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Global Mental Health Impact of the COVID-19 Pandemic

Sarah Bauermeister CPsychol PhD



International 100K Cohort Consortium



Outline

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Sarah Bauermeister CPsychol PhD
co-chair IHCC COVID-19 Mental Health
& Behavioral Impact Scientific Working
Group

University of Oxford
Oxford, UK

Delia Gheorghe PhD Data analyst

Josh Bauermeister BSc Hons Data scientist



Andre Brunoni MD PhD
co-chair IHCC COVID-19 Mental
Health & Behavioral Impact
Scientific Working Group

Faculdade de Medicina
São Paulo, Brazil

Daniel Fatori PhD Data analyst



Jordan Smoller MD ScD
co-chair IHCC COVID-19 Mental Health
& Behavioral Impact Scientific Working
Group

Harvard Medical School
Massachusetts, USA

Ashley Seiger MSc Program Manager

Rebecca Luh BA Project coordinator

Heather Lee PhD Postdoctoral researcher

Liu Zhaowen PhD Postdoctoral researcher





Project Overview

- The COVID-19 pandemic has brought an unprecedented set of challenges impacting the mental health of populations around the world.
- The IHCC COVID-19 Mental Health & Behavioral Impact Scientific Working Group is leveraging the unique platform of the IHCC consortium to address pressing questions related to COVID-19 and mental health.
- Harnessing the power of 12+ (others pending) cohorts (n= ~14m) this three site project aims to:
 - Catalogue and categorise all cohorts according to purpose
 - Harmonise a set of domains and variables for cross-cohort investigations
 - Conduct analyses to address core scientific questions

Data Corpus

Approved data access	Country	Sample size	Waves	Mean age (range) wave 1	Total available variables
All of Us	USA	316,760	*	53	94,375
Brazilian High Risk Cohort	Brazil	tbc	tbc	tbc	tbc
ELSA Brazil	Brazil	2,007	3	62	~1,200
ELSA UK	UK	12,099	9	(50-53)	~7,200
FinnGen	Finland	321,300	*	*	2,803
Generation Scotland	UK	20,128	1	(18-98)	1,292
Health and Retirement Study (HRS)	USA	12,652	16	(51-61)	~400
MGB Biobank	USA	130,000	*	*	*
OxWell School Survey	UK	19,039	1	(8-18)	~800
PsycheMERGE	USA	tbc	*	*	tbc
SAPRIN	South Africa	13,117,161	3	*	56
UK Biobank	UK	502,491	3	56	17,098

Note: *For EHR cohorts timing and frequency of measures are uniquely determined by participant; tbc=awaiting confirmation





Variables of interest

- Outcomes
 - Depression, anxiety, stress, well-being, cognition
- Demographics
 - Gender (identity & biological), education, ethnicity, SES
- External health factors
 - Housing, job, marital status, pregnancy
- Social distancing
 - Degree, interaction, risk
- Lifestyle
 - Loneliness, activity, diet, substance use, alcohol
- Social Support
 - Instrumental, information, emotional, appraisal
- Resilience
 - Coping behaviours, religion
- Discrimination
 - Racial, sexual, age, occupation
- Psycho/medical
 - Pre-existing psychiatric & medical conditions
- Healthcare access
 - Use of mental healthcare, treatment modality

Core Questions



- Mental health trajectories pre- and post pandemic
- Sociodemographic determinants of mental health outcomes of COVID-19
- Neuropsychobiological manifestations of COVID-19
- COVID-19, mental health and cognitive resilience
- Global mental health impact of lockdown and regional restrictions



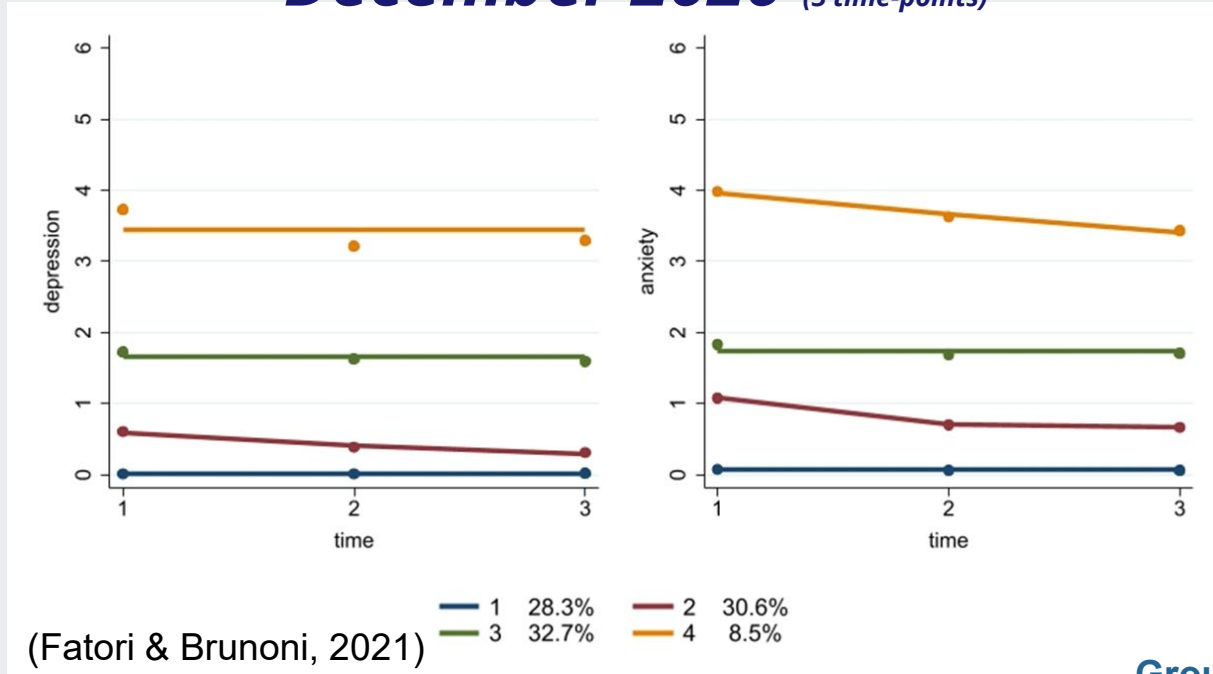
Preliminary work: Mental health trajectories São Paulo (Fatori & Brunoni)

- **Cohort:** ELSA Brazil
- **Objectives:** To identify groups of depression trajectories during the COVID-19 pandemic in different cohorts;
- **Statistical approach:** Group-based trajectory modelling (GBTM)
- **Predictors:** Pre-pandemic: Presence of mental disorder, Exposure to violence, History of trauma, loneliness/isolation; COVID diagnosis/symptoms
- **Outcomes:** Depression continuous scores measured by PHQ-9, PHQ-2, DASS-21 or an equivalent scale.
- **Covariates:** Age, sex, educational level.



ELSA-Brasil COVID-19 Mental Health Cohort (n=2,010)

Depression and Anxiety Trajectories from May 2020 to December 2020 (3 time-points)



Group-based trajectory modelling (Nagin, 2010)

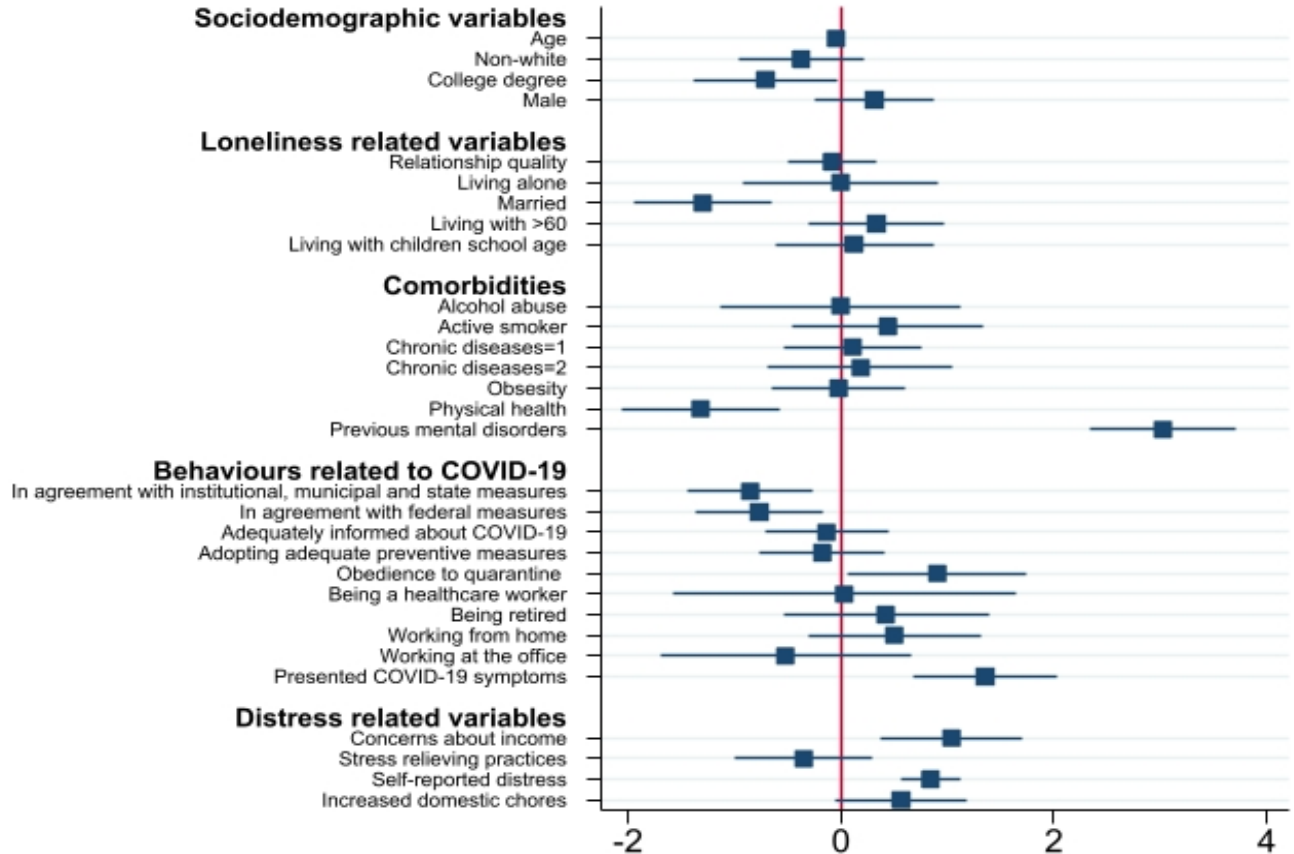


Coefficient plot

Logistic regression model

Trajectory 1 x 4

Risk factors measured during the pandemic





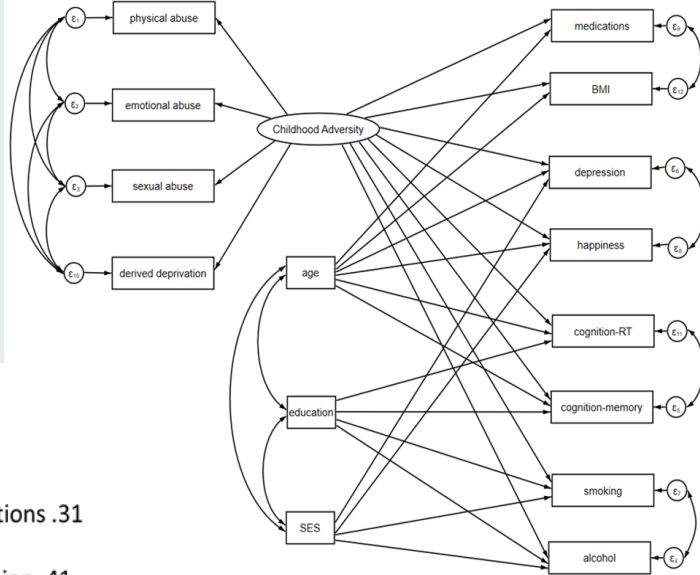
Preliminary work: Early adversity & long-term effect mediated by COVID-19

Oxford (Gheorghe & Bauermeister)

- **Cohorts:** UK Biobank; ELSA UK; ELSA Brazil;
- **Objectives:** To assess the associations between early adversity and later life biopsychosocial outcomes, cognition and dementia
- **Statistical approach:** Structural Equation Modelling
- **Predictors:** Early childhood adversity (abuse and deprivation)
- **Outcomes:** longitudinal biopsychosocial outcomes
- **Mediator:** COVID-19
- **Covariates:** sociodemographics

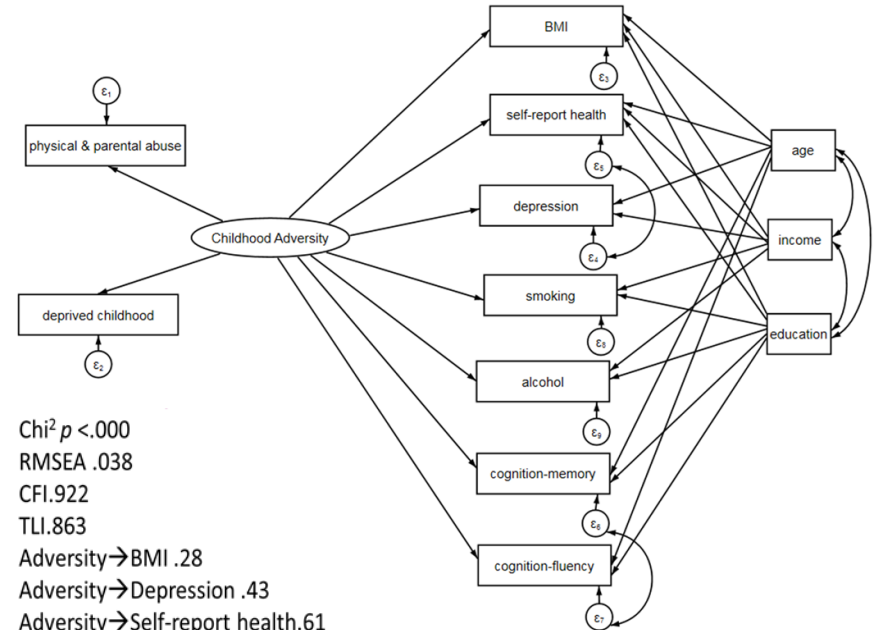


UK Biobank=479,739



Chi² $p < .000$
 RMSEA .017
 CFI .945
 TLI .914
 Adversity → Medications .31
 Adversity → BMI .26
 Adversity → Depression .41
 Adversity → Happiness -.20
 Adversity → Cognition -.18
 Adversity → Cognition-memory .03
 Adversity → Smoking -.15
 Adversity → Alcohol .19
 Standardised B coefficients:
 ***All p values = $< .000$

ELSA UK n=12,651



Chi² $p < .000$
 RMSEA .038
 CFI .922
 TLI .863
 Adversity → BMI .28
 Adversity → Depression .43
 Adversity → Self-report health .61
 Adversity → Alcohol .34
 Adversity → Smoking .23
 Adversity → Cognition-memory -.30
 Adversity → Cognition-fluency -.30
 Standardised B coefficients:
 ***All p values = $< .000$

(Gheorghe, Gallacher, Bauermeister, 2021)

Analytical plans Early Adversity and COVID-19

UK Biobank; ELSA UK & Brazil

- Smoking
- Alcohol
- Physical activity
- Sleeping
- Eating
- Anxiety
- Depression
- Cognition
- Socioeconomics
- COVID-19 outcomes





Preliminary work: Associations of Early Adversity, brain structure & COVID-19 outcomes Oxford (Gheorghe & Bauermeister)

- **Cohort:** UK Biobank
- **Objectives:** To assess the associations between early adversity and later life biopsychosocial outcomes, cognition, cortical atrophy and COVID-19
- **Statistical approach:** MANOVA, independent t-tests and imaging
- **Predictors:** Early childhood adversity
- **Outcomes:** Cortical atrophy, mental health
- **Mediator:** COVID-19
- **Covariates:** demographics, psychopathology, body size, head size and scanning position

Associations of perceived adverse lifetime experiences with brain structure in UK Biobank participants <https://doi.org/10.1111/jcpp.13298>



	COVID-19	
	Negative	Positive
Emotional Adversity (%)	17%	19%
Emotional Neglect (%)	49%	49%
Physical Abuse (%)	21%	23%
Physical Neglect (%)	19%	20%
Sexual abuse (%)	10%	10%
GAD-7 (% moderate and severe anxiety)	32%	35%
PHQ-9 (% moderate and severe depression)	55%	58%

- Childhood adversity experienced before the age of 16 years
- GAD-7 and PHQ-9 percentages of above moderate severity identified for scores > 10
- Retrospective reports related to emotional abuse are associated with small reductions in the cerebellum and ventral striatum.
- Here, we repeat our work investigating those who have experienced COVID-19 and investigate mortality and repeat imaging and assessment when available.



Conclusion

- Our project has now completed cohort confirmation and cataloguing variables of interest.
- The focus is now on the harmonisation and merging of appropriate datasets for select questions and scientific output.
- The project is ambitious and as we continue to be challenged during these times we are optimistic that our project will contribute towards understanding the global mental health impact of the COVID-19 pandemic.

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