



The Association
for Child and Adolescent
Mental Health

CAMHS around the Campfire



Virtual journal club
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The Mental Elf

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Critical appraisal background to

Adolescent gender diversity: sociodemographic correlates and mental health outcomes in the general population.



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Why do we do critical appraisal?





Why do we do critical appraisal?

Around 50% of published studies don't do enough to eliminate potential bias

Around 50% of studies don't even get published

- “negative” trials are less likely to be published than “positive” ones

Most bias works in favour of treatments



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Longitudinal Cohort Study

Sample recruited



Measures



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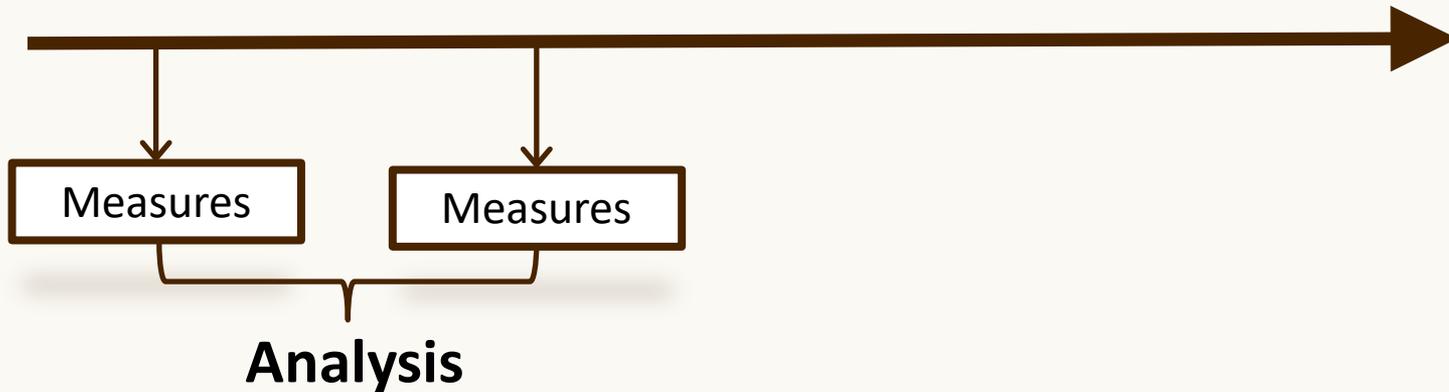
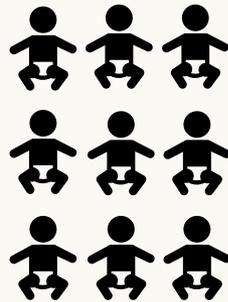
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Longitudinal Cohort Study

Sample recruited



Followed forwards over time



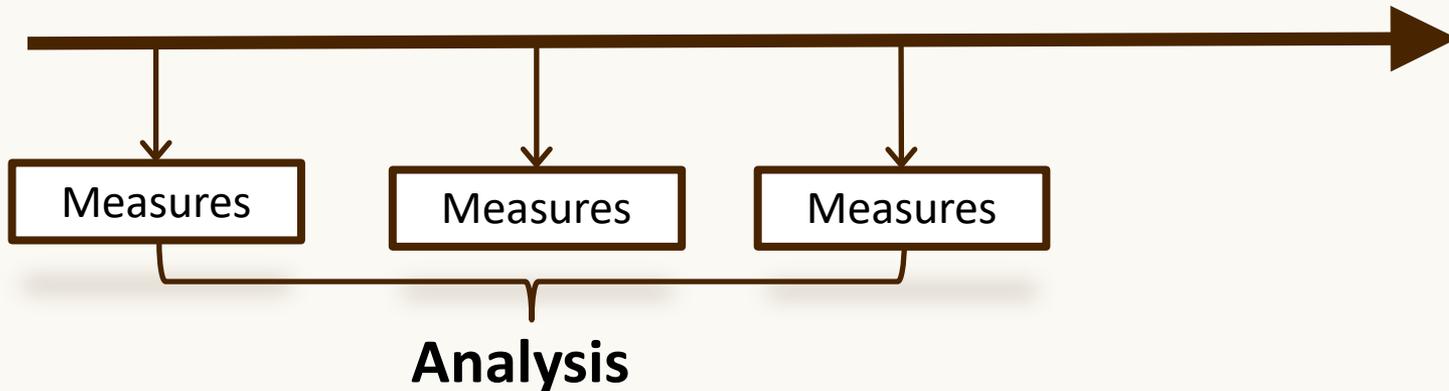
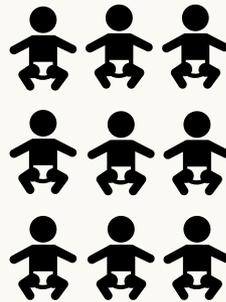


Longitudinal Cohort Study

Sample recruited



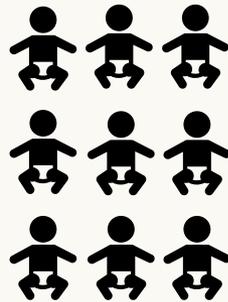
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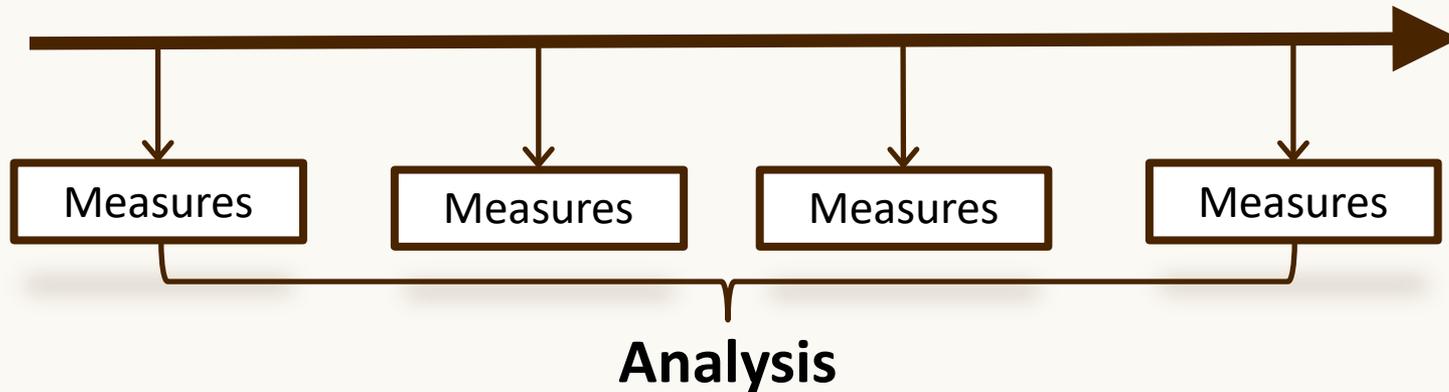


Longitudinal Cohort Study

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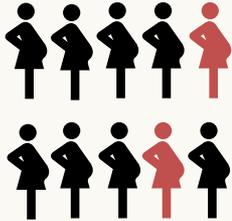
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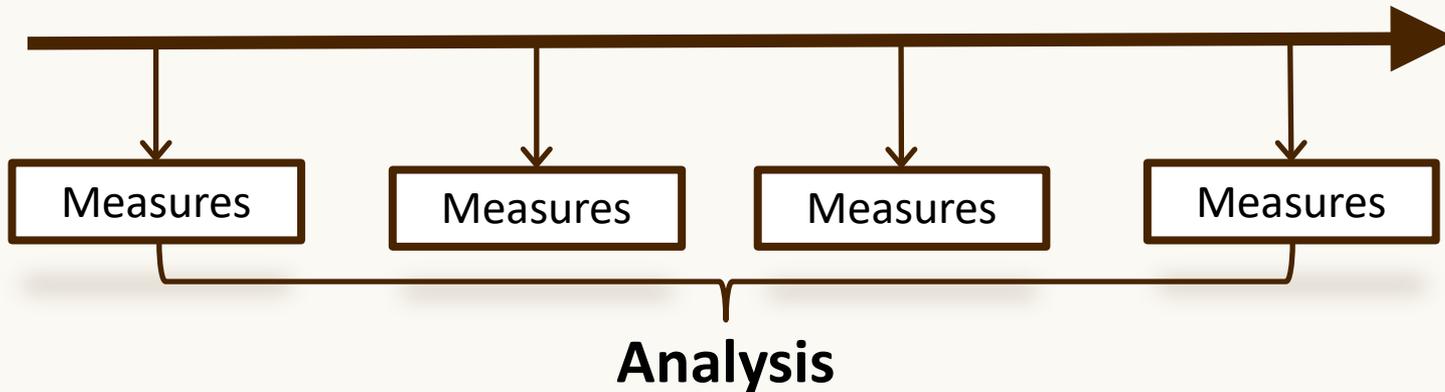
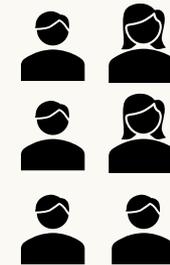
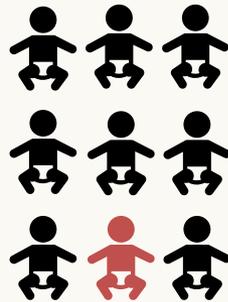


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Two concerns re: participants

Who takes part, who drops out

- Sociodemographic factors influence participation (Price 2016)
- Lower educational attainment (Gustavson 2012, Cornish 2021)
- Special educational needs, depression, smoking (Cornish 2021)
- Generally healthier than the population (Bai 2018)

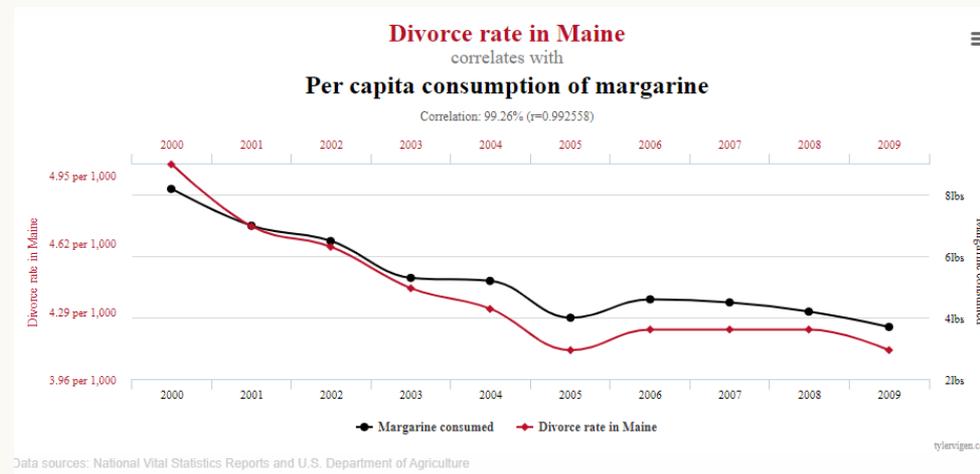
Measuring associations

“Correlation” is r

- 1 means there is perfect correlation

“Coefficient of determination” is r^2

- R^2 indicates the proportion of the variance in mental health symptoms that is explained by gender diversity experience.





In this study

Longitudinal cohort study:

- **Population**
children born between 2002 and 2006
assessed at 9-11 and 13-15
- **Exposure**
Gender diverse
experience by ASEBA and
GIDYQ
- **Outcomes**
Mental health status via
ASEBA

Methods

We used data from Generation R, a population-based cohort in Rotterdam, the Netherlands, which has followed children born between 2002 and 2006, beginning from fetal life onwards (Kooijman et al., 2016). We included participants who responded to parental and/or youth questionnaires at ages 9–11 (2012–2015) and/or 13–15 years (2016–2020). After randomly excluding one twin from each pair ($n = 123$), 5727 children with one or more data points were included in the analyses.

Measurements

We used two assessment tools to examine children's gender-variant experience. We used parent and youth forms of the Achenbach System of Empirically Based Assessment (ASEBA): Youth Self Report and the Child Behavior Checklist (Achenbach & Rescorla, 2001). At ages 9–11 and 13–15 years, parents (>90% mothers) answered a question on the ASEBA form with 'not true', 'somewhat or sometimes true', or 'very true or often true': 'does your child wish to be of opposite sex' (item #110). Adolescents responded to an identical question at ages 9–11. In addition to ASEBA, we used one item of the Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ)(Deogracias et al., 2007) at ages of 13–15 years, in which the adolescents responded to the following question:

Adolescent mental health was assessed using ASEBA questionnaires between 13 and 15 years of age (Achenbach & Rescorla, 2001). Adolescents and their parents reported on the adolescent's emotion and behavior over the past six months.



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Gender diverse experience

(ASEBA). “Does your child / do you wish to be of opposite sex?”:

1. Not true
2. Somewhat or sometimes true
3. Very true or often true.

(GIDYQ): “Would you rather be treated as someone from the opposite sex?”:

1. No
2. Probably yes
3. Definitely yes

The researchers defined “gender diverse experience” as any response of 2 or 3 on these instruments.

Data were acquired at the following points:

- Age 9-11 years: Parent responses to ASEBA
- Age 13-15 years: Parent and youth responses to ASEBA, youth responses to GIDYQ.



CASP checklist for a cohort study

Checklist item	Y/DK/N	Comments
1. Did the study address a clearly focused question?		
2. Was the cohort recruited in an acceptable way?		
3. Was the exposure accurately measured to minimise bias?		
4. Was the outcome accurately measured to minimise bias?		
5. (a) Have the authors identified all important confounding factors?		
5. (b) Have they taken account of the confounding factors in the design and/or analysis?		
6. (a) Was the follow up of subjects complete enough?		
6. (b) Was the follow up of subjects long enough?		



CASP checklist for a cohort study

Checklist item	Y/DK/N	Comments
1. Did the study address a clearly focused question?	Yes	
2. Was the cohort recruited in an acceptable way?	Yes	61% of the eligible population took part
3. Was the exposure accurately measured to minimise bias?	DK	Not sure how well this measure represents the diversity of experience
4. Was the outcome accurately measured to minimise bias?	Yes	
5. (a) Have the authors identified all important confounding factors?	No	Not possible with this type of study
5. (b) Have they taken account of the confounding factors in the design and/or analysis?	Yes	
6. (a) Was the follow up of subjects complete enough?	DK	Probably, but would like to see some analysis of participation and attrition
6. (b) Was the follow up of subjects long enough?	No	Ideally we'd have more measurements taken over a longer period



What are the results?

210 (4.3%) of 4836 participants met the criterion of “any gender-variant experience reported by either parent or child”.

- Among people assigned female sex at birth, the rate was 5.9%. In those assigned male, it was 2.7%.

Consistent, moderate positive associations between gender-variant experience and mental health symptoms. There was also a significant association with autistic traits.

- The strength of this association was greater when adolescents reported their mental health symptoms, rather than their parents.
- The researchers found no clear evidence of associations between gender diversity and sociodemographic characteristics.



Table 3 Associations between gender-variant experience and mental health and autistic trait symptoms as reported by adolescents and their parents

Gender-variant experience (<i>n</i> = 210) ^a	Mental health outcomes at ages 13–15 years			
	Parent-report		Self-report	
	<i>b</i> (95%CI)	<i>p</i> -value	<i>b</i> (95%CI)	<i>p</i> -value
	R²		R²	
Anxious/depressed	0.42 (0.28, 0.56)	<.001 ^b	0.78 (0.66, 0.93)	<.001 ^b
	0.05		0.10	
Withdrawn/depressed	0.42 (0.27, 0.56)	<.001 ^b	0.87 (0.73, 1.01)	<.001 ^b
	0.05		0.07	
Somatic complaints	0.22 (0.09, 0.36)	<.001 ^b	0.62 (0.48, 0.75)	<.001 ^b
	0.05		0.07	
Social problems	0.52 (0.38, 0.66)	<.001 ^b	0.85 (0.72, 0.99)	<.001 ^b
	0.05		0.06	
Thought problems	0.38 (0.24, 0.52)	<.001 ^b	0.99 (0.86, 1.13)	<.001 ^b
	0.03		0.07	
Attention problems	0.39 (0.25, 0.53)	<.001 ^b	0.59 (0.46, 0.73)	<.001 ^b
	0.07		0.04	
Rule-breaking behavior	0.37 (0.24, 0.51)	<.001 ^b	0.71 (0.57, 0.84)	<.001 ^b
	0.04		0.07	
Aggressive behavior	0.38 (0.24, 0.52)	<.001 ^b	0.69 (0.55, 0.83)	<.001 ^b
	0.03		0.04	
Autistic traits	0.44 (0.30, 0.58) ^c	<.001 ^b	NA	NA
	0.06			

Models were adjusted for maternal age and psychopathology at enrollment in pregnancy, child age at assessment, assigned sex at birth, and ethnicity, and parental education and house income assessed at age 6 years.

^aChildren with gender-variant experience, independent of informant or instrument compared to children who reported no gender-variant experience (*n* = 3249).

^bSignificant after correction for multiple comparison.

^cCoefficients after additional adjustment for total problem behavior reported by parents: 0.22 (95%CI: 0.09, 0.35).



Strengths and limitations

Strengths

- Large sample, whole population
- Validated MH outcomes
- Consistent with other similar studies

Limitations

- Participation and attrition
- Need to consider the range of GD experience, and type and timing of measurements



Conclusion

This is a well-conducted population cohort study that found:

- Prevalence of “any GD experience” was 4.3%
- GD experience was associated with mental health symptoms
 - But not associated with sociodemographics
 - Youth-reported MH outcomes were more strongly associated with GD experience

Future research should address how we represent the diversity of GD experience, and how it changes over time.