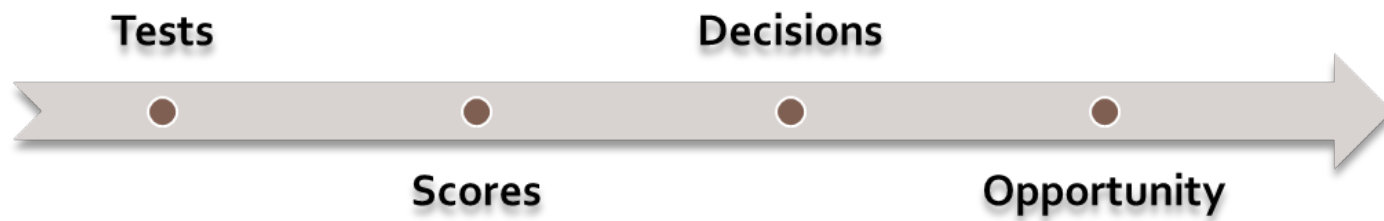


The WARNS: Why Context Matters in Test Fairness

Master's Thesis

Thao T. Vo & Brian F. French

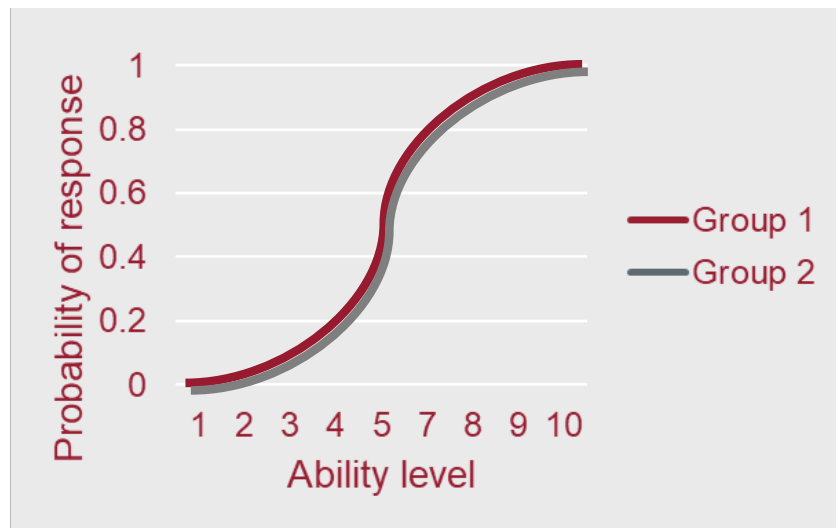
Examining Test Bias



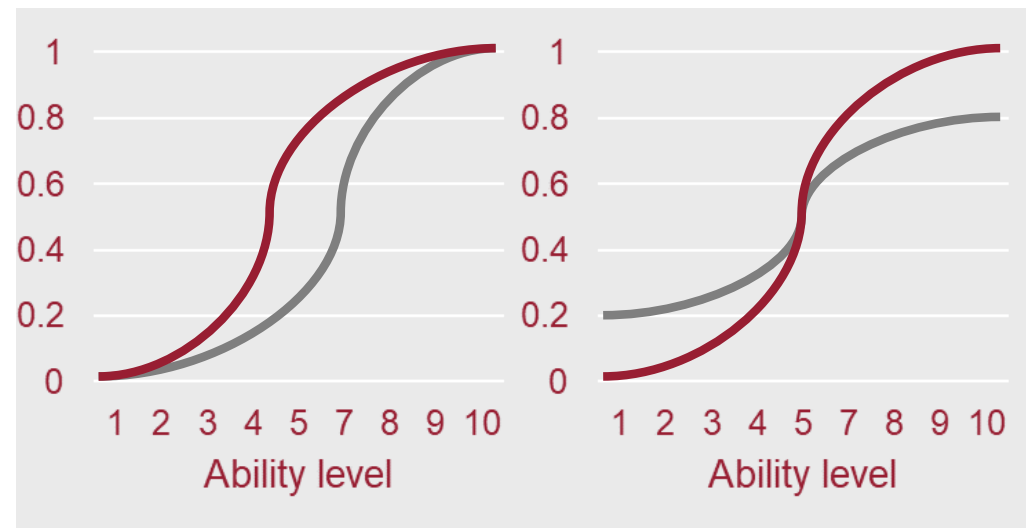
- Bias = systematic differences in the way questions measure an ability, trait, or behavior for certain groups on a test that is *not random*.
- Problematic as scores \neq same meaning across different populations, languages, or cultures.
 - *Differential Item Functioning (DIF)*

Visual Depiction of DIF

No DIF



DIF

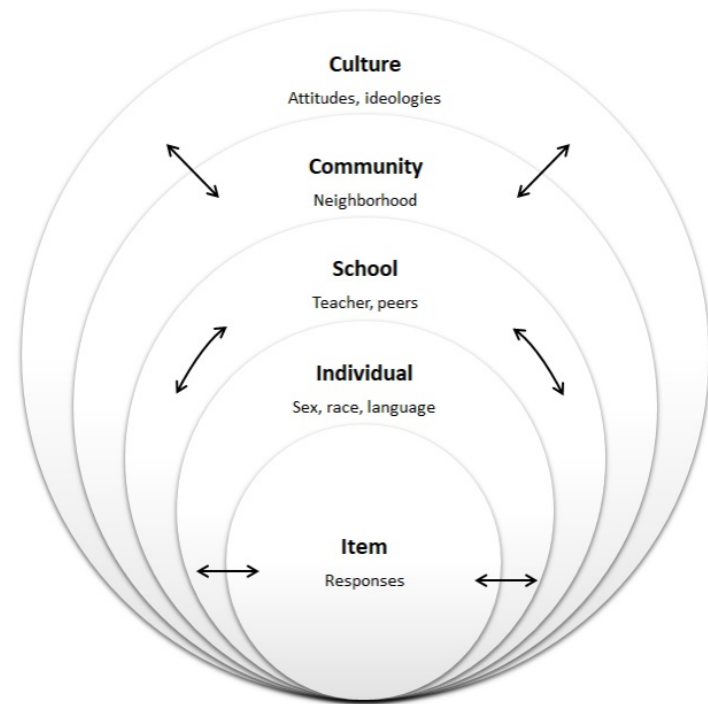


Previous DIF Research on WARNS

- 6% group comparisons (African American, Latinx, Caucasian) showed differences.
- Unlikely to influence scores and decision-making.
- *A Neen for contextual understanding of why DIF was observed.*
 - French, B. F. & Vo, T. T. (2019). Differential item functioning of a truancy assessment. *Journal of Psychoeducational Assessment*, 1-7.

Considering Student's Context

- Can we leverage district administrative data to help explain the source of DIF?
 - *Family* environment/climate
 - *School* environment/climate



Methods

- **Participants**

- 1,468 high school students

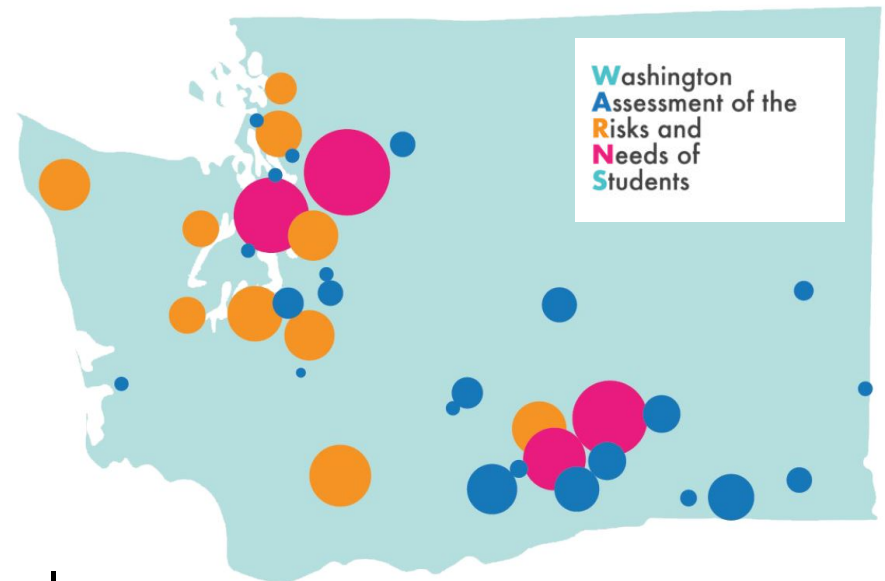
- African American, $n= 337$

- Latinx, $n= 597$

- Caucasian, $n= 534$

- WA and GA state districts

- WARNS standard practice in schools



WARNS

- **6 Subdomains**

Aggression Defiance (8)
Depression-Anxiety (8)
Family Environment (5)
Peer Deviance (5)
School Engagement (9)
Substance Abuse (5)

- **Response scale**

0= *Never or hardly never*
1= *Sometimes*
2= *Often*
3= *Always or almost always*

Administrative Data

School climate

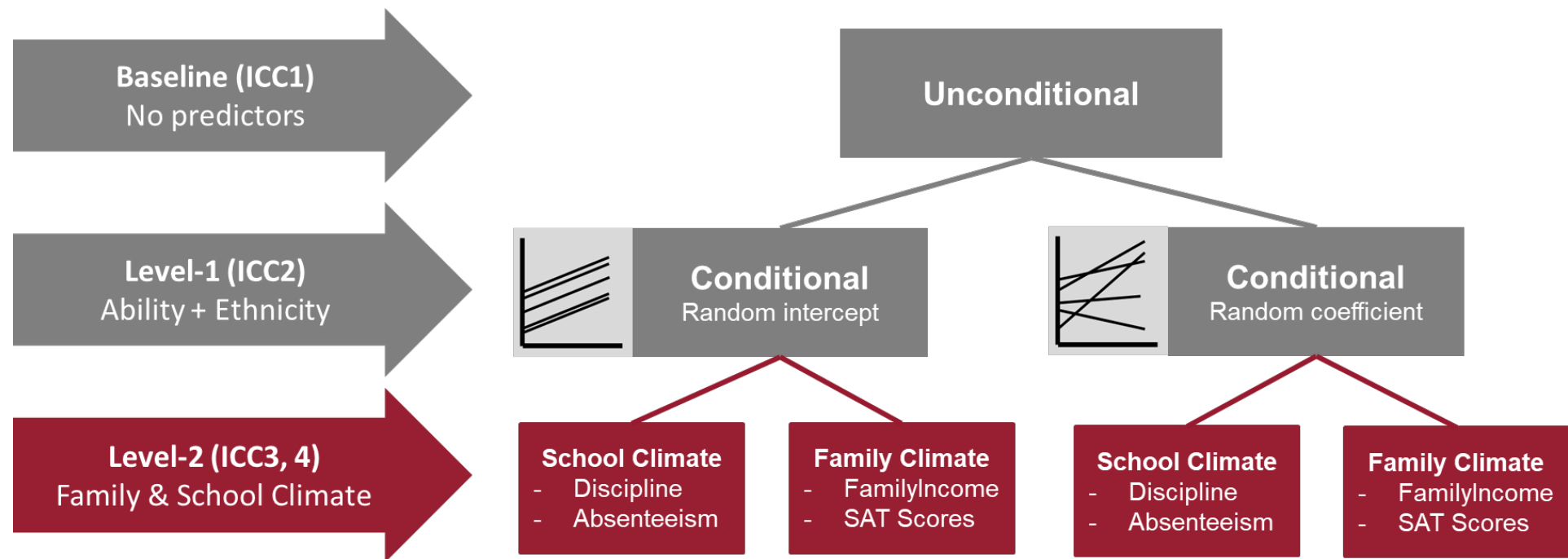
1. District discipline rate
 - % students suspended
2. District absenteeism rate
 - % students ≥ 15 unexcused

Family climate

1. District Mean SAT scores
2. District Family Income
 - % Families qualified for free & reduced lunch, SNAP, TANF, foster/homeless

- WA Data: Office of Superintendent of Public Education (OSPI)
- GA Data: Governor's Office of Student Achievement (GOSA)

Analysis

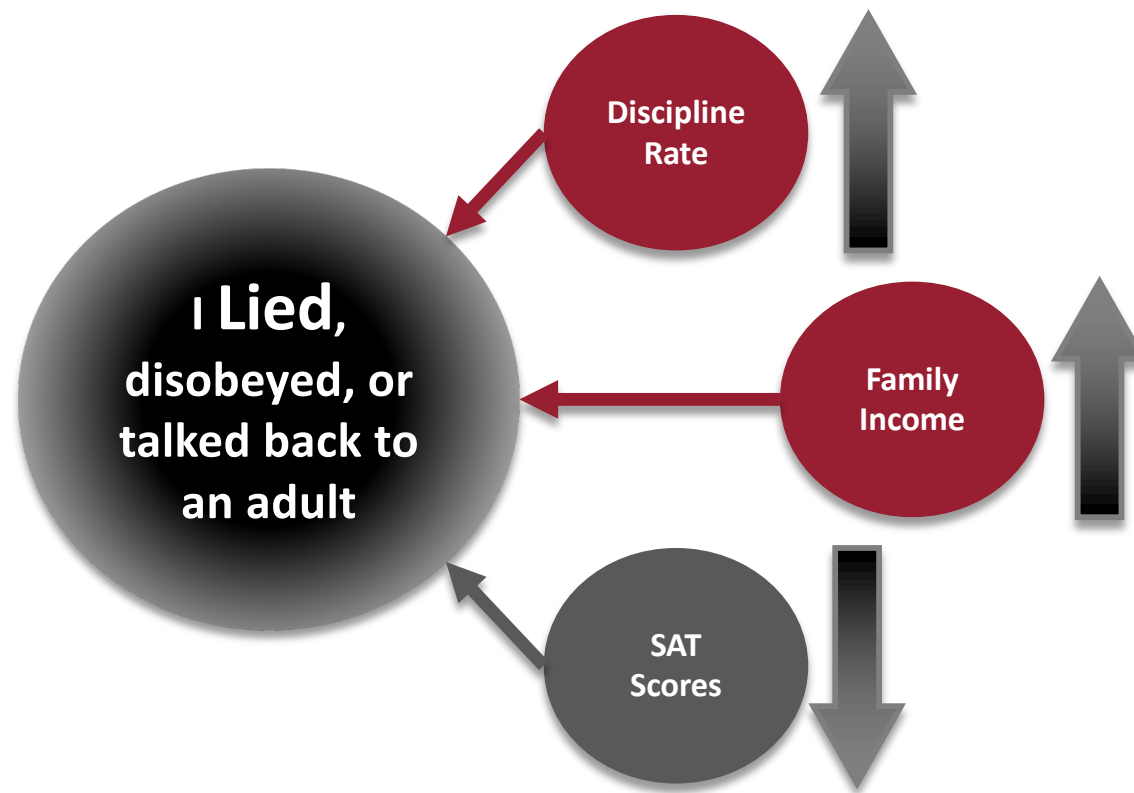


Results: Detecting DIF

- 240 models showed 13 *unique* WARNS DIF items:
 - African American vs. Latinx = 10
 - African American vs. Caucasian = 2
 - Latinx vs. Caucasian = 2
- "ICC" range = 0.8% - 14.7% between district variance explained.

Results: Explaining DIF

- After adding School and Family climate into models:
 - "ICC change" range = 44 to 92% of the between district variance *explained*.
- For example, African American vs. Latinx →



Take Home Message

- Item performance differences may not be due to typical grouping variables.
- Consider student's contextual environment
 - Behaviors may manifest differently depending on different environments.
 - School & family climate can influence student responses on WARNS responses.



Thank you

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