Socioeconomic Status and Child Behaviour in the CHILD Cohort Study: The Role of Breastfeeding

Sarah Turner[1,2,3], Jacqueline Pei [4], Piushkumar J. Mandhane[4], Theo J. Moraes[5], Stuart E. Turvey[6], Elinor Simons[1,2], Padmaja Subbarao[5], Meghan B. Azad [1,2,3]

[1]University of Manitoba, [2]Children's Hospital Research Institute of Manitoba, [3]Manitoba Interdisciplinary Lactation Centre, [4]University of Alberta, [5]University of Toronto, [6]University of British Columbia

BACKGROUND

Living with **low socioeconomic status (SES)** is associated with increased child behaviour problems.[1]

Breastfeeding is related to many **positive outcomes** for children, and may provide a more pronounced benefit for those living in low SES settings.[2]

It is unknown if **breastfeeding modifies the relationship between SES and child behaviour** among children living in Canada.

Objective
To examine how breastfeeding influences the relationship between socioeconomic status and child behaviour in Canada

METHODS

We studied 2,334 mother-child pairs from the Canadian **CHILD Cohort Study** (www.childstudy.ca), a general population birth cohort. Figure 1

Figure 1: CHILD Cohort Study

Standardized questionnaires were used to classify **breastfeeding duration** at 1 year and **breastfeeding exclusivity** at 6 months.

A **SES risk variable** was created, classifying participants with one or more of the following:
1. single parent household,
2. low household income (less than $30,000/year),
3. low maternal education (less than post-secondary degree).

At age 5, caregivers completed the **Child Behaviour Checklist (CBCL)**, a 99-item validated tool to measure total, internalizing, and externalizing behaviour problems. Lower scores indicate fewer behaviour problems. Scores are standardized as T-Scores with a mean of 100 and standard deviation of 15.

Adjusted linear regression models predicting CBCL were run with **breastfeeding and SES risk interactions**. Models adjusted for: prenatal maternal depression, child sex, birth mode, birth weight, gestational age, parity, study site, maternal race and attention deficit hyperactivity disorder genetic risk score (ADHD GRS).
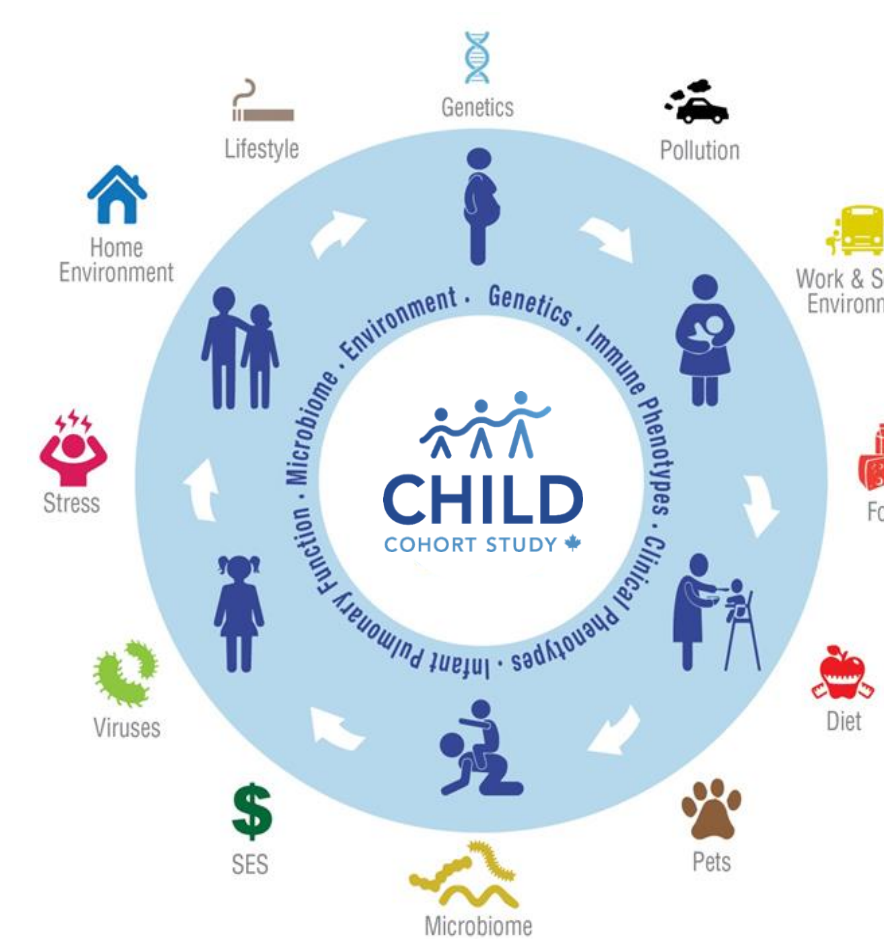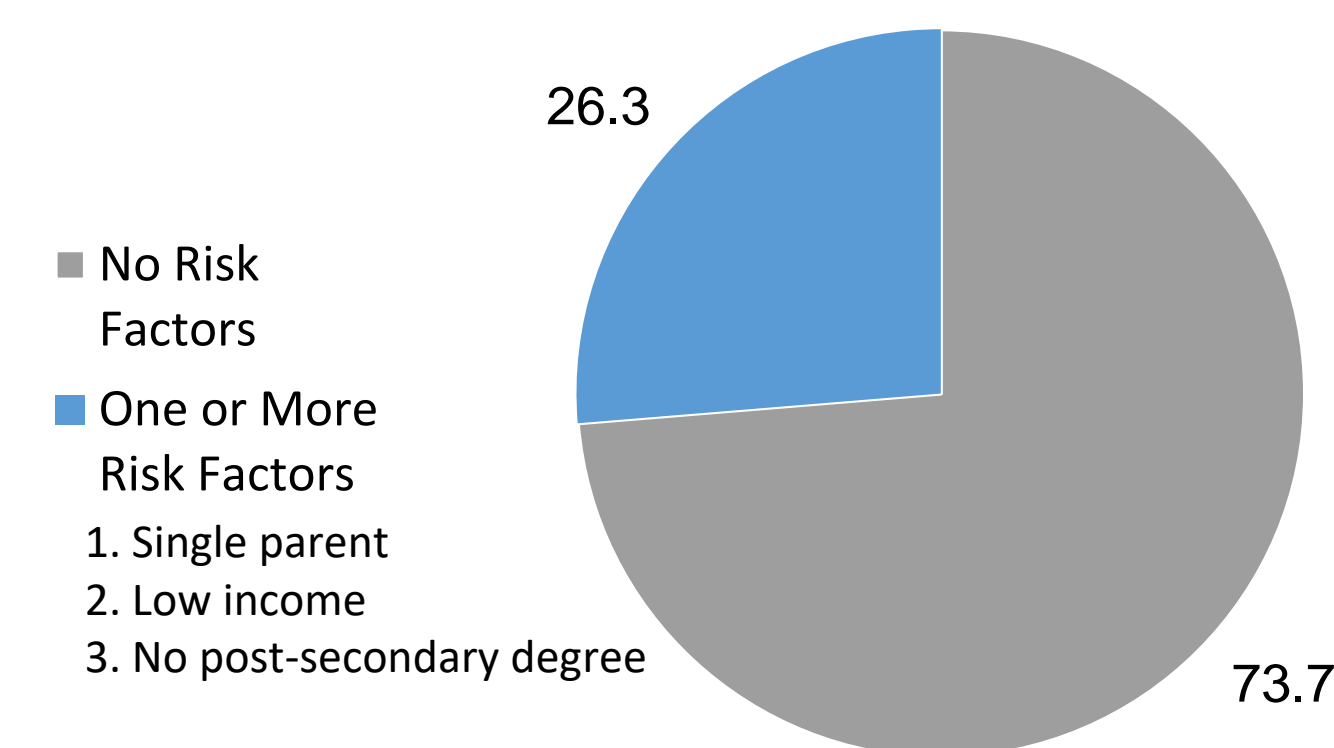
RESULTS

Figure 2: Distribution of SES Risk Variable

26.3
73.7

- No Risk Factors
- One or More Risk Factors
  1. Single parent
  2. Low income
  3. No post-secondary degree

Figure 3: Distribution of Infant Feeding Mode at 6 Months

18.7   20.9
60.4

- No Breastfeeding
- Partial Breastfeeding
- Exclusive Breastfeeding

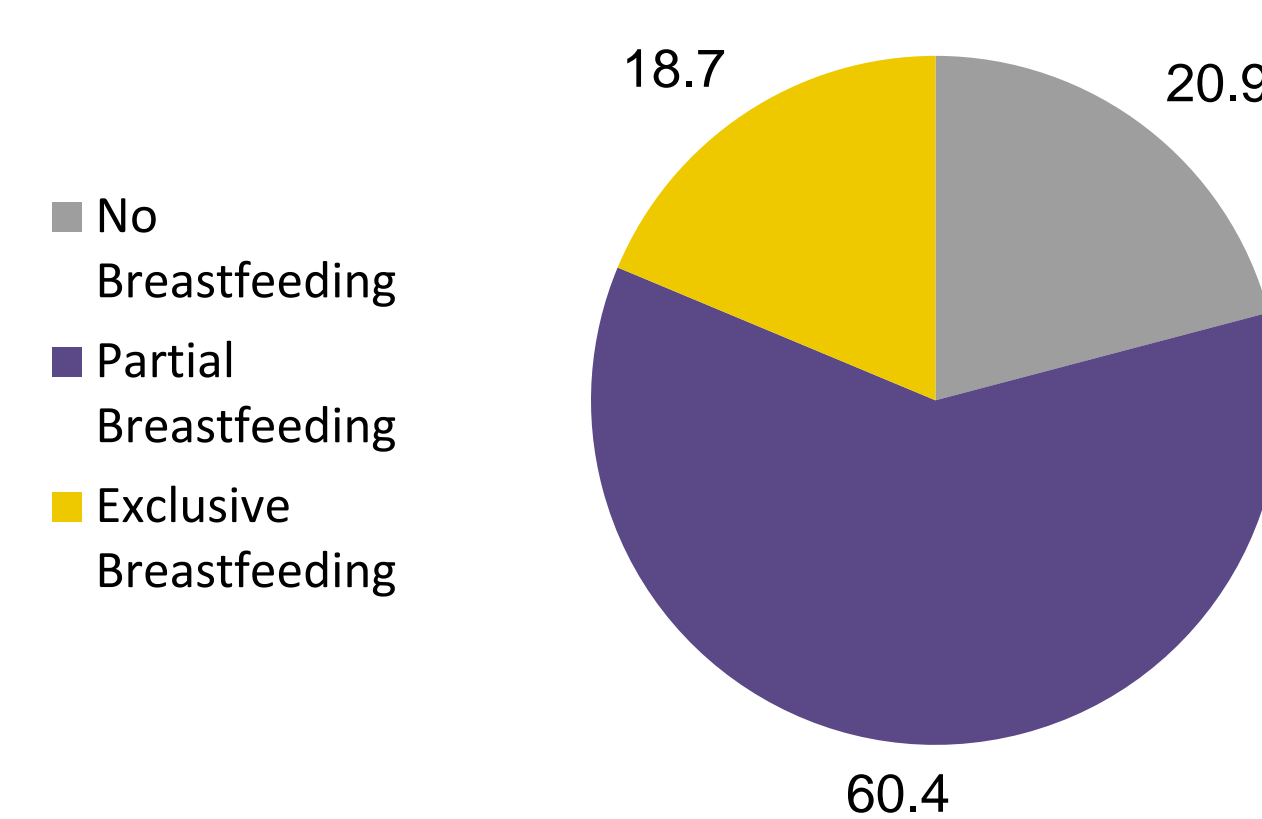**Figure 4: Distribution of Duration of Total Breastfeeding**
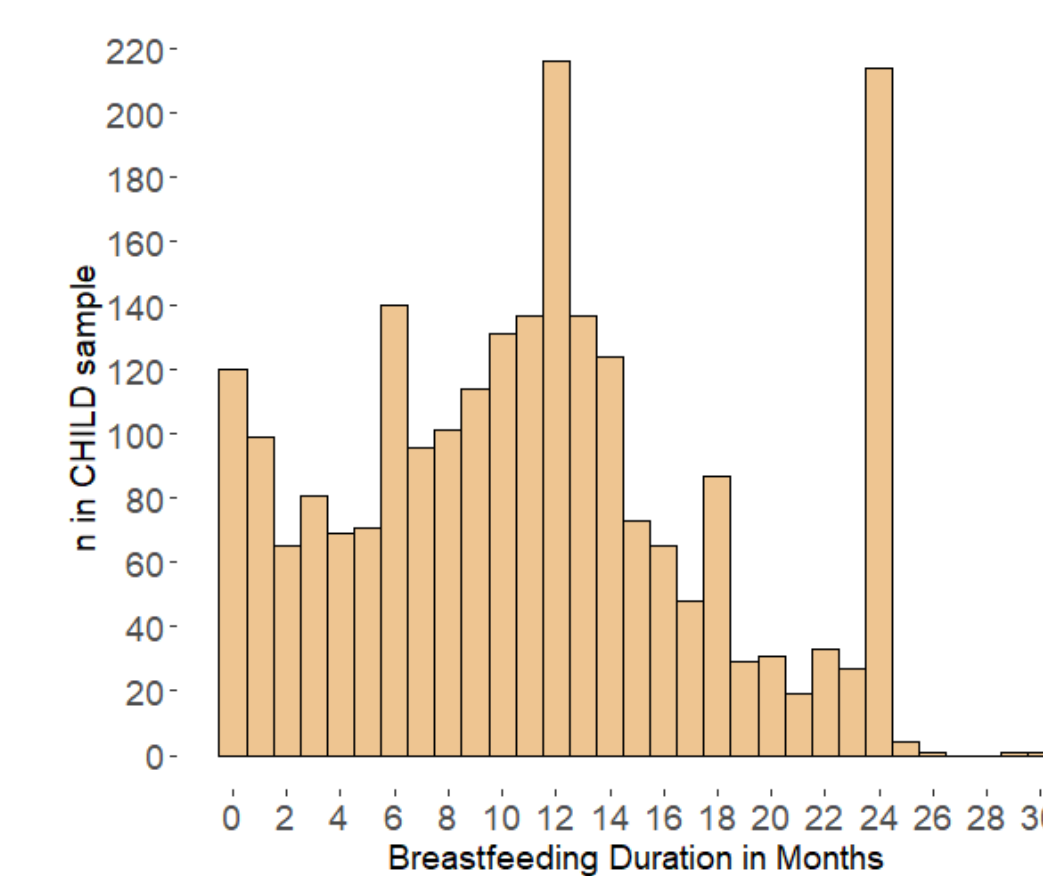

Figure 5: Adjusted Associations between Breastfeeding at 6 months and CBCL T-Scores
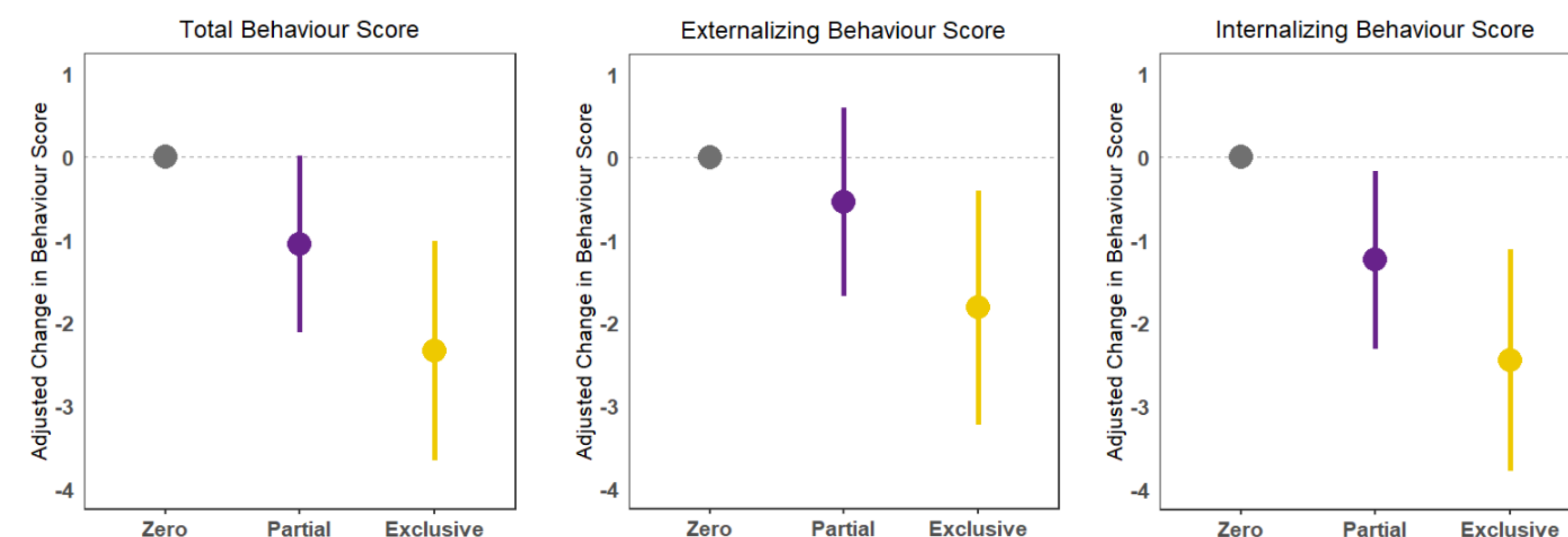

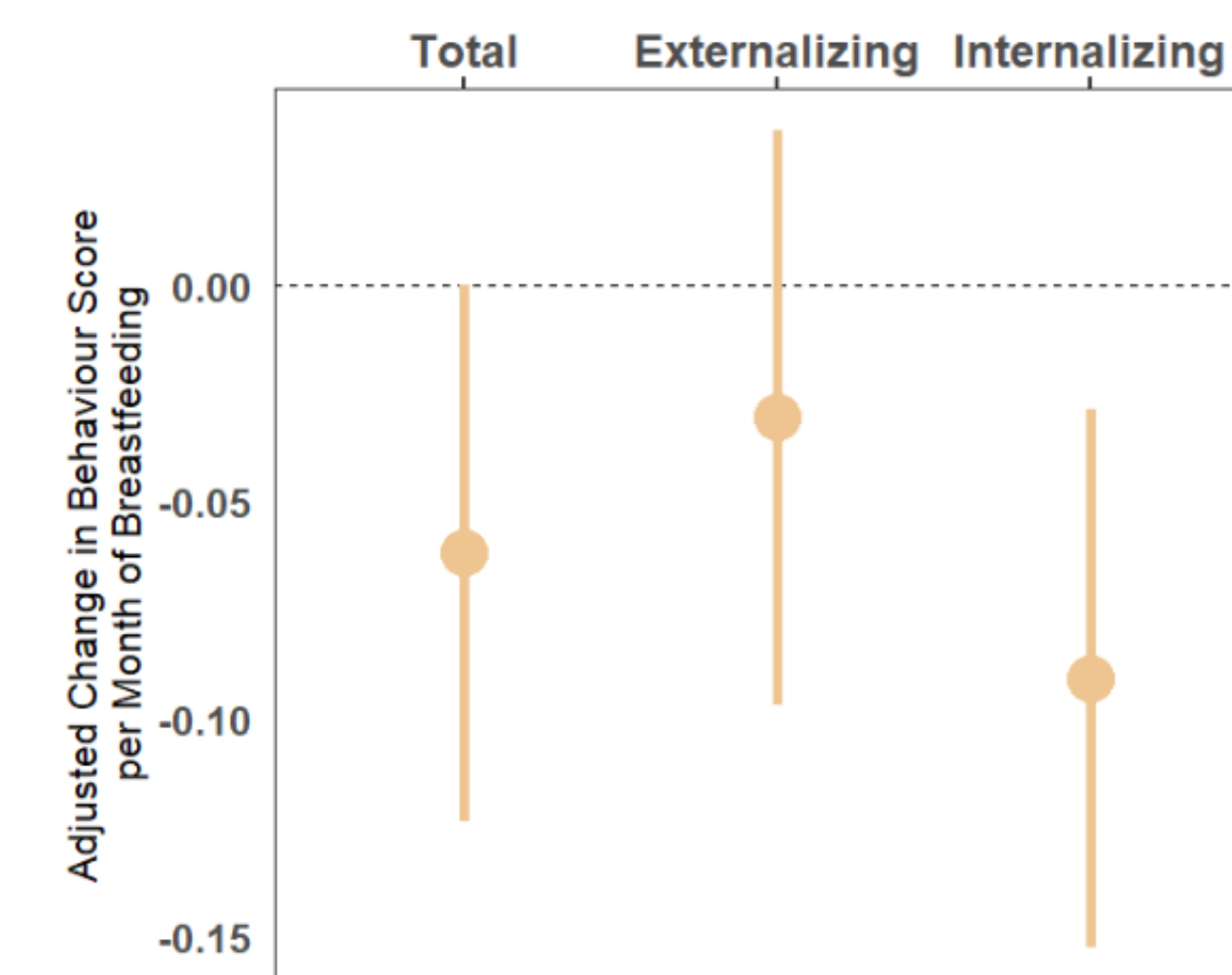**Figure 6: Adjusted Associations between Breastfeeding Duration and CBCL T-Scores**

Figure 7: Relationship between breastfeeding duration and CBCL score at 5 years, stratified by SES risk

Number of SES Risk Factors
- Zero
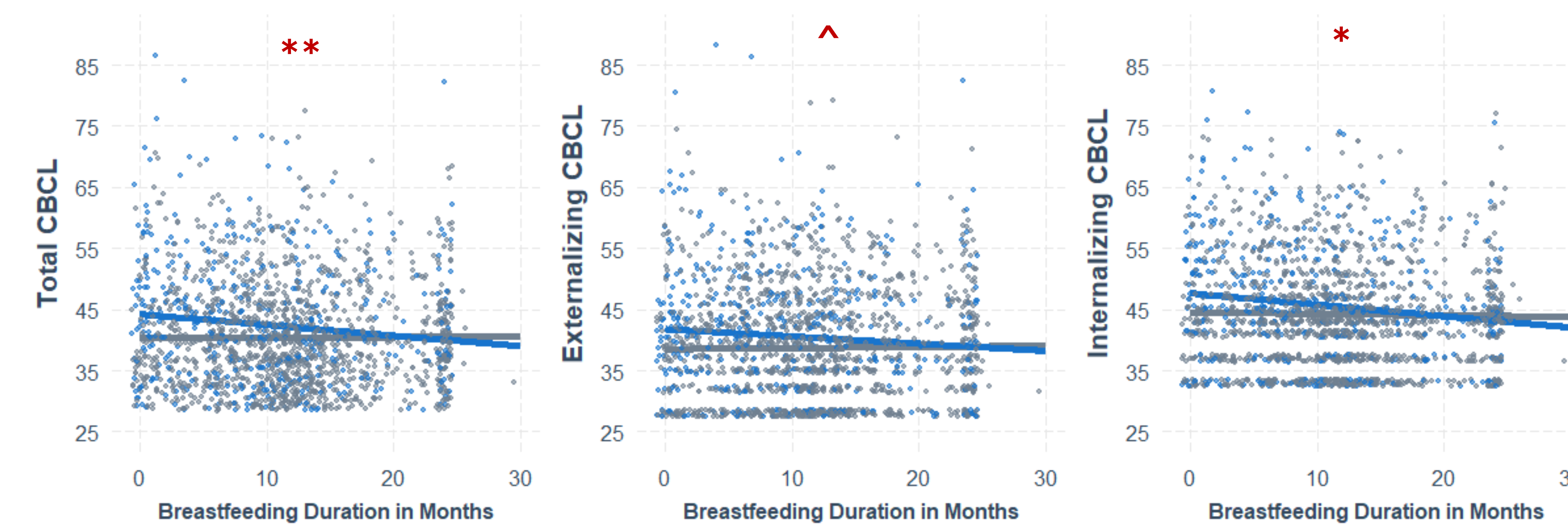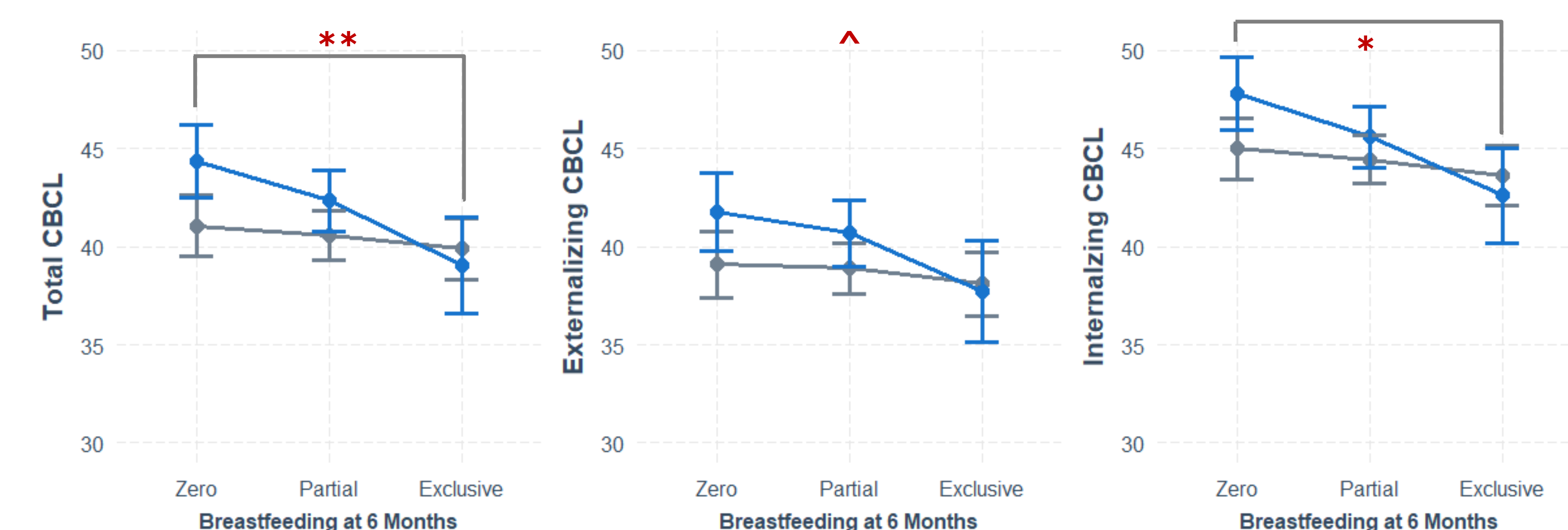- One or more

^ p<= 0.1
* p<= 0.05
** p<= 0.01

Figure 8: Relationship between breastfeeding at 6 months and CBCL score at 5 years, stratified by SES risk

Figure 5 & 6 Model Details: Models adjusted for: prenatal maternal depression, child sex, birth mode, birth weight, study site, gestational age, parity, maternal race, household income, maternal education, marital status and ADHD GRS. Zero breastfeeding at 6 months is the reference group.

Figure 7 & 8 Model Details: Models are adjusted for: prenatal maternal depression, child sex, birth mode, birth weight, gestational age, parity, study site, maternal race and ADHD GRS.

P-values represent significant interactions between breastfeeding duration and SES risk (Figure 7) and Exclusive and Zero breastfeeding and SES risk (Figure 8).

Zero, partial and exclusive breastfeeding groups are independent of one another.

KEY FINDINGS

Breastfeeding is related to lower (better) behaviour scores at 5 years in the total sample (Adjusted changes in behaviour T-score for exclusive breastfeeding (compared to no breastfeeding) range from -2.5 to -1.8, p-value <=0.05). Figure 6

However, when stratified by SES risk, **breastfeeding was only significantly related to better behaviour among children with one or more SES risk factors**. Figures 7 & 8

In the no breastfeeding group, children with no SES risk factors have lower (better) behaviour scores, compared to children with SES risk factors. However, **in the exclusive breastfeeding group, there is no difference in behaviour scores between SES groups**. Figures 8

Conclusion

Breastfeeding is associated with better behavior scores for children with one or more SES risk factors.

This suggests that breastfeeding may 'close the gap' in behaviour scores between those with and without SES risk.

IMPLICATIONS & NEXT STEPS

Identifying **sub-groups** with larger benefits associated with breastfeeding can help to inform breastfeeding promotion and policies to reduce barriers to breastfeeding.

Future work will examine interactions with **post-natal maternal stress and depression** as another important subgroup.

REFERENCES:
1. McGrath, P. J. et al. (2015). Effects of socio-economic status on behaviour problems. In International Encyclopedia of the Social & Behavioral Sciences: Second Edition (Second Edi, Issue March). Elsevier. https://doi.org/10.1016/B978-0-08-097086-8.23052-3
2. Victora, C. G., et al. (2016). Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. The Lancet, 387(10017), 475–490. https://doi.org/10.1016/S0140-6736(15)01024-7