

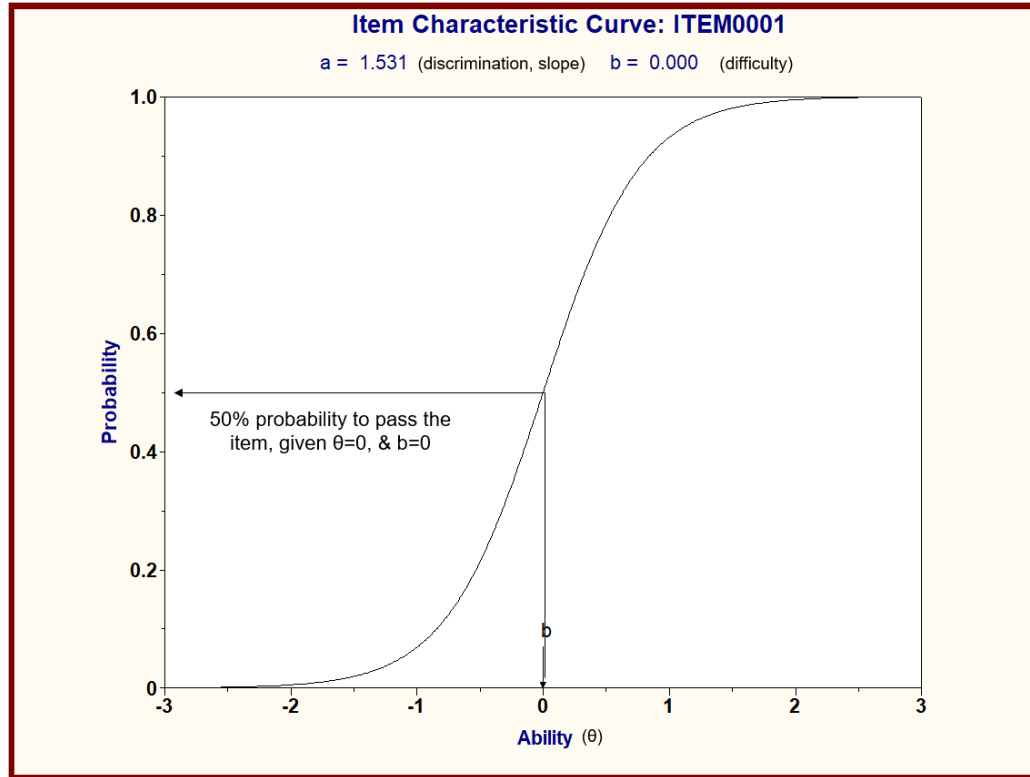
# Research Findings Related Bias in Cognitive Tests

- **Empirical research consistently finds that standardized cognitive tests are not biased** (Brown et al., 1999)
- **Continued claims of test bias are not empirically justified** (Power et al., 2004)
- **Differences in mean scores across ethnic group  $\neq$  Bias** (Reynolds & Suzuki, 2012)
- **Based on the empirical research findings, Judge John F. Grady found that I.Q. tests do not discriminate against African-American children** (United States District Court, PASE v. Hannon, 1980)

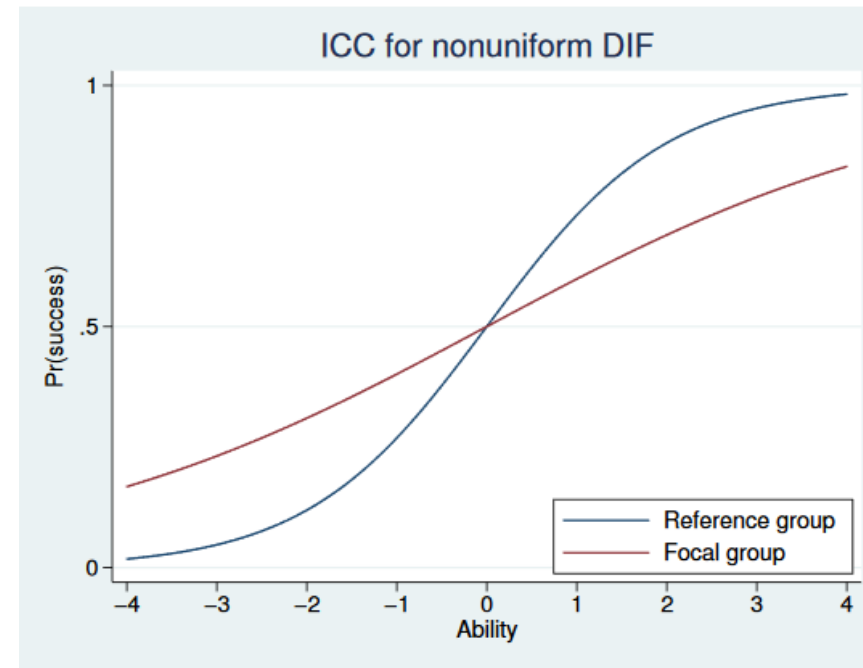
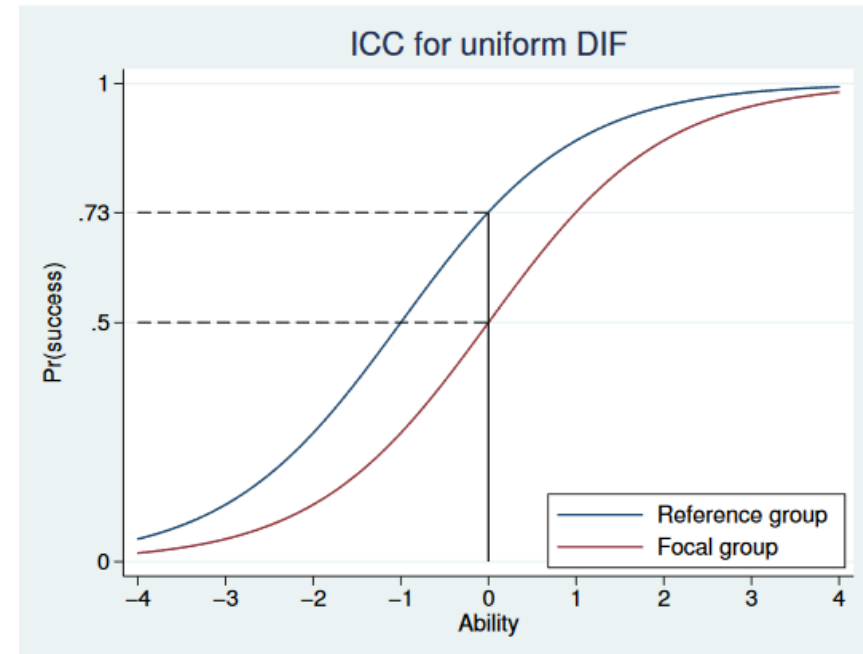
## **Scientific Procedures Used to Identify & Eliminate Bias**

- **Follow APA & AERA test development guidelines** for fairness of assessment.
- **Expert bias review** of all test items, arts, instructions, and scoring rules.
- **DIF analysis** using IRT and Mantel-Haenszel methods, and minority over-samples.
- **Measurement invariant analysis:** Ensure tests measure the same construct when assessing individuals of different ethnic groups, gender, or with different clinical diagnoses.
- **Demonstration, teaching, & sample items:** Ensure all students learn the task before being administered the real test items.
- **Response process analysis:** Ensure tests invoke the relevant cognitive process.
- **Scoring rule study for verbal subtests:** Ensure fairness of scoring.
- **Normative samples are randomly stratified according to census:** Ensure they are representative of the current US population.

# IRT DIF (Bias) Analysis



**Item DIF exist when the item characteristic curves of two groups do not overlap**



# Continued Claims of Test Bias are not Empirically Justified

## • Claim 1:

- The verbal subtests in the WISC are culturally loaded and biased against African American students.

## • Fact 1:

- On the average, African American student perform relatively better on the verbal tests than on nonverbal ones:

<b>Test</b>	<b>Verbal</b>	<b>Non-verbal</b>	<b>FSIQ (d)</b>
• WISC-R	VIQ=87.8	PIQ=87.2	86.4 (-.91)
• WISC-III	VIQ=90.7	PIQ=88.5	88.6 (-.76)
• WISC-IV	VCI=91.9	POI=91.4	91.7 (-.55)
• WISC-V	VCI=92.1	VSI=90.2, NVI=91.7	91.9 (-.54)

# Continued Claims of Test Bias are not Empirically Justified

- **Claim 2:**

- The test is biased because the mean scores are different across different race/ethnicity groups.

- **Fact 2:**

- Mean score difference  $\neq$  bias
- Race/ethnicity accounts for only 3.7% score variance in FSIQ
- Parent education accounts for 18.8% score variance in FSIQ
- Racial differences are significantly reduced after controlling family income, parent education, single parent, school resources, etc.
- Birth order accounts for about the same amount of variance in FSIQ:

1<sup>st</sup> Born = 102.3

2<sup>nd</sup> Born = 100.0

3<sup>rd</sup> Born = 97.7

7<sup>th</sup> Born = 90.6

# After 30 Years, Clinical Practice & Cognitive Assessment Have Changed

## ➤ Specific Learning Disability

**Simple difference method:** Compare achievement and ability score directly

**Regression method:** compare observed and predicted achievement

**PSW method:** compare strength-weakness patterns between achievement & cognitive abilities.

## ➤ Cognitive tests & their utilities have been changed significantly

WISC-R (1974): VIQ, PIQ, FSIQ

WISC-V (2014): VCI, VSI, FRI, WMI, PSI, FSIQ, NVI, QRI, GAI, CPI

## Summary

- **Cognitive tests are not biased** (Brown et al., 1999; Reynolds & Suzuki, 2013 )
- **The social-political unfairness, such as poverty and lack of opportunity, is the root cause** (Power et al., 2004; Hiramoto & Gamble, 2017)
- **Test ban has not solved the problem & disproportionality is not the result of intelligence testing** (Power et al., 2004; Kirst 2017)
- **Test ban deprives African American students of opportunities to be evaluated using high quality cognitive tests.**
- **School Psychologists are best qualified to determine appropriate assessment tools** (Kirst, 2017)

# References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *The standards for educational and psychological testing*. Washington, DC: Author.
- Brown, R. T., Reynolds, C. R., & Whitaker, J. S. (1999). Bias in mental testing since Bias in Mental Testing. *School Psychology Quarterly*, *14*(3), 208-238.
- Frisby, C.L. & Henry, B. (2016). Science, Politics, and Best Practice: 35 Years After Larry P., *Contemp School Psychol*, *20*(1), pp 46–62.
- Hiramoto, J. & Gamble, B. (2017). CA Association of School Psychologists Paper Regarding African American Student Achievement and Success. As retrieved 01/08/18 from <http://casponline.org>.
- Keith, T. Z., Fugate, M. H., DeGraff, M., Diamond, C. M., Shadrach, E. A., & Stevens, M. L. (1995). Using multisample confirmatory factor analysis to test for construct bias: An example using the K-ABC. *Journal of Psychoeducational Assessment*, *13*, 347-364.
- Kirst, M (2017). Letter to: The Honorable Tom Torlakson, State Superintendent of Public Instruction, California Department of Education.
- Kush, J. C., Watkins, M. W., Ward, T. J., Ward, S. B., Canivez, G. L., & Worrell, F. C. (2001). Construct validity of the WISC-III for White and Black students from the WISC-III standardization sample and for Black students referred for psychological evaluation. *School Psychology Review*, *30*(1), 70-88.
- Parents in Action on Special Ed. (PASE) v. Hannon No.74 C 3586. 506F.Supp. 831(1980) United States District Court, N.D. Illinois
- Powers, K.M., Hagens-Murillo, K.S., & Restori, A.F. (2004). Twenty-five Years after Larry P.: The California Response to Overrepresentation of African Americans in Special Education, *The California School Psychologist*, (9), 145-158.
- Reynolds, C. R., & Suzuki, L. A. (2013). Bias in psychological assessment: An empirical review and recommendations. In J. R. Graham, J. A. Naglieri, & I. B. Weiner (Eds.), *Handbook of psychology: Assessment psychology*, 82-113. Hoboken, NJ, US: John Wiley & Sons Inc.