Chris Heemskerk—christina.heemskerk@education.ox.ac.uk
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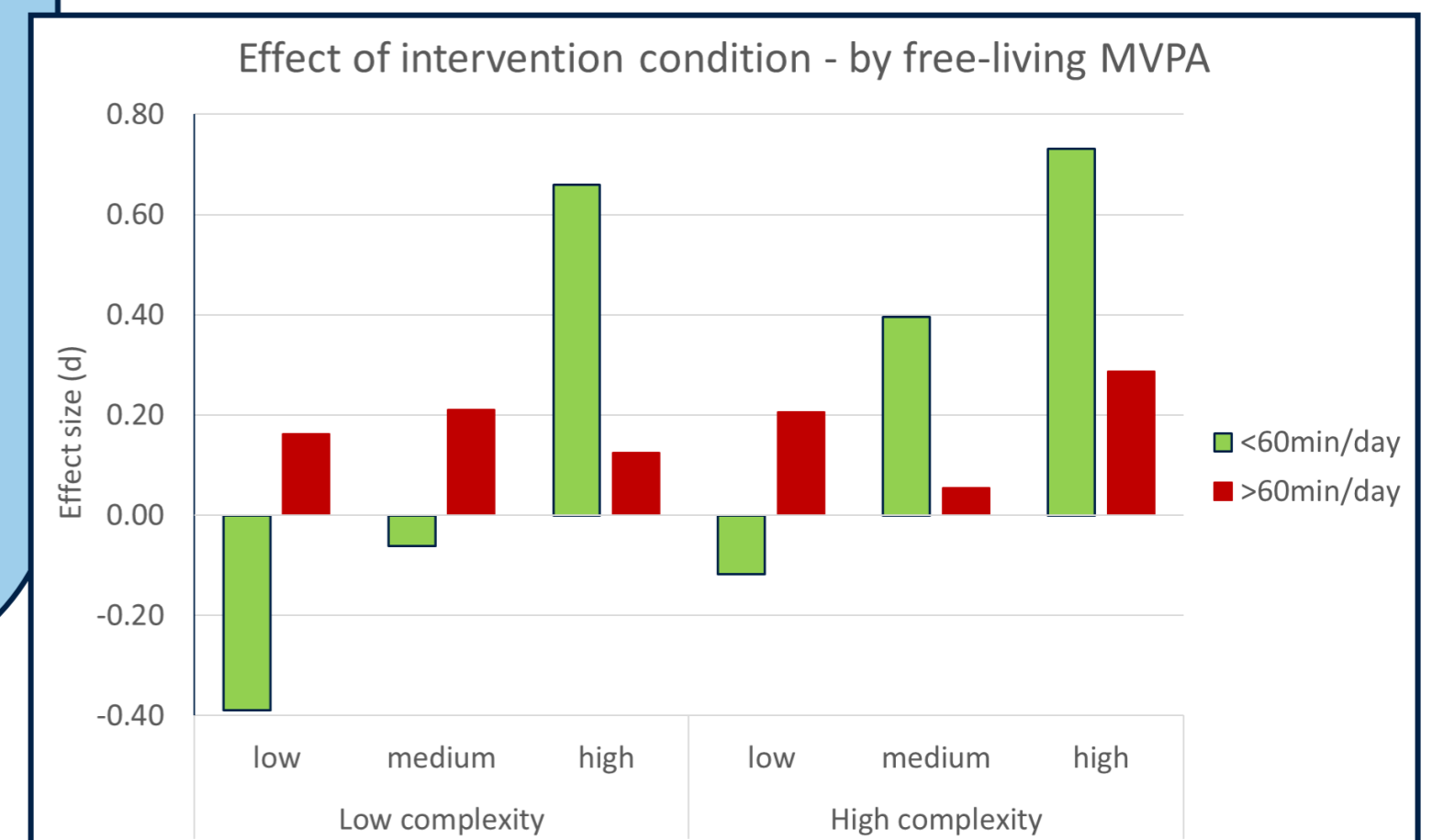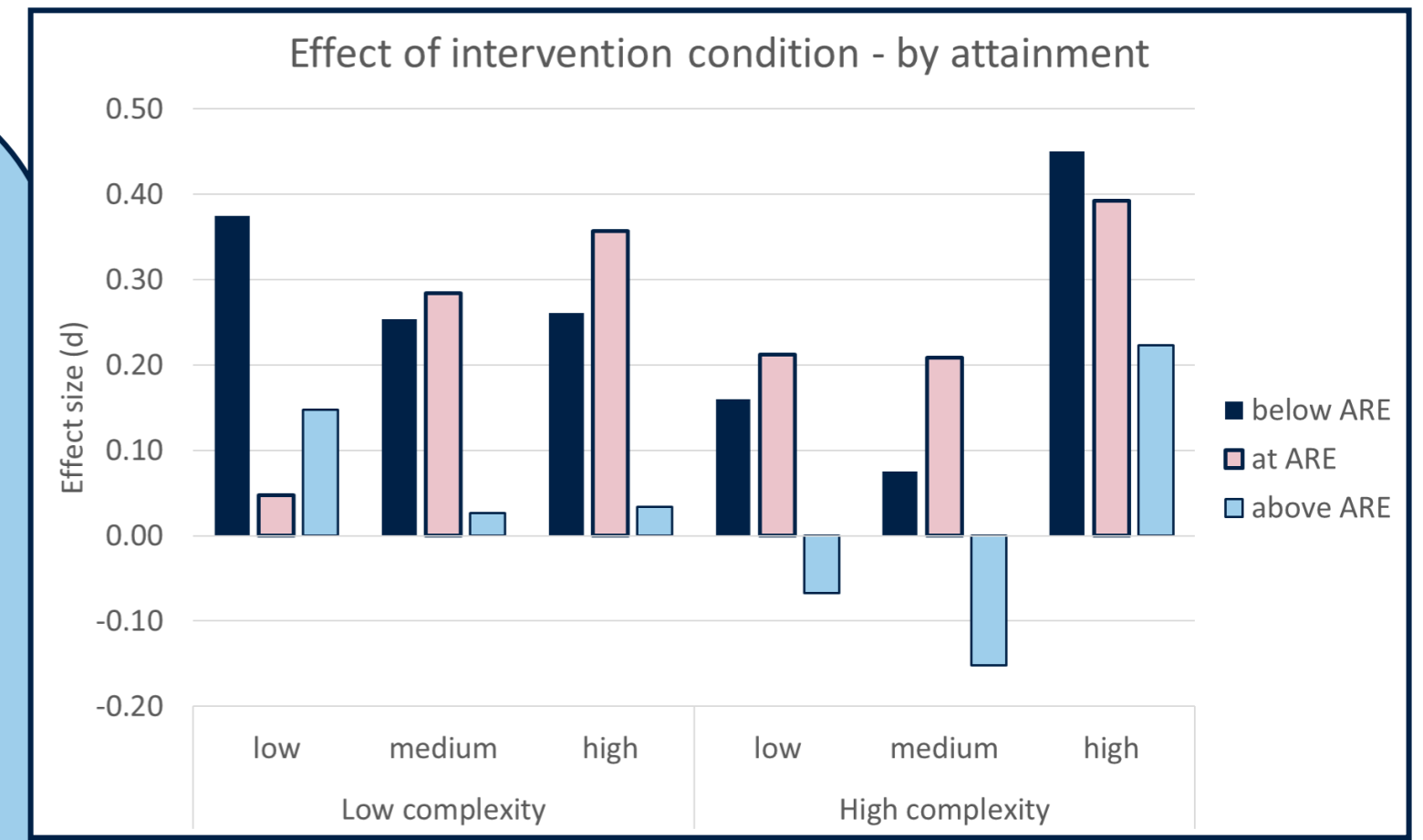### Effect of intervention condition

Particularly **high intensity exercise** with a high level of complexity is beneficial to on-task behaviour after PE.

Response to physical activity differed by the child's **achievement level in school**, as reported by their teacher, relative to Age Related Expectation (ARE).

The effect differs based on individual characteristics

Response to physical activity changes based on the child's **usual physical activity levels**, as measured by government guidelines for achieving 60mins/day of Moderate-to-Vigorous physical activity (MVPA).

Effect of intervention condition - by attainment

Effect of intervention condition - by free-living MVPA

On-task behaviour in 7-11 year-old children can be improved by Physical Education lessons

Procedure

- 6 weeks, 1 PE lesson per week
- Six different PE conditions, varying aerobic intensity and skill complexity
- Momentary Time Sampling (every 30 seconds for 25 minutes) in classroom lessons before and after PE

Aerobic intensity		
high	Sprint races & Relay	Aerobics
medium	Health Related Fitness	Ball Games
low	Flexibility testing & Stretching	Bi-Lateral Ball Skills
	low	high

Skill complexity/cognitive demand

Sample

80 children - 36 boys, 44 girls

Grades 3-5 of elementary school

M_{age}: 9.2 years

SD: 0.7 years

Range: 7.9 - 10.4 years

Analysis & Results

Logistic 3-level models (for binary data)

Time (before/after PE)		**d=0.17**
Time-by-intensity	high intensity only	**d=0.24**
Time-by-complexity		**no effect**
Time-by-intensity-by-complexity		
	high intensity & high complexity	**d=0.33**

Controlled for: task type, task enjoyment, age, gender, BMI, attainment, free-living MVPA

Purpose

To investigate the impact of **PE lesson intensity and skill complexity** on students' **on-task behaviour** in the classroom. It was hypothesised that

(i) intensity would have an inverted-U relationship with on-task behaviour,

(ii) that skill complexity would have a positive effect on-task behaviour, and

(iii) interaction effect of intensity and complexity, whereby high complexity negates the inverted-U relationship at high intensity.

In contrast to laboratory-based studies, this study investigated the effect of physical activity (PA) on learning behaviour in a naturalistic setting, lending it **high ecological validity.**

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