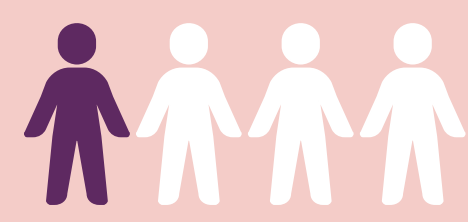


Preschooler screen time during the pandemic is prospectively associated with lower achievement of developmental milestones

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Introduction

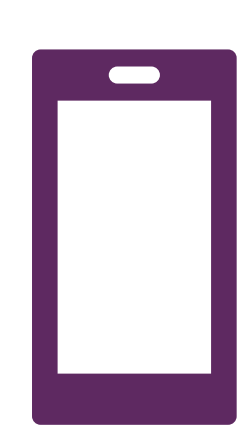


In Canada, about **1 out of 4** children has a vulnerability in one developmental area when transitioning to kindergarten (Browne et al., 2020).

Early childhood global development :

- Cognitive
- Social-emotional
- Language
- Motor/physical

Screen time recommendation for 2-5 year old children : **< 1 hour per day** (OMS, 2020)



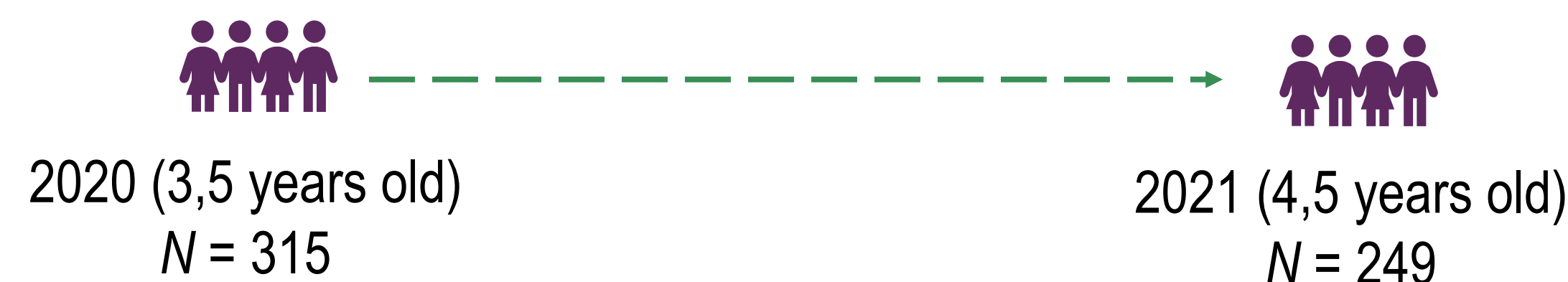
- A majority of children exceed this recommendation (McArthur et al., 2022);
- Few studies have taken into account children's actual digital environment (ex., mobile devices);
- Screen exposure has increased during the COVID-19 pandemic (Madigan et al., 2022).

Objective

Prospectively assess the developmental risks associated with screen time, and specifically newer mobile devices, in the context of the pandemic.

Methods

Prospective cohort study conducted in Nova Scotia
Data collection: parent-completed online questionnaires



Sample

- Mothers (93.0%)
- M = 34.9 years old
- Boys (53.5%)
- University degree (64.2%)

Measures

Dependent variable : Global development (4,5 years old)

Ages and Stages Questionnaires (ASQ) (Squires & Bricker, 2009)

- Language
- Problem solving
- Fine and gross motor skills
- Personal-social

At risk : Bottom 15% Not at risk : Top 85%

Independent variables : Screen use (3,5 years old) (Barr et al., 2020)

- Total screen time (h/day)
 - TV/DVD
 - Video games
 - Mobile devices
 - Computer (tablet, smartphone)
- Mobile devices (h/day)
 - Tablet, smartphone

Control variables (3,5 years old)

- Parent education
- Child's sex
- Temperament (negative affectivity)

Results

Screen time —→ **M = 3,46h/day**

Figure 1: Distribution by screen time group

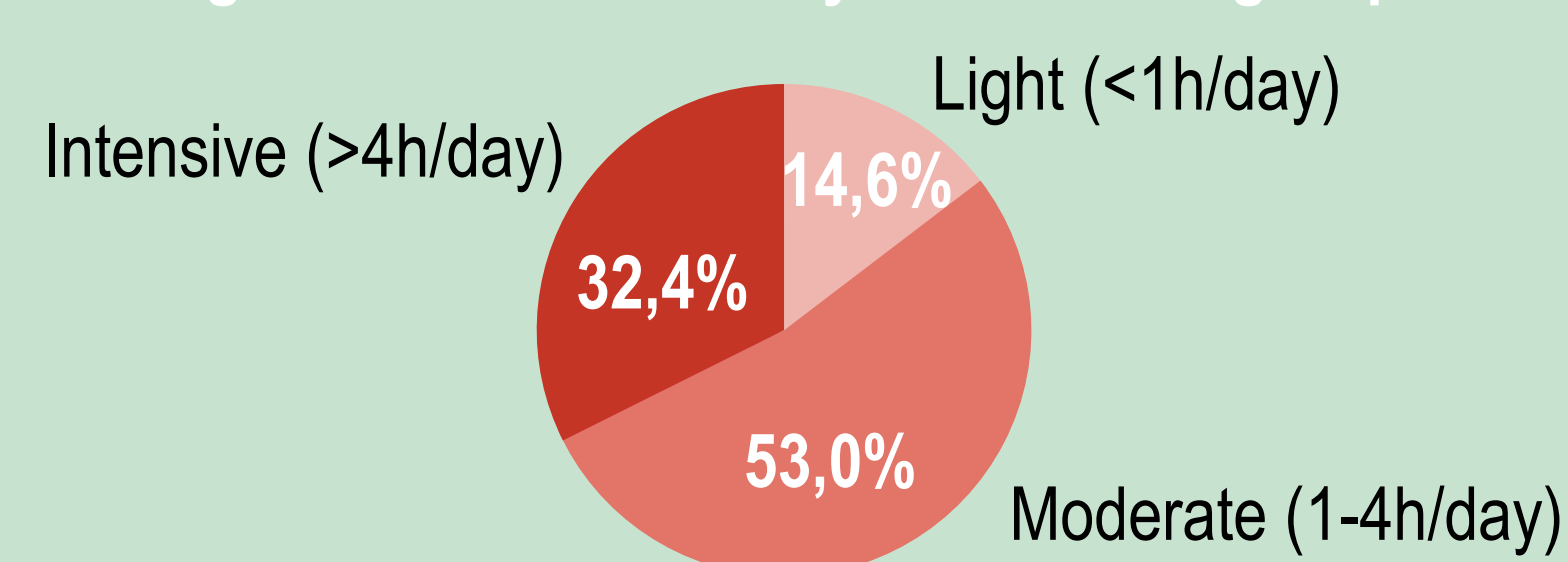
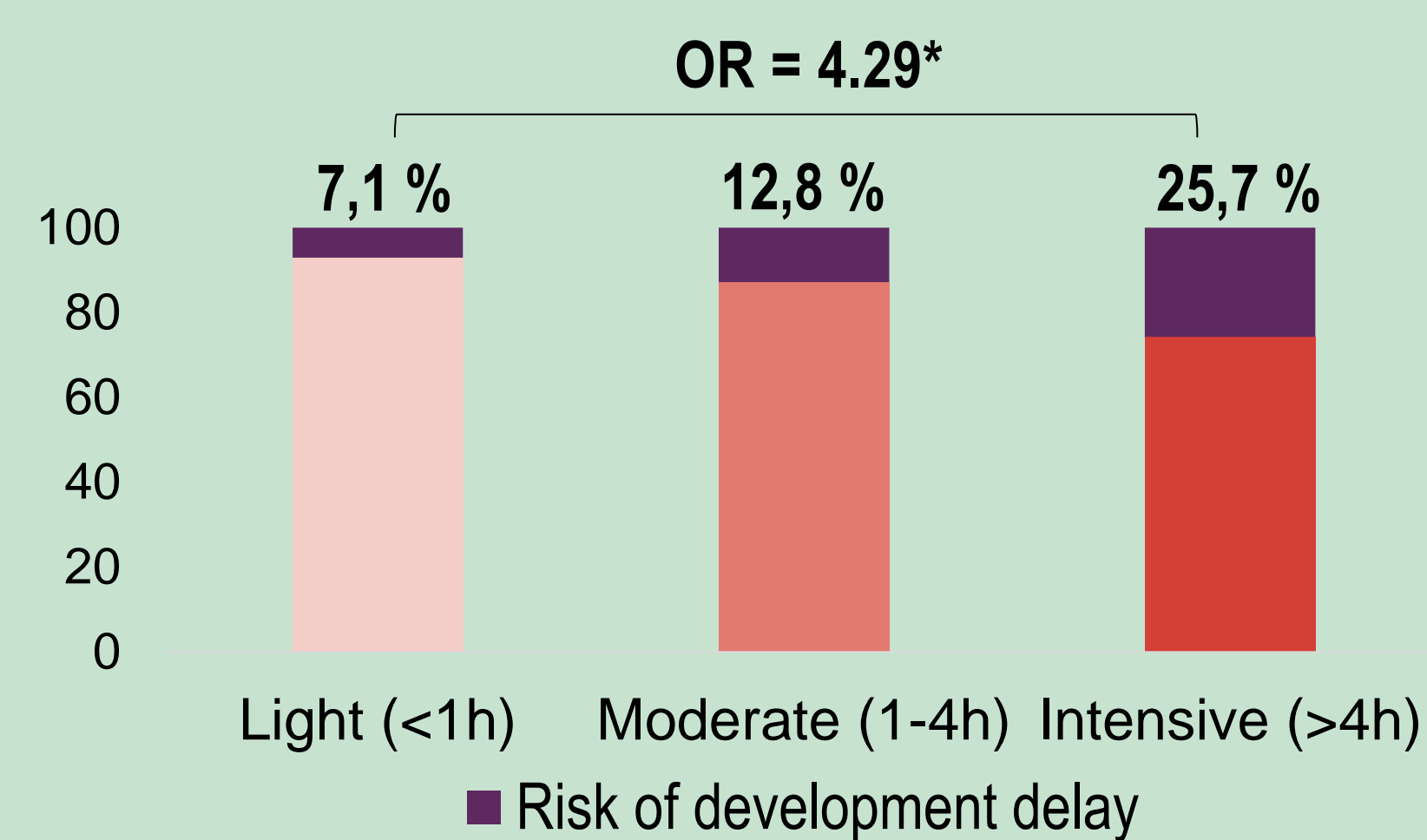


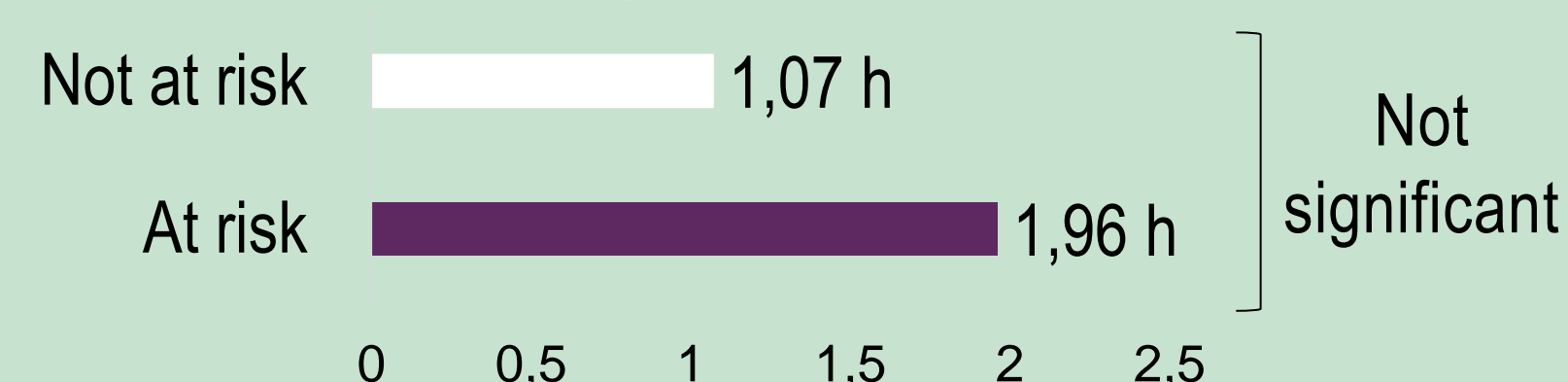
Figure 2. Proportion of risk of global development delay by screen time group



* = $p < 0.05$; Associations adjusted for parent education, child's gender and temperament (negative affectivity)

Mobile devices —→ **M = 1,28 h/day**

Figure 3: Time spent on mobile devices according to global development risk status



Associations adjusted for parent education, child's gender and temperament (negative affectivity)

Discussion

Screen time is associated with **higher risk** of delay in global development, including motor, cognitive, social-emotional domains :

- Intensive screen time (>4h/day) is associated with approximately **4 times more risk of delay**;
- No association between mobile devices and the risk of delay, suggesting that **total screen time** plays a greater role.

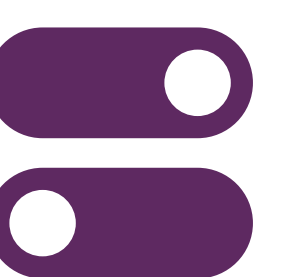
Only a **minority of children** follow the screen time guideline of 1 hour per day (14.6%).

Neurodevelopment in early childhood



- Developmental sensitivity: the brain depends on stimulation to develop optimally;
- Screen time: screen time is often sedentary and solitary, and therefore does little to contribute to the development of motor, cognitive or social skills.

Principle of the communicating vessels



- ↑ time in the day devoted to screens;
- ↓ opportunities for other activities more favorable to child development (e.g. free play, verbal and non-verbal interactions, etc.).



- Screen time measurements take into account new mobile devices;
- Prospective data collected during the pandemic.
- Convenience sample;
- Content and context of exposure to screens are not considered.

Conclusion

- Intensive exposure to screens (>4h/day) significantly increases the risk of global development delay in pre-school children;
- Intensive screen time could reduce opportunities for physical activity and social interaction and adversely affect children's school readiness across motor, cognitive and socio-emotional domains.

References

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