

# The Effects of Social Distancing Policies on Children's Cognitive Development

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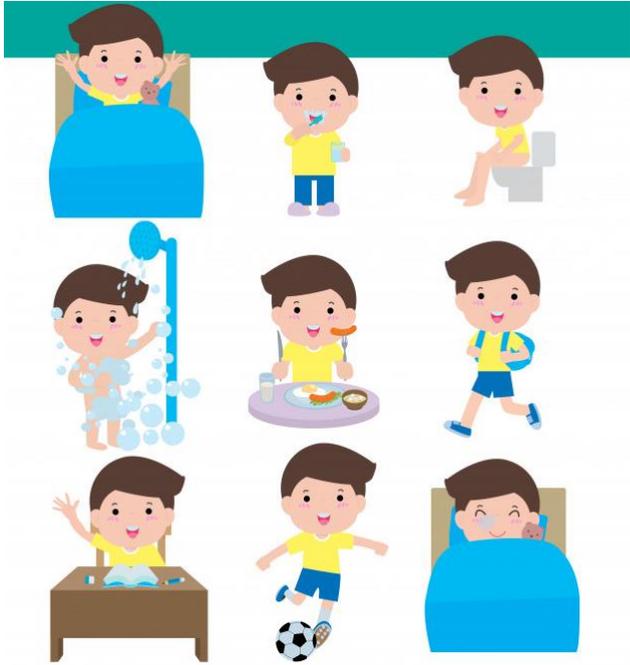
**CLOSED**

**DUE TO  
COVID-19**

**STAY AT  
HOME** 

**PROTECT  
THE NHS**

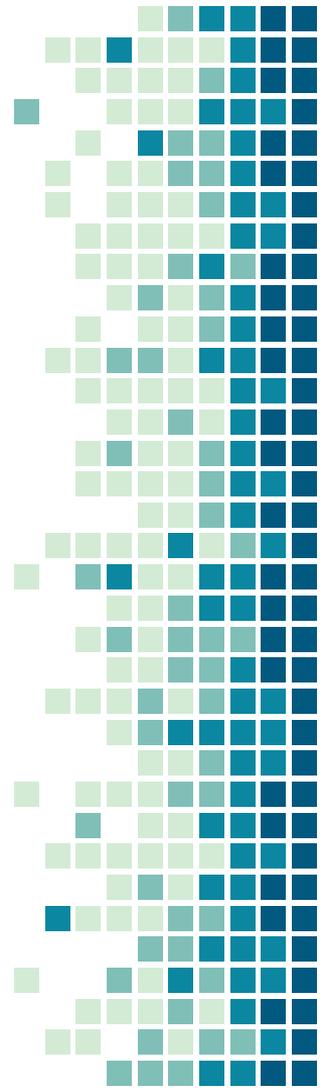
 **save  
lives**

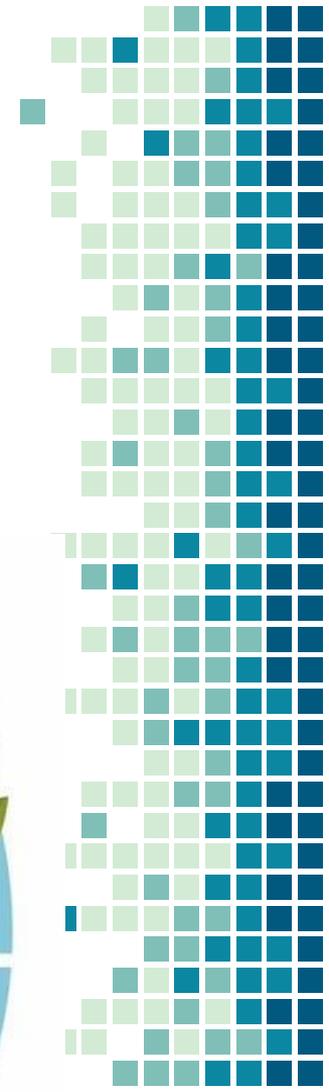


Routines



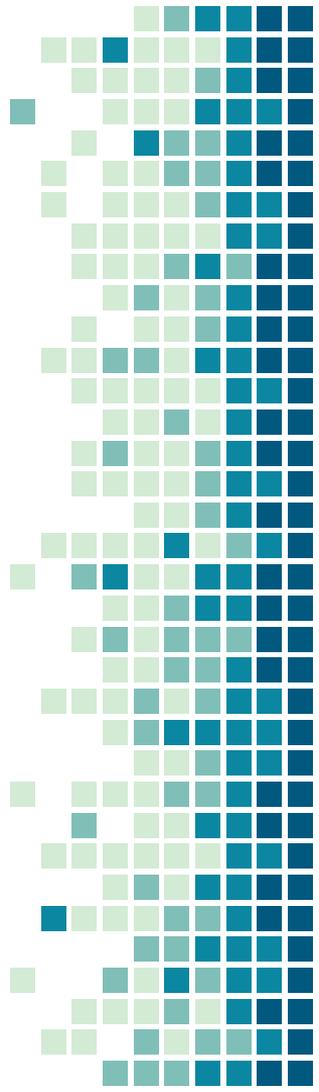
Social Interactions



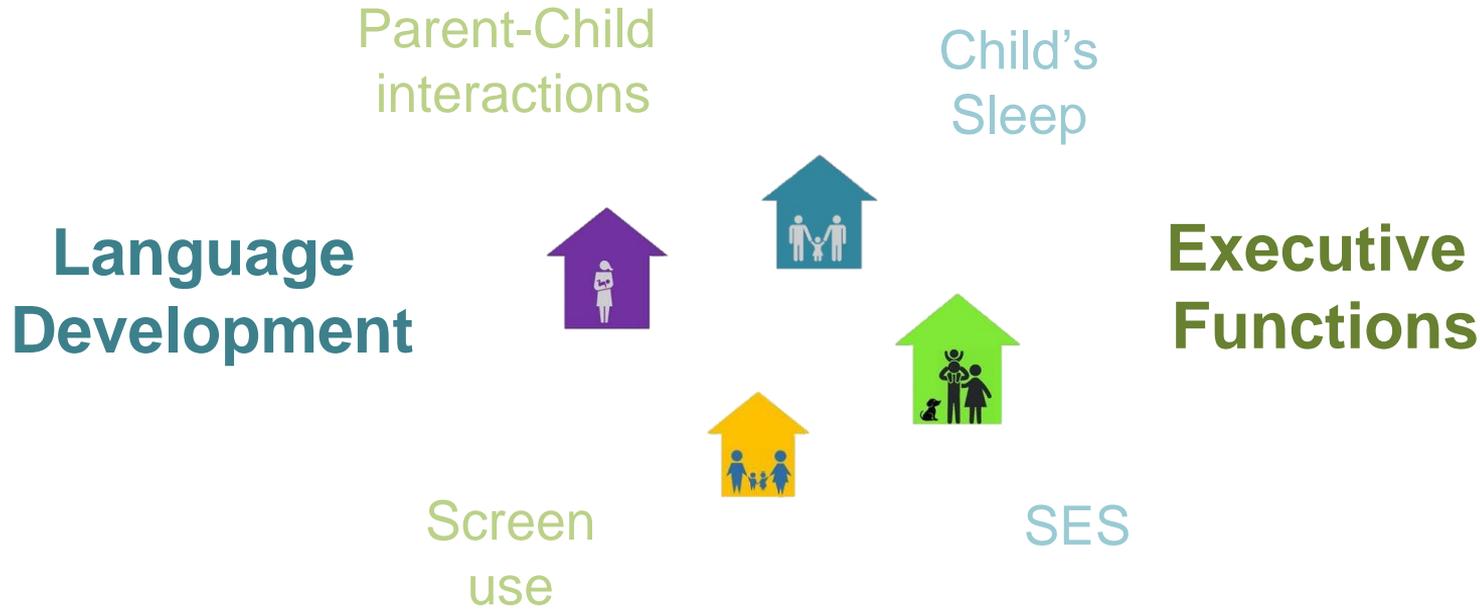


**School  
closures**

**Caring  
commitments**



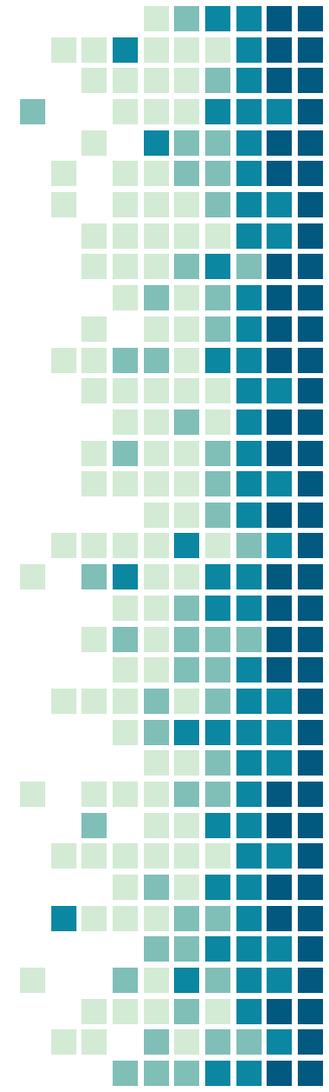
# Early Environment and Cognitive Development



# Executive Function

Executive functions include basic cognitive processes such as

- attentional control
- cognitive inhibition
- inhibitory control
- working memory
- cognitive flexibility.



# Parenting & Cognitive Development



- Scaffolding
- Stimulation
- Sensitivity/responsiveness  
versus hostility/rejection
- Control

(Hendry et al., 2016; Valcan, Davis, & Pino-Pasternak, 2018; Fay-Stammbach, Hawes, & Meredith, 2014; Hughes & Devine, 2019; Connell & Prinz, 2002; Evans & Shaw, Vigil, Hodges, & Klee, 2005)

# Sleep & Cognitive Development



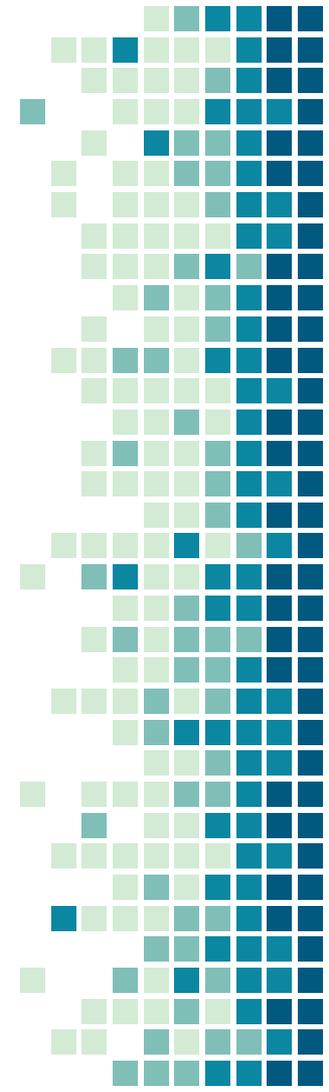
Language:

- Word Learning
- Generalisation

Executive functions:

- Regulatory EF

(Botting, & Baraka, 2018; Dionne, et al., 2011; Williams, & Horst, 2014; Henderson, Weighall, Brown, & Gareth Gaskell, 2012; Axelsson, Williams, & Horst, 2016; Lim, & Dinges, 2010)

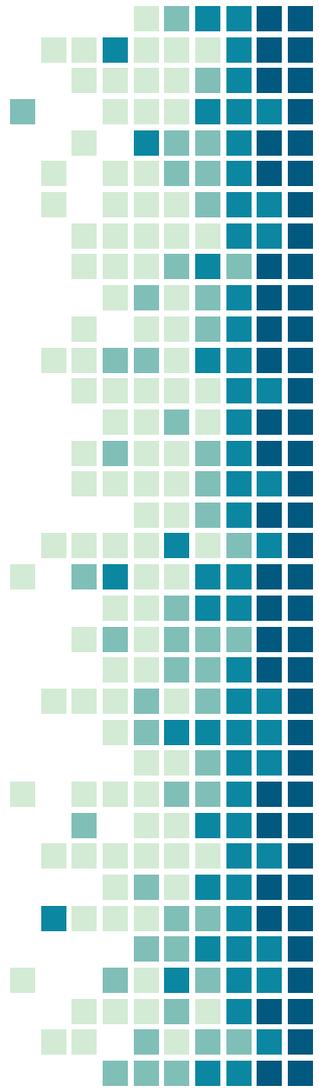


# Screen Use & Cognitive Development



- Screen time
- Introduction of screen media
- Verbal interaction

(McHarg, Ribner, Devine, & Hughes, 2020; Supanitayanon, Trairatvorakul, & Chonchaiya, 2020; Vandewater & Bickham, 2006; Radesky, Silverstein, Zuckerman, & Christakis, 2014; Zimmerman, Christakis, & Meltzoff, 2007)



# SES & Cognitive Development



## Language:

- Early speech perception (phonology)
- Language processing
- Reading
- Vocabulary

## Executive functions:

- Working memory
- Inhibiting control
- Self-regulation

(Gonzalez-Gomez, O'Brien, & Harris, 2020; Fernald et al., 2013; Halle et al., 2009; Lee & Burkam, 2002; Nelson et al., 2011; Ramey & Ramey, 2004; Raviv et al., 2004; Ruben, 2000; Deer, Hastings, & Hostinar, 2020; Lawson, Hook, & Farah, 2018; St. John, Kibbe, & Tarullo, 2019; Vrantsidis, Clark, Chevalier, Espy, & Wiebe, 2020)

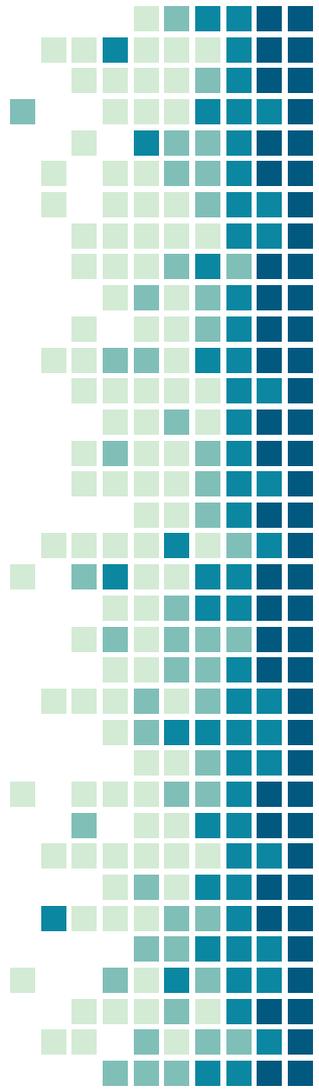
# Our Study

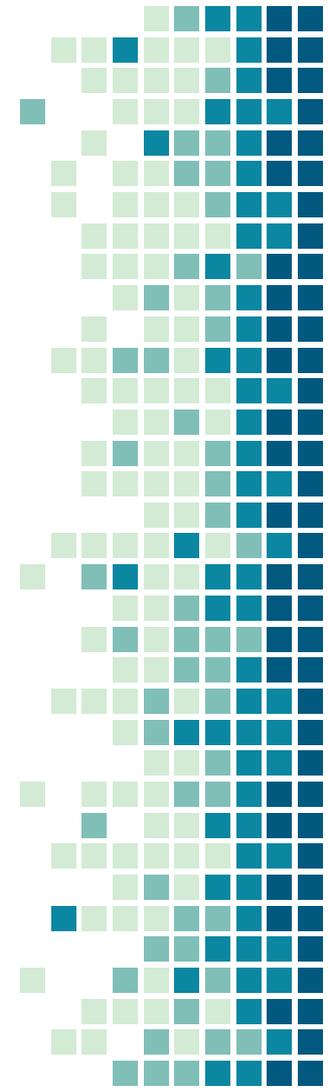
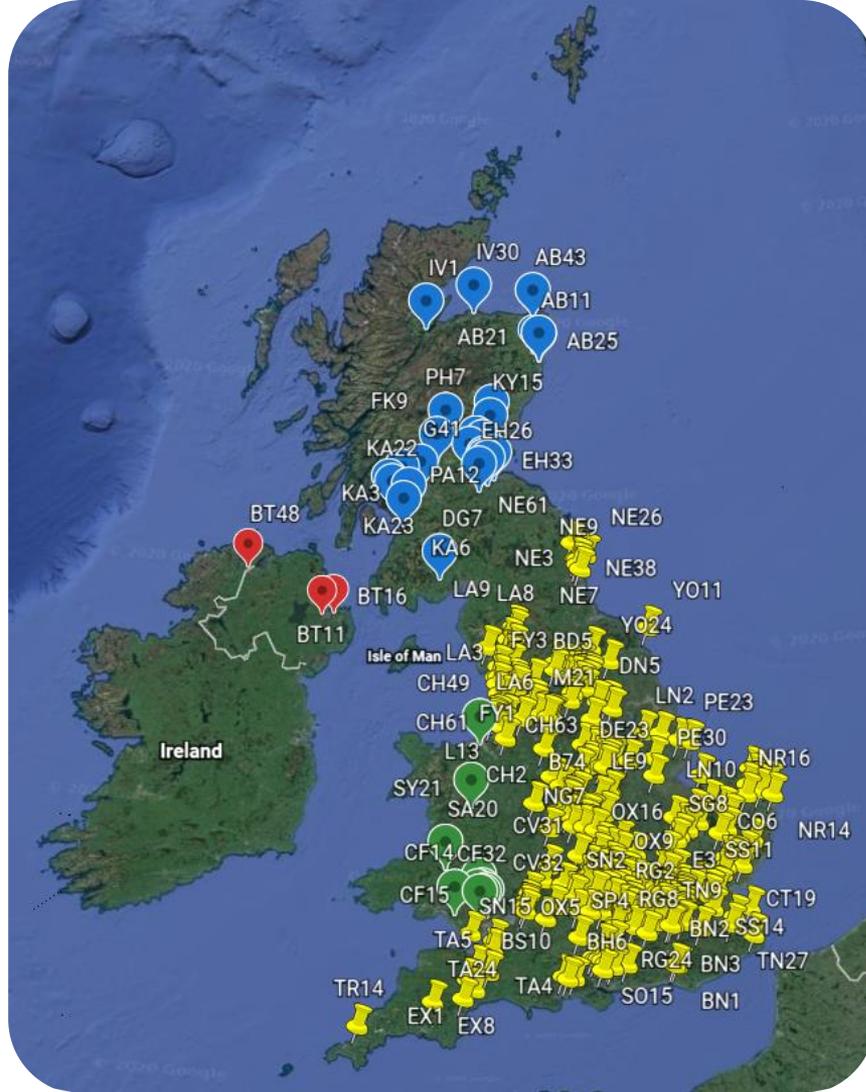


# Methods

## Participants:

- 888 families with 8-to-36-month-olds  
( $M_{\text{age}} = 19\text{m } 20\text{d}$ ; 452 girls)
- 500 completed T1/T2 and T3





# Socio-economic status

- 1) Neighbourhood deprivation index: Index of Multiple Deprivation (1-10).

$$M_{\text{IMD}}=6.86 (2.59)$$

- 2) Income: total household income (1-7):

1) £0-20k 2) £21-30k 3) £31-40k 4) £41-50k 5) £51-60k 6) £61-70k 7) £71k+

$$M_{\text{HI}}=4.92 (1.92)$$

- 3) Parental education: highest level of education completed (1-8).

$$M_{\text{HE}}=5.25 (1.15)$$

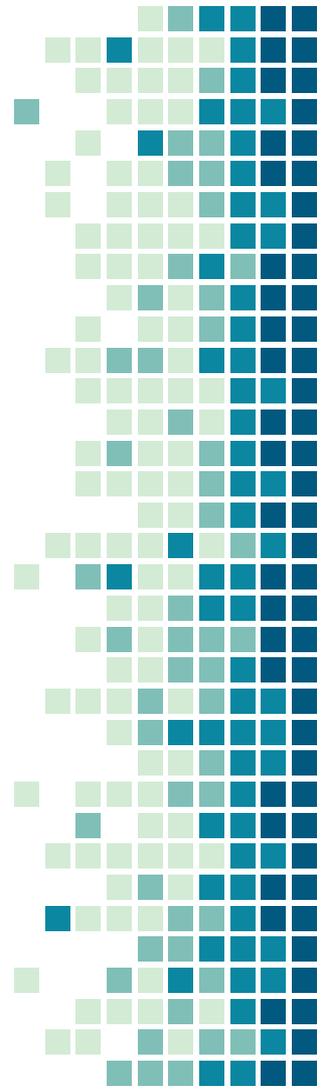
- 4) Parents' occupational prestige (1-9).

$$M_{\text{OP}}=6.84 (1.73)$$

# Methods

## Online Questionnaire:

- T1- 0-6weeks Post-Lockdown
- T2- 7-10 weeks Post-Lockdown
- T3- 11-15 weeks Post-Lockdown
- 
- 



**Time 1: Baseline**  
**± 3 weeks post Lockdown**

**Time 2 - Midpoint**  
**± 8 weeks post Lockdown**

**Time 3– End Point**  
**± 13 weeks post Lockdown**

**Family's Background:**  
Demographic questionnaire

**Parenting:** Early Parenting Attitudes questionnaire

**Language:** Oxford CDI

**Screen Time:** Average time spent on smartphone

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**Sleep:** Sleep and Settle Questionnaire

**Parent-child interactions:** 10 min recordings

**Executive Functions:** Early Executive Functions Questionnaire

**Mental Health:** Depression Anxiety Stress Scale

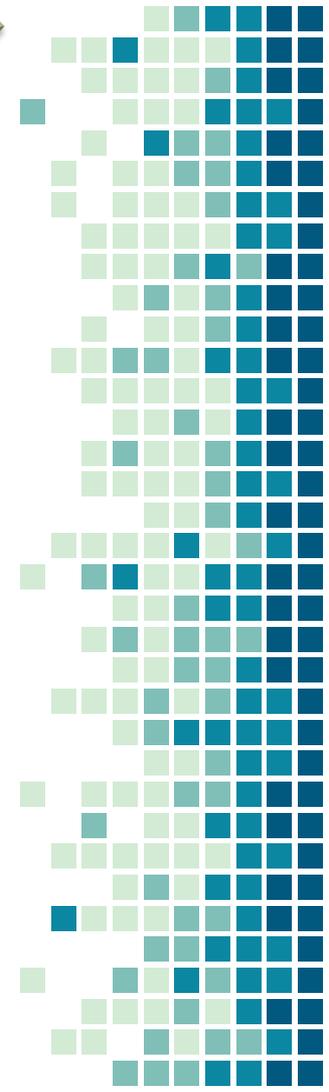
**Language:** Oxford CDI

**Screen Time:** Average time spent on smartphone

**Sleep:** Sleep and Settle Questionnaire

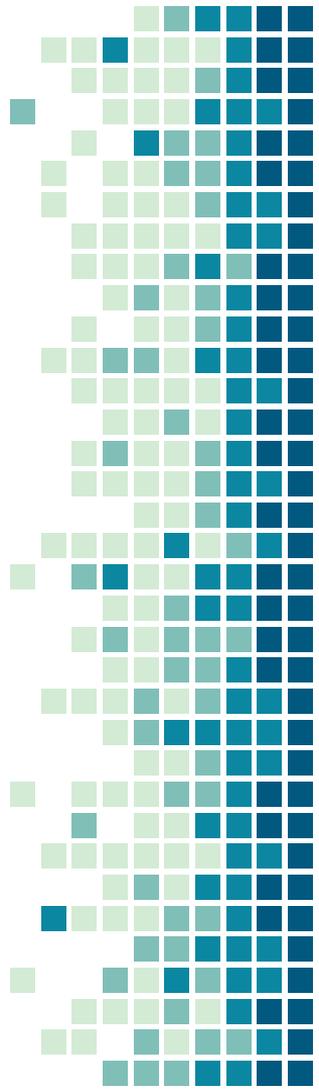
**Parent-child interactions:** 10 min recordings

**Home Activities:** Caregiver-Child and Child-only Activities Questionnaire



# Results

**PRELIMINARY**

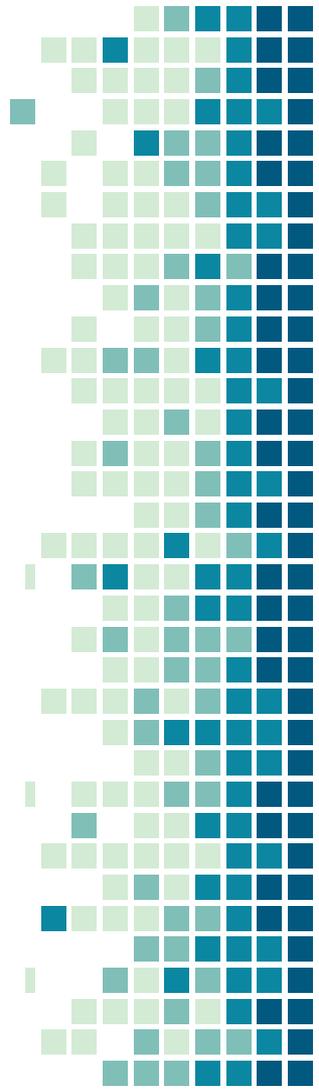
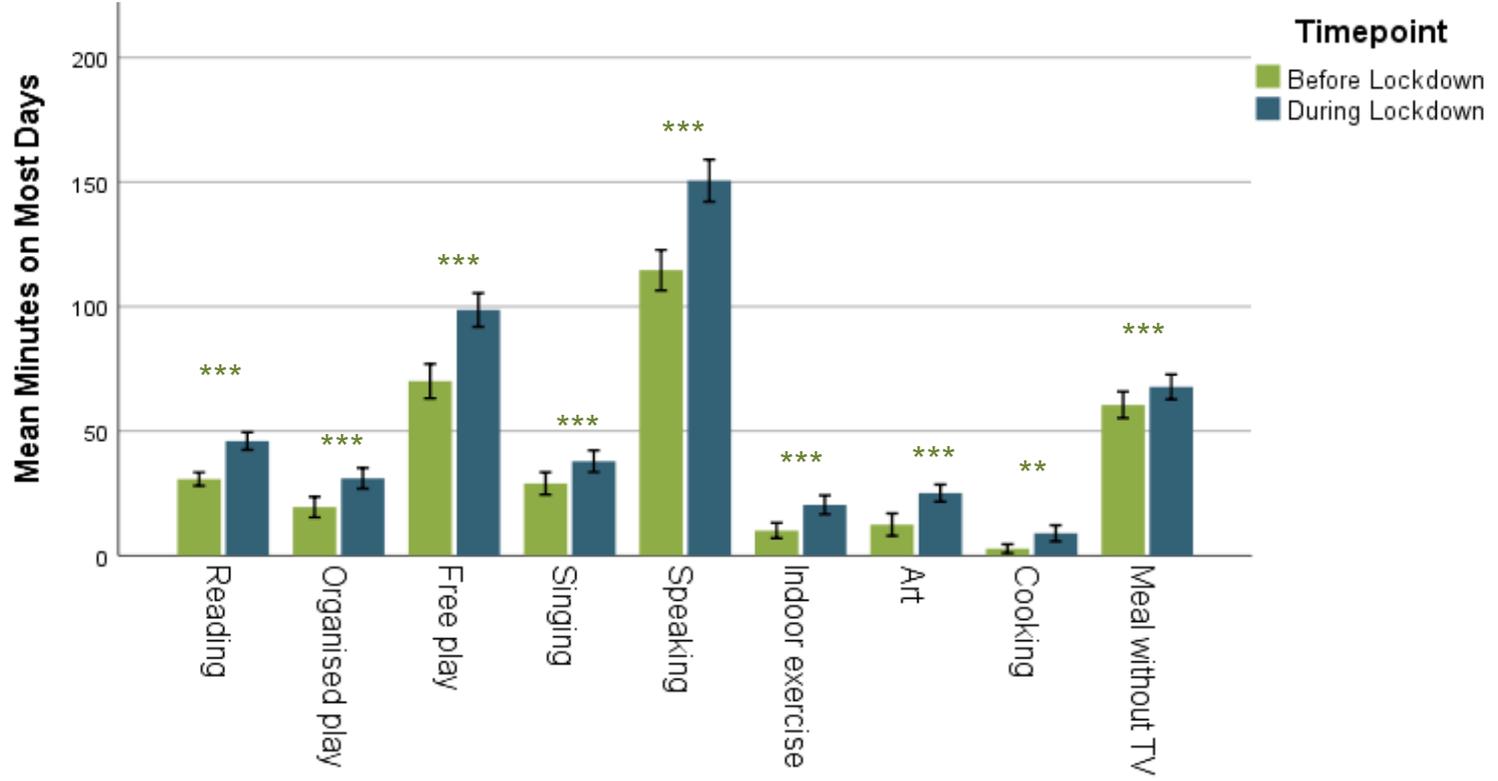




# Activities during Lockdown

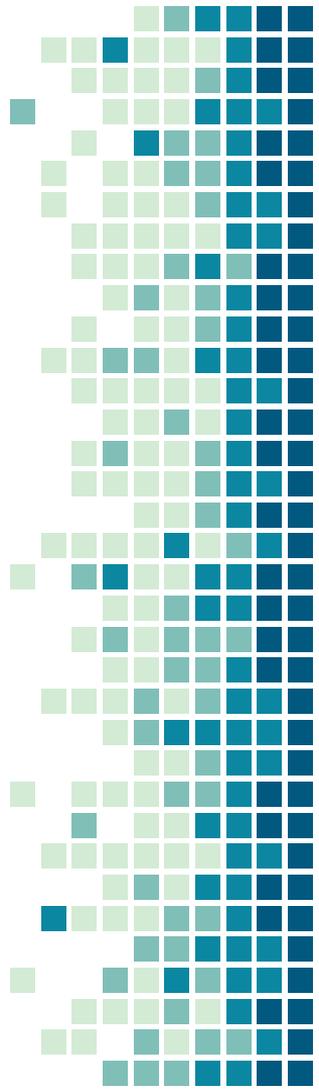
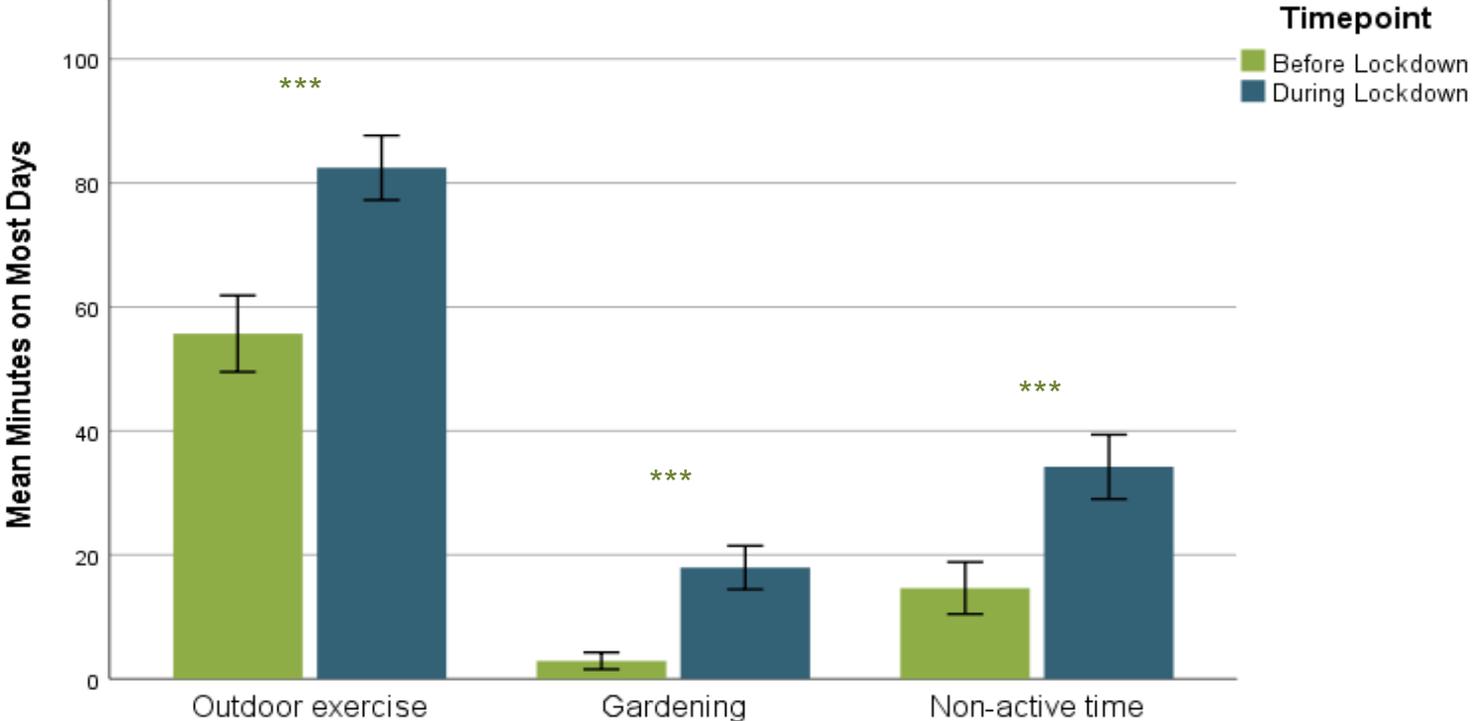
# Activities Pre- and Peri-Lockdown

## Parent+Child



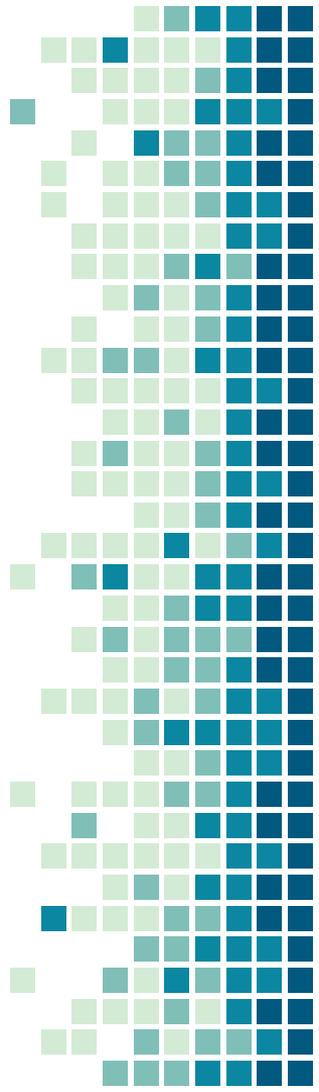
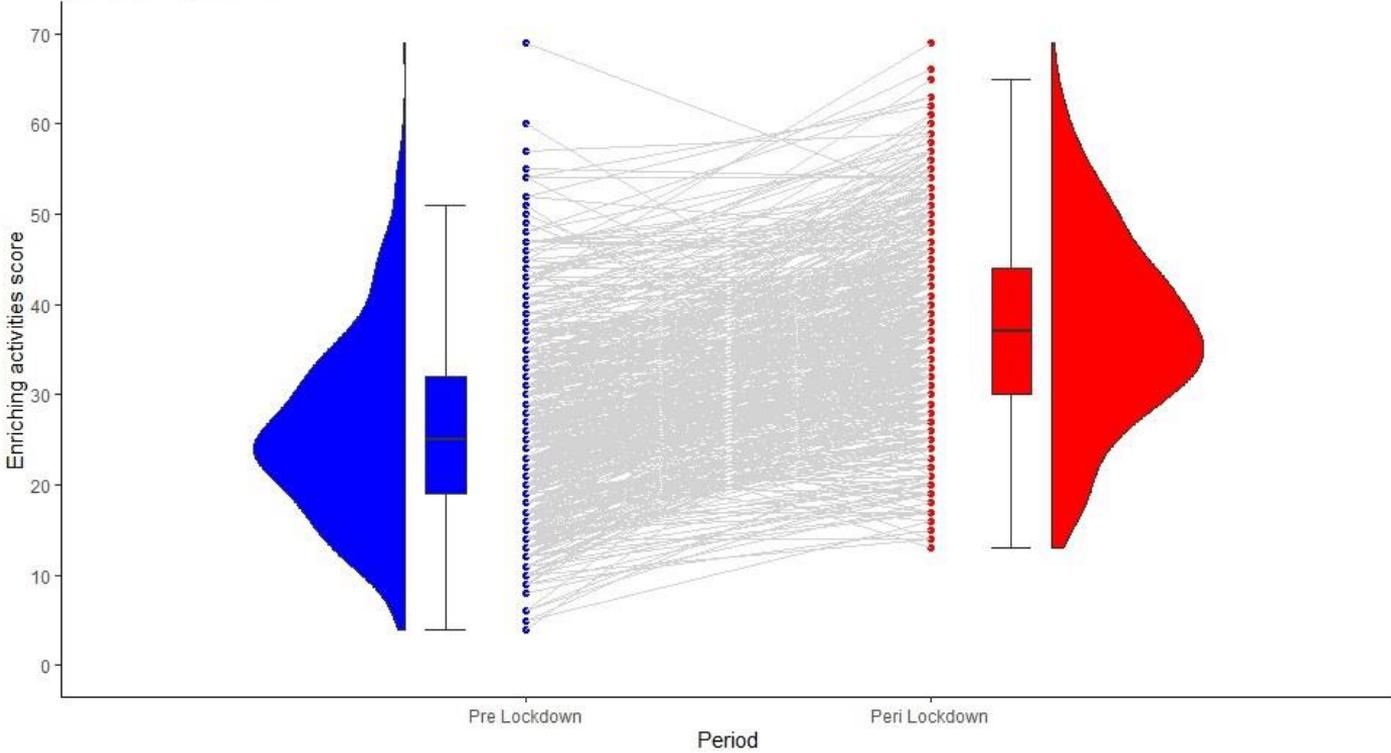
# Outdoor Activities Pre- and Peri-Lockdown

## Parent+Child

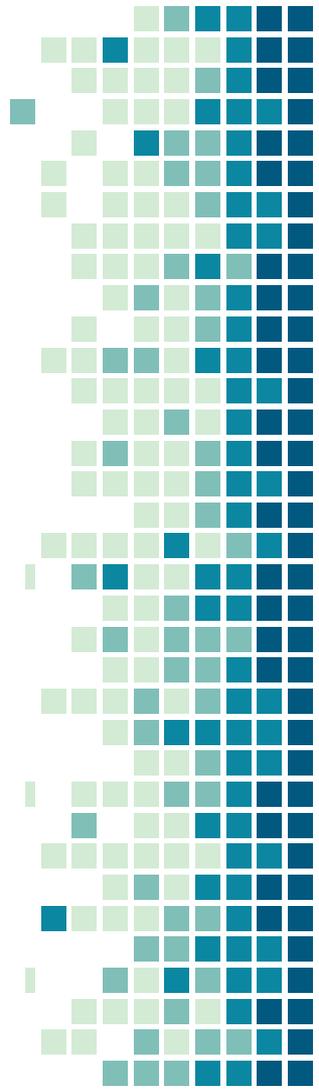
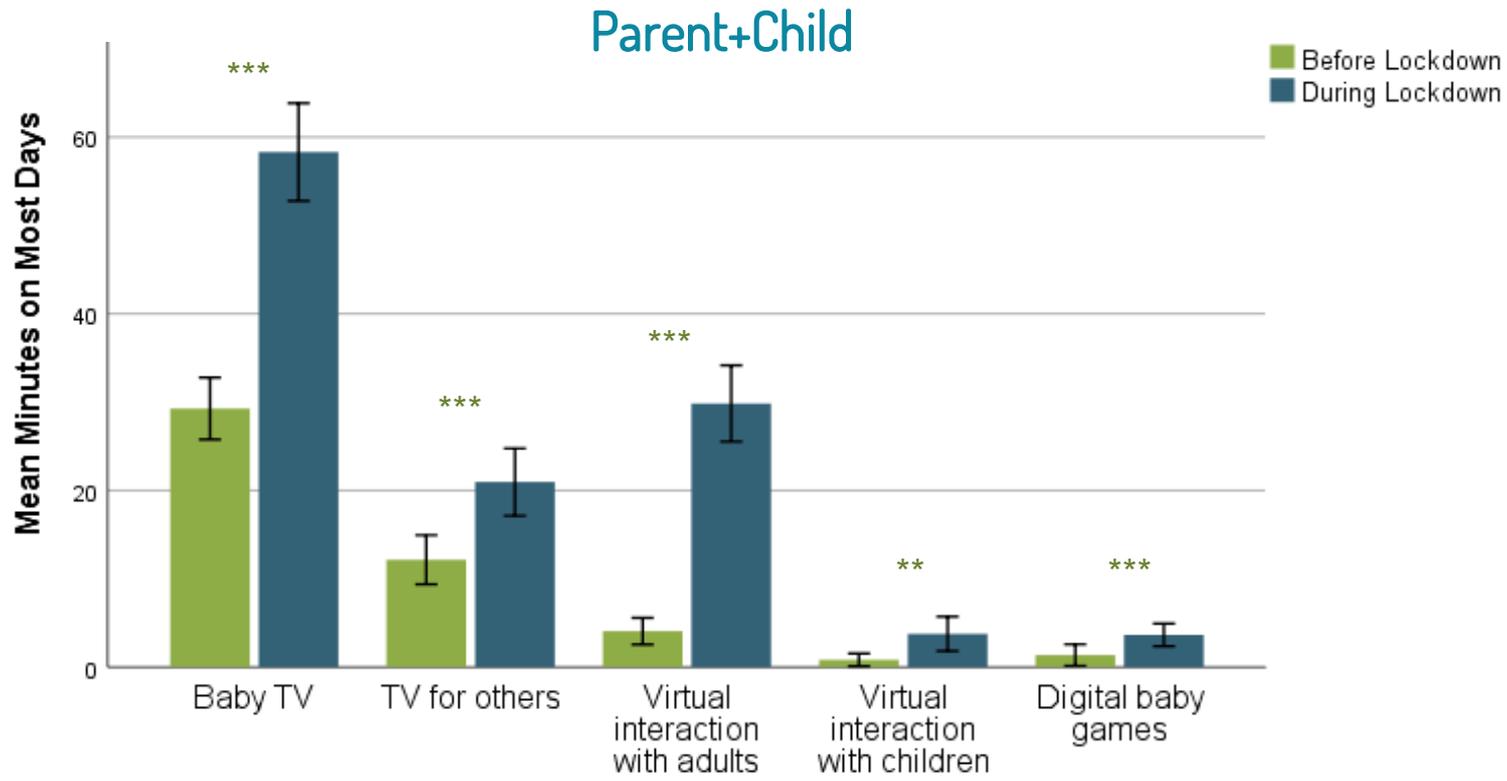


# Activities Pre- and Peri-Lockdown

## Parent+Child

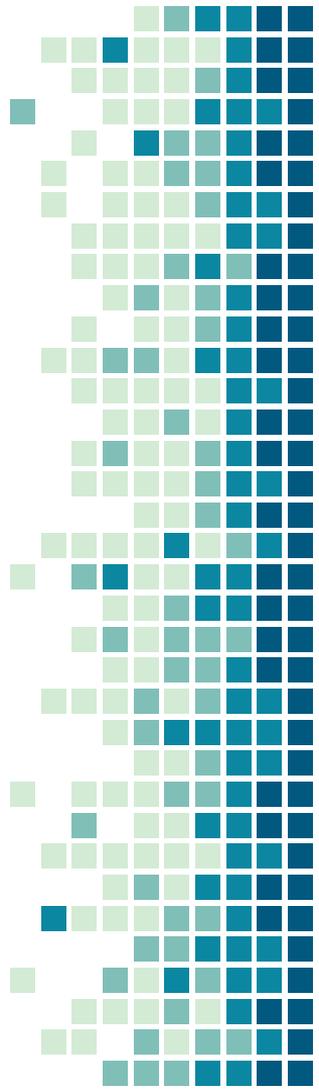
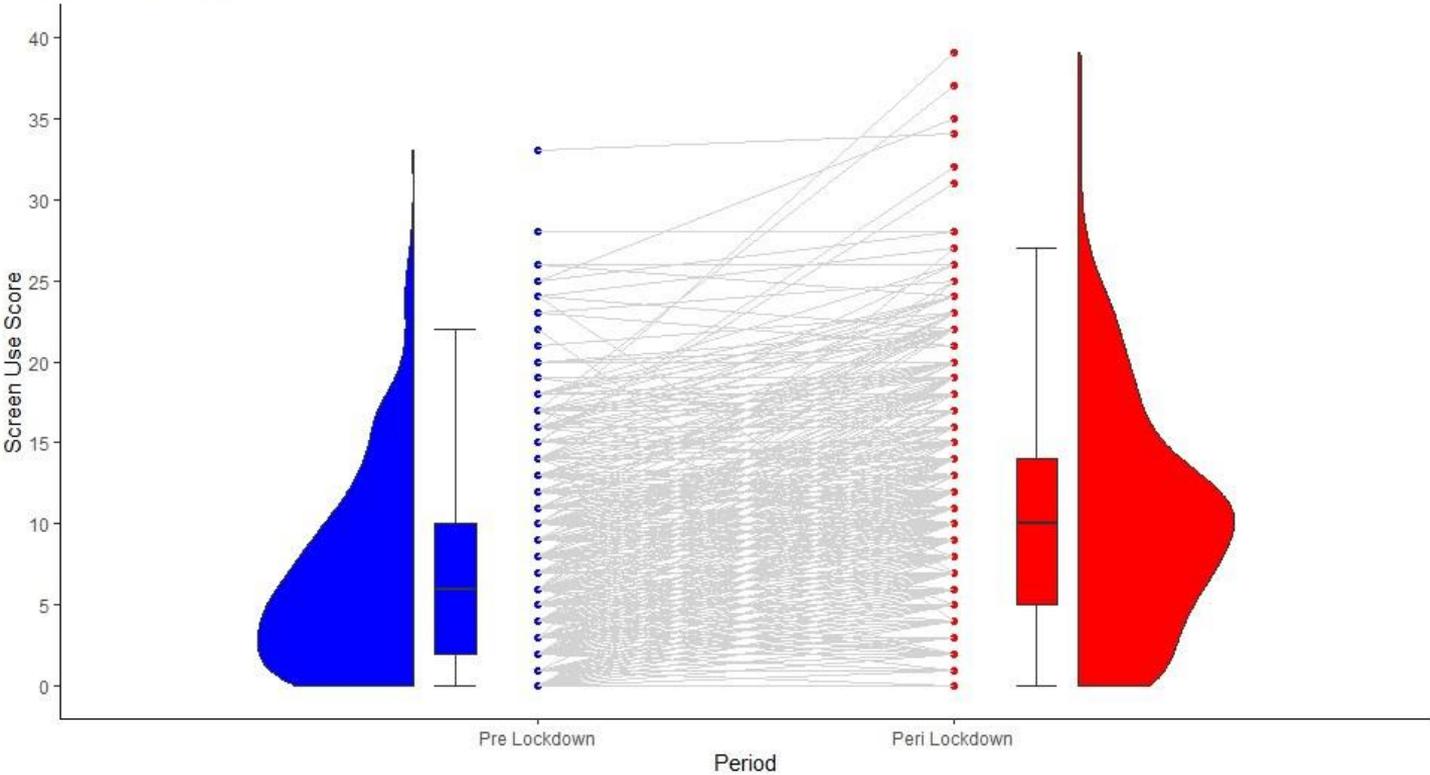


# Screen use Pre- and Peri-Lockdown

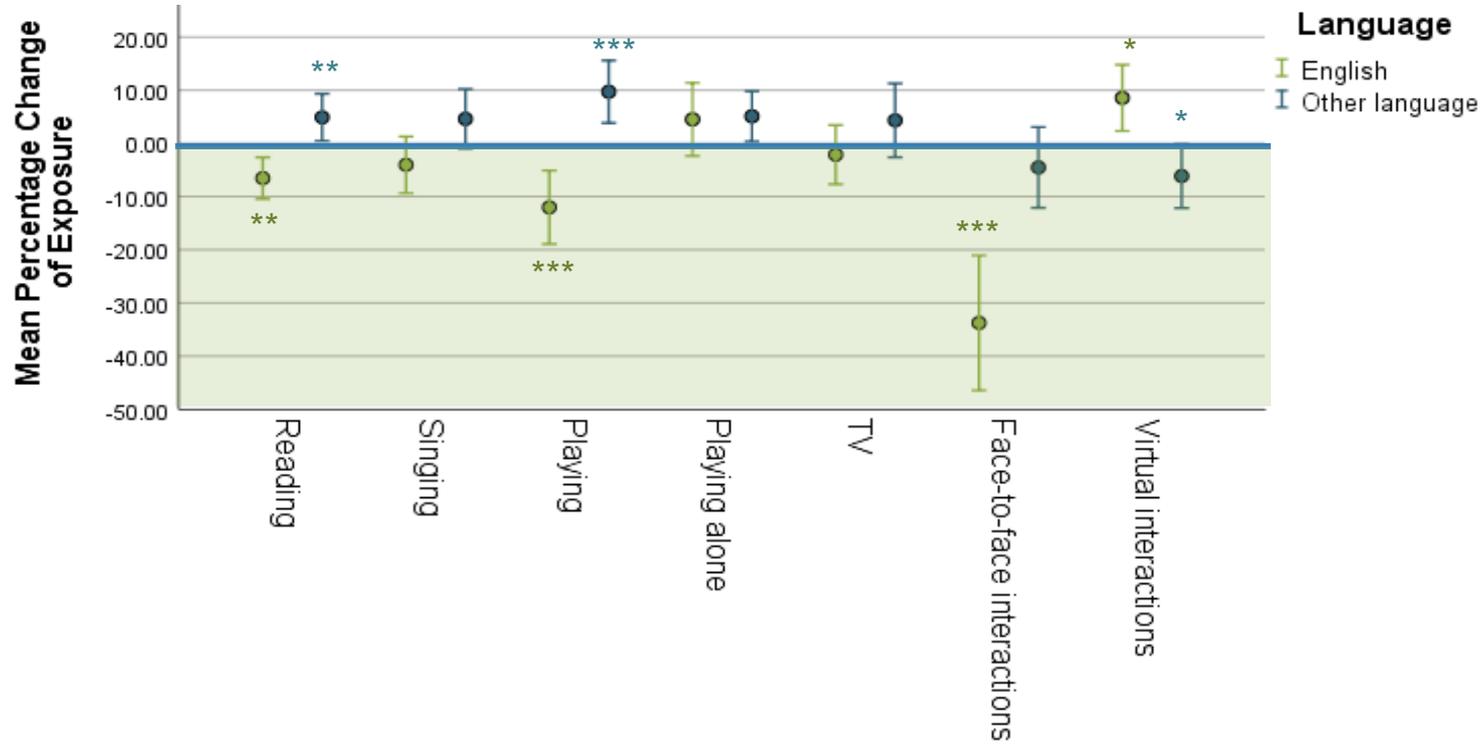


# Screen use Pre- and Peri-Lockdown

## Parent+Child

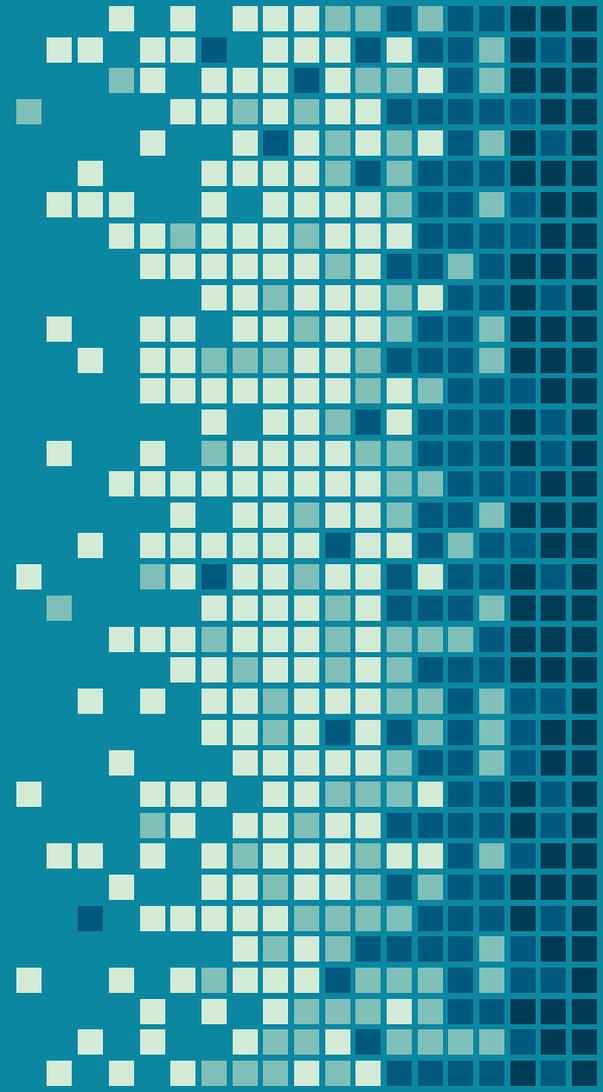


# Bilingual Language Changes Pre- and Peri-Lockdown

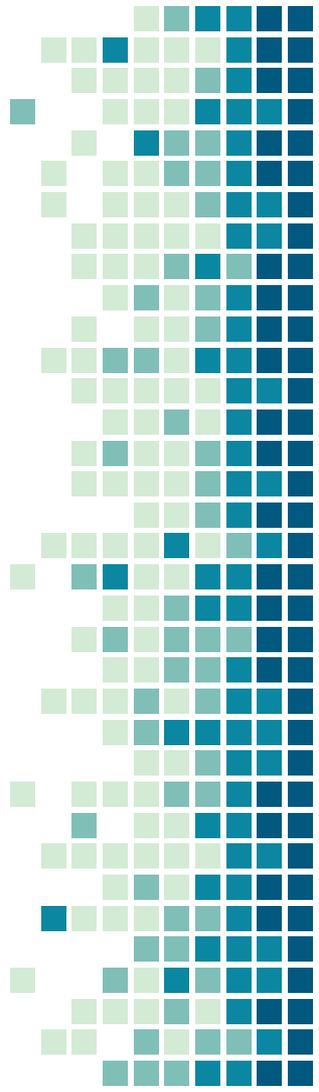
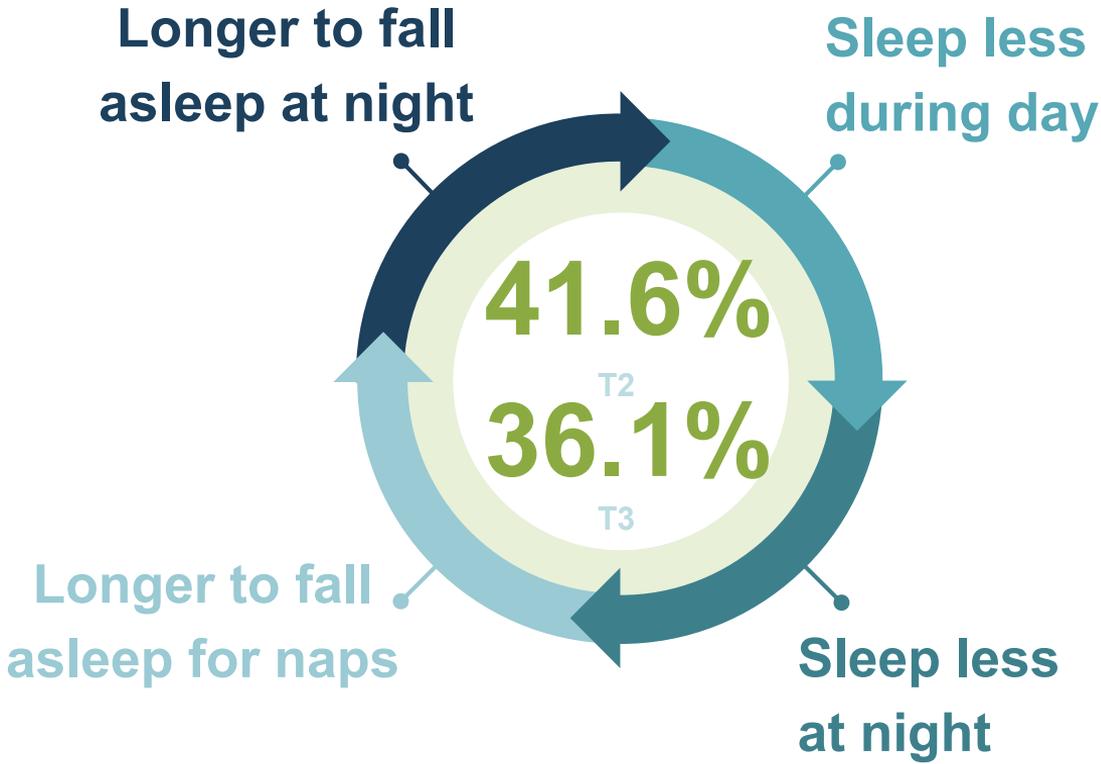




# Infants' Sleep During Lockdown



# Infants' Sleep Peri-Lockdown



# Changes in Infants' Sleep Peri-Lockdown

+ Disturbances

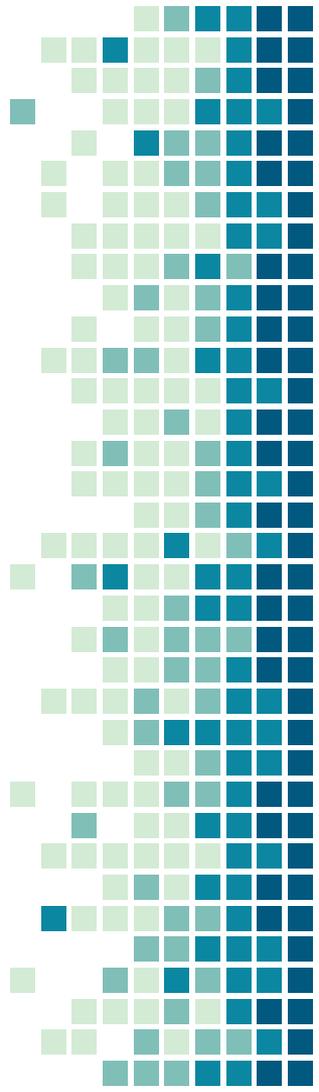
~~+ Colds~~

Sleeping arrangements

- Disturbances

Fewer Colds

More active →  
More tired



# SES & Parenting activities & Attitudes



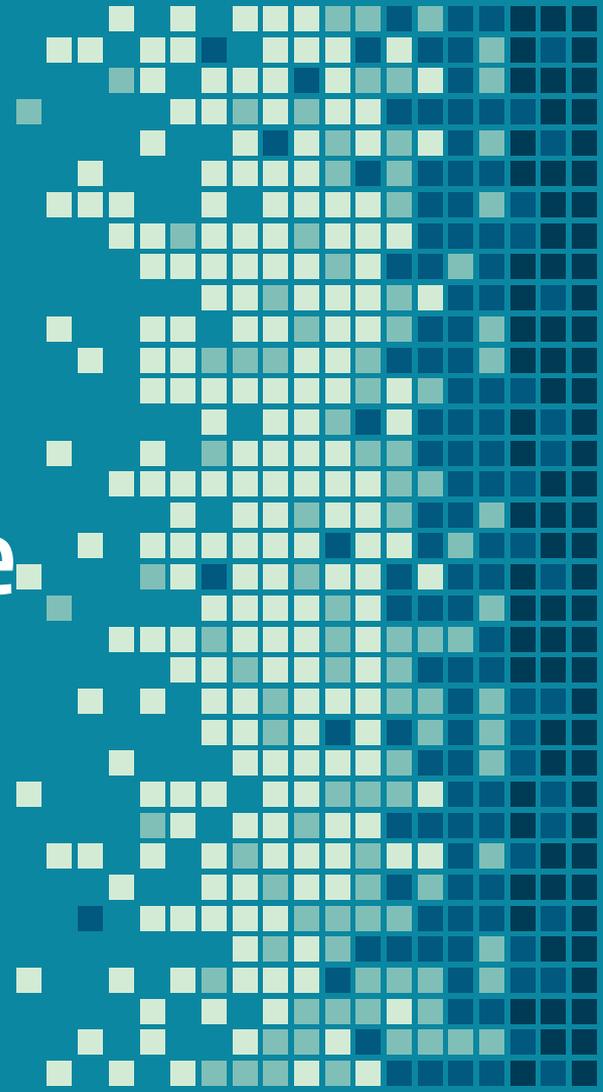
# Associations between SES and parenting activities and attitudes

Pearson correlations indices of SES and specific enriching activities

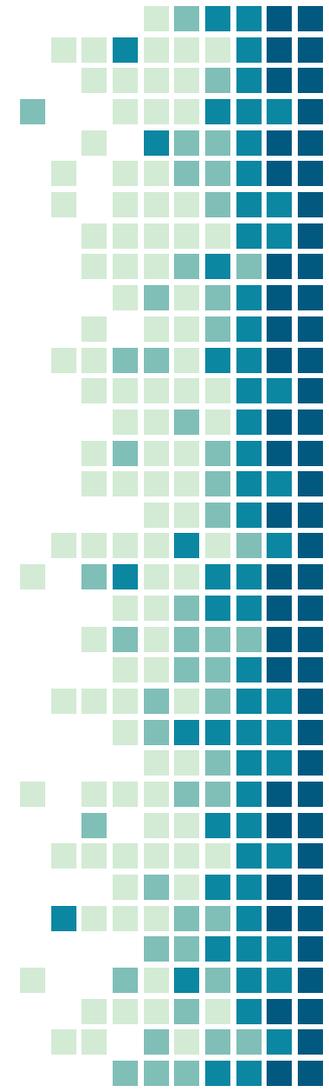
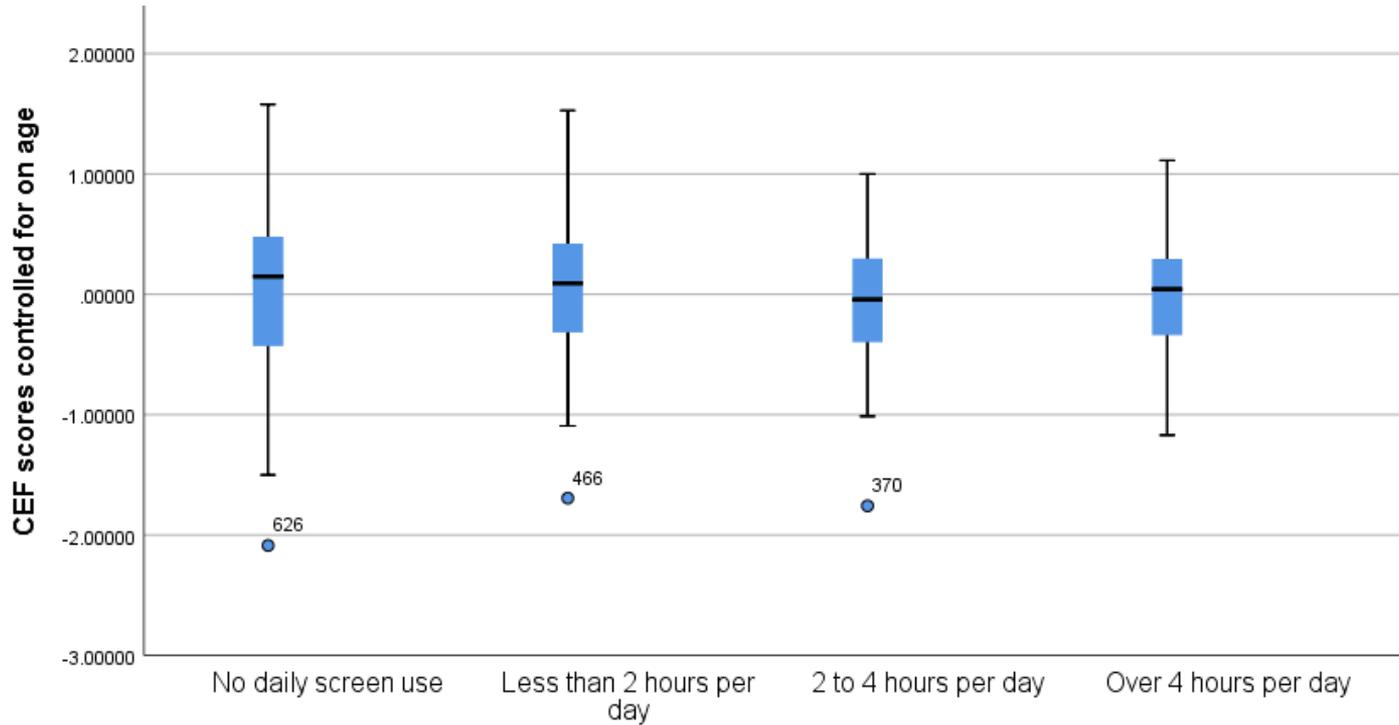
Enriching activity (during Lockdown)	Associations with SES
Reading a (child) book with your child (or to your child)	.193**
Playing organised games with a specific learning goal	.061
Free-play with your child	.078
Singing with your child	-.014
Direct one-to-one speaking to your child	.047
Indoor exercise with your child	-.046
Arts and crafts	.067
Cooking and baking	-.003
Outdoor exercise	.127**
Gardening	.116*
Non-active shared time outside	.048



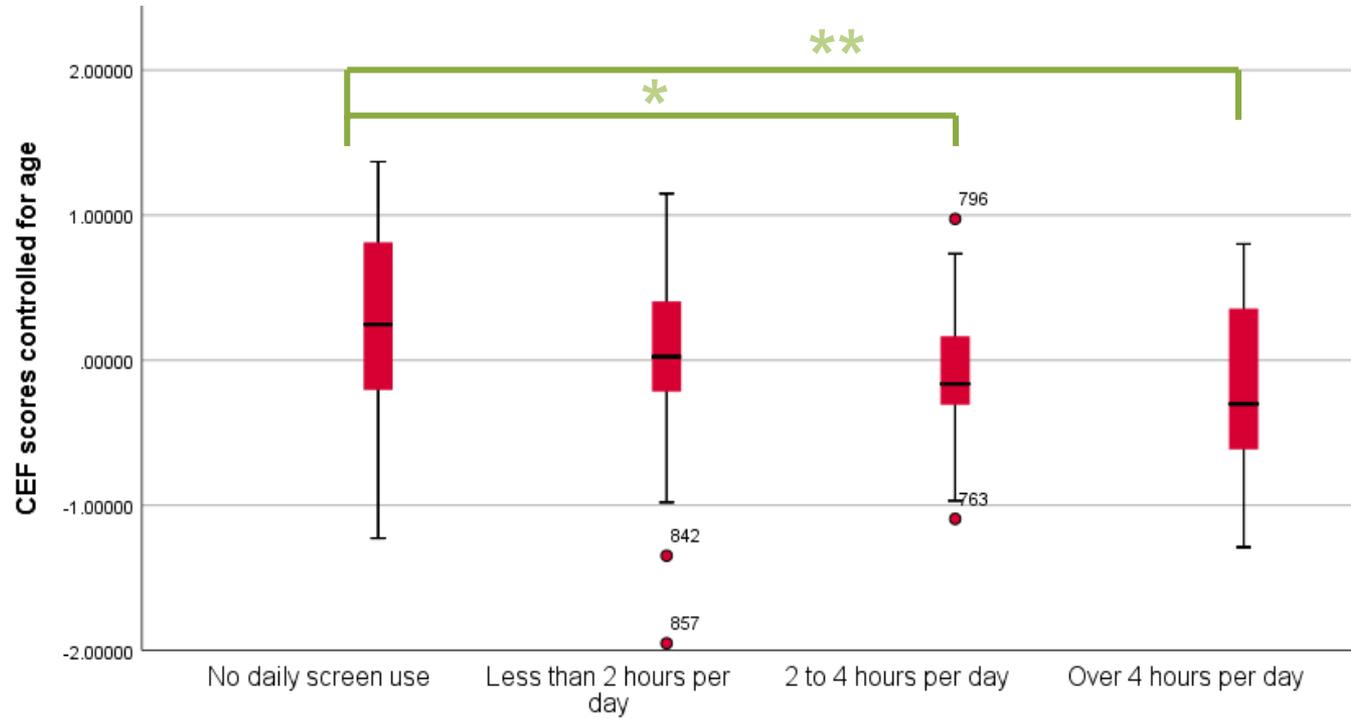
# Parenting, Screen Use & EF



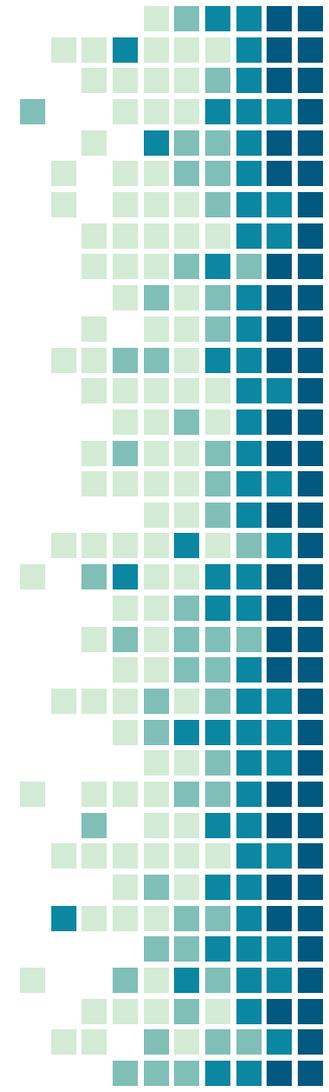
# Screen use and CEF for Under 2s



# Screen use and CEF for Over 2s

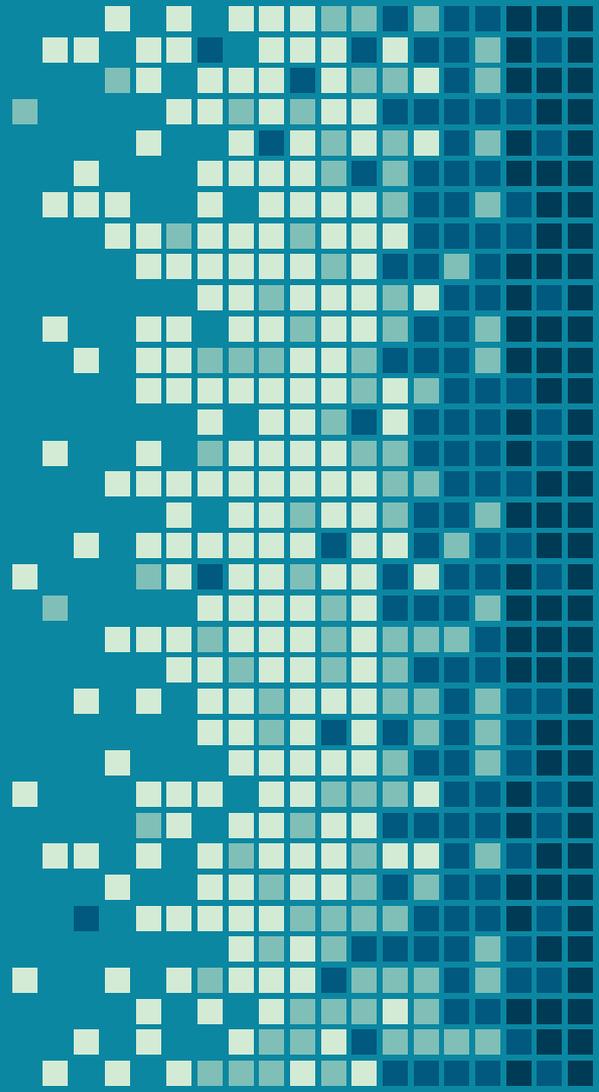


( $F(3, 138) = 2.741, p=.046, \text{partial } \eta^2 = .056$ ).





# Summary & Discussion



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## ▪ Enriching Activities and SES

- Pre-Lockdown  Low and High SES
- Peri-Lockdown  Low and High SES

Outdoor space and Books access



# Summary & Discussion

- High early EF scores

- Peri-Lockdown SES disadvantage

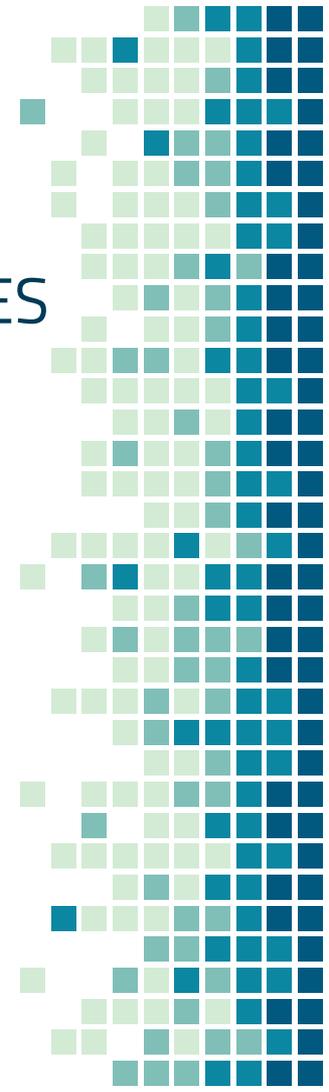
were associated with:

— screen use +

+ greater parental warmth —

+ enriching activities with their parent —

Poorer parent-reported EF



# Summary & Discussion



- disrupts sleep quality
- underdeveloped coping mechanisms

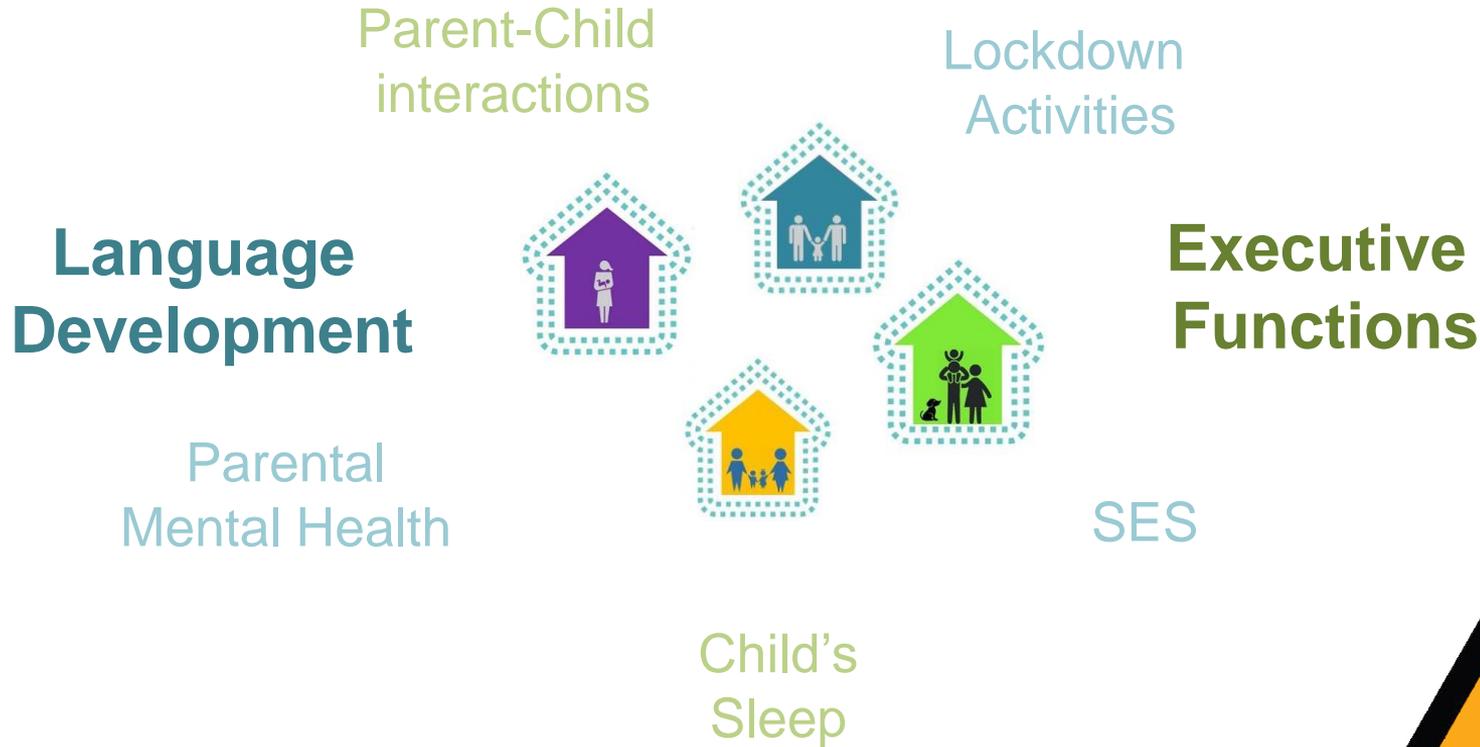
Transactional association?



Over 2s:

- age of exposure vs duration of exposure
- cumulative detrimental effects

# Follow up





UK Research and Innovation's rapid response to COVID-19 (ES/V004085/1)

# THANKS!

