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Authors' response to Letter to the Editor: ANZJPH-2017-220

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The paper describes one of the first attempts to evaluate an obesity prevention intervention that was informed by systems thinking and deliberately addressed the complexity within each school setting. A quasi-experimental design was adopted, and the intervention design included the facility for each school to choose and adopt interventions that were specific to their school context and priorities. This, in turn, meant the expectation of differential behavioural effects was part of the initial design and therefore a comparison of outcomes by intervention school was warranted.

We reported that there was no statistically significant effect of the interaction between study condition and time on anthropometry. Because of the unique and adaptive nature of intervention within each school, and the different intervention priority in each school, there was an a priori expectation of differential results and we therefore investigated reports within schools' changes. Our conclusion used qualifying statements that there was "some evidence" of within-school changes but no interaction effect, and that the findings were "limited". The concern for multiple post hoc tests is reasonable, although we would argue in this case the number of post hoc analyses are small and obviously indicated with respect to the quasi-experimental design and differential intervention target within each school. Sub-group analyses were conducted within school for the primary outcome (overweight and

obesity) and secondary outcomes (physical activity, diet and wellbeing).

Not all researchers subscribe to Bonferroni type corrections for multiple comparisons, as this adjustment targets Type 1 errors at the expense of Type 2 errors;^{1,2} although it reduces the number of false rejections, it increases the number of times the null hypothesis is retained when it should not have been. Thus, the Bonferroni Correction can severely impact on important, applied outcomes.^{1,2} Given that the ACT IYM project was designed to intervene on whole systems, we need methods to evaluate multiple, simultaneous intervention actions and processes. We agree rigorous analysis is needed for such whole-system complex interventions and this was always the aim of the researchers, within the constraint of the methods available. While we grapple with intervention and evaluation of systems approaches to prevention, we are forced to use the methods available to us which are mainly based on very linear models.

References

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