The Impact of Early Life Stress on Psychological Symptoms in Young Irish Adolescents.
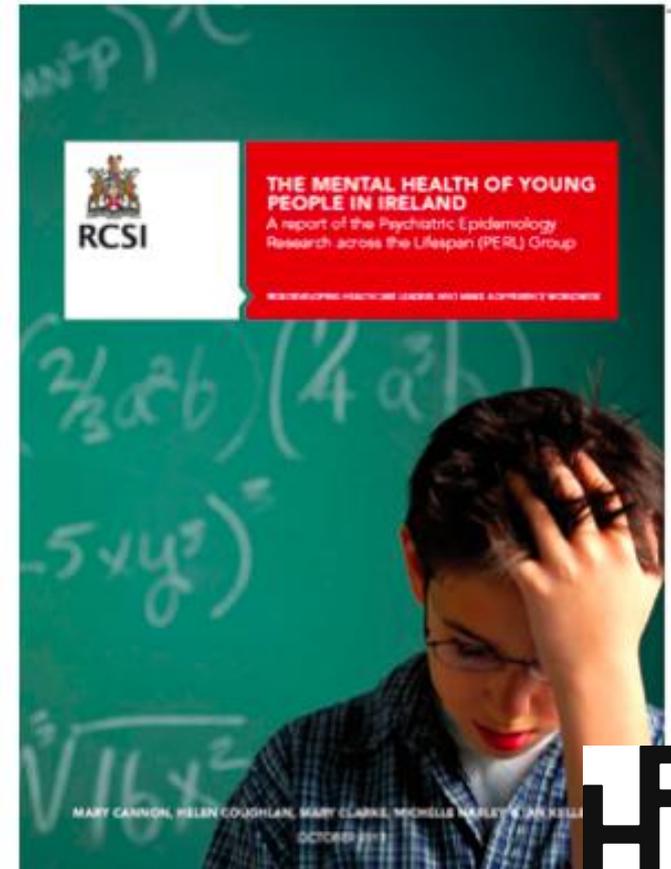
Dearbhail Ni Cathain[1], Mary Cannon[2], Mary Clarke[3].

Introduction

- By age 13, 1 in 3 Irish children have experienced some form of mental disorder. (Cannon et al,2013)

- The association between early life s symptoms has been shown in studie

- In an Irish context, with a high preva the stresses children are being expo impacts them, merits further investig

- The "Growing up in Ireland" child co data necessary to explore these issu

THE MENTAL HEALTH OF YOUNG PEOPLE IN IRELAND
A report of the Psychiatric Epidemiology Research across the Lifespan (PERL) Group
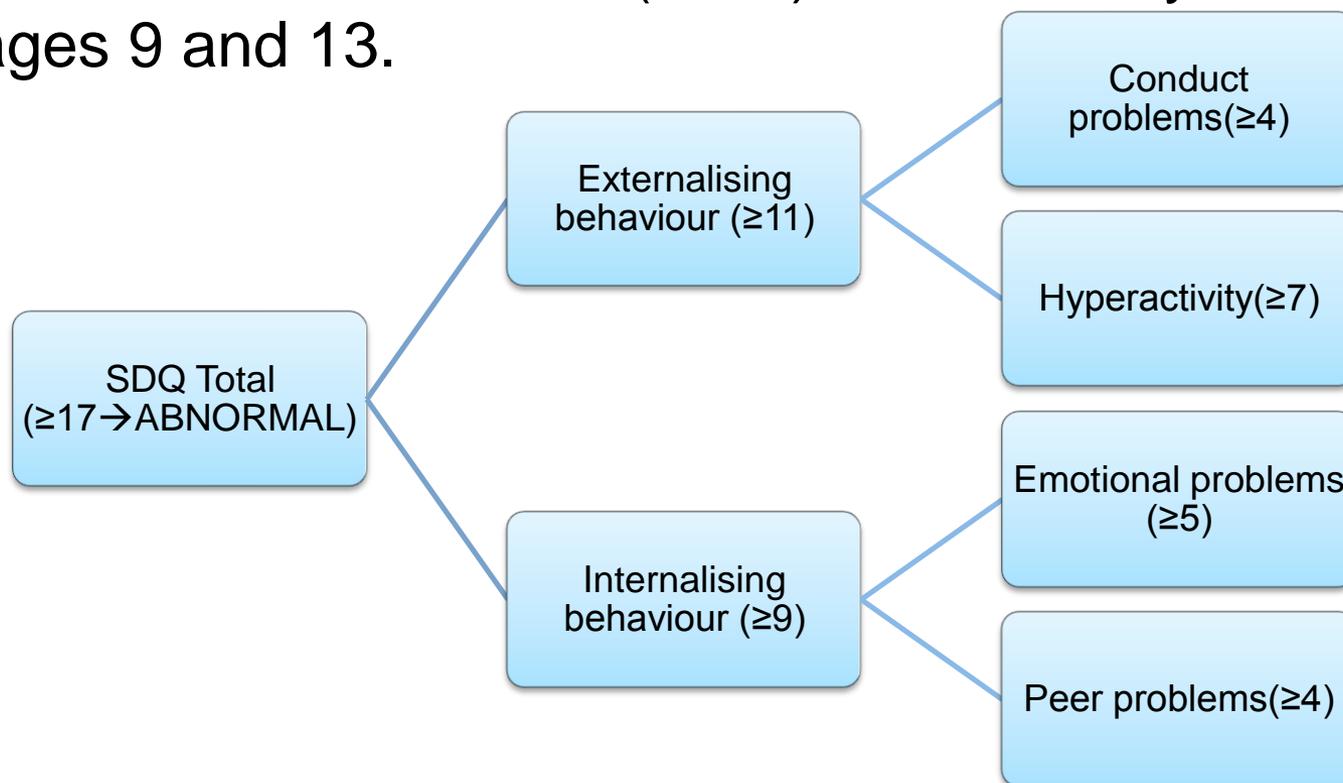
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Aims

The project aims to explore:

1)The association between early life stress at age 9 and psychological symptoms at both ages 9 and ages 13, allowing for longitudinal analyses.

2)Whether or not biological sex alters one's experience of stress psychologically.

3)Which early life stressors are most associated with psychological symptoms.

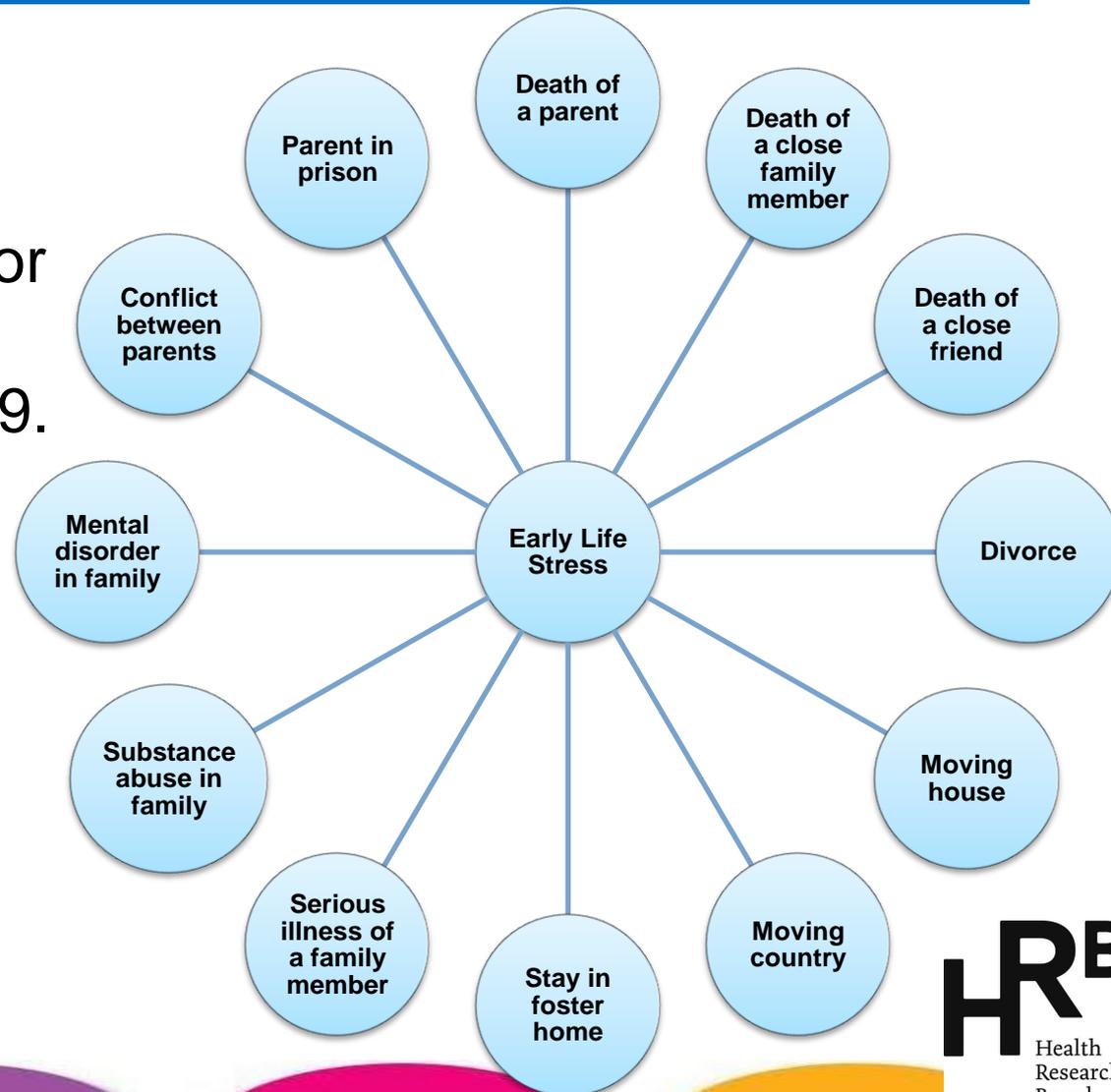4)The impact of citizenship status on the association between psychological symptoms and stress.

Methods

Outcome:

➢ Psychological symptoms, assessed by the Strengths and Difficulties Questionnaire (SDQ) answered by the PCG at ages 9 and 13.

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SDQ Total
(≥17→ABNORMAL)
    ├── Externalising behaviour (≥11)
    │       ├── Conduct problems(≥4)
    │       └── Hyperactivity(≥7)
    └── Internalising behaviour (≥9)
            ├── Emotional problems (≥5)
            └── Peer problems(≥4)
```

Methods

Exposure:

➢ Numeric variable for total stressful life events score, age 9.

➢ 95th percentile ≥ 4 events.

Methods

Confounders:

1. Biological sex
2. Socioeconomic status (measured by maternal level of education, age 9)
3. Economic strain (Degree of difficulty with which the PCG "made ends meet" at age 9 and impact of the recession age 13).

Statistical Analysis:

➢ All statistical analysis were carried out using STATA version 13.

Methods

Early life stress, age 9.

Psychological symptoms, age 9.

Psychological symptoms, age 13.

Results

Demographic data:

➢**8,568 children at age 9:**

> ➢ 458 non-Irish citizens (5.3%).

> ➢ 1,510 from a low socioeconomic background (18%).

> ➢ 2,101 families had difficulty " making ends meet" (24.52%).

➢ **7,525 children at age 13:**

> ➢ 4,502 families significantly impacted by the recession. (60%)

SDQ

Age	Total pop mean SDQ (S.D)	Boys mean SDQ (S.D)	Girls mean SDQ (S.D)	No. of abnormal SDQ (%)	Boys abnormal SDQ (%)	Girls abnormal SDQ (%)
9	7.4 (5.0)	7.7 (5.1)	7.2 (4.9)	532 (6.2)	280 (3.3)	252 (2.9)
13	6.5 (5.0)	6.3 (5.1)	6.2 (4.9)	373 (5.0)	195 (2.6)	178 (2.4)

- Boys had a higher average SDQ score compared to the girls.
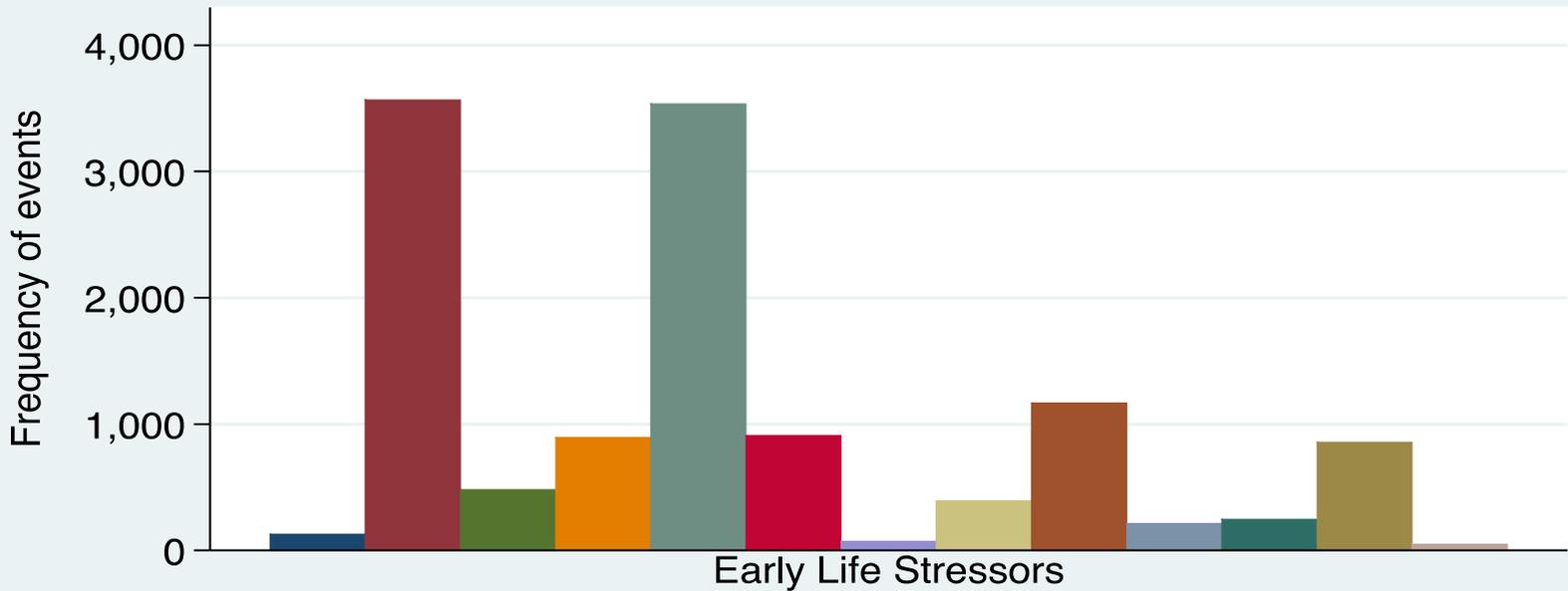- More boys scored an abnormal SDQ score than girls, at both ages.

Internalising vs. Externalising

Age	Behaviour	Total pop	Boys	Girls
9	Internalising	6.01% (n=515)	5.55% (n=231)	6.45% (n=284)
	Externalising	5.53% (n=474)	6.99% (n=291)	4.16% (n=183)
13	Internalising	5.2% (n=391)	4.76% (n=175)	5.62% (n=216)
	Externalising	4.2% (n=316)	5.49% (n=202)	2.97% (n=114)

- At both ages more children demonstrated abnormal internalising behaviours than externalising behaviours.
- Boys were more likely to exhibit externalising behaviours.
- Girls tended towards internalising behaviours.

Early Life Stress

- 76.8% of children had experienced at least one of the early life stressors by age 9. (mean =1.4)

- 564 children, 6.6% of our sample had experienced at least 4 of the events.

- 17% of the non-Irish citizens sub-population had experienced at least 4 early life stressors. (mean= 2.5)

- Non-Irish citizens had three times the odds of experiencing 4 or more events when compared to Irish citizens, odds ratio = 3.1 (2.39-4.04)

Association

Number of events	Total	Abnormal SDQ Age 9 Odds ratio (95% CI)			Total	Abnormal SDQ Age 13 Odds ratio (95% CI)		
	N	N (%)	Unadjusted	Adjusted*	N	N(%)	Unadjusted	Adjusted*
≥4	564	77 (13.7)	2.6 (2.02-3.4)	2.0 (1.5-2.6)	469	53 (11.3)	2.7 (1.98-3.6)	2.2 (1.6-3.0)

*adjusted for sex, socioeconomic background and financial strain. (P<0.000)

- At both ages 9 and 13 there was a strong association between exposure to a high number of stressful life events and an abnormal SDQ score.

- The association remained having adjusted for sex, socioeconomic background and financial strain.

- The odds ratio was increased by age 13 when compared to age 9.

Girls vs. Boys

Sex; No. of events	Total	Abnormal SDQ age 9 Odds ratio (95% CI)			Total	Abnormal SDQ age 13 Odds ratio (95% CI)		
	N	N (%)	Unadjusted	Adjusted*	N	N (%)	Unadjusted	Adjusted*
Boys; ≥4	270	32 (11.9)	1.98 (1.3-2.9)	1.48 (0.9-2.2)	226	25 (11.1)	2.4 (1.6-3.8)	2.04 (1.3-3.2)
Girls; ≥4	294	45 (15.3)	3.4 (2.4-4.8)	2.69 (1.9-3.9)	243	28 (11.5)	2.9 (1.9-4.5)	2.35 (1.5-3.6)

*adjusted for socioeconomic background and financial strain.

- Girls within the population had a higher odds of having an abnormal SDQ score if exposed to 4 or more stressful life events, at both ages, relative to the boys.

Individual Stressors

Stress	Odds ratio abnormal SDQ age 9 (CI)	P –value	Odds ratio abnormal SDQ age 13 (CI)	P-value
Death of a parent	2.33 (1.4-3.9)	.001	4.36 (2.6-7.2)	.000
Death of a close family member	1.1	.253	1.36 (1.1-1.7)	.004
Death of a close friend	1.24	.234	1.08	.740
Separation/Divorce of parents	2.29 (1.8-2.9)	.000	2.31 (1.8-3.0)	.000
Moving house	1.39 (1.2-1.7)	.000	1.22	.067
Moving country	1.12	.430	.963	.835
Stay in foster home	3.78 (2.1-6.8)	.000	6.47 (3.6-11.7)	.000
Serious illness/injury	1.51 (1.1-2.2)	.025	1.64 (1.1-2.5)	.017
Serious illness/injury of fam member	1.11	.398	1.42 (1.1-1.9)	.011
Substance abuse	2.58 (1.7-3.8)	.000	2.97 (1.9-4.7)	.000
Mental disorder in family	2.42 (2.0-4.5)	.000	2.97 (1.9-4.5)	.000
Conflict between parents	2.78 (2.2-3.5)	.000	2.25 (1.7-2.9)	.000
Parent in prison	5.4 (2.9-10.3)	.000	6.07 (2.8-12.9)	.000

Delayed effect

Stress	Odds ratio abnormal SDQ age 9 (CI)	P –value	Odds ratio abnormal SDQ age 13 (CI)	P-value
Death of a parent	**2.33** (1.4-3.9)	.001	**4.36** (2.6-7.2)	.000
Death of a close family member	1.1	.253	**1.36** (1.1-1.7)	.004
Death of a close friend	1.24	.234	1.08	.740
Separation/Divorce of parents	**2.29** (1.8-2.9)	.000	**2.31** (1.8-3.0)	.000
Moving house	**1.39** (1.2-1.7)	.000	1.22	.067
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Mental disorder in family	**2.42** (2.0-4.5)	.000	**2.97** (1.9-4.5)	.000
Conflict between parents	**2.78** (2.2-3.5)	.000	**2.25** (1.7-2.9)	.000
Parent in prison	**5.4** (2.9-10.3)	.000	**6.07** (2.8-12.9)	.000

Transient Stressors

Stress	Odds ratio abnormal SDQ age 9 (CI)	P –value	Odds ratio abnormal SDQ age 13 (CI)	P-value
Death of a parent	**2.33** (1.4-3.9)	.001	**4.36** (2.6-7.2)	.000
Death of a close family member	1.1	.253	**1.36** (1.1-1.7)	.004
Death of a close friend	1.24	.234	1.08	.740
Separation/Divorce of parents	**2.29** (1.8-2.9)	.000	**2.31** (1.8-3.0)	.000
Moving house	**1.39** (1.2-1.7)	.000	1.22	.067
Moving country	1.12	.430	.963	.835
Stay in foster home	**3.78** (2.1-6.8)	.000	**6.47** (3.6-11.7)	.000
Serious illness/injury	**1.51** (1.1-2.2)	.025	**1.64** (1.1-2.5)	.017
Serious illness/injury of fam member	1.11	.398	**1.42** (1.1-1.9)	.011
Substance abuse	**2.58** (1.7-3.8)	.000	**2.97** (1.9-4.7)	.000
Mental disorder in family	**2.42** (2.0-4.5)	.000	**2.97** (1.9-4.5)	.000
Conflict between parents	**2.78** (2.2-3.5)	.000	**2.25** (1.7-2.9)	.000
Parent in prison	**5.4** (2.9-10.3)	.000	**6.07** (2.8-12.9)	.000

Strong Association

Stress	Odds ratio abnormal SDQ age 9 (CI)	P –value	Odds ratio abnormal SDQ age 13 (CI)	P-value
Death of a parent	2.33 (1.4-3.9)	.001	4.36 (2.6-7.2)	.000
Death of a close family member	1.1	.253	1.36 (1.1-1.7)	.004
Death of a close friend	1.24	.234	1.08	.740
Separation/Divorce of parents	2.29 (1.8-2.9)	.000	2.31 (1.8-3.0)	.000
Moving house	1.39 (1.2-1.7)	.000	1.22	.067
Moving country	1.12	.430	.963	.835
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Conflict between parents	2.78 (2.2-3.5)	.000	2.25 (1.7-2.9)	.000
Parent in prison	5.4 (2.9-10.3)	.000	6.07 (2.8-12.9)	.000

Irish citizens vs. Non Irish Citizens

Citizenship: No. of events	Total N	N (%)	Odds ratio of abnormal SDQ (95% CI) Age 9	Odds ratio of abnormal SDQ (95% CI) Age 13
Irish ≥4	8110	488 (6.0)	2.66 (2.0-3.5)	3.02 (2.2-4.2)
Non-Irish ≥4	458	76 (16.6)	2.16 (.8-4.9)	.616 (.1-2.7)

- Despite being more likely to have experienced a greater number of stressors as a non-Irish citizen, there is no significant association among this subgroup between stress and an abnormal SDQ.

Discussion

- **In keeping with previous findings** (Compas B,E, 1987)**, this study showed in an Irish context that exposure to early life stress was associated with psychological symptoms in children as young as 9.**

- **The association was strengthened by age 13.**

- **Mediators? : Pituitary volume, cortisol reactivity and genetics.**
  - Common thread = Activation of the hypothalamic-pituitary-adrenal axis by stress. (Tykra AR,2013)
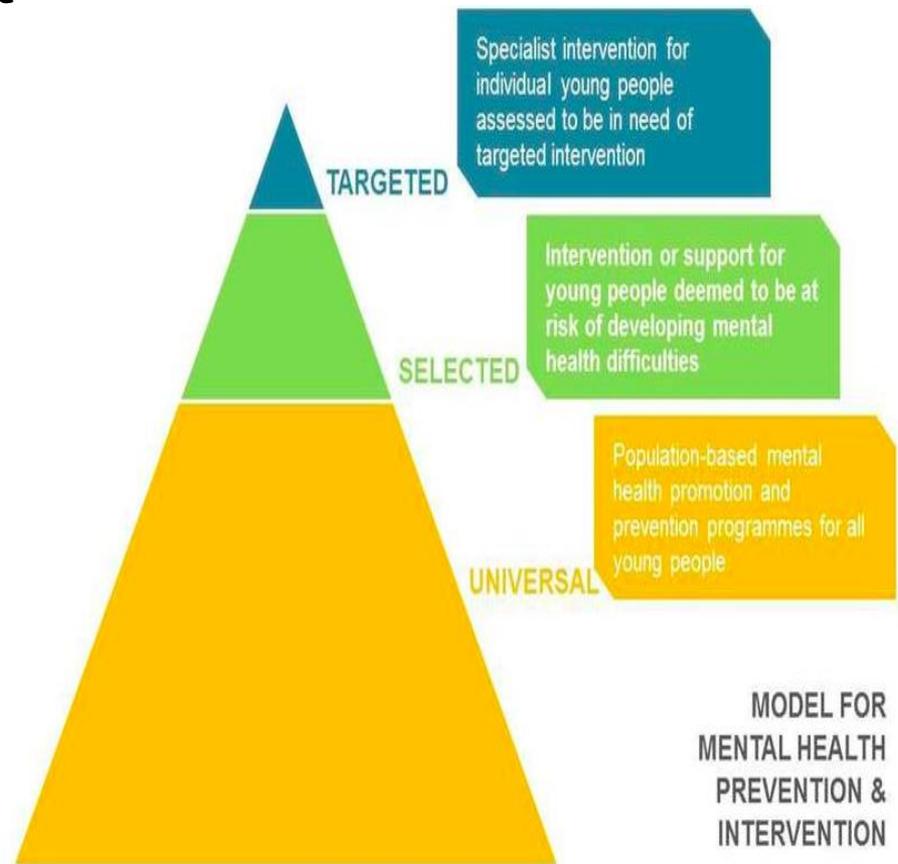 - Early and Excessive activation→Allostatic load (McEwen BS, 2007).

- **This study found that females are more vulnerable to psychological symptoms having experienced numerous stressors.**

  - Can also be related back to the HPA axis and theories that propose that females are more susceptible to changes in the programming of the axis when exposed to stress. (Carpenter t, et.al,2015)

Discussion

- **Strong relationship between having a parent in prison or growing up in a foster home and psychological symptoms.**
  - ➢ Important in an Irish context.
  - ➢ Demonstrates the need for support for young individuals experiencing such stress.

TARGETED
Specialist intervention for individual young people assessed to be in need of targeted intervention

SELECTED
Intervention or support for young people deemed to be at risk of developing mental health difficulties

UNIVERSAL
Population-based mental health promotion and prevention programmes for all young people

MODEL FOR MENTAL HEALTH PREVENTION & INTERVENTION
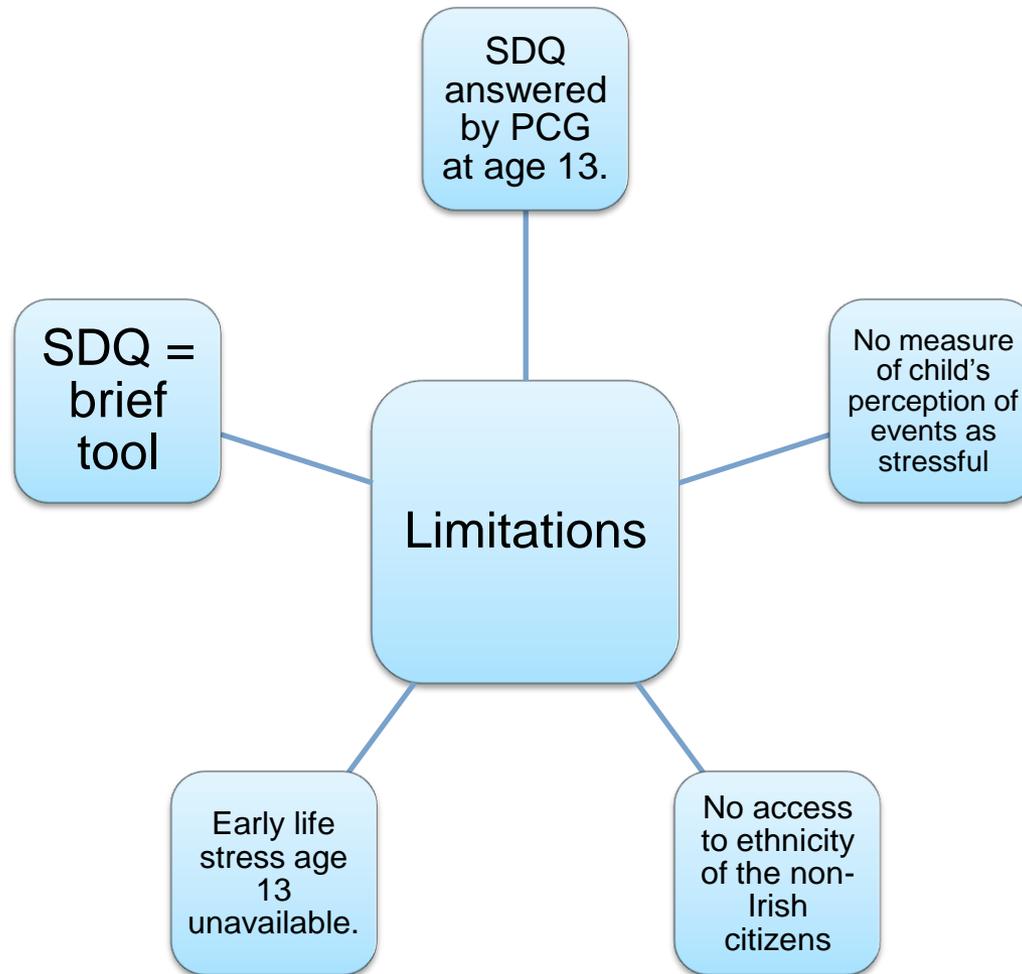
Discussion

- **Non-Irish citizens experienced more stress and yet this did not have an impact on whether or not they exhibited psychological symptoms.**
  - ➢ Are we as Irish more susceptible to stress?
  - ➢ Interesting questions
  - ➢ The theory of Post traumatic growth and acquired resilience. (Jayawickreme E, 2014)
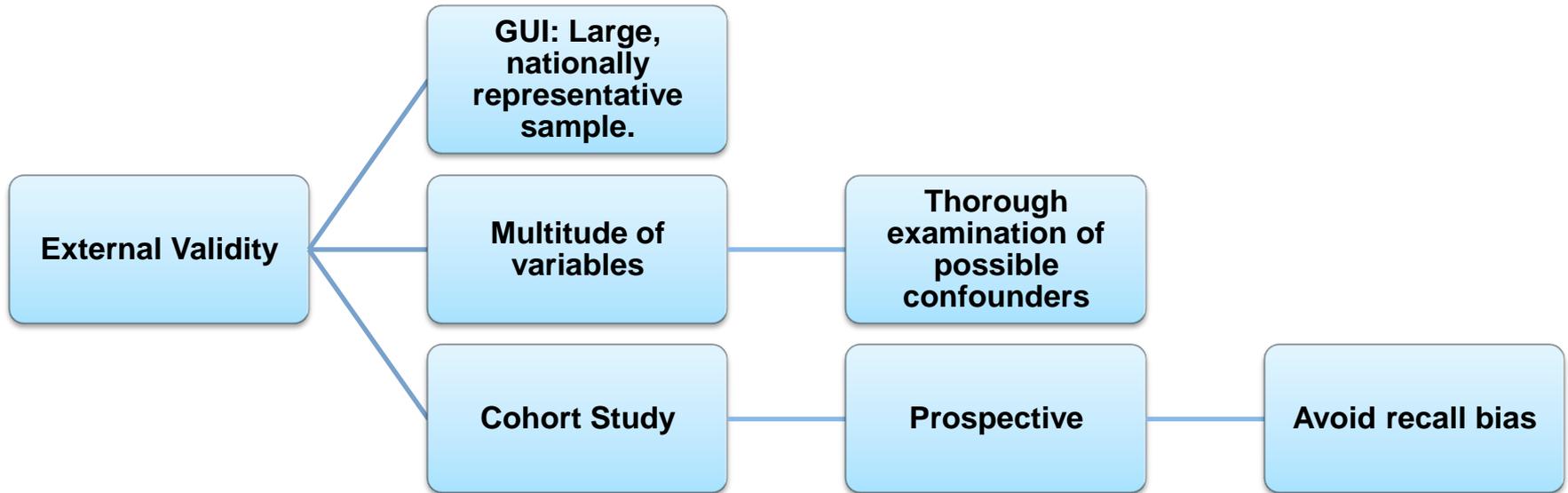
Discussion

- **The delayed impact of death of a close family member or serious illness/injury of a family member, may reflect children's natural progression to understanding the totality of death.**

Limitations

- SDQ answered by PCG at age 13.
- SDQ = brief tool
- No measure of child's perception of events as stressful
- Limitations
- Early life stress age 13 unavailable.
- No access to ethnicity of the non-Irish citizens

Generalisability

External Validity

- GUI: Large, nationally representative sample.
- Multitude of variables → Thorough examination of possible confounders
- Cohort Study → Prospective → Avoid recall bias

Summary

1. Early life stress was associated with psychological symptoms, at both ages 9 and 13.

2. Girls are more likely to be exhibit psychological symptoms having experienced stress.

3. The majority of stressors had a stronger association by age 13, demonstrating the longitudinal impact.

4. Some stressors had a delayed effect on SDQ.

5. Growing up with a parent in prison or having been in foster care gives you 6 times the odds of exhibiting abnormal psychological symptoms.

6. The relationship between early life stress and abnormal SDQ, in Non-Irish citizens, was not found in this data set.

Conclusion

- This study supports the need to acknowledge early life stress as a predictor of mental health outcomes.

- Armed with this knowledge, steps can be taken to preempt the emergence of psychological symptoms in those most susceptible to their development.

- If we can intervene early enough we may be able to prevent psychological symptoms from developing into a full blown psychopathologies.

Acknowledgements

- Prof. Mary Cannon

- Dr. Mary Clarke

- Ms. Helen Coughlan

- Patrick Williams

- GUI

- Funded by HRB