



**GAMES FOR HEALTH EUROPE
2025**

DISCLOSURE SLIDE
for presentations at the

GAMES FOR HEALTH EUROPE 2025 CONFERENCE

I herewith confirm that there is not any conflict of interest with the conference organization or any of its sponsors.



Play Behavior and Mental Health of Children With a Chronic Condition

A study during the COVID-19 pandemic

Dr. Emmie W. Koevoets

31-03-2025

Background

Een actueel perspectief op kinderen en jongeren met een chronische aandoening in Nederland

OMVANG, SAMENSTELLING
EN PARTICIPATIE

Lineke van Hal
Bas Tierolf
Maaïke van Rooijen
Marlinda van der Hoff



zorg én
perspectief
FNO

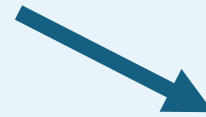
Verwey-
Jonker
Instituut



1. van Hal et al. (*Verwey-Jonker Instituut*), 2019
2. David-Wilathgamuwa et al. (*Arch Dis Child*), 2023
3. Maurice-Stam et al. (*Acta Paediatr*), 2019
4. Janicke et al. (*J Dev Behav Pediatr*), 2008



Background



BOOSTER



Wilhelmina Kinderziekenhuis



Erasmus MC
Sophia Kinderziekenhuis

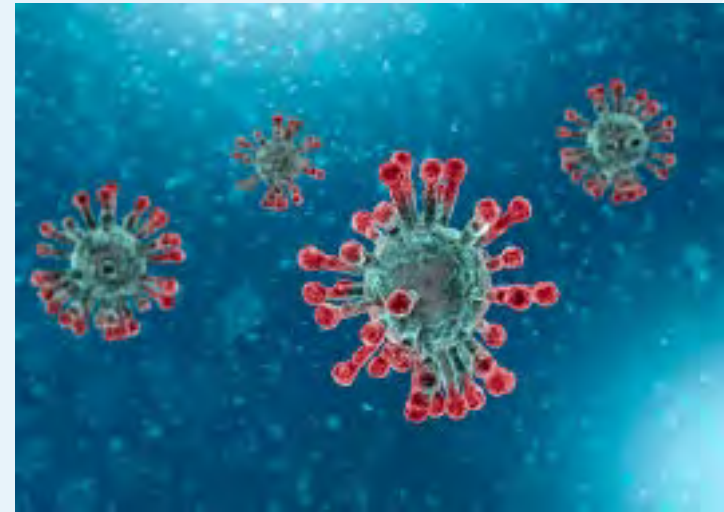


Background

Koevoets, E. W., Lesscher, H. M., Veltkamp, R. C.,
Hoefnagels, J. W., & Nijhof, S. L. (2024). **IMPACT OF
PLAY RESTRICTION DURING THE COVID-19 PANDEMIC
ON MENTAL WELL-BEING IN CHILDREN WITH A CHRONIC
CONDITION.** *European Journal of Pediatrics* , 184(1), 42.



Background



5. Nijhof et al. (*Neuroscience and behavioral reviews*), 2018



Study aims

Impact of social restrictions (due to the COVID-19 pandemic)

1



2



3



Methods



Children with a chronic disease

COVID-19 questionnaire:

- **SAME QUESTION TWICE**, regarding **BEFORE** and **DURING** the pandemic.
 - **PLAY BEHAVIOR:**
 - Who (alone/friends/family)
 - Where (indoor/outdoor)
 - How much face-to-face interaction
 - How much online interaction
 - Types of play activities
 - **MENTAL WELL-BEING:**
 - Cantril (1-10): life satisfaction
 - PedsQL: quality of life
 - RCADS: internalising symptoms

Methods – Statistical analysis

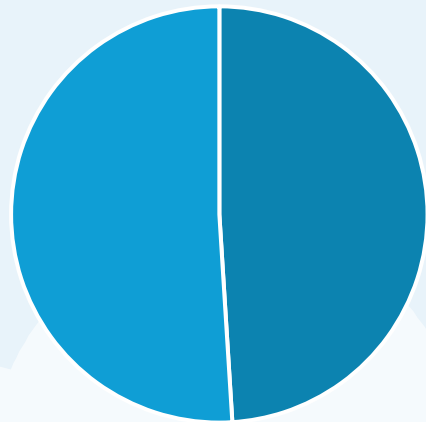
- **SEPARATE ANALYSES** for two age groups (8-12 years; 13-18 years)
- **IMPUTED DATA** (MICE)
- **DIFFERENCES IN PLAY BEHAVIOR** before and during the pandemic:
 - McNemar's test & Wilcoxon signed-rank test
- **PLAY BEHAVIOR – MENTAL WELL-BEING**
 - Linear regression analyses
 - Covariates: sex, age, socioeconomic status, and school closure status

P-values corrected for False Discovery Rate (FDR)



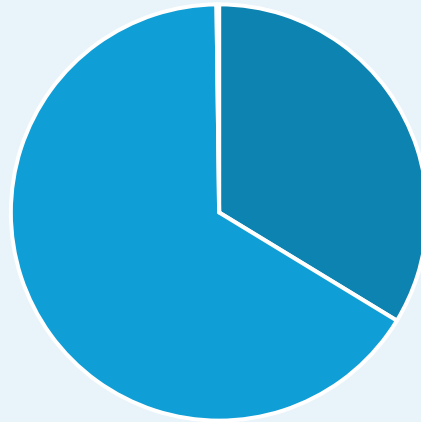
Results – descriptives

N =
261
8-12 years



10.1
yrs

N =
495
13-18 years



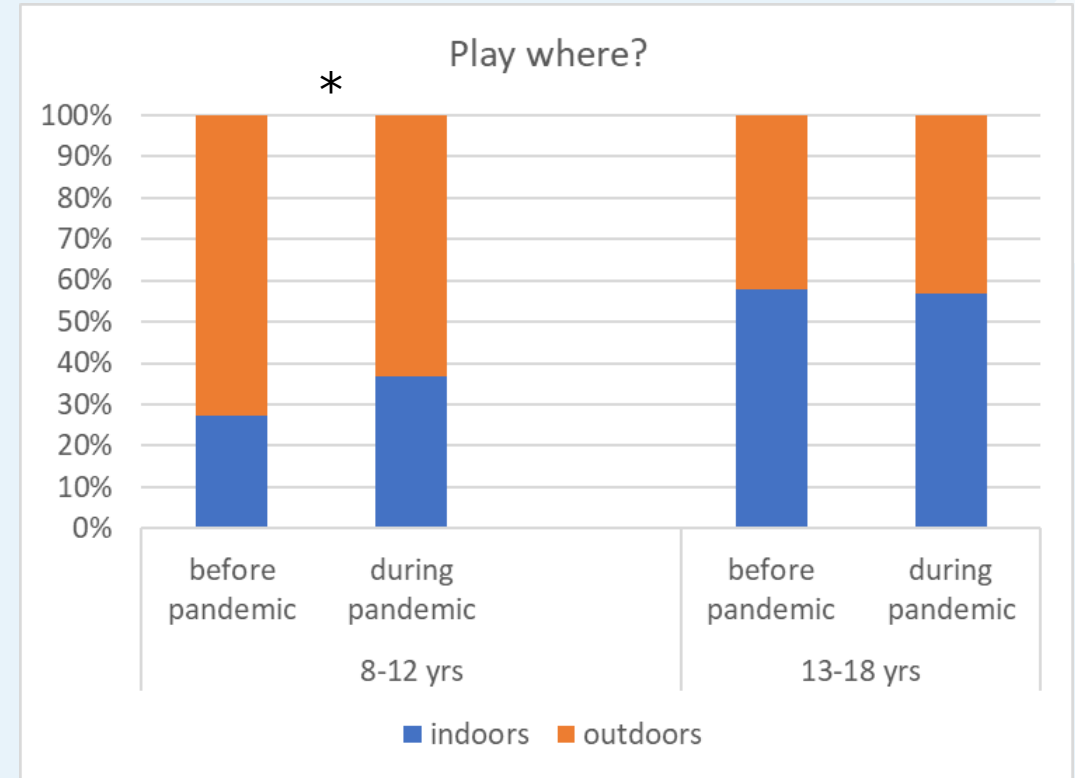
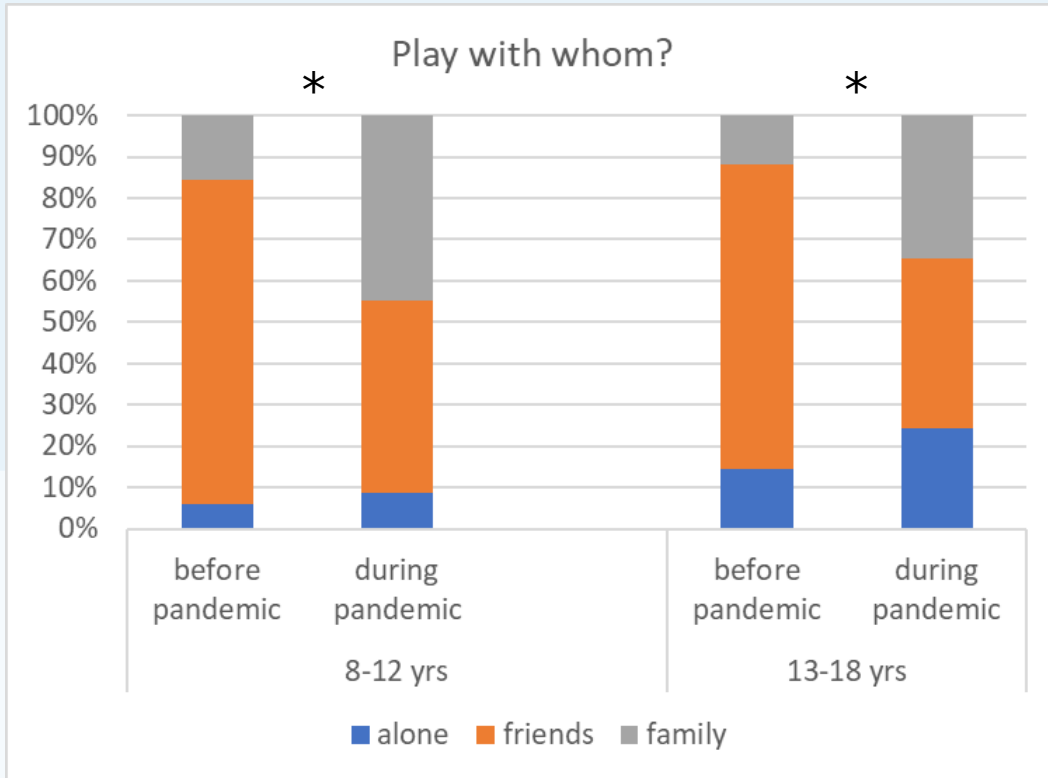
15.5 yrs

- boy
- girl
- NA

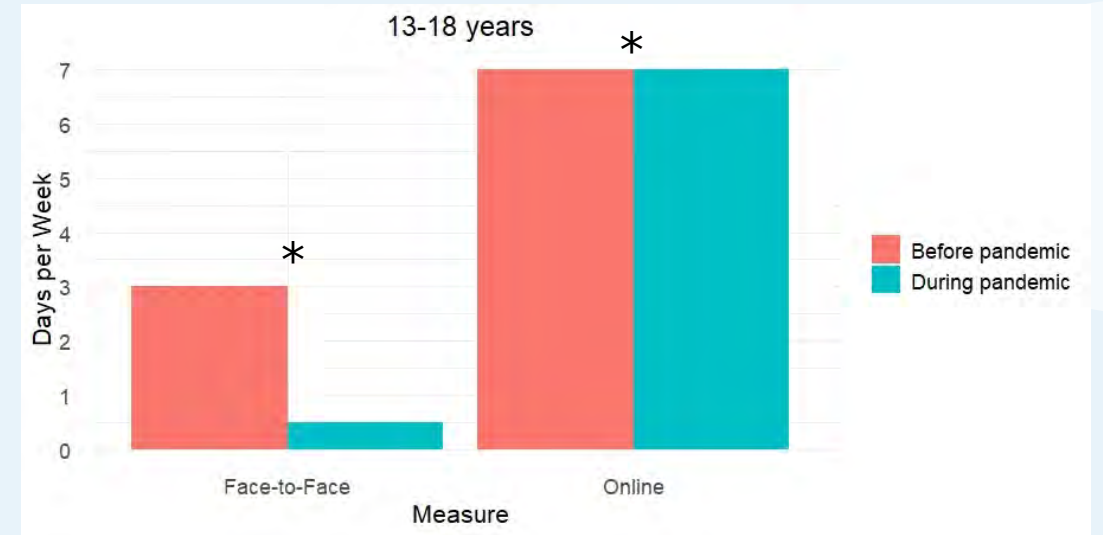
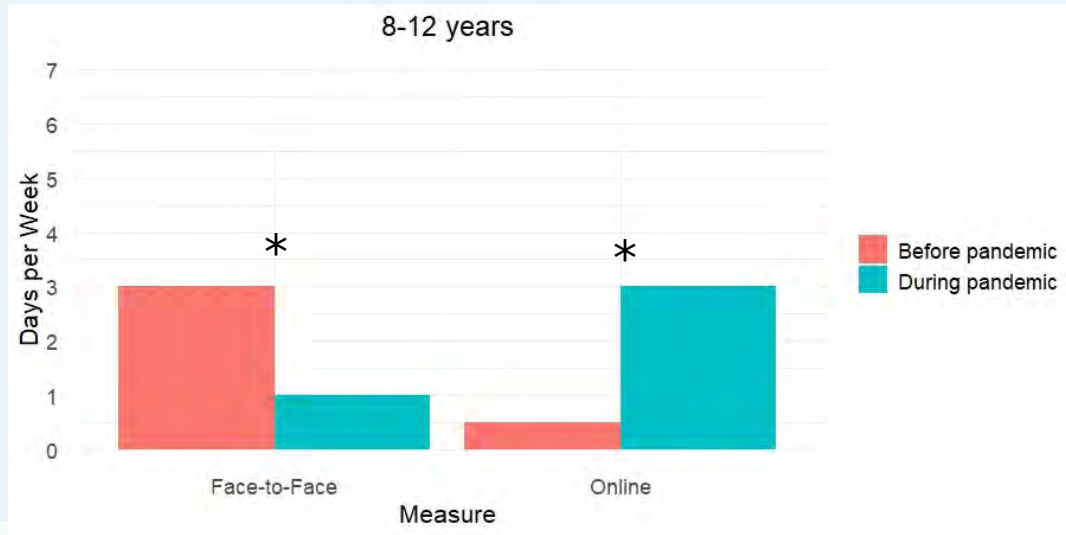
	TOTAL	AGE: 8-12 YEARS	AGE: 13-18 YEARS	P
N	756	261	495	
SEX (%)				<0.001
BOY	295 (39.0)	128 (49.0)	167 (33.7)	
GIRL	460 (60.8)	133 (51.0)	327 (66.1)	
NOT DISCLOSED	1 (0.1)	0 (0.0)	1 (0.2)	
AGE (MEAN (SD))	13.7 (3.0)	10.1 (1.4)	15.5 (1.6)	<0.001
EDUCATIONAL LEVEL (%)				<0.001
ELEMENTARY SCHOOL	127 (27.3)	125 (73.1)	2 (0.7)	
HIGH SCHOOL	246 (52.0)	28 (16.4)	218 (74.1)	



Results



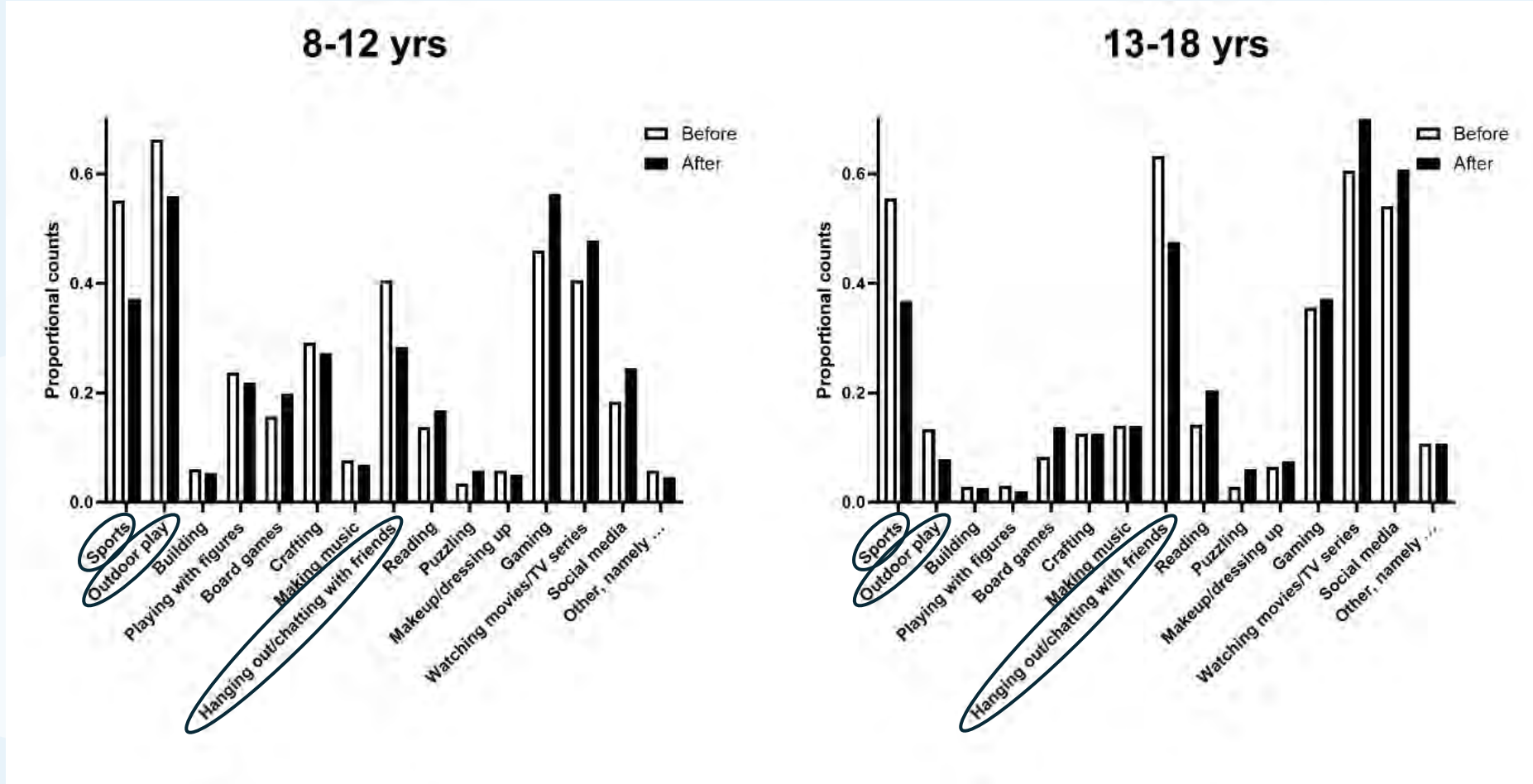
Results



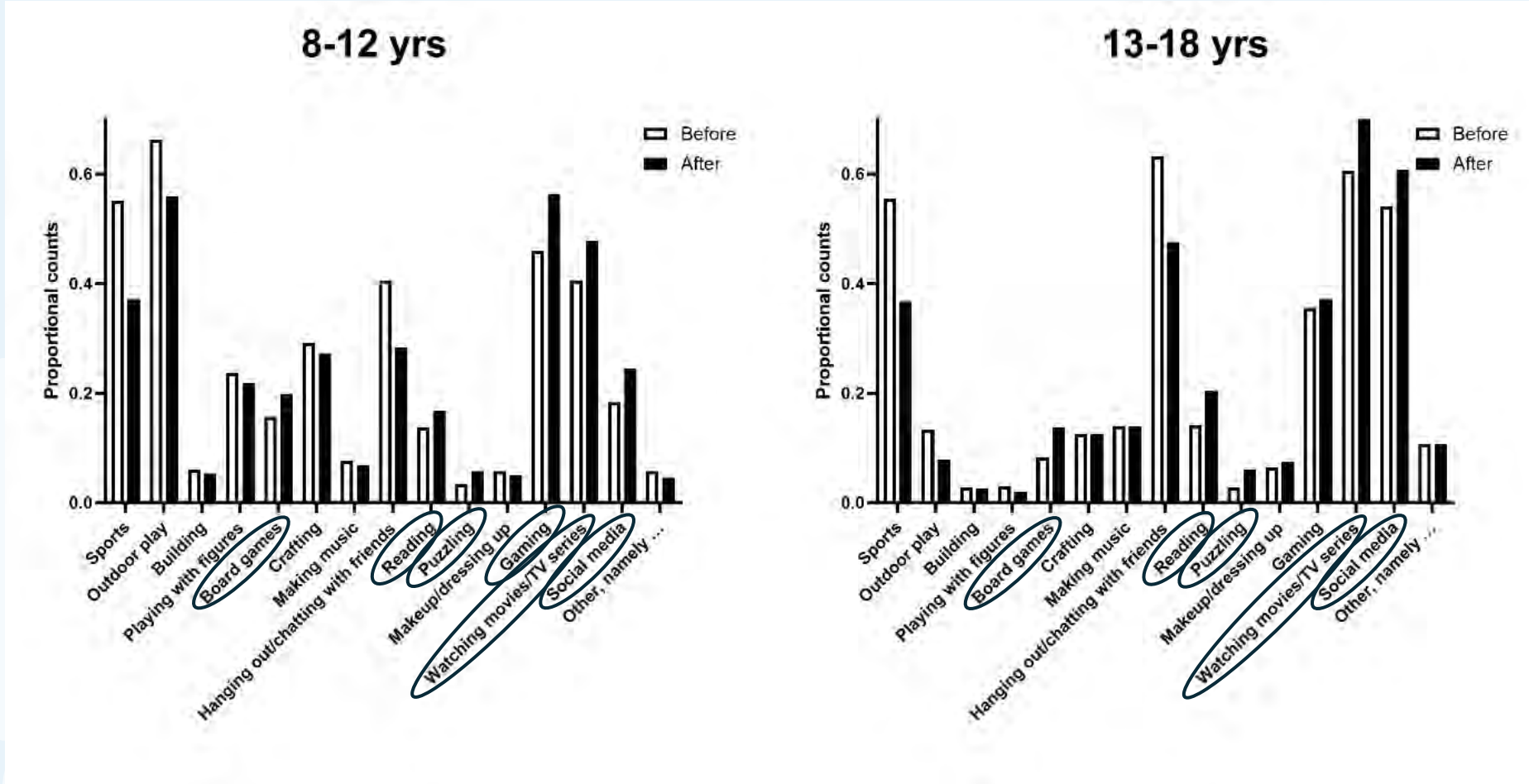
AGE: 8-12 YEARS (N=261)				
	Before pandemic	During pandemic	p _{uncorrected}	p _{adjusted}
HOW MANY DAYS/WEEK FACE-TO-FACE (MEDIAN (IQR))	3.0 (1.0; 3.0)	1.0 (0.5; 3.0)	<0.001*	<0.001*
HOW MANY DAYS/WEEK ONLINE (MEDIAN (IQR))	0.5 (0.0; 7.0)	3.0 (0.0; 7.0)	<0.001*	<0.001*
AGE: 13-18 YEARS (N=495)				
	Before pandemic	During pandemic	p _{uncorrected}	p _{adjusted}
HOW MANY DAYS/WEEK FACE-TO-FACE (MEDIAN (IQR))	3.0 (0.5; 3.0)	0.5 (0.5; 3.0)	<0.001*	<0.001*
HOW MANY DAYS/WEEK ONLINE (MEDIAN (IQR))	7.0 (3.0; 7.0)	7.0 (7.0; 7.0)	<0.001*	<0.001*



Results



Results



AGE 8-12 YRS

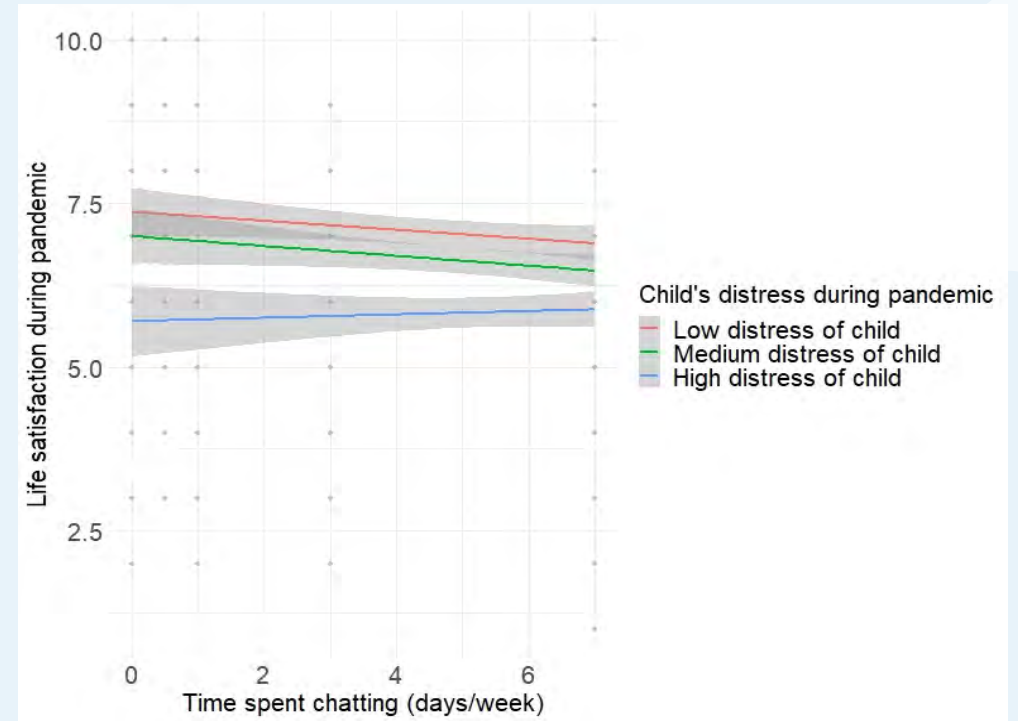
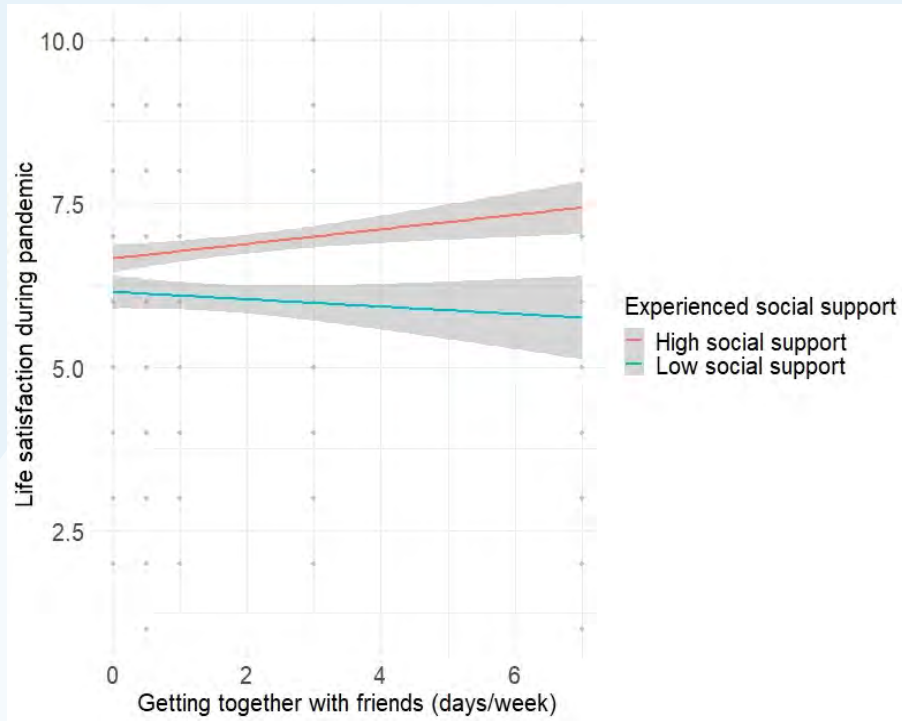
- Compared to playing alone:
 - Playing with **FRIENDS OR FAMILY** →
 - **HIGHER** quality of life
 - **LESS** anxiety and depressive symptoms
- Days per week **FACE-TO-FACE** →
 - **HIGHER** quality of life

AGE 13-18 YRS

- Compared to playing alone:
 - Playing with **FRIENDS OR FAMILY** →
 - **HIGHER** life satisfaction
 - **HIGHER** quality of life
 - **LESS** anxiety and depressive symptoms
- Compared to playing indoors:
 - Playing **OUTDOORS** →
 - **HIGHER** life satisfaction
 - **LESS** anxiety and depressive symptoms
- Difference larger face-to-face →
 - **MORE** anxiety and depressive symptoms



Results



Future research

- To explore the association of play behavior and long-term mental well-being
- To investigate play behavior of children with a chronic condition in greater depth



Take home message

- There are **DIFFERENCES** in **PLAY BEHAVIOR** before and during the pandemic
- **PLAYING WITH OTHERS**, not alone, is associated with increased mental well-being
- Being outdoors is related to increased mental well-being in older children
- Encouraging (social) play is important, especially for children with chronic conditions





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