#CAMHScampfire

Critical appraisal workshop on

The effects of school closures on youth mental health: evidence from a cross-sectional survey
Critical appraisal 101

“Not all evidence is created equal”

Ben Djulbegovic

Broadly, we can think of three possible explanations for the results of any research study:

1. Bias
2. Chance
3. The truth

The more we can rule out 1 and 2, the more confident we can be that we’re looking at 3.
Reality Checks

Some limitations of surveys:

• Correlation ≠ causation
• Chicken or egg?
• Chance associations
• Selection bias
• Information bias
• Averages can be misleading

Credit: XKCD
https://xkcd.com/552/
ORIGINAl ARTiCLE

COVID-19 partial school closures and mental health problems: A cross-sectional survey of 11,000 adolescents to determine those most at risk

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The research question

In young people affected by school closures, what risk factors are associated with their experience of mental illness?

11,765 pupils, S England, aged 12-21 (yrs 8-13)

Socioeconomic, individual vulnerability, situational

Depression and anxiety (RCADS), single-item mental wellbeing question
Risk factors

1. Socioeconomic
   – Access to free school meals
   – Experience of food poverty
2. Increased vulnerability
   – Female gender
   – Previous accessed MH services
   – Living circumstances
3. Situational risk factors
   – Parents going out to work
   – Important examinations (years 10 and 12)
Depression and anxiety via RCADS

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I worry about things</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>I feel sad or empty</td>
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<td>3</td>
<td>When I have a problem, I get a funny feeling in my stomach</td>
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<td>4</td>
<td>I worry when I think I have done poorly at something</td>
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<td>5</td>
<td>I would feel afraid of being on my own at home</td>
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<tr>
<td>6</td>
<td>Nothing is much fun anymore</td>
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<td>7</td>
<td>I feel scared when I have to take a test</td>
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<td>8</td>
<td>I feel worried when I think someone is angry with me</td>
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<td>9</td>
<td>I worry about being away from my parent</td>
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<tr>
<td>10</td>
<td>I am bothered by bad or silly thoughts or pictures in my mind</td>
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</table>
Critical appraisal checklist

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Not sure</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Were the aims/objectives of the study clear?</td>
<td>X</td>
<td></td>
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<tr>
<td>2 Was the study design appropriate for the stated aim(s)?</td>
<td>X</td>
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<tr>
<td>3 Was the sample size justified?</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>4 Was the sample population clearly defined?</td>
<td>X</td>
<td></td>
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<tr>
<td>5 Was the sample taken from a representative population?</td>
<td>X</td>
<td></td>
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<tr>
<td>6 Was the selection process likely to be representative?</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7 Were measures undertaken to address non-responders?</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>8 Were the variables measured appropriate to the aims of the study?</td>
<td>X</td>
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<tr>
<td>9 Were they measured using validated instruments?</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>10 Is it clear what how statistical significance was estimated?</td>
<td>X</td>
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<tr>
<td>11 Were the methods sufficiently described to enable them to be repeated?</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>
The Results

**Figure 1** Adjusted odds ratios and 95% confidence intervals for depression, anxiety and self-reported worse wellbeing during school closures.
What are the “odds”?  

**Odds** are a way of measuring the probability of an event

**Odds** are:

The probability of an event occurring

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The probability of the event NOT occurring
Odds of AJ winning Strictly

If we assume all three have an equal chance:
• 1 in 3 chance of winning (33%)
• 2 in 3 chances of not winning (67%)
=> AJ’s odds are 33/67 = 0.5

Odds of 1 = equal chance of each outcome
Above 1 = more likely than not
Below 1 = less likely than not
What if Rose drops out?

If we assume both have an equal chance:

- 1 in 2 chance of winning (50%)
- 1 in 2 chance of not winning (50%)

=> AJ’s odds are now 50/50 = 1

We can use the Odds Ratio to show how much AJ’s chances have improved:

= Odds after / odds before = 1/0.5 = 2
Odds ratios in this study

e.g. are youth who previously accessed MH services (YPAMHS) more likely than others to experience depression after school closures?

Odds ratio:
\[
\frac{\text{Odds of depression in YPAMHS}}{\text{Odds of depression in others}}
\]
The Results

**FIGURE 1** Adjusted odds ratios and 95% confidence intervals for depression, anxiety and self-reported worse wellbeing during school closures.
Conclusions

A well conducted survey with a large sample and clear protocol
• Non-responders were less engaged with remote learning
• Did not look at ethnicity, SENs or other important factors

The strongest predictive factors were:
• Previous use of mental health services
• Female gender
• Experience of food poverty
Also: having key worker parents, preparing for important exams

The adverse mental health impacts of school lockdown were felt most by those who were already at risk.
Questions for the team

• How does this compare with other surveys?
• Does the reliance on self-reports affect the results?
• Were non-responders different from responders?
• Any “threshold effects” re: depression and anxiety?
• What other risk factors or confounders are in play here?
• Can we use these findings to guide interventions?