Are demographics our destiny? 
Examining individual differences in Canadian children’s intelligence Scores

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ABSTRACT
Intelligence is a complex construct, therefore examining individual differences is crucial to our understanding of its expression. In part one, we examined the impact of parent education level and ethnicity on IQ performance differences on the WISC-IV. We illustrated significant differences in performance based on these variables in the Canadian sample. The purpose of part two is to extend these findings, mirroring in-depth analyses conducted in the U.S. within our Canadian sample.

METHODOLOGY
Participants: 680 Canadian children
- English-first-language
- Sample Stratification – 5 variables:
  - Sex (Male, Female)
  - Age (6–16)
  - Ethnicity (Asian, Caucasian, First Nations, & Other)
- Parent Education Level (1-4)
- Geographic Region (West, East, or Central Canada)

Materials:
- Wechsler Intelligence Scale for Children – Fifth Edition: Canadian (WISC-V-CA)
  - Variables: Full Scale IQ, Home Environment Questionnaire
  - Variables: Ethnicity, Parent Education Level & Income

Procedure:
- All data collected in the Canadian Standardization study
- Children were administered the full WISC-V-CA assessment by a trained examiner
- Parents completed Home Environment Questionnaire

RESULTS

<table>
<thead>
<tr>
<th>Mean FSIQ with 95% CI for Each PED Level</th>
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</thead>
<tbody>
<tr>
<td><strong>PED 1</strong> (83.876) 5.25, p = .001</td>
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<tr>
<td><strong>PED 2</strong> (83.876) 5.25, p = .001</td>
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<tr>
<td><strong>PED 3</strong> (83.876) 5.25, p = .001</td>
</tr>
</tbody>
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One Way ANOVA (F(3,876) = 42.58, p < .001; n² = .13, power = 1.00).

Tukey HSD test (α = .05):
- PED 1 scored lower than PED 3 & 4
- PED 2 scored lower than PED 1 & 4 & 6
- PED 1 scored higher than PED 2 & 4 & 6
- PED 4 scored higher than PED 1 & 2 & 3

SUMMARY OF STANDARD REGRESSION ANALYSIS TO PREDICT FSQI FROM ETHNICITY, PARENT EDUCATION, AND INCOME

<table>
<thead>
<tr>
<th>Model</th>
<th>ΔR²</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>Sig.</th>
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<tbody>
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<td>78.55</td>
<td>2.73</td>
<td>28.76</td>
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One Way ANOVA (F(3,876) = 5.25, p = .001; n² = .02, power = .93).

Tukey HSD test (α = .05):
- Asian & Caucasian groups scored higher than First Nations & Other groups (p < .005).
- No observed differences between the Asian & Caucasian groups (p = .718) or the First Nations & Other groups (p = .364).

PED AS A MEDIATOR

INCOME AS A MEDIATOR

PED AND INCOME AS MEDIATORS

CONCLUSIONS
- Consistent with U.S. findings:
  - Significant differences observed as a function of Parent Education Level; higher level resulted in higher mean FSQI in children.
  - Significant differences observed as a function of Ethnicity; some groups performed better, which is not a result of test bias.
  - Ethnicity, PED & income all predictors of FSQI.
  - Hypothesized interaction effect not observed, but strong effect size was.
  - Suggests need for oversample for adequate power.
  - Adding in SES variables accounts for significantly more variance in intelligence and ethnicity.
  - Preliminary evidence that SES acts as a mediator in the observed relationship between ethnicity and FSQI.

IMPLICATIONS
- Regardless of ethnicity, higher education & increased environmental opportunity yields higher performance.
- Highlights issues regarding access to education & promoting support in at-risk communities.
- It is critical that these findings are considered at the policy levels which in turn supports access to the most effective environments.
- This enables us to provide necessary support to promote healthy cognitive development in children across all ethnicities, abilities, & social status.

FUTURE DIRECTIONS
- Inclusion of all groups of Indigenous peoples of Canada (Métis, Inuit)
- Increase representation of disabilities sample
- Oversampling of certain ethnicity and parent education groups to allow for interaction effect to be tested
- Examine the influence of parental support and encouragement as potential protective factors

REFERENCES

Thank you to Pearson Clinical Assessment Inc. for sharing the WISC-V Canadian Data for this research project.