



NEES



Protective Factors Across School Trajectories:

Socioeconomic and Racial Disparities



The
Future
of Education

INTERNATIONAL CONFERENCE
16TH EDITION



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INTRODUCTION

Why is this topic important?

School Dropout is not only an individual problem.
It is a social problem.

- **School dropout:** students leaving before completing basic education. [1]
- A persistent problem with profound social and economic costs.
- In Brazil, Black and Brown students are the majority of non-completers. [2]

- **Protective factors:** relational elements that promote student retention even in adversity. [3]
- **Race/color & INSE:** structural determinants that shape access to these protective factor. [4]

OBJECTIVE

How do race and the Socioeconomic Status Index (INSE) influence relational protective factors in the educational trajectories of Brazilian students?

Racial Classification in Brazil



Self-declaration

The person themselves reports their color or race.



Socially constructed category

IBGE* adopts race as a social construct, based on perception.

***IBGE: Instituto Brasileiro de Geografia e Estatística (or *Brazilian Institute of Geography and Statistics*)**

Socioeconomic Status Index (INSE)

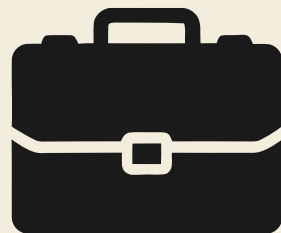
STUDENT



Household assets



Digital services



Space & infrastructure

FAMILY



Mother's education



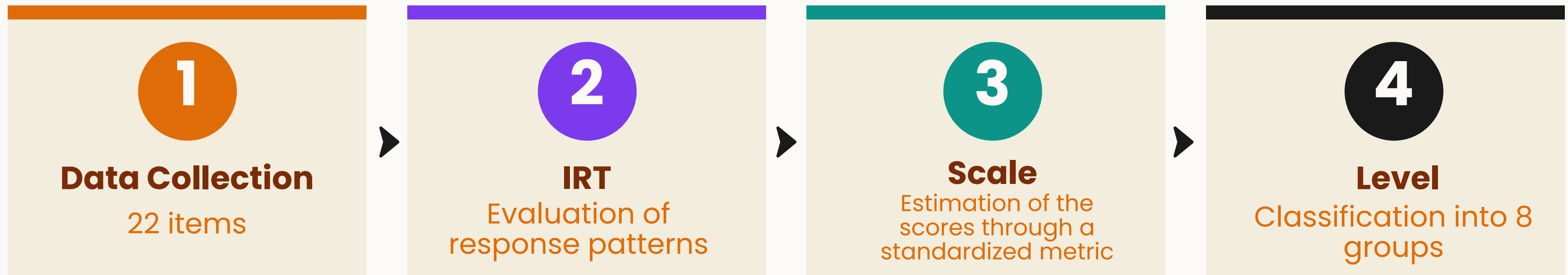
Father's education



Neighborhood infrastructure

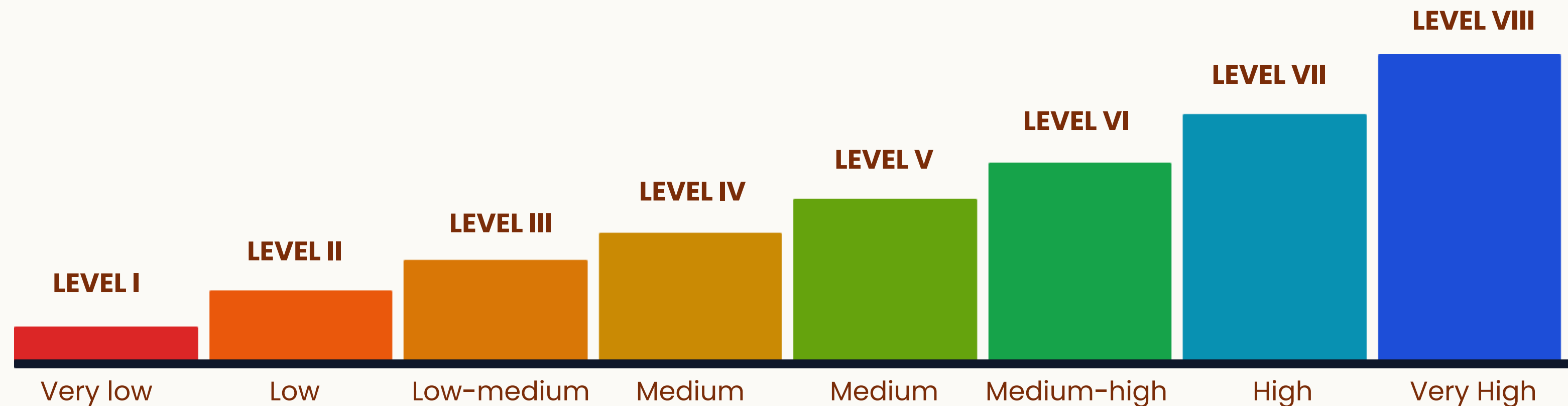
How is it calculated?

INTRODUCTION



← Lower socioeconomic capital

Higher socioeconomic capital →



Why to use the INSE?



Diagnostic

Understand academic performance in light of students' socioeconomic context



Equity

Identify social inequalities in education to guide investments toward a more equitable society



Policy

Informs public education policy decisions

METHOD

Participants



10,000

synthetic data points

*generated from **3,678** valid responses*



50.82%
Female



54.88%
Brown/Mixed Race



21.66%
INSE Group V



44.35%
Midwest

Instruments

*Relational Factors for the
Risk of School Dropout Scale
– Alternative version [5]*

METHOD

➤ **46** Items

Frequency & agreement scales

➤ **5** Dimensions

SSc – Student-School

SP – Student-School Professionals

SF – Student-Family

SC – Student-Community

SSt – Student-Student

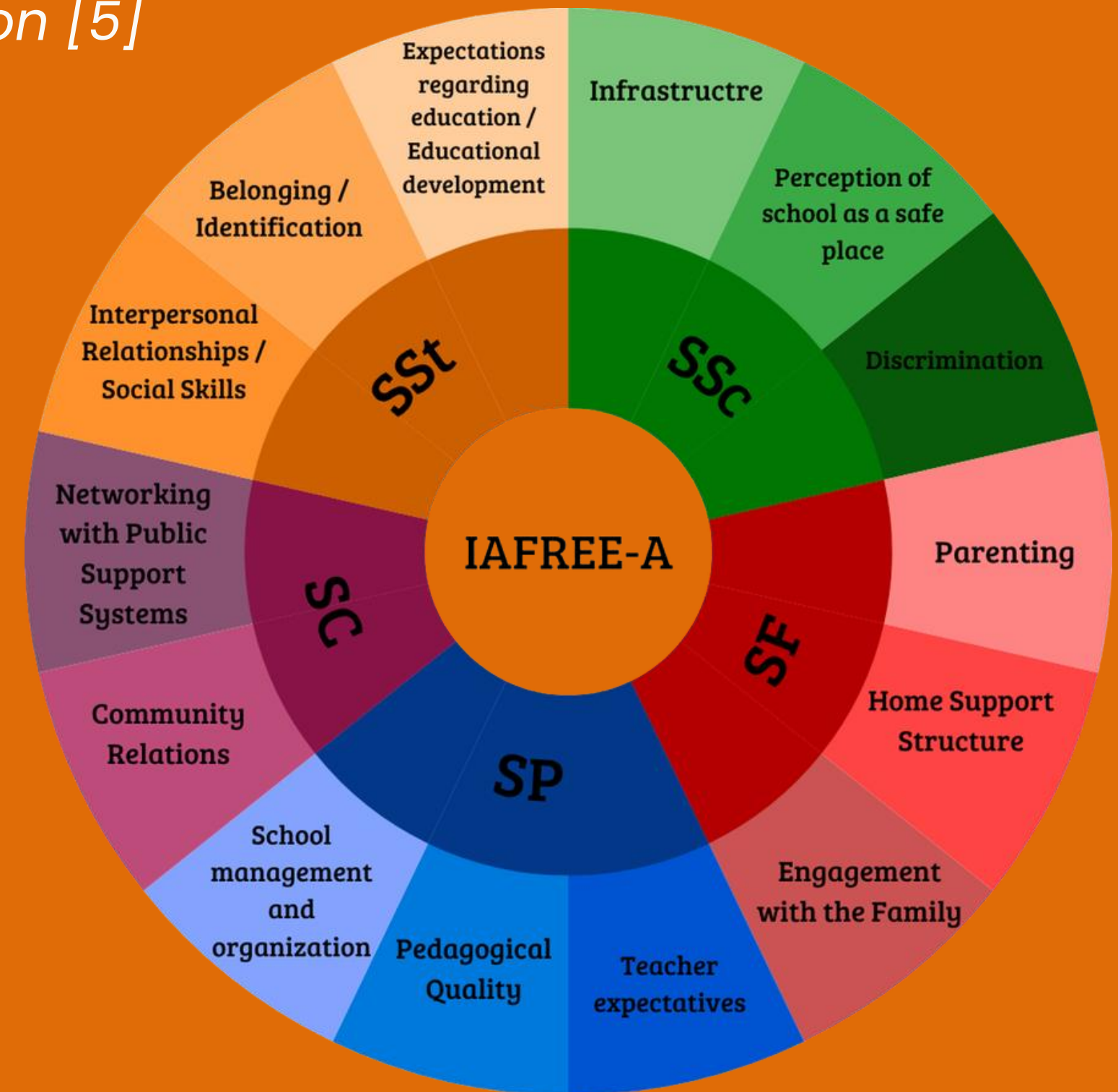
➤ **14** Attention Factors

➤ **1-to-4 Likert scale in two formats:**

Never – Always

Strongly disagree – Strongly agree

➤ **Higher scores** = greater attention to the educational trajectory
Lower scores = lower vulnerability



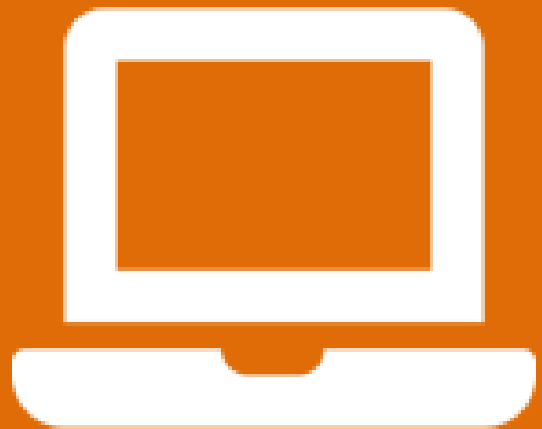
Procedures

METHOD



Data Collection

4 Brazilian state school systems:
Central-West · Northeast · North · Southeast



Digital Platform

Purpose-built for IAFREE-A
Informed Consent (ICF; parents) + Informed Assent (IAF; students)

➤ Synthetic Data Generation

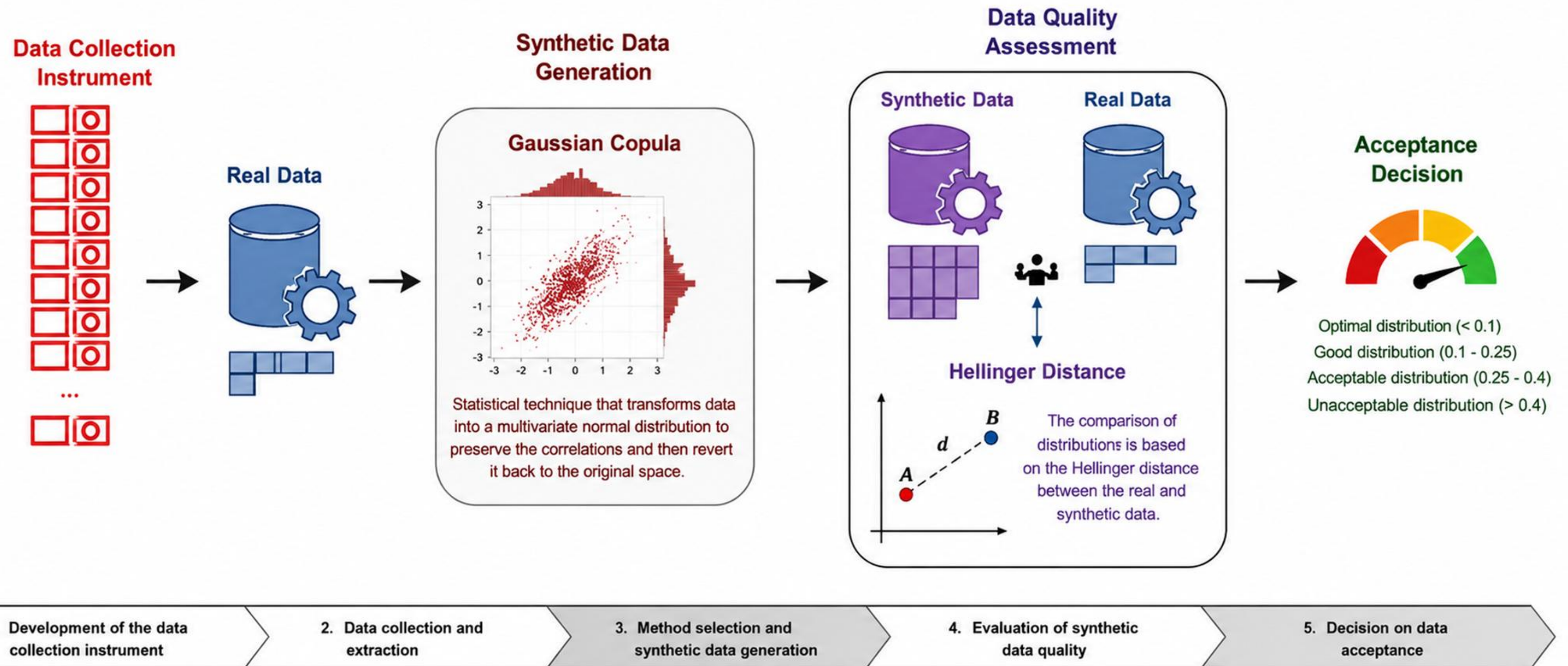
Synthetic data generated via Gaussian Copula technique in R. [6–7]

Preserves the dependency structure among variables.

Ensures anonymization in compliance with Brazil's General Data Protection Law (LGPD). [8]

Correspondence assessed via Hellinger distance (H_d), ranging from 0 to 1, with $H_d < 0.25$. [9]

Synthetic Data Generation Using Neural Networks



➤ Statistical Analyses

Statistical analyses performed in JASP. [10]

Shapiro–Wilk test ($p < .05$), assumptions not met (asymmetry)
→ nonparametric approach chosen. [11]

Kruskal–Wallis test with Dunn's post hoc test (Holm correction). [12]

Variables:

dependent = 14 IAFREE–A attention factors

independent = Race/color (White, Black, Brown/Mixed) and INSE
(Groups I–VIII)

RESULTS

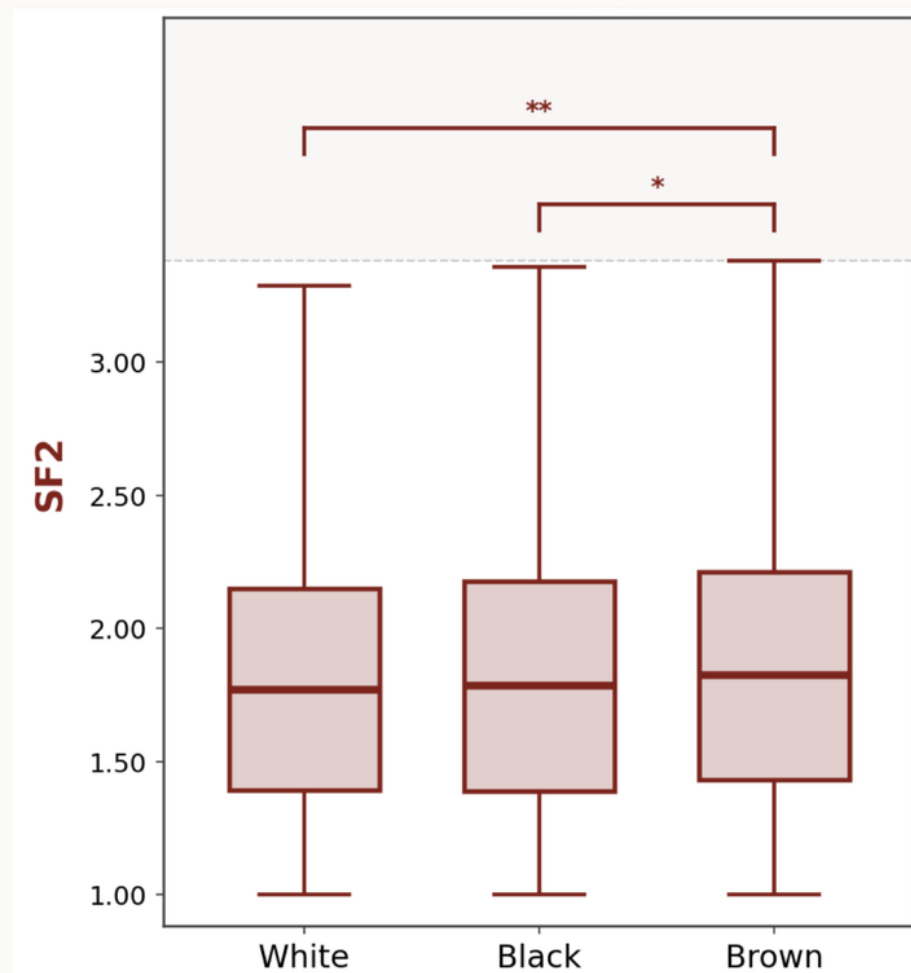
Hellinger distance

All Hellinger distance values remained below the adequacy criterion ($Hd < 0.25$).

Table 1. Hellinger distance by dimension, factor, and sociodemographic variables.

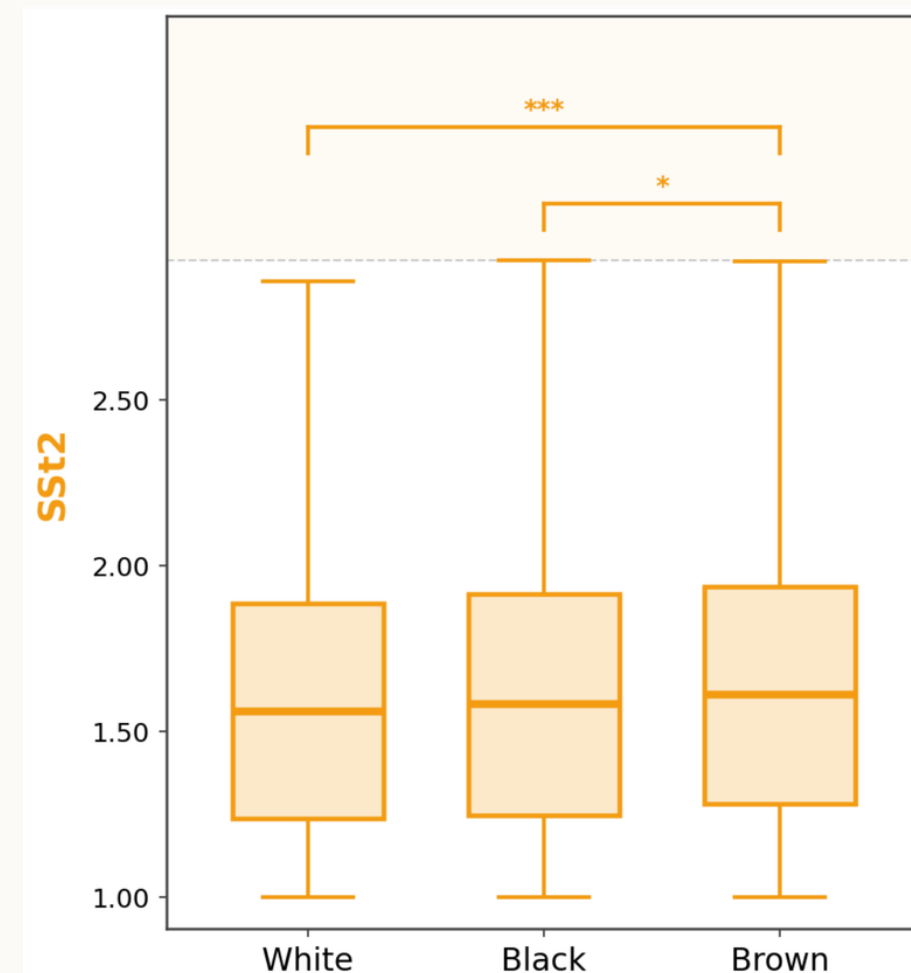
Dimension	Hd	Factor 1	Hd	Factor 2	Hd	Factor 3	Hd
SSc	0.017	SSc1	0.035	SSc2	0.033	SSc3	0.044
SF	0.026	SF1	0.039	SF2	0.038	SF3	0.032
SP	0.021	SP1	0.036	SP2	0.035	SP3	0.032
SC	0.034	SC1	0.037	SC2	0.033	—	—
SSt	0.015	SSt1	0.038	SSt2	0.065	SSt3	0.043
Variables		Race/Color	0.067	INSE	0.027	—	—

Note. Hd: Hellinger distance. INSE: Socioeconomic Status Index.



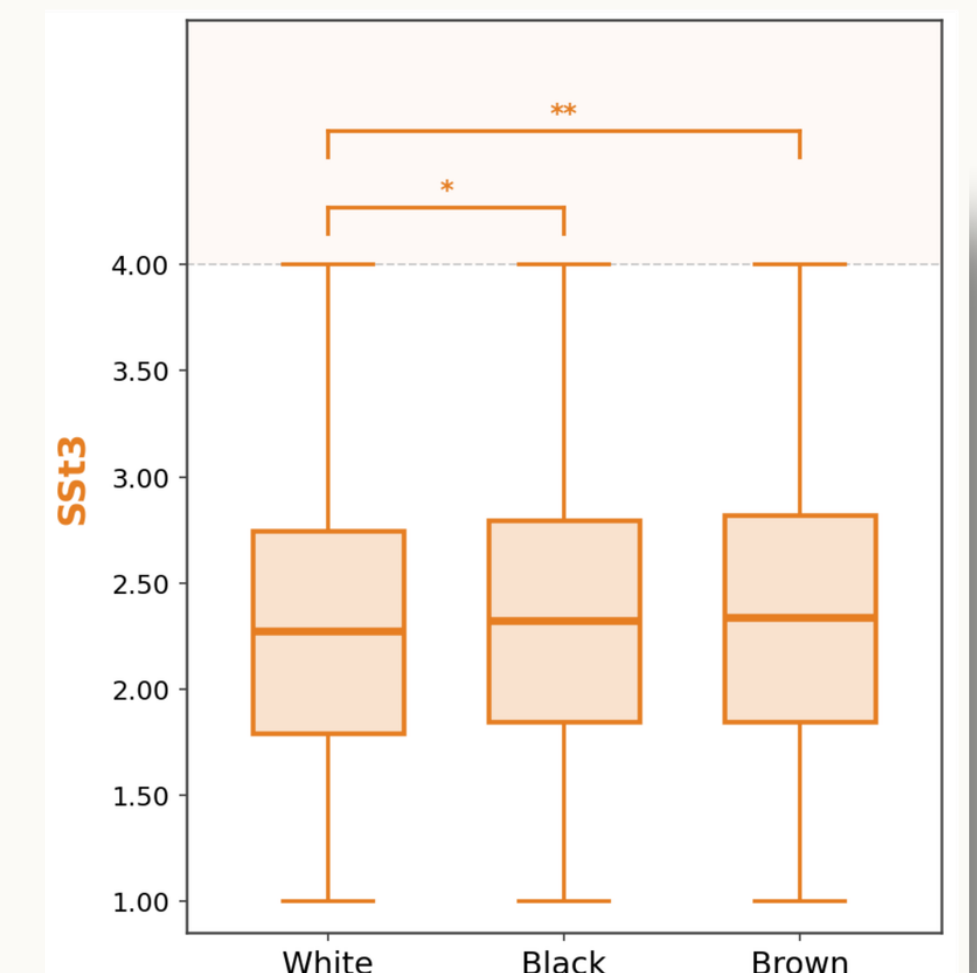
Family support structure

Brown/Mixed students reported **more negative perceptions** than **White** ($z=-3.44$; $p=.002$) and **Black** students ($z=-2.75$; $p=.012$)



Educational expectations

Brown/Mixed students **also showed lower expectations** than **White** ($z=-4.06$; $p<.001$) and **Black** students ($z=-2.69$; $p=.014$)

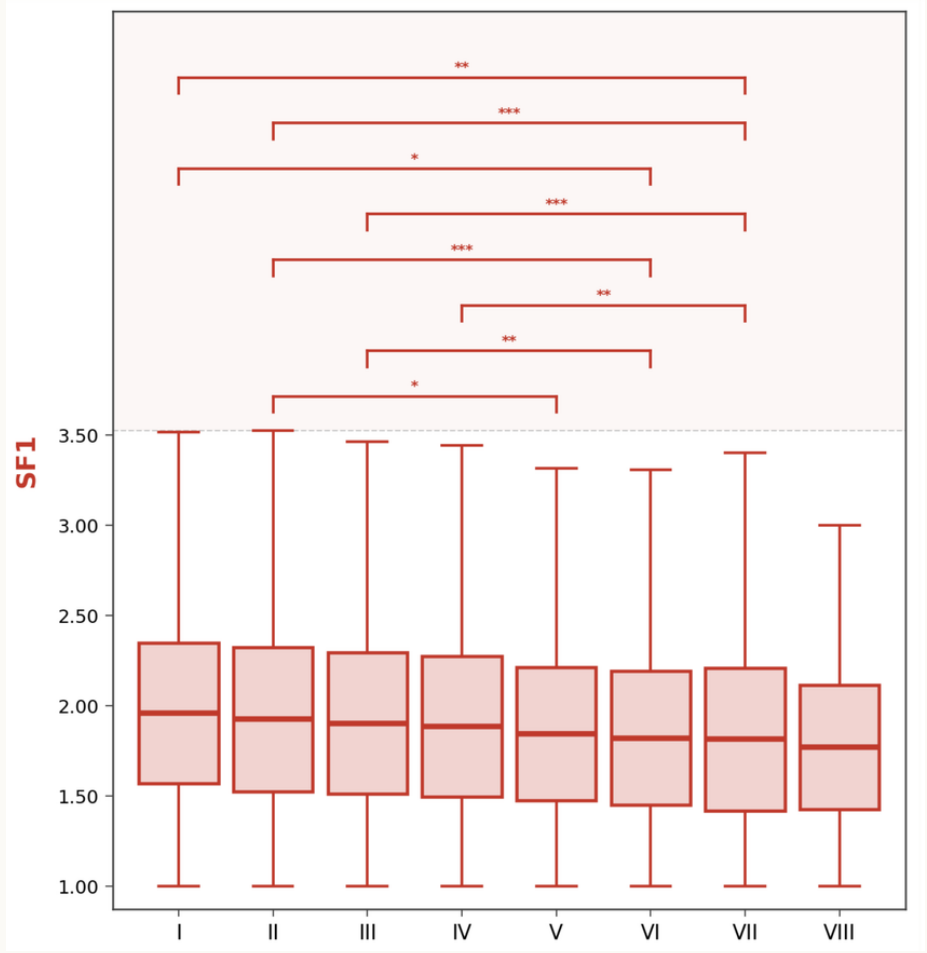


Belonging/Identification

Both **Black** ($z=-2.42$; $p=.031$) and **Brown/Mixed** ($z=-3.52$; $p=.001$) students **showed weaker sense of belonging** than **White**

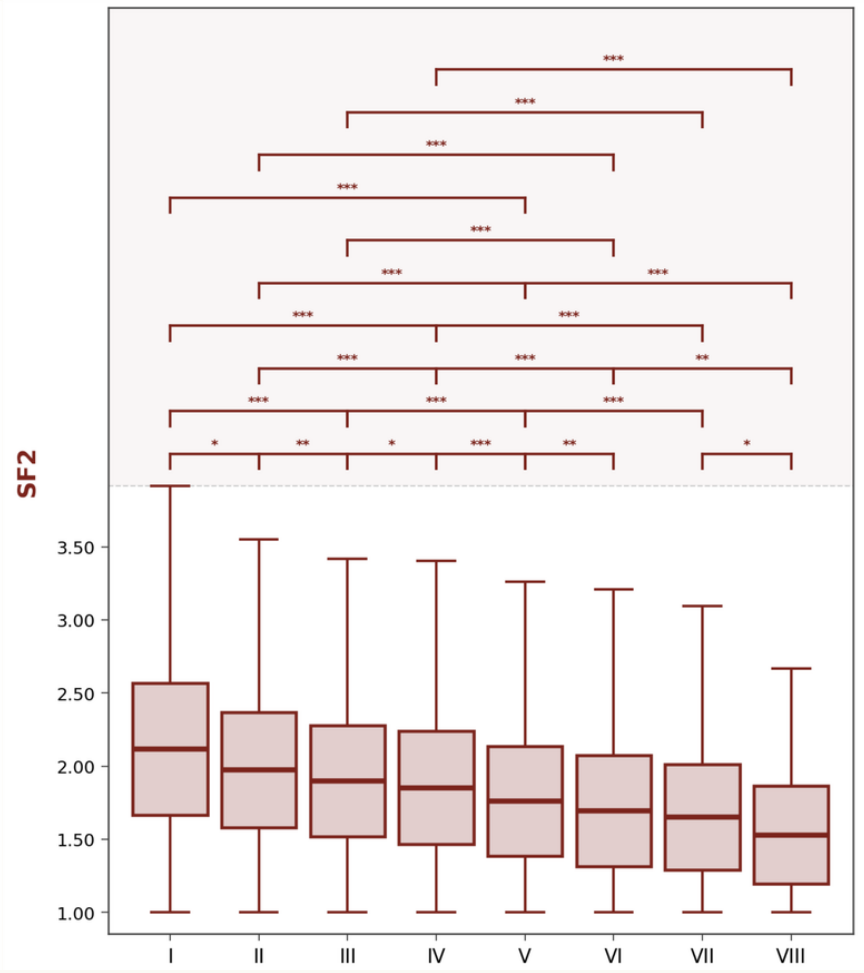
Note: *: $p<.05$; **: $p<.01$; ***: $p<.001$

Socioeconomic Status Index (INSE)



Parenting
($p < .001$; $\eta^2 = 0.004$)

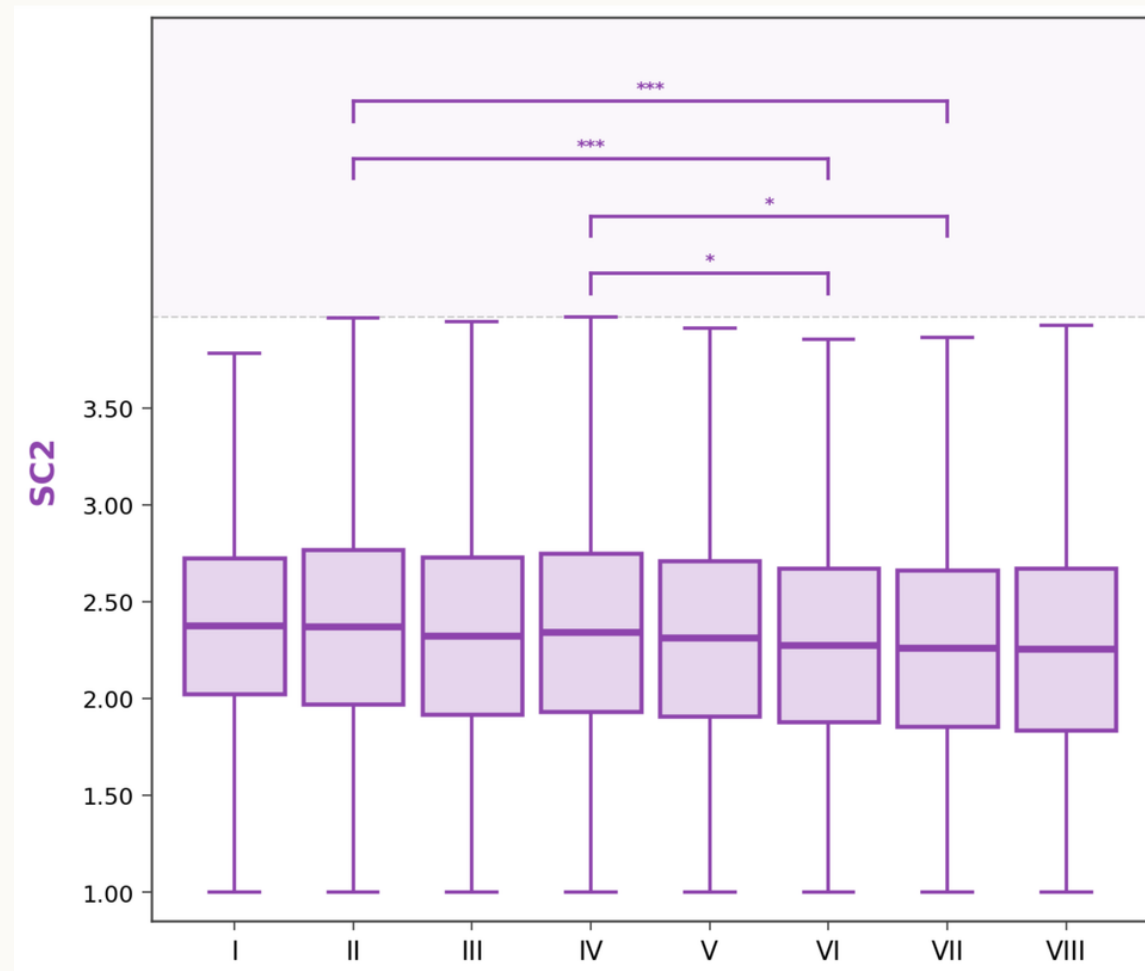
Groups I–IV reported a more negative perception of the family environment in relation to educational valuing



Family support structure
($p < .001$; $\eta^2 = 0.039$)

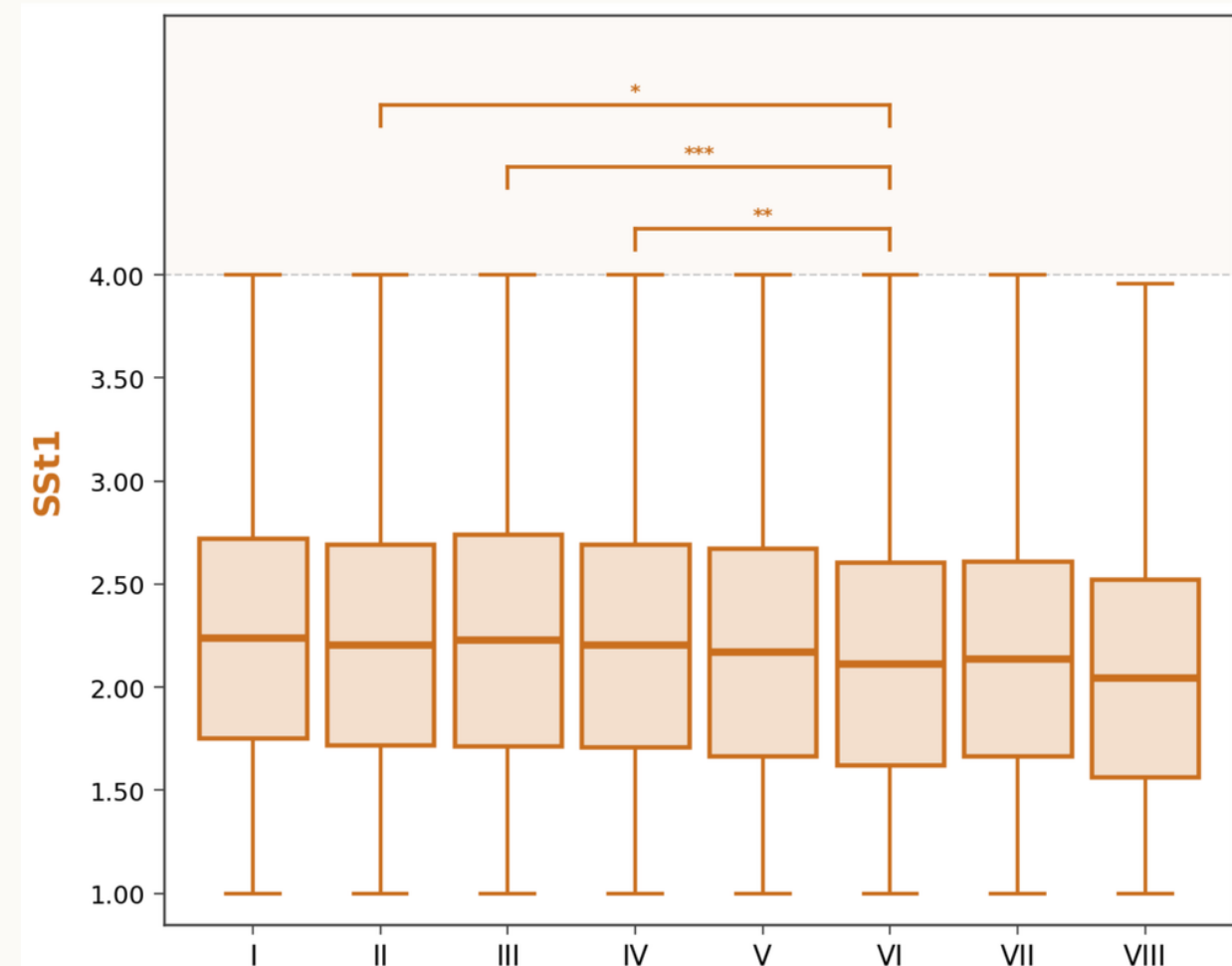
Scores decreased progressively from **Group I to VIII**, indicating greater perceived lack of family resources and support among lower-SES students

Note: *: $p < .05$; **: $p < .01$; ***: $p < .001$



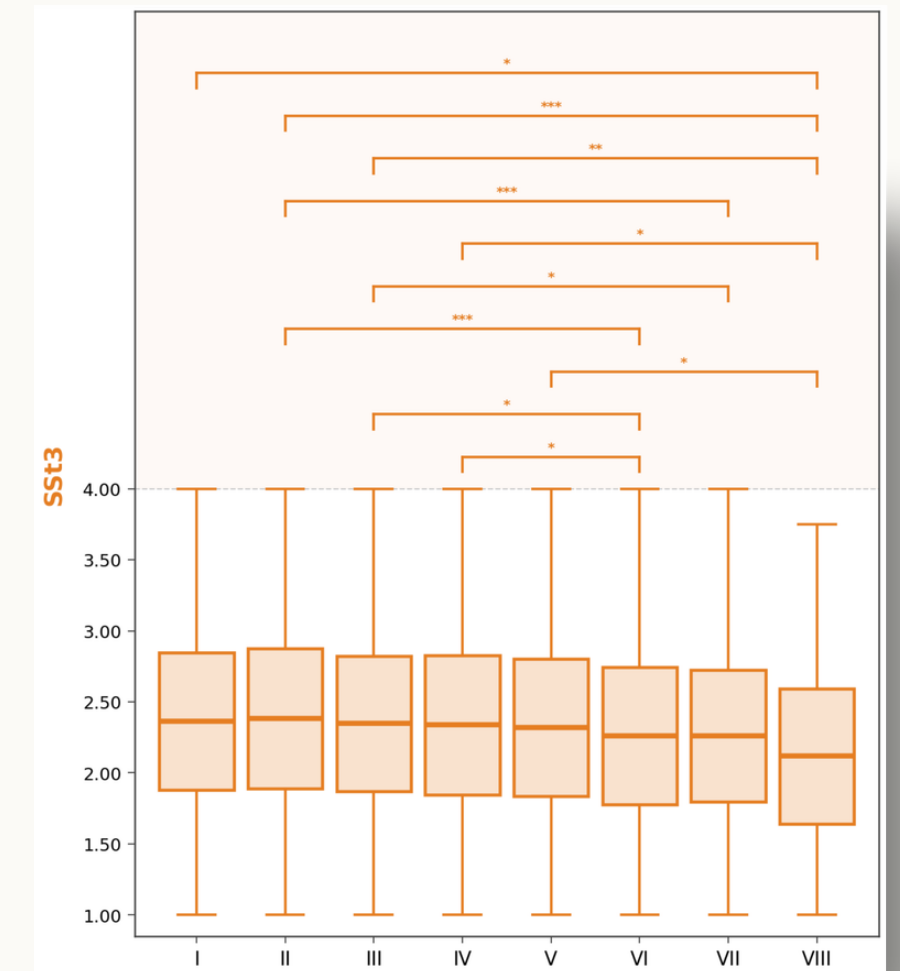
Community relations ($p < .001$; $\eta^2 = 0.003$)

Groups II and IV vs. Groups VI and VII: lower INSE groups perceived greater distance between school and community



Interpersonal relationships and social skills ($p < .001$; $\eta^2 = 0.003$)

Groups II, III, IV reported more conflictual relationships, less empathy and greater communication difficulties **vs. Group VI**



Belonging/Identification ($p < .001$; $\eta^2 = 0.004$)

Lower INSE **groups (I-IV)** showed weaker sense of belonging

Note: *: $p < .05$; **: $p < .01$; ***: $p < .001$

**The lower the students'
socioeconomic status, the
greater their relational
vulnerability**

DISCUSSION

- Reflecting historical exclusion conditions that limit educated role models in the family, compromising concrete and symbolic support for school trajectories.
- **Low expectations are directly linked to a weakened sense of school belonging**
 a condition affecting motivation, attendance, and retention that tends to intensify across educational levels.
- **Invisibility in traditional indicators:** race-related effects were concentrated in subjective and affective dimensions.

- The combination of material, relational, and emotional factors explains why dropout rarely occurs abruptly.
- Safeguarding educational trajectories requires recognizing that school retention is, above all, a relational issue.
- Socioeconomic and racial inequalities manifest intersectionally.
- **Research agenda:** Longitudinal studies may clarify educational inequalities and guide equitable policies.

CONCLUSION

School retention is, above all, a relational issue.

- **Race/Color:** significant differences in SF2, SSt2, and SSt3.
- **INSE:** significant differences in SF1, SF2, SC2, SSt1, and SSt3.
- **Intersectional nature:** racial and socioeconomic inequalities are expressed in subjective and affective dimensions.
- **Implication:** intersectional educational policies are needed to promote welcoming and inclusive school environments.

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Thank you for your attention!



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