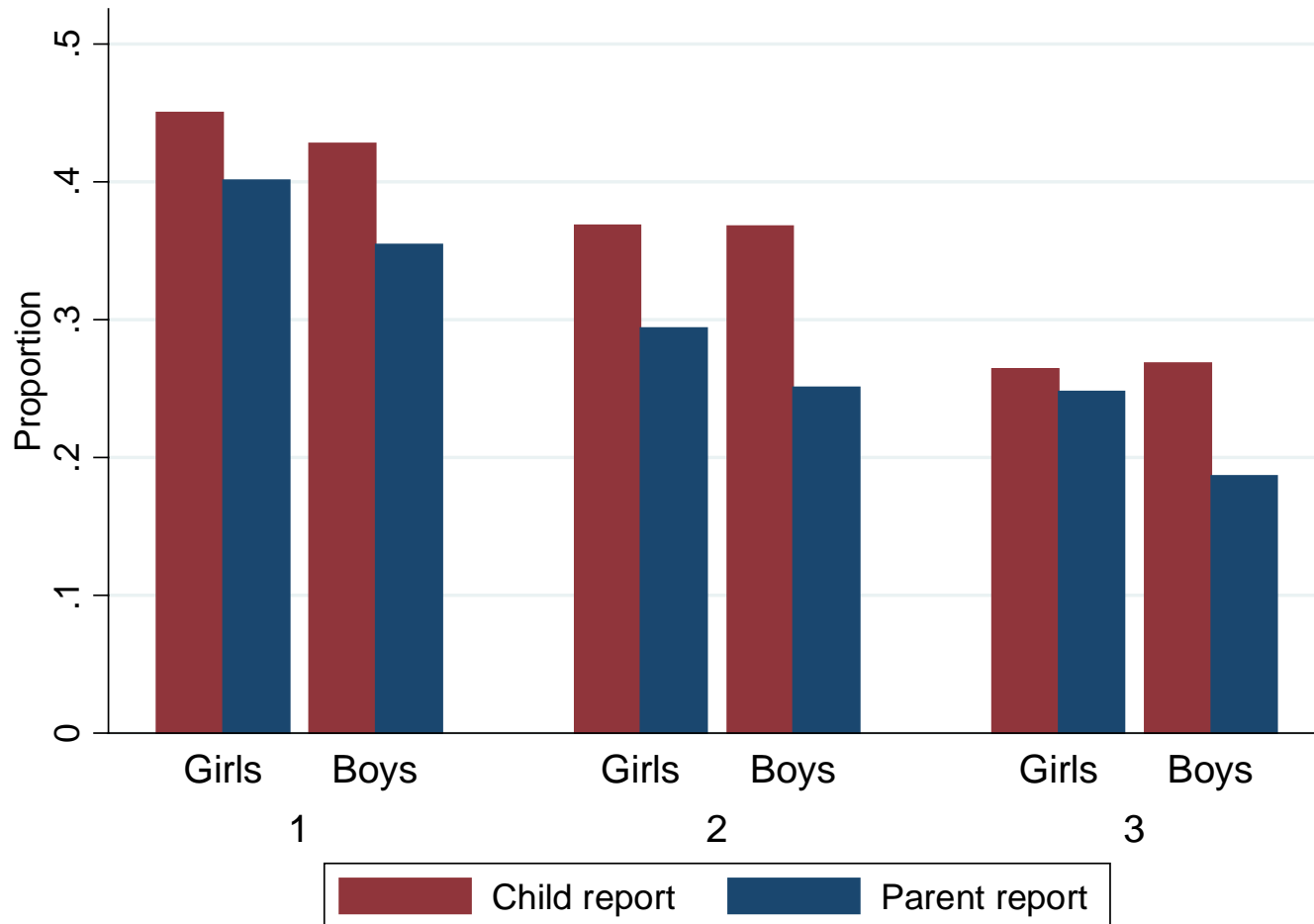


## Girls



# Raw data

- Cross-reports reflect all self-report patterns
  - Parents report only slightly less bullying on average



# Covariates (OLS, matching, IPWRA)

## *Basic specification*

- child's gender
- child's ethnicity
- ESL
- Region
- Child's month-of-birth
- School fixed effects - bullying policies, social reference group

## *Full specification*

- IDACI (local area deprivation)
- Main parent's age
- Highest parental qualification
- Family income
- Parents' marital status
- SEN, FSM
- Child's prior attainment (Key Stage 2 average points score)
- Whether the current school is the families' first choice

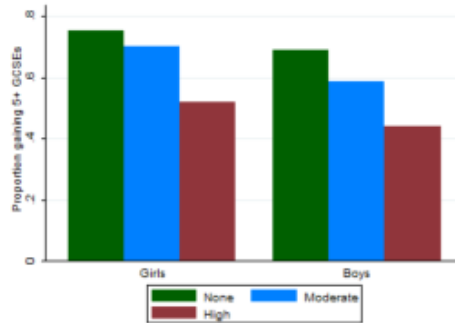
# 9 outcomes

- **School**
  - 5+ subject passes at 16, including Maths and English
  - Having some A-level passes (High School graduation)
  - High school GPA (Sum of best 3 subject scores)
- **University**
  - Degree
- **Labour market**
  - Weekly earnings conditional on being an employee
  - Unemployed = not employee or self-employed
- **Health**
  - Count of mental health conditions (0 to 12)

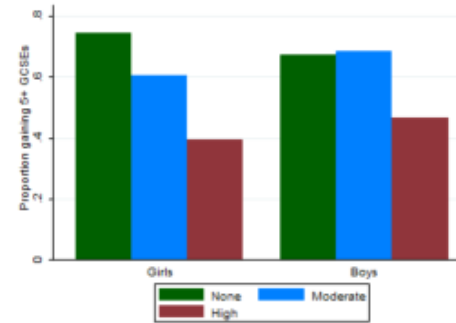


# Outcome differences - Education

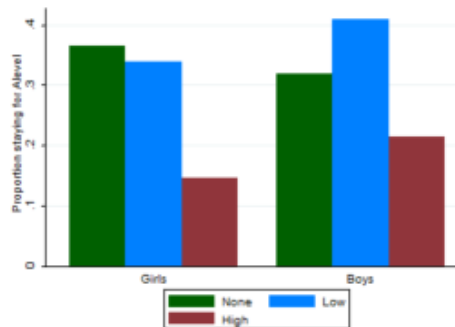
a) 5+ GCSEs - Non-violent



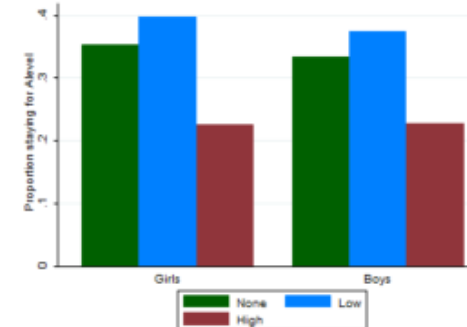
b) 5 GCSEs - Violent



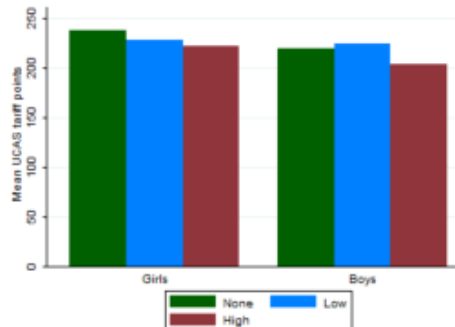
c) A-levels - Non-violent



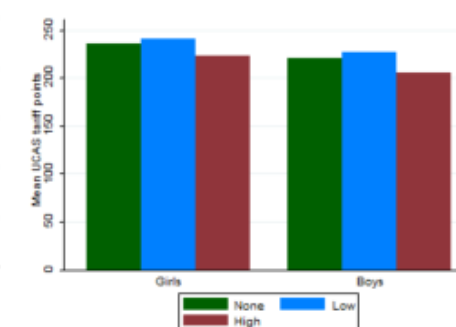
d) A-levels - violent



e) A-level points - Non-violent

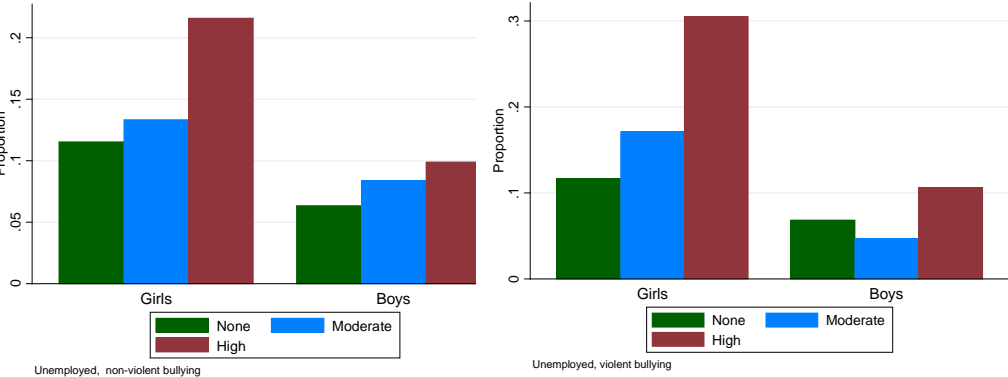


f) A-level points - violent

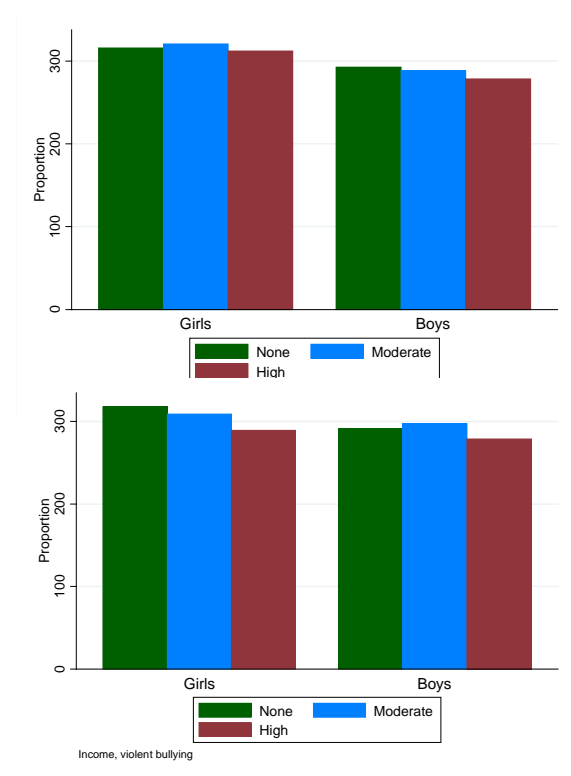


# Outcome differences – Age 25

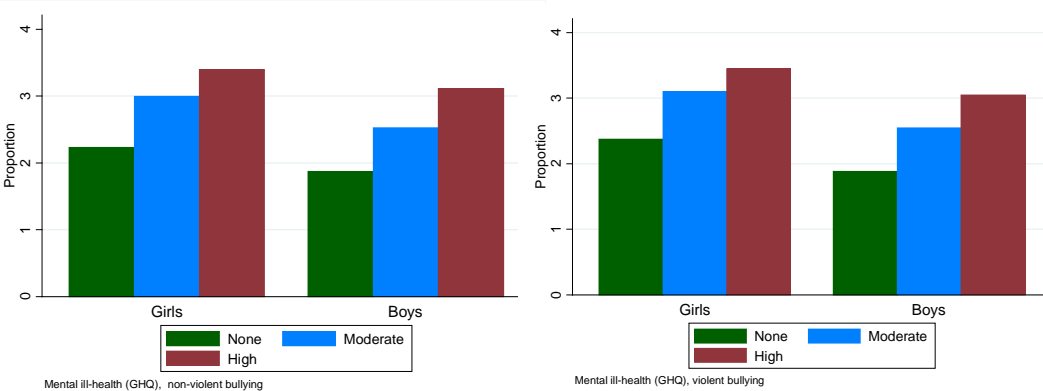
*Unemployed - Non-violent and violent*



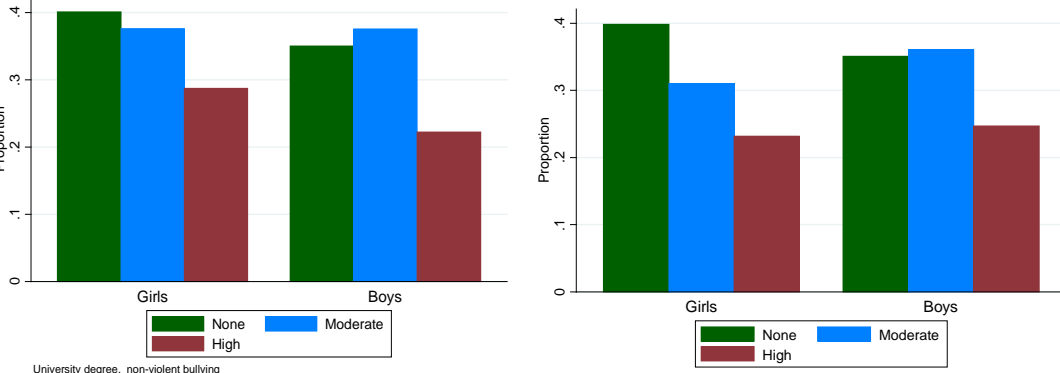
*Weekly income - Non-violent and violent*



*Mental health - Non-violent and violent*



*University degree - Non-violent and violent*



# 3 methods

- OLS
  - Selection on observables
    - Test various specifications
      - Tests sensitivity to selection on unobservables (Oster)
- PSM/IPWRA for discrete/multi-valued treatment
  - Selection on observables
    - Logit (MNL) for multiple treatments
    - Test various specifications (kernel matching; nearest neighbour, and multivariate distance matching)
    - Test sensitivity to selection on unobservables (Nanninci)
- IV for attenuation bias
  - Cross-reports as IV for measurement error
- **To do:** IV for selection on unobservables – Within-school relative characteristics as IVs

# X report of bullying as IV: assumptions and limitations

- First stage: bullying is a function of **maternal cross reported bullying**, defined in the same way as the dependent variable.
- **Exclusion restriction:** bullying reported by the main parent does not affect individual's long-term outcomes directly.
- **Possible problem:** parents who report bullying may be systematically different from those who do not report it. If these characteristics or strategies also affect long-term outcomes, our estimates could be biased.
- This kind of parental behaviour is more likely to be found among **parents who are more involved in their children's lives** and possibly more able to support their children.
- We expect these parental characteristics to have a **positive effect on children's long-term outcomes**, and therefore this is likely to make our estimates more conservative.

# Effects of Any Bullying

## PSM/OLS Estimates of Effects of Any Bullying

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	5+ A*-C	Did A-levels?	UCAS points
<i>OLS<sub>basic</sub></i>	-0.063***	-0.046***	-4.93
<i>OLS<sub>full</sub></i>	-0.035***	-0.025***	-5.88*
<i>PSM<sub>full</sub></i>	-0.071***	-0.053***	-7.46**
Outcome mean	0.74	0.53	232
%	-5% -10%	-5% -10%	-2.5% -3.1%

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- Being bullied reduces the probability of gaining 5+ ‘good’ GCSEs,
- ...and the probability of staying on to take A-levels
- Conditional on staying on, only small associations with top 3 UCAS points

# Effects of Any Bullying

## PSM/OLS Estimates of Effects of Any Bullying

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	Ln(earnings)	Uni degree?	Unemployed?	Mental health
<i>OLS<sub>basic</sub></i>	-0.023***	-0.023*	0.035***	0.969***
<i>OLS<sub>full</sub></i>	-0.009***	-0.011***	0.028***	0.911***
<i>PSM<sub>full</sub></i>	-0.017***	-0.022***	0.035***	0.960***
Mean	25,000	0.39	0.09	1.74
%	-£250-£500 p.a.	- 3-5%	30%-40%	52-55%

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- Small reductions in earnings at age 25 years
- Small reductions in pr(university degree)
- Larger magnitudes for unemployment and mental ill-health (1/3 SD)

# Test for stability of coefficients

- We report estimates of the parameter  $\delta$ , developed in Oster (2019).
- This parameter indicates the **level of selection on unobserved variables**, proportional to the level of selection on observed variables, required to drive the treatment effect to zero.
- In all the estimated models, the parameter of interest  **$\delta$  exceeds 1** (between 3.5 and 674), which is considered an 'acceptable' level of selection in Oster (2019)

# Placebo test: Bullying and pre-determined outcomes

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	% White ('04)	% 5+ A*-C ('01)	Av. KS2 ('01)
Coeff.	0.0902	-0.179	0.989
(s.e.)	(0.473)	(0.459)	(1.14)

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- We assess the effects of the binary bullying variable on variables which should not be impacted by bullying, if we have adequately controlled for unobserved selection
- Bullying doesn't seem to affect things it probably shouldn't affect



# OLS, IV using parental x-report – short term outcomes

	5+ A*-C	Did A-levels?	UCAS points
$OLS_{factor}$	-0.0140**	-0.0228***	-1.203
$IV_{factor}$	-0.0287	-0.0497*	-20.20
$OLS_{binary}$	-0.0349***	-0.0249**	-5.880*
$IV_{binary}$	-0.0920***	-0.0463	-17.69*

- Treatment variable is continuous Principal Components variable summarising bullying type\*frequency and an “Any bullying” binary variable

# OLS, IV using parental x-report - long-run outcomes

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	Ln(earnings)	Uni degree?	Unemployed?	Mental health
$OLS_{factor}$	-0.001**	-0.0115*	0.0111*	0.297***
$IV_{factor}$	-0.0243***	-0.0561***	0.0287	0.775***
$OLS_{binary}$	-0.0096***	-0.0109	0.0281***	0.911***
$IV_{binary}$	-0.0374***	-0.0864**	0.0566**	1.768***

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- IV bullying effects larger than OLS
- Suggesting important measurement error

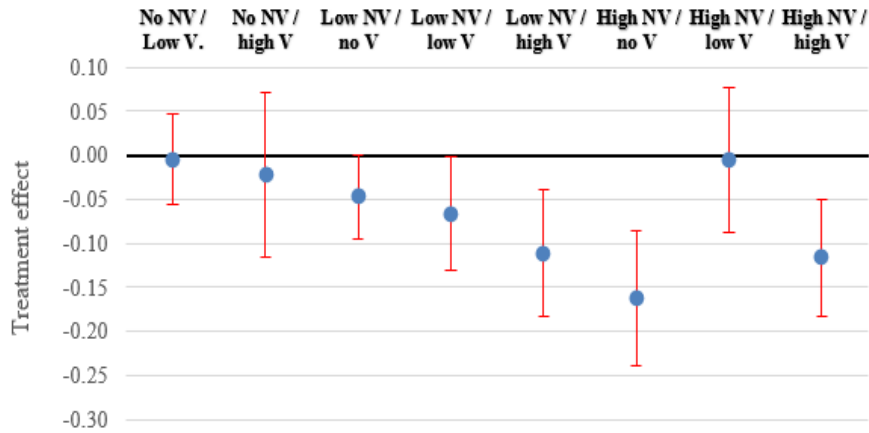
# Multiple / Multi-valued treatments

		Non-violent		
		None	Low	High
Violent	None	Reference group: no bullying of either type	No violent bullying; moderate non- violent	No violent bullying; high non-violent
	Low	Moderate violent bullying; no non- violent	Moderate violent bullying; Moderate non-violent	Moderate violent bullying; high non- violent
	High	High violent bullying; no non- violent	High violent bullying; Moderate non-violent	High violent bullying; high non- violent

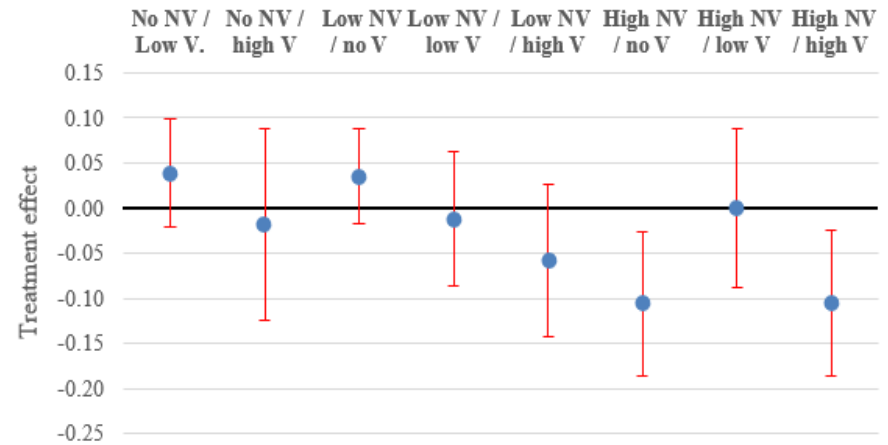
# Bullying Type (NV,V) and Intensity (0,L,H)

## IPWRA Estimates for educational outcomes

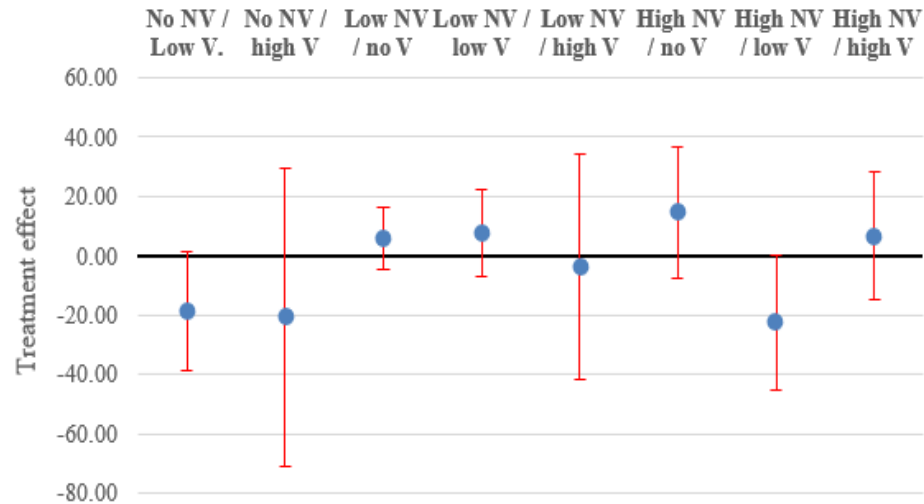
(a) 5+ GCSE



(b) Any A-levels

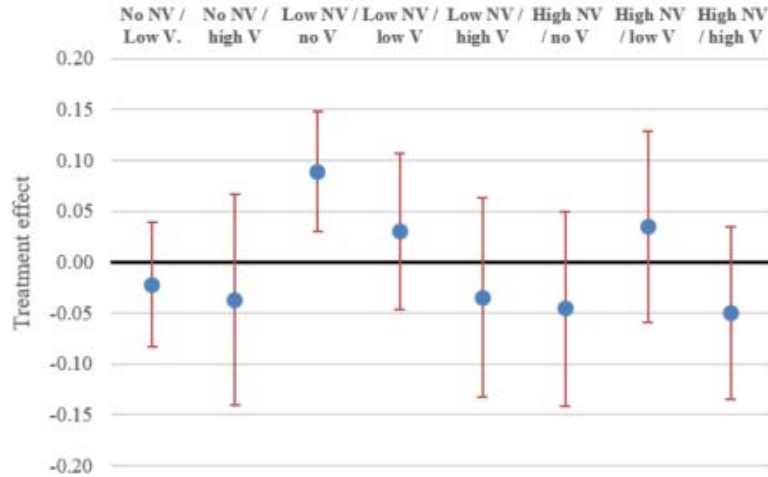


(c) Best 3 A-level points

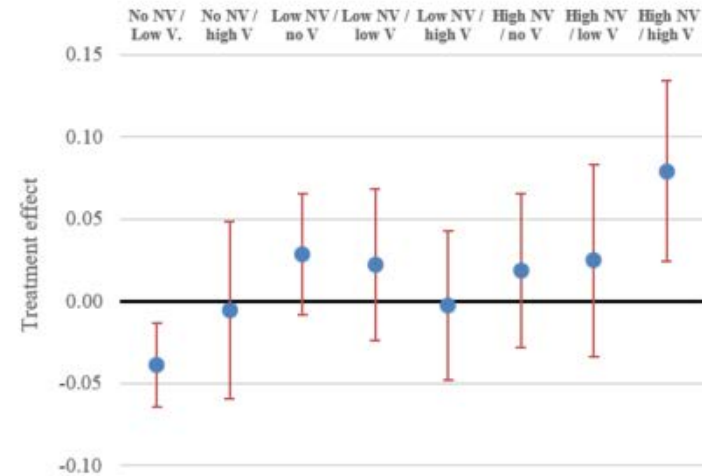


# Bullying Type (NV,V) and Intensity (0,L,H) IPWRA Estimates for longer term outcomes

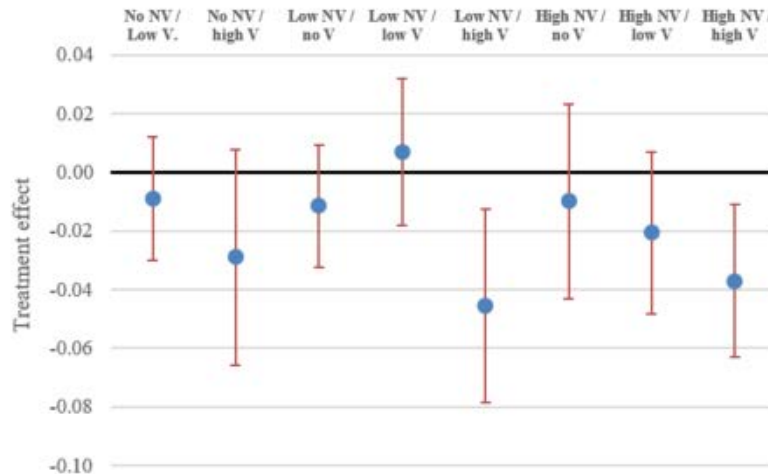
(a) University degree



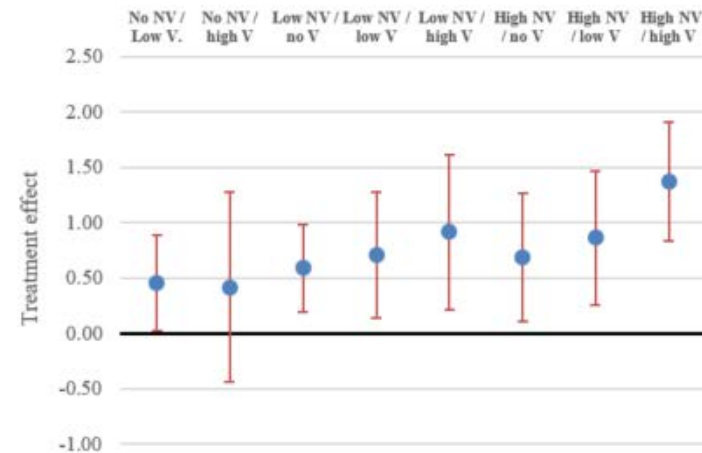
(c) Unemployed



(b) Income



(d) Mental ill-health



- IPWRA results suggest:  $H > L > 0$ ,  $V > NV$

# Conclusions

- Bullying is associated with reductions in high stakes attainment and staying on to A-levels
- Reduced wages at age 25: 1-2% (similar to Brown and Taylor: 2-3% at 23 years)
- Larger associations with unemployment, mental health

# Conclusions

- Measurement error causes attenuation in OLS
  - x-reports highly correlated with own reports
- No suggestion that bullying is “character forming”
  - No long term outcomes made better by bullying
- Reject pooling V and NV, and Low/High intensity
  - Intensity matters and V matters more than NV
    - Does not support simple “zero tolerance” approach
- To do
  - IV using relative within-school characteristics as exclusion restrictions

Thank you for  
listening!