

Influence of school on whether girls develop eating disorders: a multilevel record-linkage study

Dr Helen Bould

Elizabeth Blackwell Clinical Primer

Child and Adolescent Psychiatry Registrar

Eating Disorders

Up to 6% of adolescent girls
(Smink 2014)



SMR: 5.9 (95% CI 4.2-8.3) for anorexia nervosa
(Arcelus, 2011)

The silent epidemic hitting top girls' schools

Article

[Video: understanding eating disorders](#)



Katie Gibbons

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A silent epidemic of anorexia is sweeping through the country's top independent schools, affecting thousands of teenage girls, experts say.

Experts say many of the top private schools are in denial about the scale of the problem
Paola Colleoni/Getty Images

School Clustering

Clinical impression

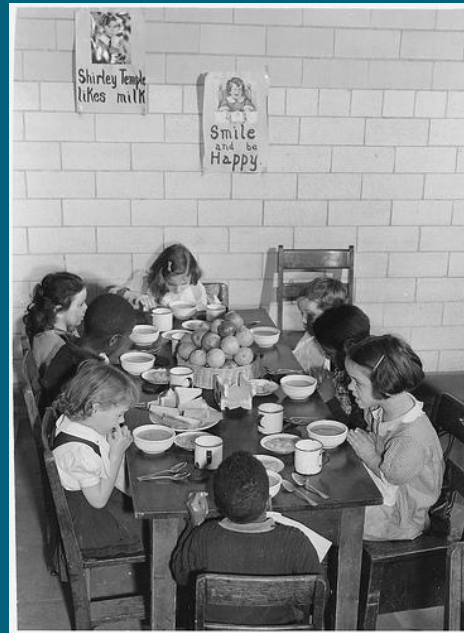
Weight loss behaviours vary (Austin, 2013)

More underweight girls \longrightarrow More losing weight
(Mueller, 2010)

School level interventions?

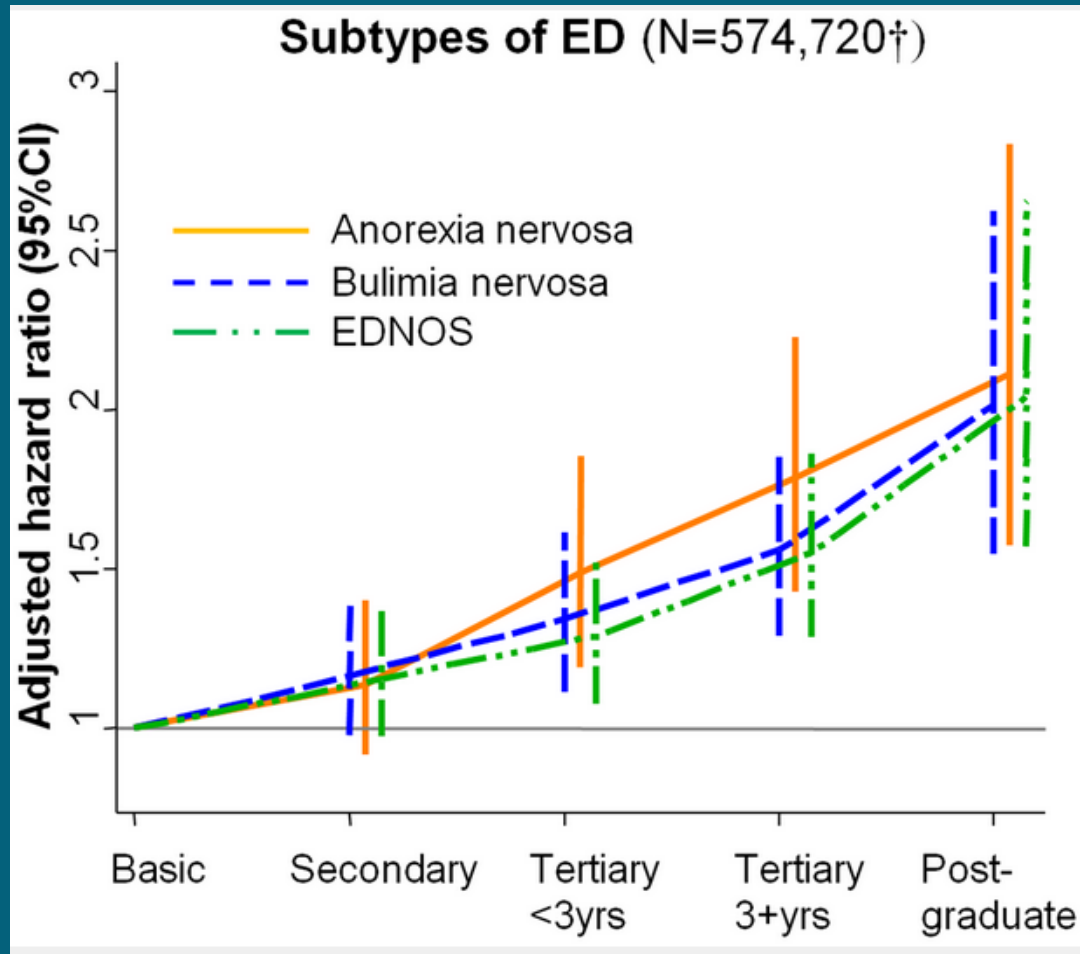


Variation in Rates between Schools



Composition:
characteristics
of the students

Parental Education



Variation in Rates between Schools



Context:
characteristics
of the school

Stockholm Youth Cohort



- Record linkage study
- 0 – 17 year olds
- In Stockholm County 2001-2011
- N=735,096



Sources of diagnosis

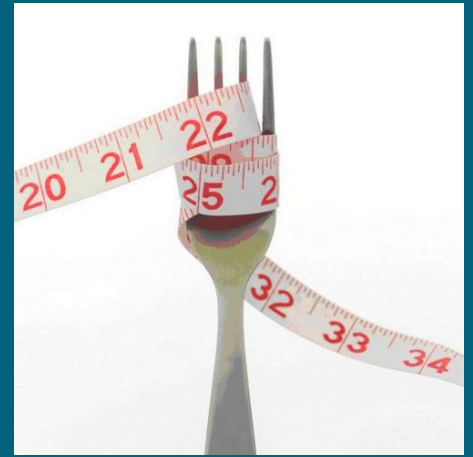
- Throughout: Sweden Inpatient (SOSSLV)
- From 1993: Stockholm Inpatient (VALSLV)
- From 1995: Adult psychiatry (PVS)
- From 1997: Sweden Daytime surgery (SOSDAG)
- From 1998: Stockholm Outpatient (VALOVR)
- From 2001: CAMHS diagnosis/reason for visit (BUPDIA/BUPKO)
- From 2005: Primary care (VALKON)
- From 2007: Private (VALARV)

Inclusion Criteria

- Subset of SYC who left Gymnasium 2001-2010
- At a school with >10 pupils
- Had a final exam result
- No previous eating disorder diagnosis
- Born in Sweden
- Female

Outcome

- Eating Disorder (ED) aged 16-20
- Any diagnosis (IP/OP/any eating disorder)
- Attendance at a specialist eating disorder clinic (Ahren, 2013)



School Variables

- Built from 142,832 subjects (boys & girls)
- To calculate for each school
 - proportion of girls
 - proportion of parents with higher education
 - proportion of students/parents born abroad
 - proportion with high disposable income

Descriptive Data

- 55,059 girls attending 409 Gymnasiums
- 2.37% diagnosed with an ED aged 16-20



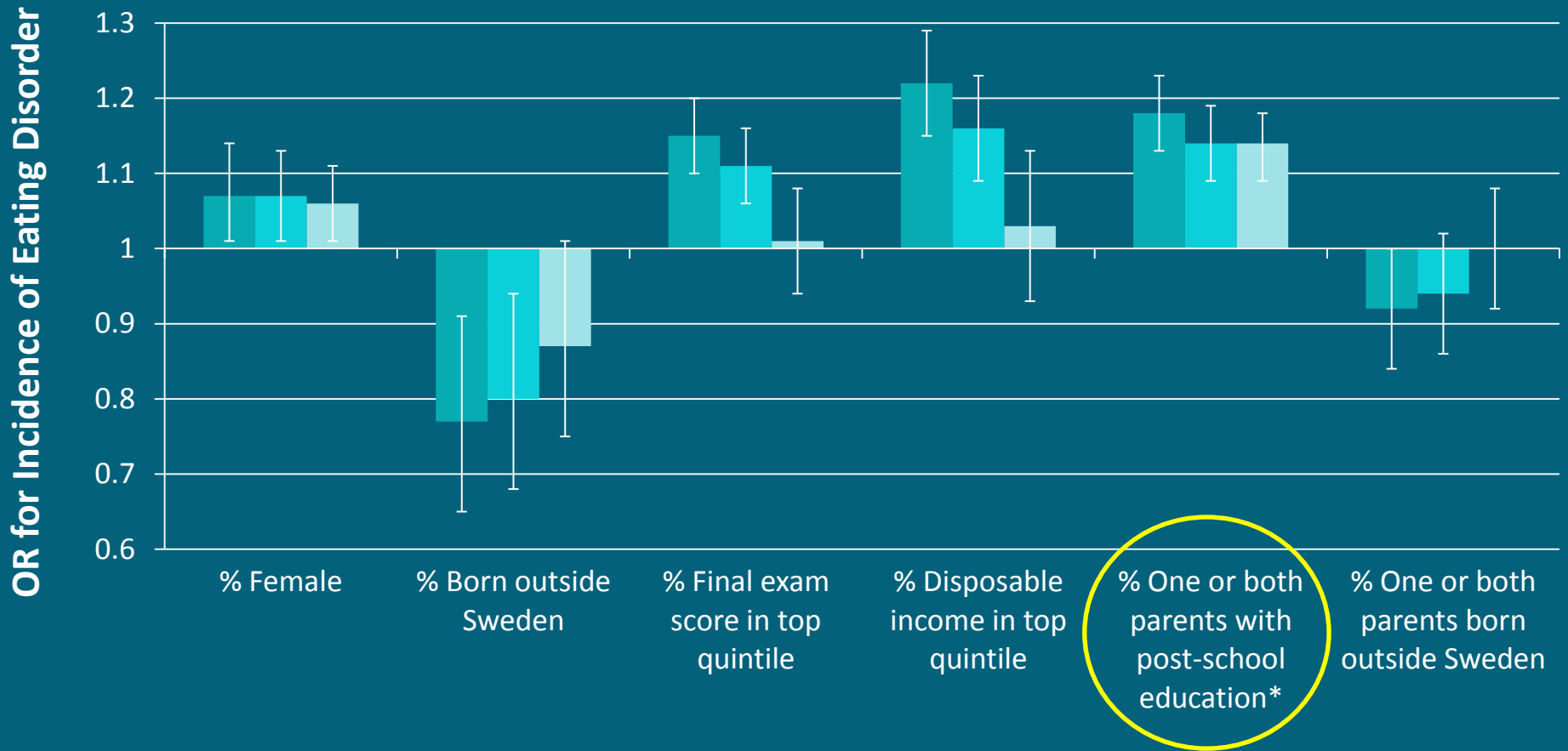
School Variables

Variables	Mean (range) in schools (%)
Number of Students per School	1513 (10-3956)
Eating Disorder in girls aged 16-20	2.42 (1.3-16.7)
Female	55.04 (1.6-100)
Final exam score in the top 20%	23.16 (0-94.7)
Disposable income in the top 20% for Sweden	32.45 (0-70.60)
One or both parents with higher education	57.16 (12.73-91.67)
Mother with higher education	37.48 (0-73.34)
One or both parents born outside Sweden	25.54 (0-67.37)
Child born abroad	6.24 (0-40)

Proportion of Variance at School Level

Unadjusted and Adjusted Models	% of unexplained variance at school level (95% CI)
<i>Unadjusted Model</i>	
Whole sample (N=62,990)	4.3 (2.7 to 6.7)
Complete Case sample (N=55,059)	4.4 (2.8 to 7.1)
<i>Adjusted for Multiple Individual Level Variables</i>	
Parental level of education, psychiatric history in either parent, maternal age, disposable income, either parent born outside Sweden	2.9 (1.6 to 5.3)

Odds Ratio for eating disorder diagnosis for a 10% increase in school variables



10% Increase in School Level Variables

- School Level Variable only
- Adjusted for Individual Variables
- Adjusted for proportion of parents with higher education

% of parents with higher education

Adjusted for a 10% increase in students in the school with the following characteristics	Odds Ratio for Eating Disorder diagnosis (95% CI, p value)* for a 10% increase in the proportion of parents with higher education
Adjusted for Individual Variables only*	1.14 (1.09 to 1.19), p<0.0001
Female	1.14 (1.09 to 1.18), p<0.0001
Born outside Sweden	1.13 (1.08 to 1.18), p<0.0001
Final exam score in the top 20%	1.13 (1.05 to 1.21), p=0.001
Disposable income in the top 20%	1.12 (1.04 to 1.20), p=0.002
One or both parents born outside Sweden	1.14 (1.09 to 1.19), p<0.0001

*Parental level of education, psychiatric history in either parent, maternal age, disposable income, either parent born outside Sweden

Cross Level Interaction

- Individual and school level parental education
- No evidence of cross-level interaction

Possible mechanisms

ED are contagious

Some school cultures encourage ED

Some schools are better at identifying ED

ED are contagious (cognitive/perceptual)



Rates of body dissatisfaction are higher in areas of lower average BMI (McLaren, 2003)

In schools with more underweight girls, individuals are more likely to be trying to lose weight (Mueller, 2010)

Body size perceived to be most normal can be altered with visual adaptation
(Winkler, 2005; Glauert, 2009)

So can perception of own size (Bould, unpublished)

ED are contagious (behavioural)



Adolescent girls' extreme weight loss behaviours are associated with those in their friendship groups (Paxton 1999, Hutchinson 2007)

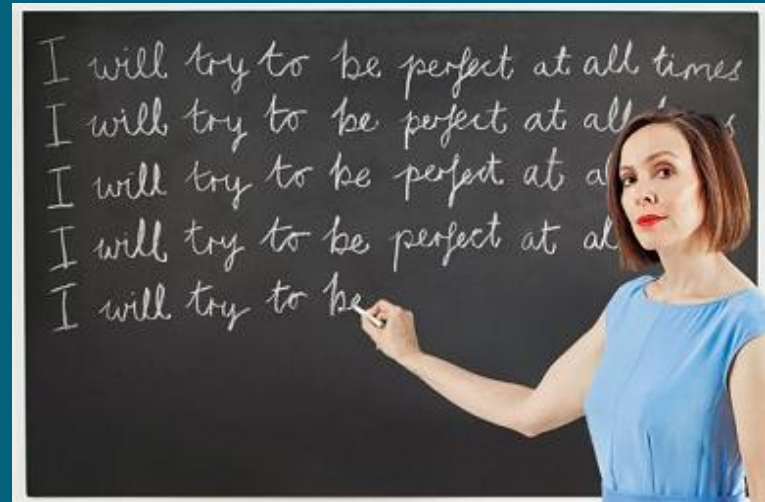
School culture may encourage ED



A school salad bar increases the amount of fruit & veg purchased by students
(Slusser, 2007)



School culture may encourage ED



Girls in single sex (vs mixed) schools
associate intelligence and professional success with being thinner
(Tiggemann, 2001)

Possible mechanisms

- Some schools may be better at identifying ED

Outcome: Any referral to Child and Adolescent Mental Health Services

10% increase in proportion of parents with higher education: OR 1.00 (95% CI 0.98, 1.05), $p = 0.739$)

Implications

Higher risk in all girls' public schools

Developing school level interventions

Increasing awareness in at risk schools

The Telegraph

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The truth behind the death of Little Miss Perfect

The quest for perfectionism is damaging young women beyond repair, prompting a backlash from high-achieving schools. So just how do we explain the death of "Little Miss Perfect" to our girls - and what can we do to boost their confidence again?



Future Directions

- Eating Disorders & Body Dissatisfaction in ALSPAC
- GHQ, BMI, alcohol use, smoking, other mental illnesses in Swedish Cohorts

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Any questions?

