



# Are overweight children at increased risk of mental health problems?

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# Overview of Presentation

- **Why did we look at this?**
- **What did we do?**
- **What did we find out?**



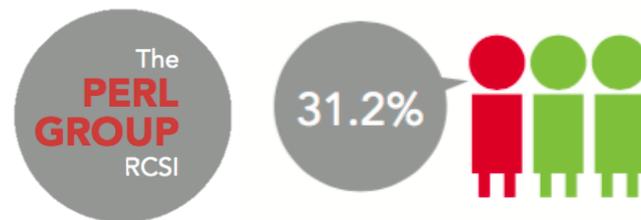
# Introduction

- **RCSI Medicine, 3<sup>rd</sup> year**
- **Summer studentship–RSS**
- **Psychiatry, Psychology Depts.**
  - Prof. Mary Cannon
  - Dr. Mary C. Clarke
  
- **8 weeks**



# Why we did this project (I)

- **Background—mental illness**
- PERL group: 1 in 3 11-13 year olds have history of mental illness
- Coughlan: 27.4% of 11-13-year-olds have DSM IV disorder



Prevalence of DSM-IV mental disorders, deliberate self-harm and suicidal ideation in early adolescence: An Irish population-based study



Helen Coughlan<sup>a,\*</sup>, Lauren Tiedt<sup>a</sup>, Mary Clarke<sup>a,b</sup>, Ian Kelleher<sup>a</sup>, Javeria Tabish<sup>a</sup>, Charlene Molloy<sup>a</sup>, Michelle Harley<sup>a,c</sup>, Mary Cannon<sup>a,d</sup>

Cannon M. et al (2013) The Mental Health of Young People in Ireland: a report of the Psychiatric Epidemiology Research across the Lifespan (PERL) Group

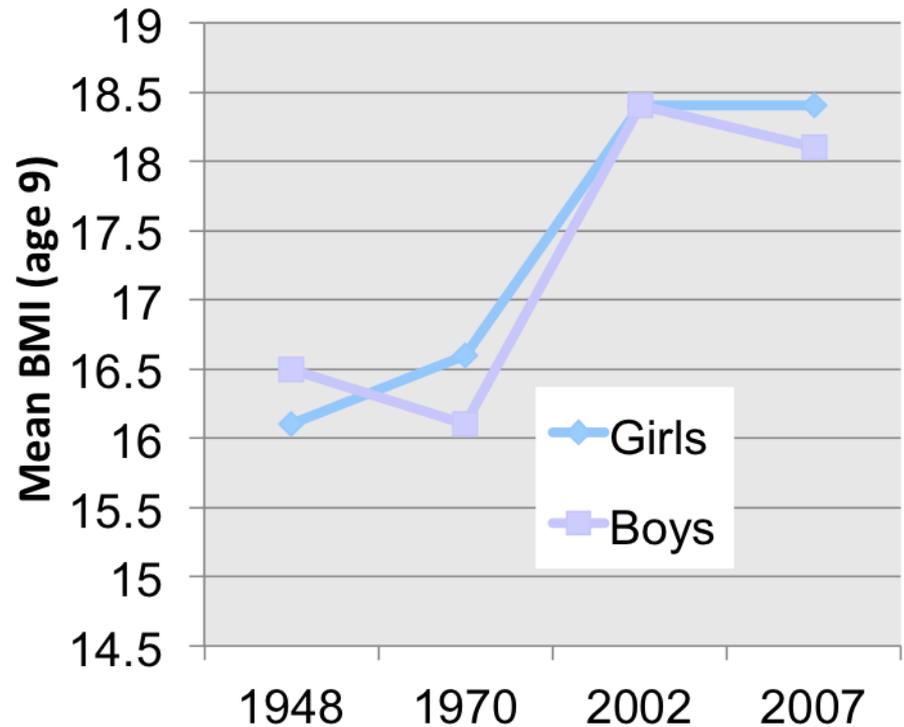
Coughlan H. et al, Journ. Adol. 37 (2014)





# Why we did this project (II)

- **Background—overweight**
- **From GUI**
- Average BMI increased over time
- 27% of 9-year-olds overweight in 2007



Data from Layte, McCrory (2011) Overweight and obesity among 9-year-olds



# Why we did this project (IV)

- “Isn’t it just common sense?”

Acta Paediatr 88: 998–1003. 1999

Mental health and psychosocial characteristics in adolescent obesity: a population-based case-control study

C Renman<sup>1</sup>, I Engström<sup>2</sup>, S-A Silfverdal<sup>1</sup> and J Åman<sup>1</sup>

- Sweden, obese teenagers
- “obese adolescents do not differ from their normal-weight peers in other aspects of mental health.”

**Depressive symptomatology, weight status and obesogenic risk among Australian adolescents: a prospective cohort study**

Erin Hoare<sup>1</sup>, Lynne Millar<sup>1</sup>, Matthew Fuller-Tyszkiewicz<sup>2,3</sup>, Helen Skouteris<sup>2,3</sup>,  
Melanie Nichols<sup>1</sup>, Mary Malakellis<sup>1</sup>, Boyd Swinburn<sup>1,4</sup>, Steven Allender<sup>1</sup>

- Australia, prospective study
- Relationship present in males
- In females who eat takeaway

**Is there a relationship between overweight and obesity and mental health problems in 4- to 5-year-old Australian children?**

Sawyer MG<sup>1</sup>, Miller-Lewis L, Guy S, Wake M, Canterford L, Carlin JB.

⊕ Author information

- Australia again, younger cohort
- Relationship disappears when controlled for confounders



# Why we did this project (V)

- **Disagreement in literature**
- Methods
- Exposures
- Outcomes
- Populations



# Why we did this project (VI)

- **Systematic reviews**

## BMJ Open Systematic review of mental health and well-being outcomes following community-based obesity prevention interventions among adolescents

Erin Hoare,<sup>1,2</sup> Matthew Fuller-Tyszkiewicz,<sup>3</sup> Helen Skouteris,<sup>3</sup> Lynne Millar,<sup>1,2</sup>  
Melanie Nichols,<sup>2</sup> Steven Allender<sup>2</sup>

### The Relation Between Eating- and Weight-Related Disturbances and Depression in Adolescence: A Review

Jennine S. Rawana · Ashley S. Morgan ·  
Hien Nguyen · Stephanie G. Craig

- “Future research could also make use of secondary data analysis involving large population-based surveys to investigate the relationship between EWRDs and depression. These surveys provide opportunities to include diverse measures that investigate multiple domains related to the developmental process, cross-informant information, and longitudinal data.”



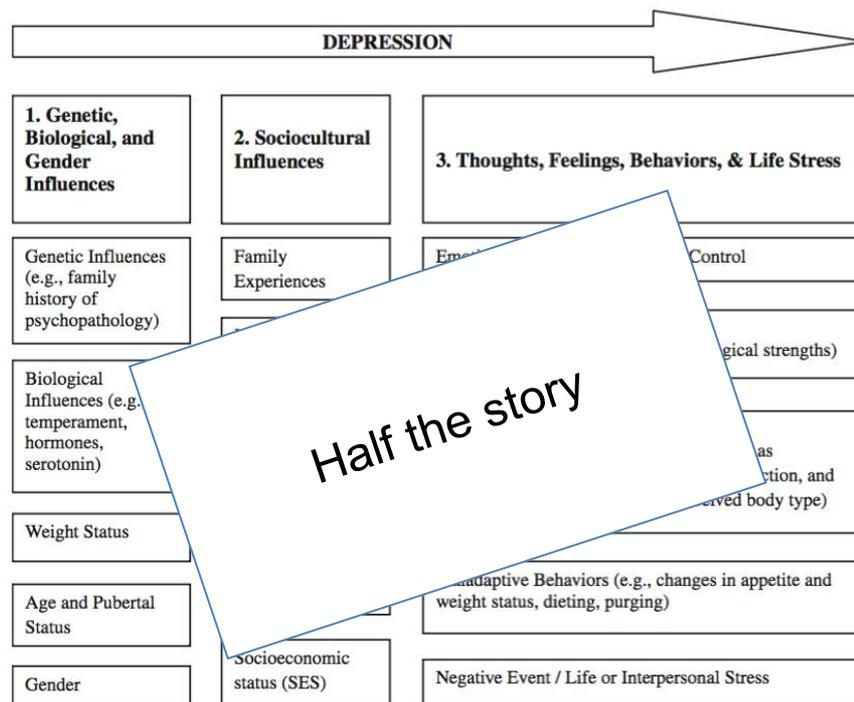
# Why we did this project (VII)

- **Valid question**
- **Poorly answered in literature**
- **GUI data good fit–Rawana**



# Why we did this project (VIII)

- **Specific aims difficult to tie down—complex field**
- **Difficult to be definitive**



Rawana et al, Clin Child Fam Psychol Rev. (2010) 13:222



# What we did (I)

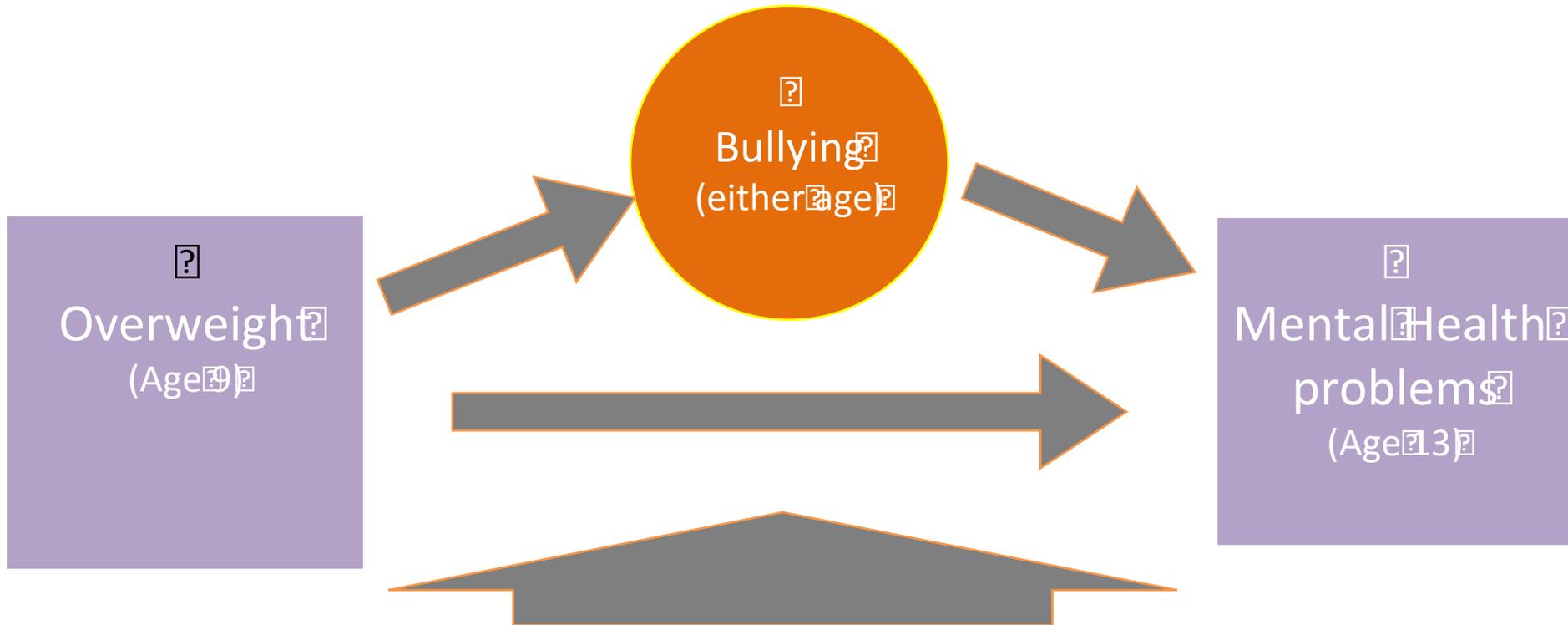
- **Contentious area, get a general picture**
- **Aims:**
  - Validate existing research—see if relationship exists in Ireland, test common confounders
  - Additional hypothesis: bullying as mediator



# What we did (II)

- **Where did bullying come from?**
- **Linked to exposure and outcome**
  - In GUI, others
- **Referenced frequently in literature**
  - Variable, not standard
- **Rule out simple relationships**

# What we did (III)



SE  
Status

Family History  
Of Mental Illness

Female  
Gender

Single  
Parent



# What we did (IV)

- **Simplify to three questions**
- **Q1: Does the relationship exist in Irish children?**
- **Q2: Are there easily identifiable confounders in the relationship?**
- **Q3: Is bullying the mediator of the relationship?**



# What we did (V)

- **GUI–what data to use?**

- **Child cohort**

- Waves 1&2

- **Timeline**

- Exposure at age 9
- Outcome at age 13
- Confounders at age 9



**Growing Up**  
**in Ireland**  
National Longitudinal  
Study of Children



# What we did (VI)

- **Q1: Relationship**
- **Exposure: BMI (age 9)**
  - Measure of weight/body area
  - Consistent, reliable, objective etc.
  - Divide into high/low
- **Outcome: SDQ (Strengths and Difficulties Questionnaire) (age 13)**
  - Measures symptoms of psychological difficulties
  - Relatively objective, widely validated
  - Primary caregiver
  - Divide into abnormal/normal



# What we did (VII)

- **Q2: Confounders to check**
- Biological sex
- SE status
  - (maternal education—Junior cert)
- Single parent household
- Family history of mental illness (asked with stressors)



# What we did (VIII)

- **Q3: Bullying**
- Difficult
- Child asked—most accurate
  - Disadvantage: asked differently in both waves(1y vs 3mths)

# What we found (I)

- **Q1: Does the relationship exist?**

Likelihood of abnormal SDQ at age 13 for overweight (incl. obese) v non-overweight at age 9

Model 1—unadjusted			Model 2—adjusted for confounders		
OR	95% CI	P value	OR	95% CI	P-value
1.31	1.04-1.64	0.021	1.28	1.02-1.61	0.037
			<i>confounders: sex, single-parent household</i>		

- Consistent in large population
- Small
- Did not control for baseline SDQ abnormality



# What we found (II)

- **Q2: What confounds it?**
- ✓
- Female gender
- Single Parent household
- Only significant confounders included in analysis
- Relationship remained
- ✗
- SE status
- Family history



# What we found (III)

- **Does bullying mediate?**

- Very small effect
  - Previous OR 1.28
  - Not a significant reduction

- Not simple mediation

Likelihood of abnormal SDQ at age 13 for overweight (incl. obese) v non-overweight at age 9

Model 3—adjusted for confounders and bullying		
OR	95% CI	P-value
1.25	0.99-1.59	0.065
<i>confounders: sex, single-parent household</i>		



# What we found (IV)

- **Do our results agree with the literature?**
- **Q1: Does the relationship exist?**
- Slight relationship—consistent in large sample
- Adds to evidence base

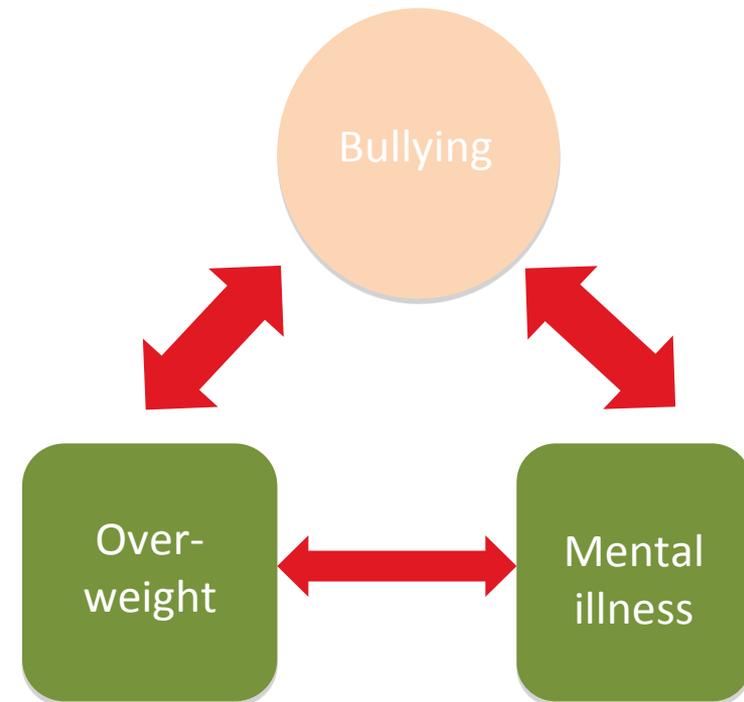


# What we found (V)

- **Do our results agree with the literature?**
- **Q2: What confounds the relationship?**
  - No agreement before
  - Female gender well documented
  - Single parent also evidenced
- Family History, SES—no effect
  - Debunking stereotypes?
  - Consistent lack of effect in large population

# What we found (VI)

- Do our results agree with the literature?
- Q3: Does bullying mediate the relationship?
- Not straightforward in literature
- Alternative theories?
  - Reulbach: self image
  - Adams: circle





# What you should know

- **Overweight predicts later mental ill-health**
  - Slight relationship consistent with systematic reviews
  - Adds to evidence base
- **Confounders**
  - Some predictable from literature
  - Stereotypes debunked
  - Needs more work
- **Bullying as mediator**
  - Not as simple as we thought
  - Not ruled out—other theories



# What you should know— again

Overweight  
(age 9)

Bullying?

Mental  
Health  
problems  
(age 13)



~~SE Status~~

~~Family History  
Mental Illness~~

Female  
Sex

Single  
Parent



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