Investigating Common Myths: The Link Between Music and Mental Health
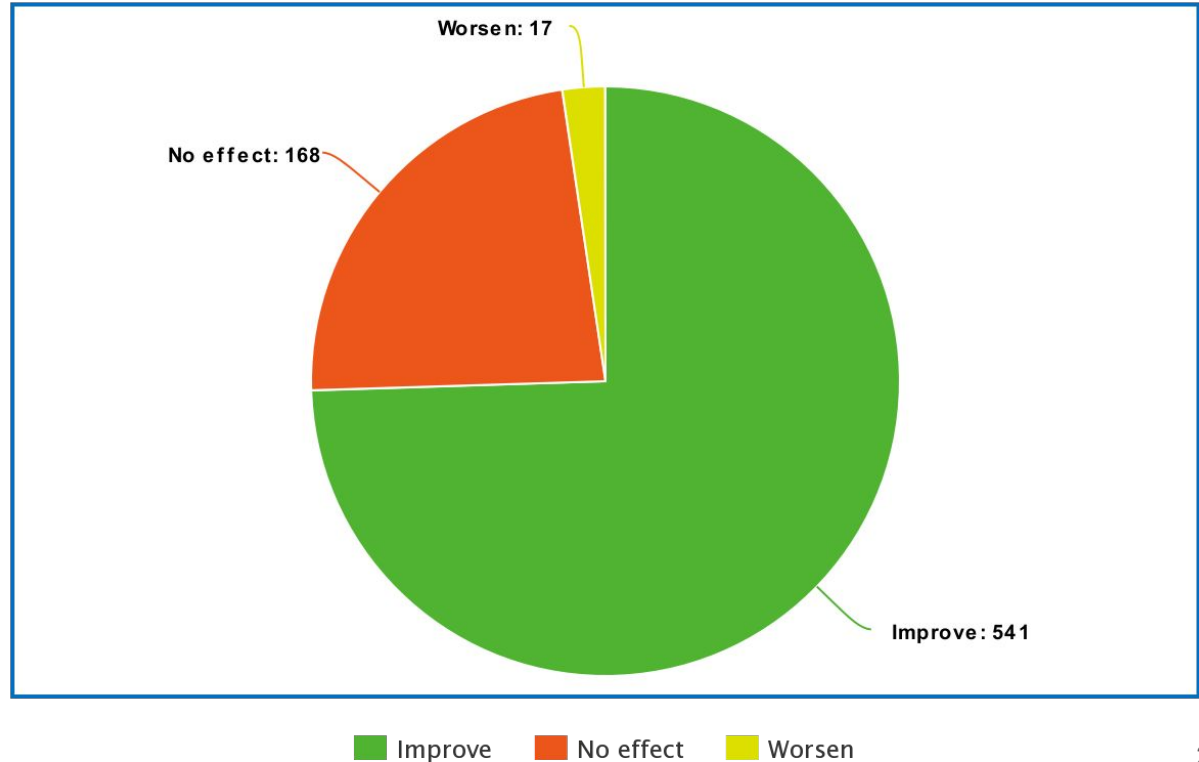
Music & Mental Health Survey Results

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MUgSS Datathon, 3/11/23

Motivation: Self-reported beliefs

Does music improve/worsen respondent's mental health conditions?

Motivation

Common beliefs regarding the effect of music on mental health include:

- Listening to music while working may negatively affect mental health
- Listening to music too much may negatively affect mental health
- Playing an instrument helps reduce anxiety/depression
- Listening to certain genres such as hip hop, rap, pop, and video game music can induce anxiety/depression (unless it's classical) (example next slide)

Motivation

mic.com
https://www.mic.com › articles › scientists-prove-that-...

Scientists Prove That Pop Music Is Literally Ruining Our Brains

Oct 9, 2014 — Research proves what our parents have been saying all along: **Modern pop music really is worse than older generations of pop music**.

The Montclarion
https://themontclarion.org › opinion › yes-rap-and-roc...

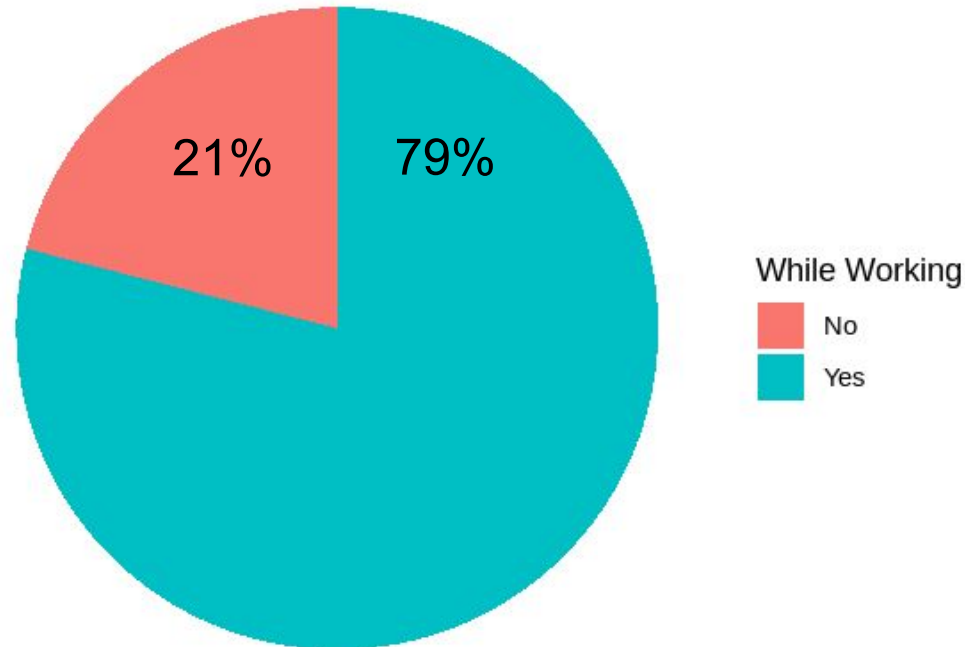## Yes, Rap And Rock Are Rotting Your Brain - The Montclarion

Sep 23, 2022 — **All aggressive music, all music that illustrates misogyny or materialism will affect you**. Rap and rock tend to carry these themes.

What is the relationship between listening to music while working and mental health?
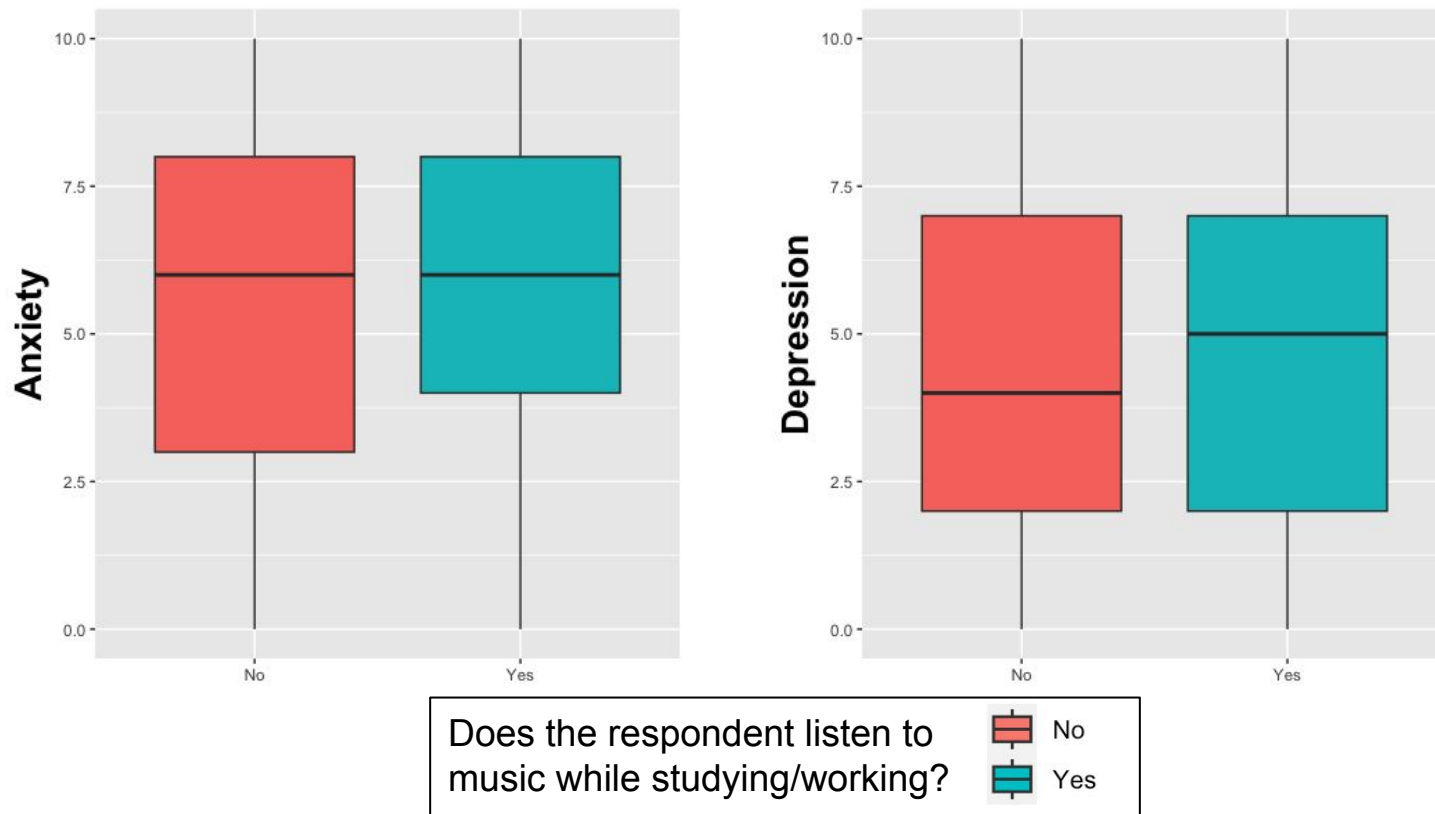
Proportion Who Listen to Music While Working
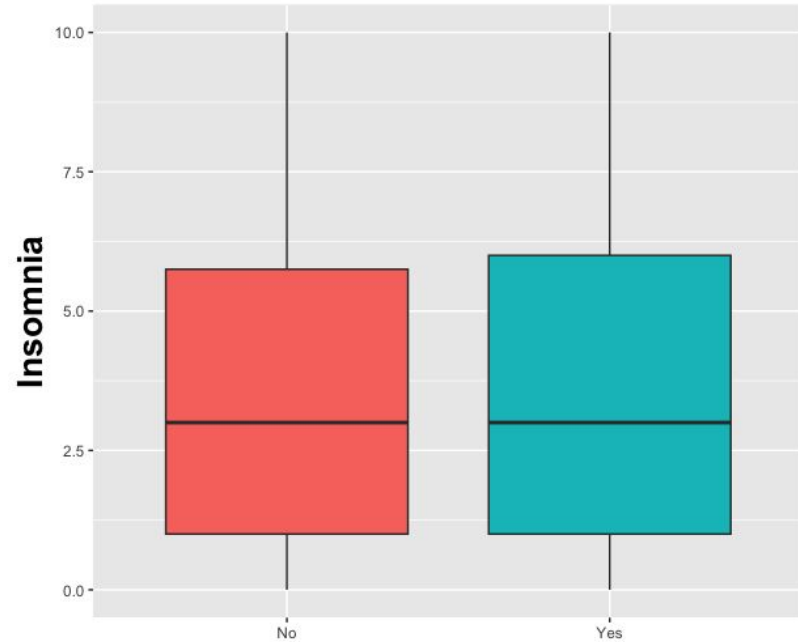
Total # of observations: 733

21%

79%

While Working
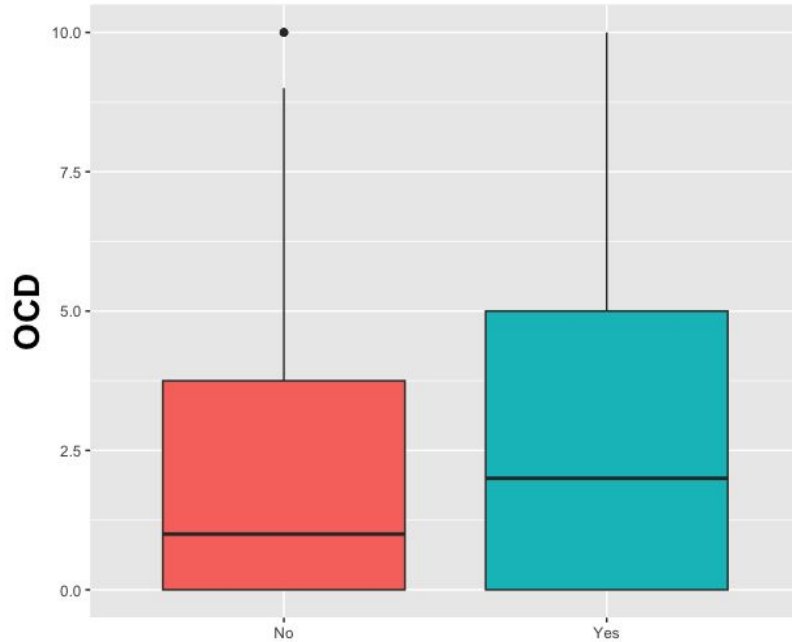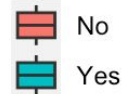- No
- Yes

What is the relationship between listening to music while working and mental health?

Does the respondent listen to music while studying/working? — No, Yes

Does the respondent listen to music while studying/working? No / Yes

Methodology: Regress each mental health indicator (and an average) on *While.working* and control for Age

Table 1: Listening to Music While Working vs Mental Health

	Dependent variable:				
	Anxiety	Depression	Insomnia	OCD	Average
	(1)	(2)	(3)	(4)	(5)
While.workingYes	0.158	0.349	0.269	0.497*	0.318*
	(0.250)	(0.273)	(0.280)	(0.256)	(0.186)
Age	−0.041***	−0.029***	0.001	−0.029***	−0.025***
	(0.008)	(0.009)	(0.009)	(0.009)	(0.006)
Constant	6.743***	5.257***	3.485***	2.965***	4.613***
	(0.318)	(0.348)	(0.357)	(0.326)	(0.236)
Observations	732	732	732	732	732
R^2	0.033	0.017	0.001	0.022	0.026
Adjusted R^2	0.031	0.014	−0.001	0.019	0.023
Residual Std. Error (df = 729)	2.748	3.004	3.081	2.810	2.041
F Statistic (df = 2; 729)	12.509***	6.159***	0.460	8.122***	9.757***

Note: *p<0.1; **p<0.05; ***p<0.01

Distribution of Hours/Day
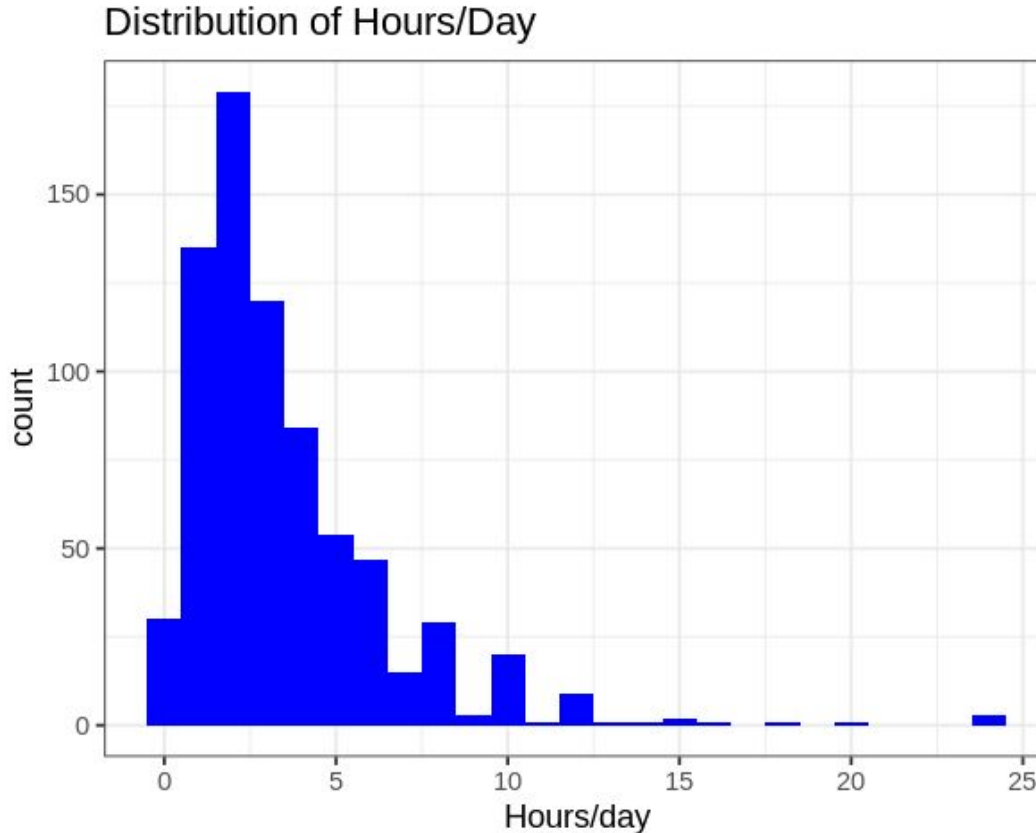
What is the relationship between hours listened and mental health?

Table 1: Hours Listened Versus Mental Health

	Dependent variable:			
	Anxiety	Depression	Insomnia	OCD
	(1)	(2)	(3)	(4)
Hours.per.day	0.039	0.105***	0.145***	0.107***
	(0.034)	(0.037)	(0.037)	(0.034)
Age	−0.040***	−0.029***	0.003	−0.029***
	(0.008)	(0.009)	(0.009)	(0.009)
Constant	6.716***	5.163***	3.137***	2.993***
	(0.268)	(0.292)	(0.299)	(0.273)
Observations	735	735	735	735
R^2	0.033	0.026	0.020	0.030
Adjusted R^2	0.030	0.023	0.018	0.027
Residual Std. Error (df = 732)	2.750	2.995	3.063	2.801
F Statistic (df = 2; 732)	12.474***	9.701***	7.567***	11.257***

Note: *p<0.1; **p<0.05; ***p<0.01

What is the proportion that plays an instrument?

Proportion who Play an Instrument

32%

68%

Instrumentalist

No

Yes

n=732
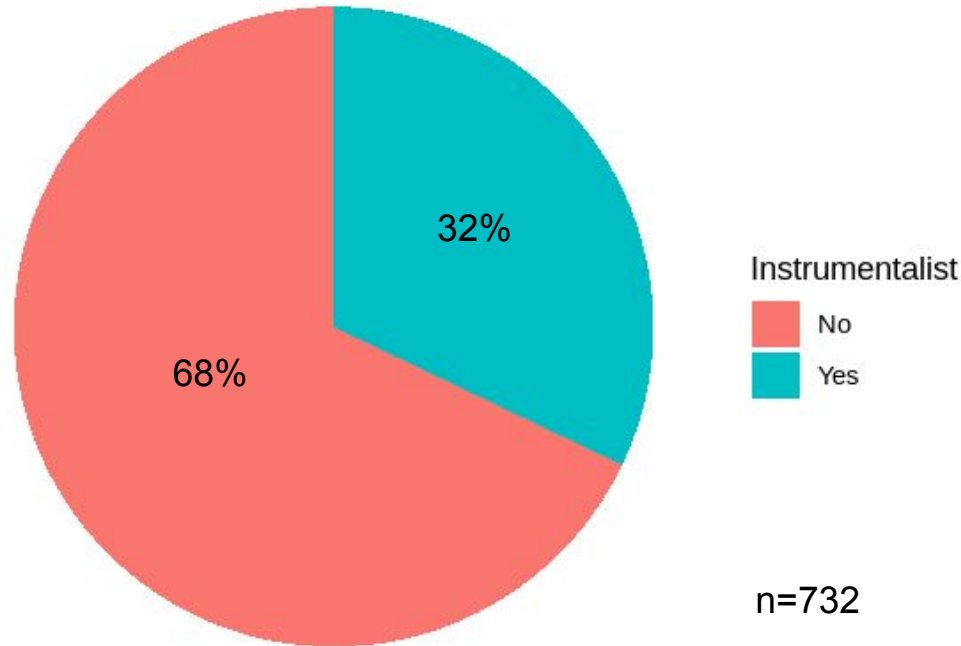
What is the relationship between playing an instrument and mental health?

Table 2: Playing an Instrument Versus Mental Health

	Dependent variable:			
	Anxiety	Depression	Insomnia	OCD
	(1)	(2)	(3)	(4)
InstrumentalistNo	0.643	0.311	−1.097	0.374
	(1.384)	(1.515)	(1.556)	(1.418)
InstrumentalistYes	0.673	0.243	−0.913	0.364
	(1.389)	(1.520)	(1.561)	(1.423)
Age	−0.041***	−0.031***	0.003	−0.031***
	(0.009)	(0.009)	(0.010)	(0.009)
Constant	6.217***	5.292***	4.698***	3.039**
	(1.385)	(1.516)	(1.556)	(1.419)
Observations	735	735	735	735
R^2	0.032	0.015	0.001	0.017
Adjusted R^2	0.028	0.011	−0.003	0.013
Residual Std. Error (df = 731)	2.754	3.014	3.094	2.821
F Statistic (df = 3; 731)	7.933***	3.694**	0.343	4.220***

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Does favorite music genre affect mental health?

	Dependent variable:				
	Anxiety	Depression	Insomnia	OCD	Average
	(1)	(2)	(3)	(4)	(5)
'Fav genre'Country	0.474	0.216	−1.075	0.358	−0.007
	(0.665)	(0.723)	(0.745)	(0.687)	(0.495)
'Fav genre'EDM	0.413	1.028	0.167	0.502	0.527
	(0.588)	(0.639)	(0.659)	(0.608)	(0.438)
'Fav genre'Folk	1.661***	0.977	−0.161	−0.190	0.572
	(0.626)	(0.681)	(0.702)	(0.647)	(0.466)
'Fav genre'Gospel	1.263	−0.425	1.638	−1.190	0.322
	(1.208)	(1.314)	(1.355)	(1.249)	(0.900)
'Fav genre'Hip hop	1.106*	1.714***	−0.331	0.130	0.655
	(0.602)	(0.655)	(0.675)	(0.623)	(0.449)
'Fav genre'Jazz	0.978	0.399	0.055	0.400	0.458
	(0.719)	(0.782)	(0.806)	(0.743)	(0.536)
'Fav genre'K pop	0.995	0.087	−0.357	−0.065	0.165
	(0.660)	(0.717)	(0.739)	(0.682)	(0.491)
'Fav genre'Latin	−0.936	−1.362	−0.487	−0.959	−0.936
	(1.628)	(1.770)	(1.824)	(1.683)	(1.213)
'Fav genre'Lofi	1.029	2.387**	1.794*	0.903	1.528**
	(0.945)	(1.028)	(1.059)	(0.977)	(0.704)

	Dependent variable:				
	Anxiety	Depression	Insomnia	OCD	Average
	(1)	(2)	(3)	(4)	(5)
'Fav genre'Metal	0.825*	0.956*	0.761	−0.012	0.632*
	(0.476)	(0.518)	(0.534)	(0.493)	(0.355)
'Fav genre'Pop	1.055**	0.312	−0.434	0.392	0.331
	(0.456)	(0.496)	(0.511)	(0.472)	(0.340)
'Fav genre'RB	0.245	−0.276	−0.910	0.340	−0.150
	(0.597)	(0.649)	(0.669)	(0.617)	(0.445)
'Fav genre'Rap	0.005	−0.224	−1.534**	0.675	−0.270
	(0.696)	(0.757)	(0.780)	(0.720)	(0.518)
'Fav genre'Rock	1.334***	1.235***	0.095	0.364	0.757**
	(0.426)	(0.464)	(0.478)	(0.441)	(0.318)
'Fav genre'Video game music	0.792	0.247	0.192	−0.125	0.276
	(0.560)	(0.609)	(0.628)	(0.579)	(0.417)
Age	−0.045***	−0.033***	−0.003	−0.029***	−0.028***
	(0.009)	(0.010)	(0.010)	(0.009)	(0.007)

Base category: Classical

Results

Common beliefs regarding the effect of music on mental health include:

- Listening to music while working may negatively affect mental health ✅ ❌

- Listening to music too much may negatively affect mental health ✅ ❌

- Playing an instrument helps reduce anxiety/depression ❌

- Listening to certain genres such as hip hop, rap, pop, and video game music can induce anxiety/depression (unless it's classical) ✅ ❌

Conclusion

- Correlation != causation.
  - The individuals may be too different from each other to prove a causal relationship
  - There may be confounding variables that affect mental health, e.g. exercise and diet, that were not surveyed
- Potential problems of reverse causality, low sample size, and self-reported mental health scores
- Further research involving a lab experiment could help solve these limitations!
- And I know we zoomed through this, so if you're still interested, please check our full slides afterwards!