

# PROYECTO COEDUCA

## “Cognition & Education”



# Project COEDUCA

## Consolider-Ingenio 2010

- Interdisciplinary Research Program
- Funded by the Spanish Ministry of Science and Innovation
- Combines experimental, developmental and educational psychology, cognitive neuroscience, genetics and information and communication technology
- Studying the development of two key cognitive skills in education:

**Reading  
Attention**



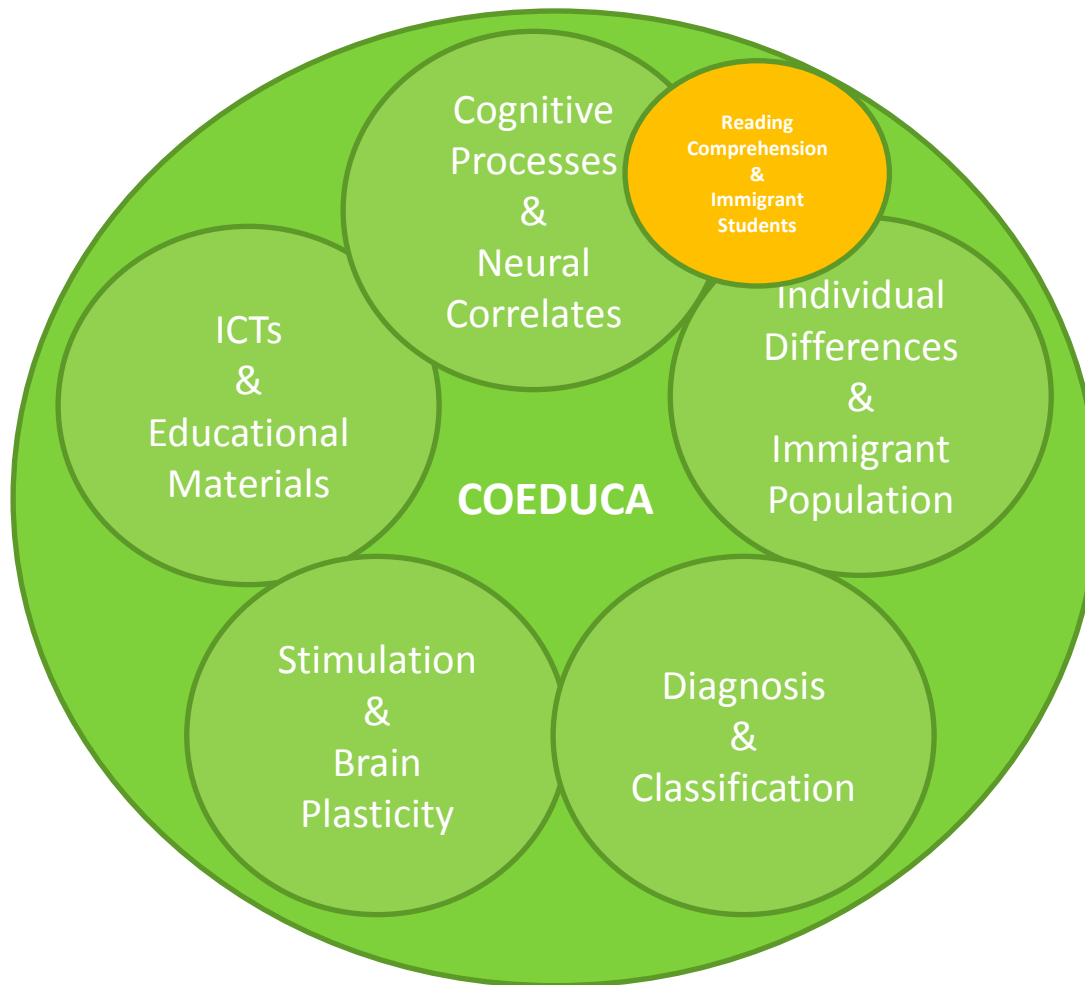
- Processes involved in reading and reading comprehension acquisition
- How are regulated by attentional, mnemonic and emotional mechanisms
- Influence of genetics and socioeconomic environment

# Research Groups

- Basque Center on Cognition, Brain and Language [BCBL] (San Sebastián)
  - Coordinating Center
  - Word Reading
  - PI: Dr. Manuel Carreiras
- University of Murcia
  - Attentional Processes in cognition
  - PI: Dr. Luís Fuentes
- University of Granada
  - Working Memory and Reading Comprehension
  - PI: Dr. M<sup>a</sup> Teresa Bajo
- University of La Laguna
  - Specific Educational Needs and New Technologies
  - PI: Dr. Juan E. Jiménez
- University of Sevilla
  - Effects of social and cultural environment on cognitive and educational processes
  - PI: Dr. David Saldaña



# COEDUCA Aims



# COEDUCA Current State

- 4500 participants assessed
  - Children Activities:
    - 3 sessions of 1 hour of duration each:
      - Saliva sample (DNA) and brief intelligence test (K-BIT)
      - Computer activities: attention, inhibition, memory, language and reading
  - Families Activities:
    - Informed Consent
    - Questionnaires:
      - Sociocultural and economic variables
      - Child Temperament
      - Executive Functions
- Currently: integrating data from research groups

# PROYECT COEDUCA: “Cognition & Education”

Reading Comprehension Processes in  
Hispanic Immigrant Students,  
Preliminary Data.

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R&D Researcher

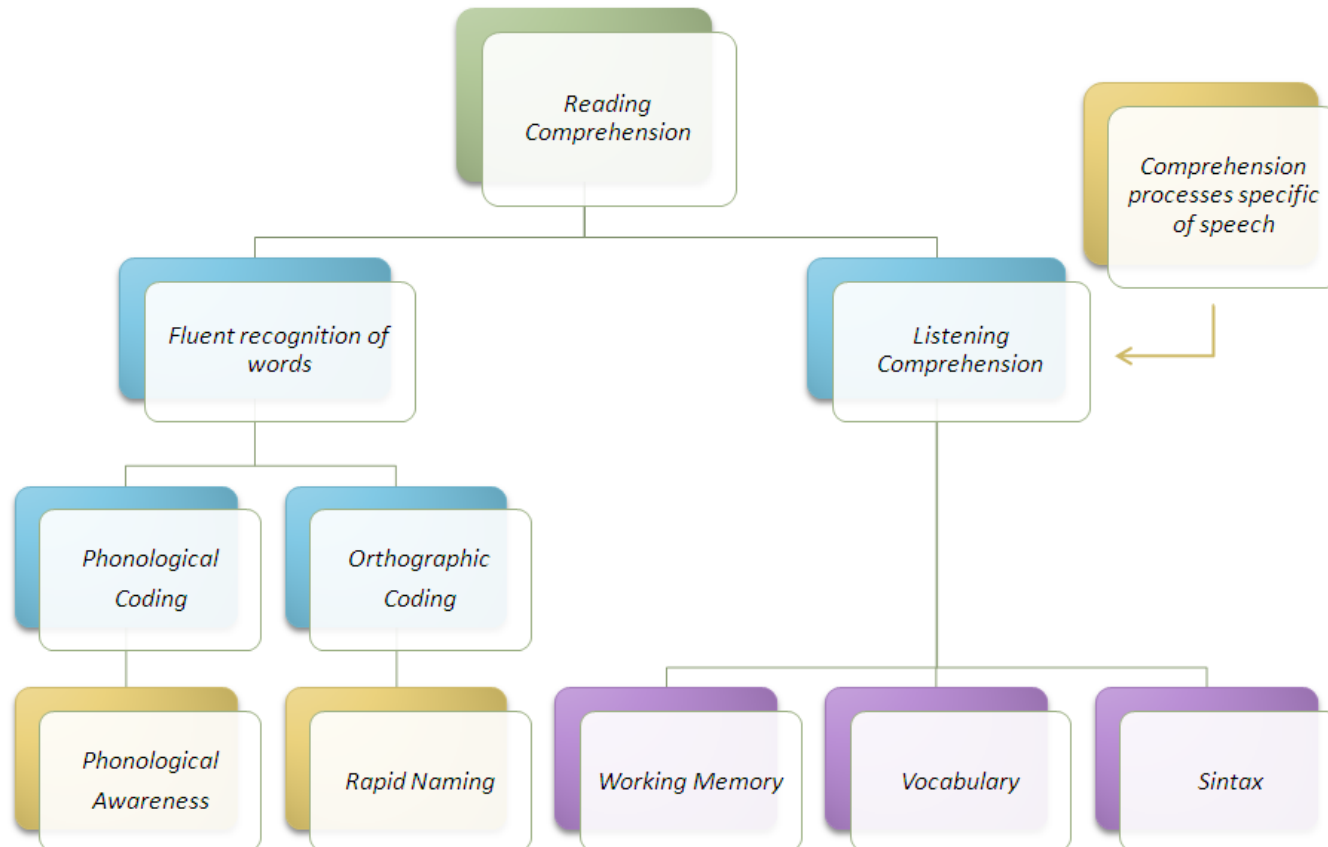
Dr. David Saldaña  
Director

*Diversity, Cognition and Language Lab  
Department of Developmental and Educational Psychology  
University of Sevilla, Spain*



# The Simple View of Reading

[Gough & Tunmer, 1986; Pennington & Bishop, 2009]



# Immigration & School in Spain

	A- TOTAL Ens no Uni	B- Extranjeros Ens no Uni	C- TOTAL E. Primaria	D- Extranjeros E. Primaria	porcentajes relativos		
					B/A	D/C	D/B
España	7.606.517	762.746	2.702.415	296.327	10%	11%	38,8%
Andalucía	1.532.909	88.765	541.814	34.638	5,8%	6,4%	39%
Sevilla	358.579	10.357	126.551	3.991	2,9%	3,2%	38,5%

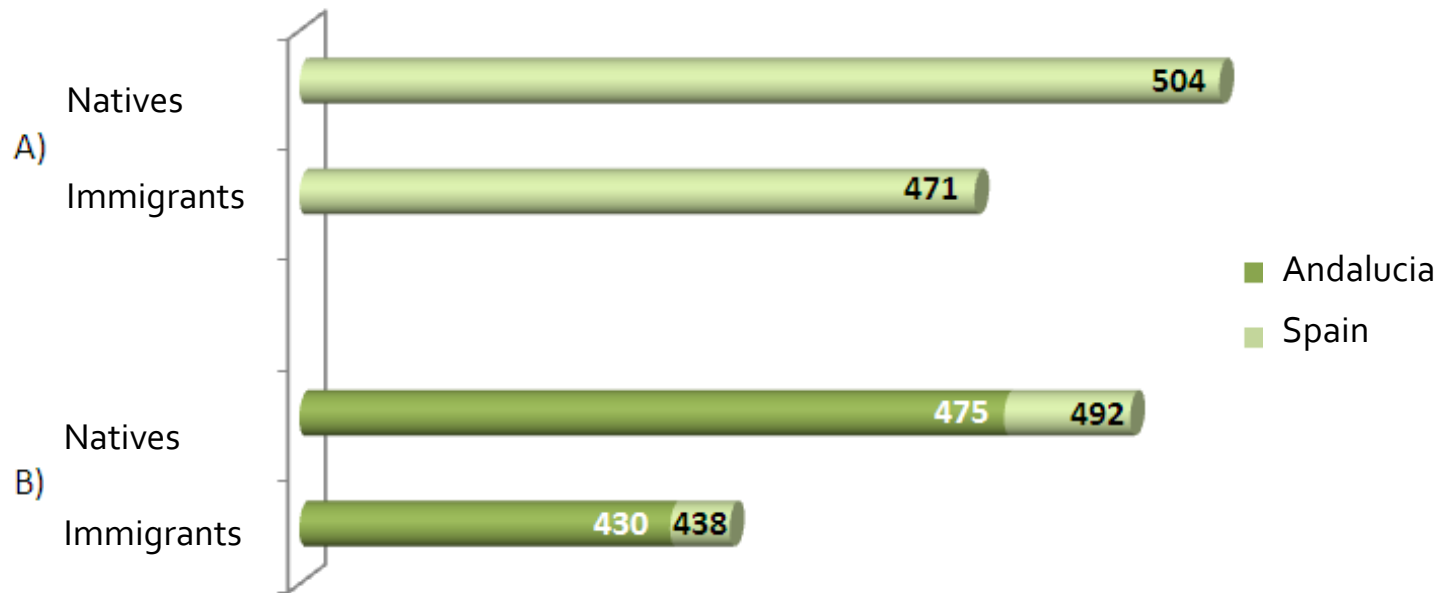
Fuente: (Ministerio de Educación de España, 2010b)

Leyendas: B/A – porcentaje de alumnado extranjero en todos los niveles de Enseñanzas no Universitarias.

D/C – porcentaje de alumnado extranjero en Educación Primaria.

D/B – porcentaje relativo de alumnado de Educación Primaria en el total de alumnos extranjeros escolarizados en Enseñanzas no Universitarias.

# Immigration & School in Spain



- A) Ministry of Education of Spain. General Diagnostic Evaluation. Primary Education. Fourth Grade. Madrid, 2010.
- B) Appraisal Institute. MEC. PISA 2006. Programme for International Student Assessment of the OECD. Spanish Report. Madrid: General Technical Secretariat. Ministry of Education and Science, 2007.

# Immigration & Learning to Read

- Conclusions
  - Similar development in word recognition
  - In terms of reading comprehension data are less clear
  - Differences in performance can be explained by
    - Socio-Economic status (SES)
    - Other specific factors
- Immigrant students population at risk

# Aims

1. Assess the level of reading comprehension in primary school students of Hispanic origin
  - a linguistically homogeneous group and most represented in our country.
2. Analyze the involvement of cognitive processes related to performance in reading comprehension:
  - Reading Processes: precision and fluidity.
  - Listening processes, including:
    - Precursor functions: working memory, vocabulary and syntax.
    - Comprehension processes specifics of speech: monitoring and inferences making.
3. Analyze the effects of SES in the process of cognitive development and learning of reading
  - comparing Hispanic origin students with their native classmates.

# Hypothesis

1. The reading comprehension achievement of students of Hispanic origin is equivalent to that of native students under similar socioeconomic circumstances.
2. Possible differences in performance between Hispanic and natives may relate to linguistic aspects:
  - Worst performance of immigrant students in vocabulary, syntax, and/or listening comprehension.
  - Equivalent performance in other cognitive processes involved.
1. The reading comprehension achievement will be more related to family SES differences than the immigrant origin condition itself.

# Participants

- 75 students from 2nd to 6th grade of Primary Education, from Seville Public School with high proportion of immigrant students, prior written parental consent.

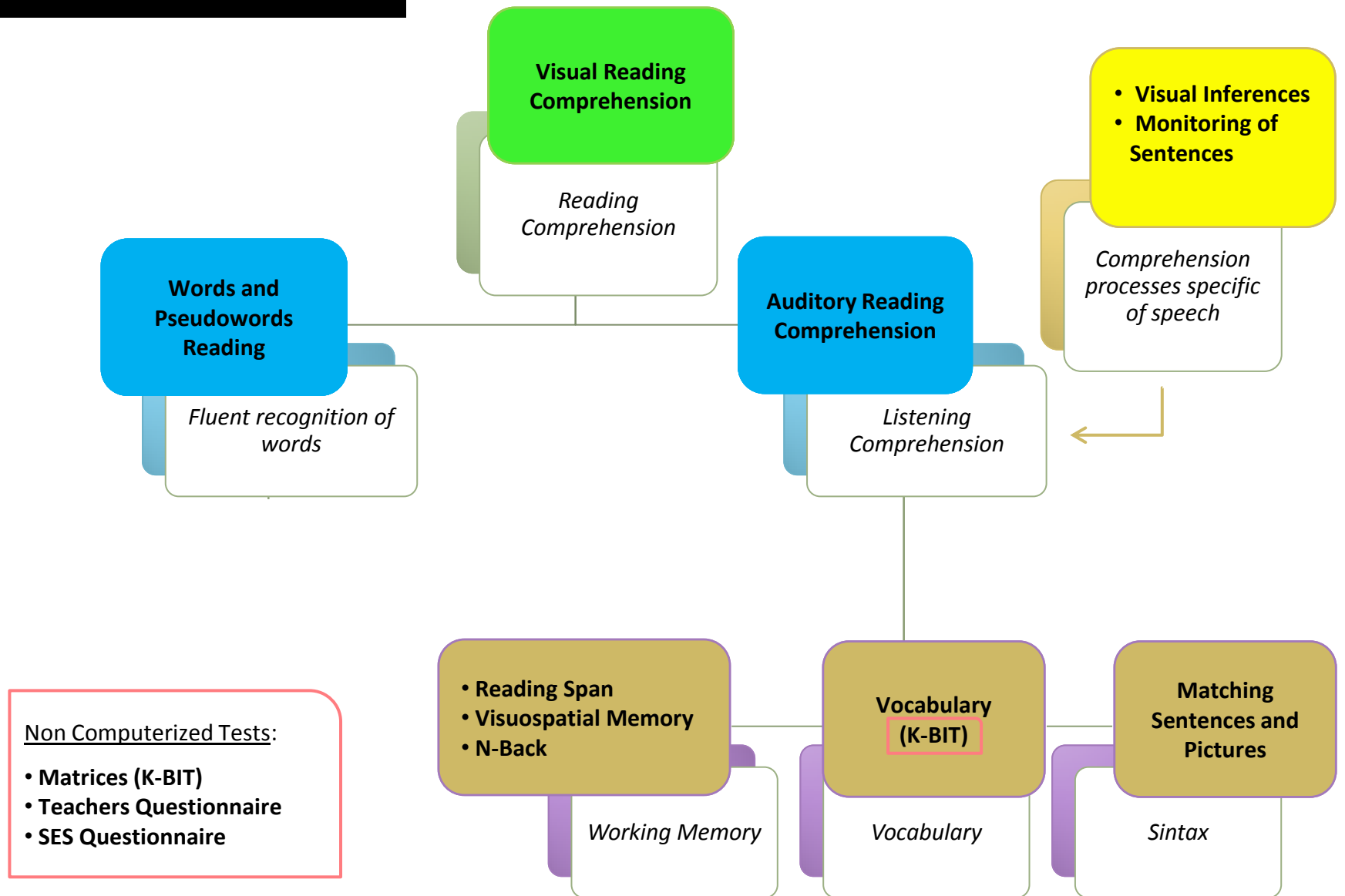
	2º	3º	4º	5º	6º	General Total
Hispanic Origin	7	9	8	7	8	39
Boy	5	5	4	4	4	22
Girl	2	4	4	3	4	17
Natives	7	7	8	6	8	36
Boy	4	3	4	4	3	18
Girl	3	4	4	2	5	18
<b>General Total</b>	<b>14</b>	<b>16</b>	<b>16</b>	<b>13</b>	<b>16</b>	<b>75</b>

- Equivalent groups in age, sex, grade and IQ

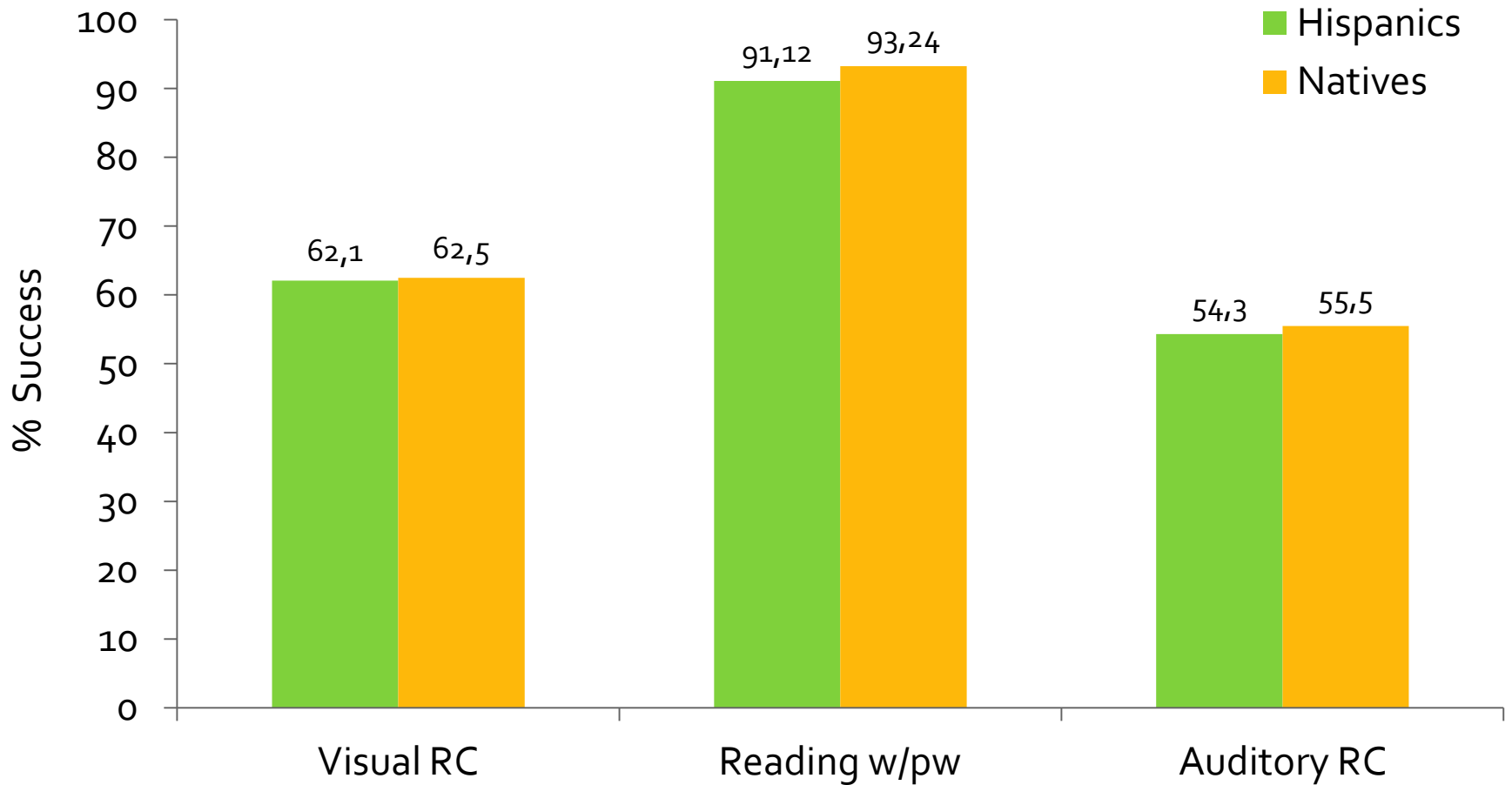
# Participants

Country of Origin	Nº Participants	Percentage
Bolivia	8	20,5%
Ecuador	8	20,5%
Colombia	6	15,4%
Peru	6	15,4%
Paraguay	3	7,7%
Venezuela	3	7,7%
Cuba	2	5,1%
Argentina	1	2,6%
Nicaragua	1	2,6%
Dominican Rep.	1	2,6%
<b>General Total</b>	<b>39</b>	<b>100,0%</b>

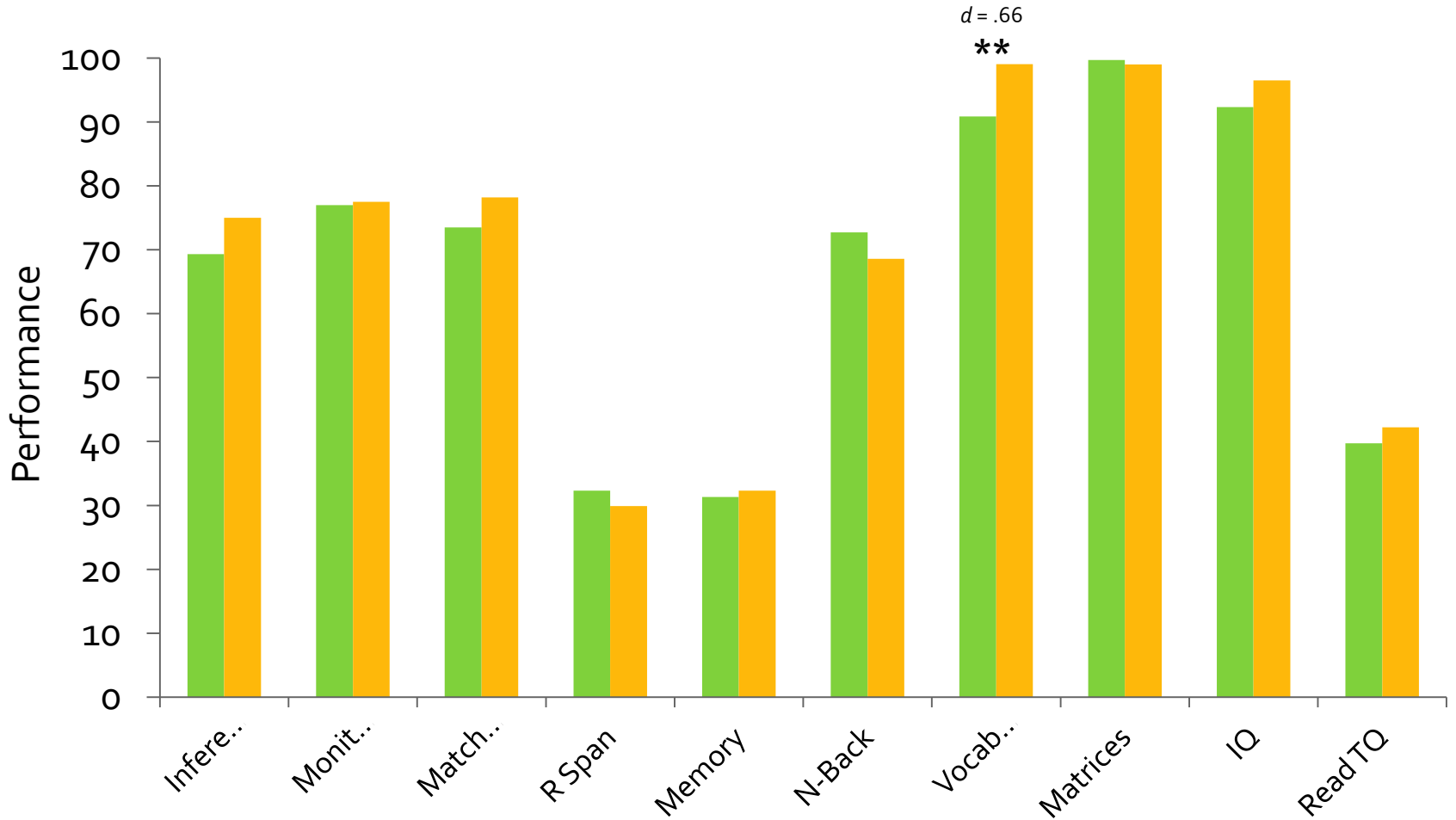
# Instruments



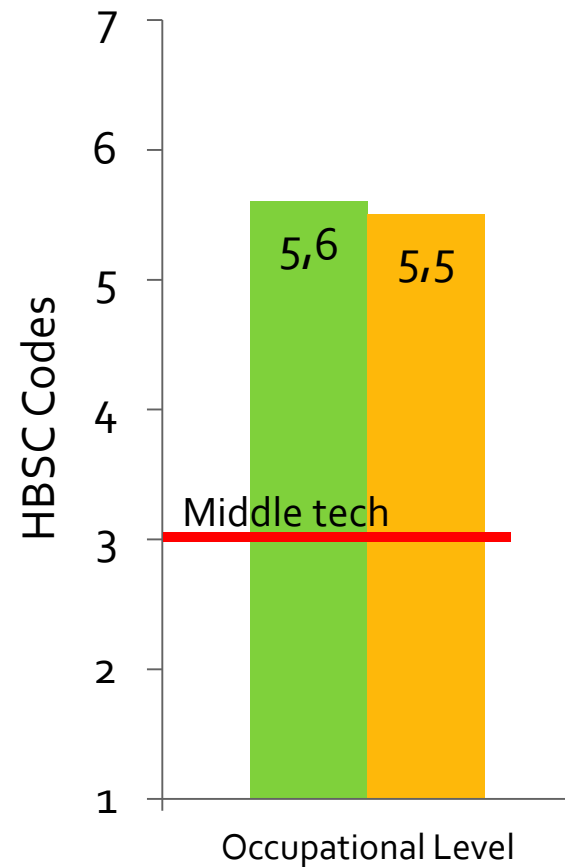
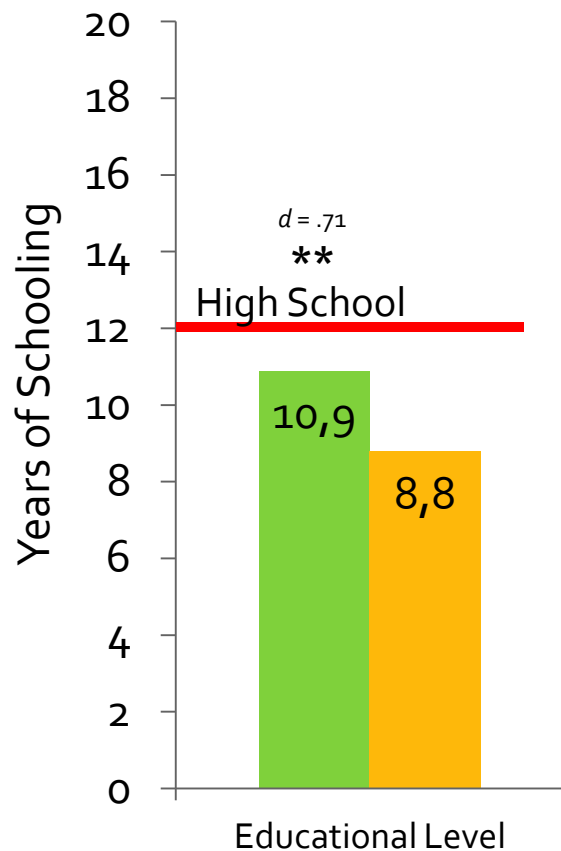
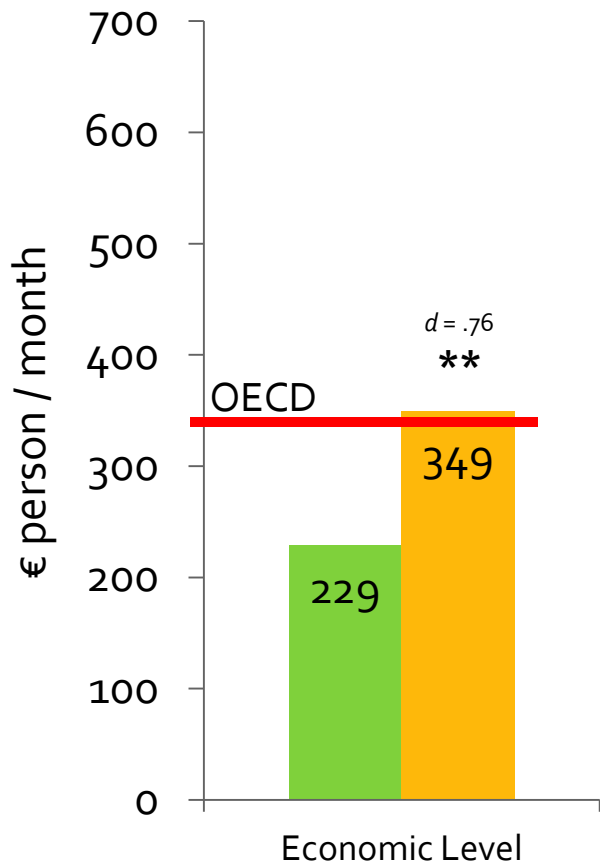
# Results



# Results



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# Statistical Power

- From previous studies (Hutchinson et al., 2004)
  - Statistical power of our study = 0.7
    - medium-low statistical power, acceptable parameters
- Recommended minimum parameters
  - Detect medium and large differences between groups
  - $d \geq 0.66$

# Discussion

- Reading comprehension achievement of Hispanic origin students is equivalent to their native classmates if they are equivalent in terms of the SES
- As for the linguistic and cognitive aspects related to reading comprehension, there was only minor Hispanic origin students' vocabulary performance, although both groups scored within the average.
- Association between low SES and low achievement in reading comprehension, regardless of immigrant origin
  - Low SES common denominator in both groups.
  - Nevertheless, currently only a trend.

# Conclusions

- Consistent with studies
  - children belonging to low SES are a population at risk in the acquisition of cognitive skills
  - highly recommended to pay special attention to all these students to promote further cognitive, academic and social development to them.

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