

# Víctor H. Cervantes

POSTDOCTORAL RESEARCH ASSOCIATE - UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PHD MATHEMATICAL AND COMPUTATIONAL COGNITIVE SCIENCE · MS (MATHEMATICS, STATISTICS, PSYCHOLOGY)

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## Education

### Ph.D. in Mathematical and Computational Cognitive Science

West Lafayette, USA

PURDUE UNIVERSITY

08/2014–08/2020

- Dissertation: Contextuality and Noncontextuality in Human Choice Behavior
- Advisor: Ehtibar N. Dzhafarov

### M.S. in Mathematics

West Lafayette, USA

PURDUE UNIVERSITY

08/2017–05/2019

### M.S. in Psychological Sciences

West Lafayette, USA

PURDUE UNIVERSITY

08/2014–12/2016

- Thesis: An Application of Contextuality-by-Default in a Psychophysical Double Detection Experiment
- Advisor: Ehtibar N. Dzhafarov

### M.S. in Statistics

Bogotá, Colombia

UNIVERSIDAD NACIONAL DE COLOMBIA

03/2006–10/2010

- Thesis: Modelamiento de la habilidad en modelos de Teoría de Respuesta al Ítem (TRI) logísticos para variables ordinales [Modelling Ability in Logistic Item Response Theory Models for Ordinal Items]
- Advisor: Edilberto Cepeda Cuervo

### B.S. in Psychology

Bogotá, Colombia

UNIVERSIDAD NACIONAL DE COLOMBIA

02/1999–09/2005

- Thesis: Un estudio de Monte Carlo sobre la precisión del Alfa de Cronbach [A Monte Carlo Study on Cronbach's Alpha Precision]
- Advisor: Aura Nidia Herrera

## Research areas and interests

- Mathematical psychology
- Foundations of probability and probabilistic contextuality across sciences
- Knowledge and learning spaces
- Theory of measurement
- Philosophy of science
- Behavioral decision theory
- Reproducible Science
- Psychometrics
- Free/Libre Software

## Research Experience

### Contextuality Across Sciences (GSR)

PI: Ehtibar N. Dzhafarov

PURDUE UNIVERSITY, USA

08/2014–ongoing

### Identifying Cultural Bias in the Items of Colombian “Examen de Estado” Tests (RA)

PI: Aura Nidia Herrera

UNIVERSIDAD NACIONAL DE COLOMBIA, COLOMBIA

2006–2013

### Evaluating DIF Detection Procedures in Large-Scale Assessments

PI: Víctor H. Cervantes

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN (ICFES), COLOMBIA

2011–2014

### Assessing Sample Design Effects on Item Parameter Estimations for Large-Scale Assessments

PI: Víctor H. Cervantes

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN (ICFES), COLOMBIA

2010–2011

## Bibliometric Indicators on Measurement Invariance Research (GSR)

UNIVERSITAT DE BARCELONA, ESPAÑA

Visitor scholar

PI: Juana Gómez Benito

01/2008–03/2008

## RESEARCH GROUPS

### Contextuality Across Sciences

PURDUE UNIVERSITY, USA

Co-investigator

08/2014–ongoing

### Investigaciones y Análisis de Evaluaciones Educativas de Gran Escala

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN (ICFES), COLOMBIA

Group leader

2010–2014

### Métodos e Instrumentos para la Investigación en Ciencias del Comportamiento

UNIVERSIDAD NACIONAL DE COLOMBIA, COLOMBIA

Research assistant and

co-investigator

2003–ongoing

## Teaching

### Graduate instructor

PURDUE UNIVERSITY. PSYCHOLOGICAL SCIENCES DEPARTMENT

USA

06/2019–07/2019

#### • Courses:

Introduction to Statistics in Psychology.

Summer 2019

### Graduate instructor

UNIVERSIDAD NACIONAL DE COLOMBIA. STATISTICS DEPARTMENT

Colombia

02/2007–06/2007

#### • Courses:

Statistics II for Psychology.

2007-I

Quantitative methods I for Geography.

2007-I

## Professional Experience

### Postdoctoral Research Associate

UNIVERSITY OF ILLINOIS AT URBANA CHAMPAIGN. DEPARTMENT OF PSYCHOLOGY

USA

08/2020–current

### Teaching assistant

PURDUE UNIVERSITY. DEPARTMENT OF PSYCHOLOGICAL SCIENCES

USA

08/2016–05/2020

#### • Courses:

PSY607 - Scaling and Measurement

Spring 2020

PSY605 - Applied Multivariate Analysis

Spring 2019, Spring 2018

PSY201 - Introduction to Statistics in Psychology

Fall 2019, 2018, 2017, 2016; Spring 2017

### Subdirector de Estadística (Head of the Statistics Subdirectorate)

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN - ICFES

Colombia

02/2012–06/2014

- Design, coordinate and control the development of methodologies and procedures for sample designs, data processing, item parameter calibration, test scoring and statistical and psychometric analyses of assessments.

### Gestor de pruebas 04 (Test analyst 04)

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN - ICFES

Colombia

01/2010–02/2012

- Management tasks and participation on developing activities and projects related to improving the methodologies and processes regarding the statistical and psychometric analyses of educational tests.

### Psychometrics contractor

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN - ICFES

Colombia

02/2009–12/2009

- Professional services to support statistical and psychometric analyses of educational tests for ICFES.

## Psychometrics contractor

Colombia

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN - ICFES. RED DE UNIVERSIDADES DEL EJE

05/2008–12/2008

CAFETERO (ALMA MATER)

- Professional services to support statistical and psychometric analyses of educational tests for ICFES.

## Psychometrics contractor

Colombia

INSTITUTO COLOMBIANO PARA LA EVALUACIÓN DE LA EDUCACIÓN - ICFES. CONVENIO ANDRÉS BELLO

07/2007–12/2007, 12/2007–03/2008

- Professional services to support statistical and psychometric analyses of educational tests for ICFES.

## Psychometrics contractor

Colombia

ESCUELA SUPERIOR DE ADMINISTRACIÓN PÚBLICA - ESAP. OFICINA DE ASESORÍAS Y CONSULTORÍAS

01/2006–10/2006

- Write and review 200 aptitude items.

## Service

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### REVIEWER

|                          |                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Journals                 | Educational and Psychological Measurement (ISSN 1552-3888), BioSystems (ISSN 0303-2647), Journal of Mathematical Psychology (ISSN 0022-2496), Philosophical Transactions of the Royal Society A (ISSN 1471-2962), Avances en Psicología Latinoamericana (ISSN 1794-4724), Perspectivas en Psicología (ISSN 1853-8800), Avances en Medición (ISSN 1692-0023). |
| Grants and Fellowships   | Fellowships granted by Fulbright Colombia 2019, 2020. Colombian National Institute for Educational Assessment Research Grants 2012, 2013.                                                                                                                                                                                                                    |
| Seminars and Conferences | Quantum Interactions 2016 Conference, ICFES International Seminar on Education Quality Research (Seminario Internacional de Investigación sobre la calidad de la Educación) 2012, 2013.                                                                                                                                                                      |

### OTHER SERVICE ACTIVITIES

|                  |                                                                                                                                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2020, 2019       | Mentor to new Colombian Fulbright scholars.                                                                                                                                                                            |
| 2019, 2017, 2015 | Mentor to incoming exchange undergraduate students Purdue University-Universidad Nacional de Colombia Program UREP-C.                                                                                                  |
| 2018             | Organization, along Ehtibar Dzhamfarov and Maria Kon, of the 2018 Purdue Winer Memorial Lectures - Probability and Contextuality held November 9-12.                                                                   |
| 2017–2020        | Graduate Student Faculty Liaison for the Mathematical and Computational Cognitive Science program (Purdue University).                                                                                                 |
| 2013–2014        | Interinstitutional task force for developing an instrument and protocol for assessing the quality of tests in current use in Colombia.                                                                                 |
| 2013             | Interinstitutional task force (Ministry of Education, National Administrative Department of Statistics –DANE– and National Institute for Education Assessment –ICFES–) for the national schools directory in Colombia. |

## Affiliations

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|              |                                     |
|--------------|-------------------------------------|
| 2016–present | Society for Mathematical Psychology |
| 2009–present | Colegio Colombiano de Psicólogos    |
| 2008–2016    | European Association of Methodology |

## Skills

### LANGUAGES

|                |        |                |                |
|----------------|--------|----------------|----------------|
| <b>Spanish</b> | Native | <b>English</b> | Excellent (C2) |
| <b>French</b>  | Fair   | <b>German</b>  | Beginner (A2)  |

### PROGRAMMING LANGUAGES AND SPECIALIZED SOFTWARE

|                                                                                                |           |                                                                                                 |           |
|------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------|-----------|
| <b>R</b>                                                                                       | Excellent | <b>TeX</b>                                                                                      | Very good |
| <b>SPSS</b>                                                                                    | Good      | <b>perl</b>                                                                                     | Good      |
|  <b>Linux</b> | Very good |  <b>python</b> | Fair      |

### MOOCs

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|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|  <b>2015</b> | Programming for Everybody (Python). University of Michigan.                     |
|  <b>2015</b> | An Introduction to Interactive Programming in Python (Part 1). Rice University. |
|  <b>2015</b> | Reproducible Research. Johns Hopkins University.                                |
|  <b>2013</b> | Game theory. Stanford University.                                               |

## Honors & Awards

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|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 2017, 2018,<br>2020 | <b>Graduate School Summer Research Grant Award</b> , Purdue University, USA                                                                                            |                              |
| 2016, 2018          | <b>Graduate Student Conference Participation Award</b> , Society for Mathematical Psychology                                                                           |                              |
| 2016                | <b>Travel Award for young scientists</b> , University of Indiana, USA                                                                                                  | US\$1000                     |
| 2014–2016           | <b>Fulbright scholarship</b> , Fulbright Commission, Colombia-USA                                                                                                      | Two year fellowship          |
| 2007                | <b>Programa de Movilidad Internacional de Investigadores e Innovadores a Eventos y Estancias de Corta Duración Tercer Corte. Call 395/2007</b> , Colciencias, Colombia | International travel tickets |
| 2007                | <b>Programa de Movilidad Académica entre las Instituciones Asociadas a la AUIP</b> , Asociación Universitaria Iberoamericana de Postgrado, España                      | €500                         |
| 2005                | <b>Honor degree</b> , Facultad de Ciencias Humanas, Universidad Nacional de Colombia, Colombia                                                                         |                              |
| 2004                | <b>Outstanding results on “Examen de la calidad de la educación superior” (ECAES), terciary education exam, in 2003</b> , Ministry of Education, Colombia              |                              |

## Talks and Conference Presentations

### PAPERS PRESENTED AT CONFERENCES

25. **Cervantes, V. H.** (2020, July). Detecting contextuality in systems with categorical variables. *Society for Mathematical Psychology Meeting, Online conference (virtual.mathpsych.org)*
24. **Cervantes, V. H.** & Dzhamfarov, E. N. (2019, July). Contextuality in human decision making. *Frontiers of Quantum and Mesoscopic Thermodynamics, Prague, Czech Republic*
23. Dzhamfarov, E. N. & **Cervantes, V. H.** (2019, June). Contextuality in human behavior. *Quantum Information Revolution: Impact to Foundations, Växjö, Sweden*
22. **Cervantes, V. H.** & Dzhamfarov, E. N. (2019, May). Using probabilistic couplings in data analysis. *Quantum Contextuality in Quantum Mechanics and Beyond, Prague, Czech Republic*

21. **Cervantes, V. H.** & Dzhaferov, E. N. (2018, November). Direct influences vs contextuality in human choices. *Purdue Winer Memorial Lectures, West Lafayette, IN, USA*
20. **Cervantes, V. H.** & Dzhaferov, E. N. (2018, July). Contextuality in behavioral systems. *Society for Mathematical Psychology Meeting, Madison, WI, USA*
19. Dzhaferov, E. N. & **Cervantes, V. H.** (2018, June). Behavioral contextuality. *Towards Ultimate Quantum Theory, Växjö, Sweden*
18. **Cervantes, V. H.** & Dzhaferov, E. N. (2018, May). Two behavioral experiments revealing contextuality. *Workshop Quantum Contextuality in Quantum Mechanics and Beyond, Prague, Czech Republic*
17. Dzhaferov, E. N. & **Cervantes, V. H.** & Kujala, J. V. (2017, July). Canonical systems of random variables in contextuality analysis. *Society for Mathematical Psychology Meeting, Warwick, UK*
16. Dzhaferov, E. N. & **Cervantes, V. H.** & Kujala, J. V. (2017, June). Canonical representations of quantum measurements for contextuality analysis. *Foundations of Quantum Mechanics and Technology, Växjö, Sweden*
15. **Cervantes, V. H.** & Dzhaferov, E. N. (2016, August). Exploration of contextuality in a psychophysical double-detection experiment. *Society for Mathematical Psychology Meeting, New Brunswick, NJ, USA*
14. **Cervantes, V. H.** & Dzhaferov, E. N. (2016, July). Exploration of contextuality in a psychophysical double-detection experiment. *Society for Mathematical Psychology Meeting, San Francisco, CA, USA*
13. Dzhaferov, E. N., Kujala, J. V., Larsson, J.-Å., & **Cervantes, V. H.** (2015, June). Contextuality: An almost general theory. *Quantum Foundations and Quantum Information, Växjö, Sweden*
12. Dzhaferov, E. N., Kujala, J. V., Larsson, J.-Å., & **Cervantes, V. H.** (2015, July). Contextuality-by-Default: A brief overview of ideas, concepts and terminology. *Quantum Interactions, Filzbach, Switzerland*
11. **Cervantes, V. H.** (2012, July). On using the Item Parameter Replication (IPR) approach for power calculation of the noncompensatory differential item functioning (NCDIF) index. *V European Congress of Methodology, Santiago de Compostela, España*
10. Camargo, S. & **Cervantes, V. H.** (2012, July). Validity of the Colombian adaptation of PIML attachment questionnaire. *V European Congress of Methodology, Santiago de Compostela, España*
9. **Cervantes, V. H.** & Uzaheeta, A. (2011, November). Uso de pesos muestrales en la calibración de los parámetros de los ítems en evaluaciones a gran escala [How to use the sampling weights in estimating Item Parameters in Educational Surveys]. *II Seminario Internacional de Investigación sobre la Calidad de la Educación, Bogotá, Colombia*
8. **Cervantes, V. H.** & Cuevas, M. L. (2011, November). NCDIF y Regresión logística como procedimientos para detectar funcionamiento diferencial del ítem en SABER 5 y 9 [Differential Item Functioning Detection on National Tests “SABER 5 y 9” using NCDIF and logistic regression]. *II Seminario Internacional de Investigación sobre la Calidad de la Educación, Bogotá, Colombia*
7. **Cervantes, V. H.** (2011, August). Assessing the effects of the sample size, sample size ratio, magnitude of DIF and test length on the noncompensatory differential item functioning index (NCDIF). *European Mathematical Psychology Group Meeting, Paris, France*
6. Uzaheeta, A. & **Cervantes, V. H.** (2011, July). How to use the sampling weights in estimating Item Parameters in Educational Surveys. *4th Conference of the European Survey Research Association (ESRA), Lausanne, Switzerland*
5. **Cervantes, V. H.** & Uzaheeta, A. (2011, March). Estimating item parameters for the dichotomous Rasch model with a complex sampling design. *8th International Amsterdam Multilevel Conference, Amsterdam, The Netherlands*
4. Fernandes, I., Lopera, C., & **Cervantes, V. H.** (2010, July). Resultados de Colombia en TIMSS 2007 [Colombian National Results on TIMSS 2007]. *I Seminario Internacional de Investigación sobre la Calidad de la Educación, Bogotá, Colombia*

3. **Cervantes, V. H.** & Cepeda, E. (2008, October). Regresión latente en modelos de respuesta al ítem logísticos de tres parámetros [Latent regression in three parameter logistic item response models]. *XV Jornadas en Estadística e Informática, Guayaquil, Ecuador*
2. **Cervantes, V. H.** & Cepeda, E. (2008, October). Intervalos de confianza y de credibilidad para una proporción [Confidence and credibility intervals for one proportion]. *XV Jornadas en Estadística e Informática, Guayaquil, Ecuador*
1. **Cervantes, V. H.** (2005, September). Robustez del índice alfa de Cronbach [Cronbach's alpha coefficient robustness]. *IV Encuentro de Investigadores en Ciencias del Comportamiento y IV de Medición y Evaluación, Bogotá, Colombia*

#### TALKS AT COLLOQUIA

4. **Cervantes, V. H.** (2018, October). Contextuality in human choices. *Mathematical and Computational Cognitive Science Colloquium, Purdue University, IN, USA*
3. **Cervantes, V. H.** (2018, April). Contextuality in two behavioral experiments. *Mathematical and Computational Cognitive Science Colloquium, Purdue University, IN, USA*
2. **Cervantes, V. H.** (2017, April). Contextuality in systems of categorical random variables. *Mathematical and Computational Cognitive Science Colloquium, Purdue University, IN, USA*
1. **Cervantes, V. H.** (2016, April). An exploration of Contextuality-by-Default in psychophysics. *Mathematical and Computational Cognitive Science Colloquium, Purdue University, IN, USA*

## Publications

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#### EDITED VOLUMES

2. Dzhamfarov, E. N., Jordan, S., Zhang, R., & **Cervantes, V. H.** (Eds.). (2016). *Contextuality from Physics to Psychology*. New Jersey, NJ, USA: World Scientific.
1. Lopera, C. & **Cervantes, V. H.** (Eds.). (2011). *Informe técnico SABER 5o. y 9o. 2009. [SABER 5 y 9 Technical Report]*. Bogotá, Colombia: ICES.

#### PEER-REVIEWED JOURNAL ARTICLES AND BOOK CHAPTERS

20. Dzhamfarov, E. N., Kujala, J. V., & **Cervantes, V. H.** (in press). Epistemic odds of contextuality in cyclic systems. *To appear in European Physics Journal - Special Topics*. Available as arXiv:2002.07755
19. **Cervantes, V. H.** & Dzhamfarov, E. N. (2020). Contextuality analysis of impossible figures. *Entropy*, 22(9), 981. doi:10.3390/e22090981
18. Dzhamfarov, E. N., Kujala, J. V., & **Cervantes, V. H.** (2020). Erratum: Contextuality and noncontextuality measures and generalized Bell inequalities for cyclic systems [Phys. Rev. A 101, 042119 (2020)]. *Physical Review A*, 101(6), 069902. doi:10.1103/PhysRevA.101.069902
17. Dzhamfarov, E. N., Kujala, J. V., & **Cervantes, V. H.** (2020). Contextuality and noncontextuality measures and generalized Bell inequalities for cyclic systems. *Physical Review A*, 101(4), 042119. doi:10.1103/PhysRevA.101.042119
16. Basieva, I., **Cervantes, V. H.**, Dzhamfarov, E. N. & Khrennikov, A. Y. (2019). True contextuality beats direct influences in human decision making. *Journal of Experimental Psychology: General*, 148(11), 1925-1937. doi:10.1037/xge0000585
15. **Cervantes, V. H.** & Dzhamfarov, E. N. (2019). True contextuality in a psychophysical experiment. *Journal of Mathematical Psychology*, 91, 119-127. doi:10.1016/j.jmp.2019.04.006
14. **Cervantes, V. H.** & Dzhamfarov, E. N. (2018). Snow Queen is evil and beautiful: Experimental evidence for probabilistic contextuality in human choices. *Decision*, 5(3), 193-204. doi:10.1037/dec0000095

13. Dzhaferov, E. N., **Cervantes, V. H.** & Kujala, J. V. (2017). Contextuality in canonical systems of random variables. *Philosophical Transactions of the Royal Society A*, 375, 20160389. doi:10.1098/rsta.2016.0389
12. **Cervantes, V. H.** & Dzhaferov, E. N. (2017). Advanced analysis of quantum contextuality in a psychophysical double-detection experiment. *Journal of Mathematical Psychology*, 79, 77–84. doi:10.1016/j.jmp.2017.03.003
11. **Cervantes, V. H.** & Dzhaferov, E. N. (2017). Exploration of contextuality in a psychophysical double-detection experiment (pp. 182–193). In: de Barros J., Coecke B., Pothos E. (Eds.) *Quantum Interaction. LNCS*, (Vol. 10106) Available as arXiv:1604.04800
10. **Cervantes, V. H.** (2017). DFIT: An R package for Raju's Differential Functioning of Items and Tests Framework. *Journal of Statistical Software*, 76(5), 1–24. doi:10.18637/jss.v076.i05
9. Dzhaferov, E. N., Kujala, J. V., & **Cervantes, V. H.** (2016). Contextuality-by-default: a brief overview of ideas, concepts, and terminology (pp. 12–23). In: Atmanspacher, H., Filk, T., Pothos, E. (Eds.) *Quantum Interaction. LNCS*, (Vol. 9535) Available as arXiv:1504.00530
8. Dzhaferov, E. N., Kujala, J. V., **Cervantes, V. H.**, Zhang, R., & Jones, M. (2016). On contextuality in behavioural data. *Philosophical Transactions of the Royal Society A*, 374, 20150234. doi:10.1098/rsta.2015.0234
7. **Cervantes, V. H.**, Cepeda, E. & Corrales, M. (2014). Acoso en el ambiente escolar: Análisis de un cuestionario mediante Teoría de Respuesta al Ítem y Análisis de Correspondencias Múltiples [Analysis of a school bullying questionnaire using Item Response Theory and Multiple Correspondence Analysis]. *Universitas Psychologica*, 13(2), 443–456. doi:10.11144/Javeriana.UPSY13-2.aed
6. Cuevas, M. & **Cervantes, V. H.** (2012). Differential item functioning detection with logistic regression. *Mathématiques et Sciences Humaines / Mathematics and Social Sciences*, 50(199), 45–59. <http://msh.revues.org/12274>
5. **Cervantes, V. H.**, Santana, A. C., Gómez Benito, J. & Guilera, G. (2009). Hierarchical linear models in psychiatry: A bibliometric study. *Scientometrics*, 80(3), 797–808. doi:10.1007/s11192-009-2121-4
4. Cepeda, E. & **Cervantes, V. H.** (2009). Regresión latente en modelos de respuesta al ítem logísticos de tres parámetros [Latent regression in three parameter logistic item response models]. *Matemática*, 7, 13–20
3. Cepeda, E., Aguilar, W., **Cervantes, V. H.**, Corrales, M., Díaz, I. & Rodríguez, D. (2008). Intervalos de confianza e intervalos de credibilidad para una proporción [Confidence and credibility intervals for one proportion]. *Revista Colombiana de Estadística*, 31(2), 211–228. <http://www.emis.de/journals/RCE/V31/bodyv31n2/v31n2a06CepedaEtAl.pdf>
2. **Cervantes, V. H.**, Cepeda, E. & Camargo, S. (2008). Una propuesta para la obtención de niveles de desempeño en los modelos de Teoría de Respuesta al Ítem [A proposal for setting achievement levels with item response models]. *Avances en Medición*, 6(1), 49–58. [http://www.humanas.unal.edu.co/psicometria/files/5313/8574/6081/Articulo5\\_Estimacion\\_IRT\\_49-58.pdf](http://www.humanas.unal.edu.co/psicometria/files/5313/8574/6081/Articulo5_Estimacion_IRT_49-58.pdf)
1. **Cervantes, V. H.** (2005). Interpretaciones del coeficiente alpha de Cronbach [Interpretations of Cronbach's alpha coefficient]. *Avances en Medición*, 3(1), 9–28. [http://www.humanas.unal.edu.co/psicometria/files/1113/8574/8604/Articulo\\_1\\_Alfa\\_de\\_Cronbach\\_9-28\\_2.pdf](http://www.humanas.unal.edu.co/psicometria/files/1113/8574/8604/Articulo_1_Alfa_de_Cronbach_9-28_2.pdf)

## PROCEEDINGS

4. **Cervantes, V. H.** (2012). On using the Item Parameter Replication (IPR) approach for power calculation of the non-compensatory differential item functioning (NCDIF) index (pp. 206–207). In: *Proceedings of the V European Congress of Methodology*.
3. Camargo, S. & **Cervantes, V. H.** (2012). Validity of the Colombian adaptation of PIML attachment questionnaire (p. 205). In: *Proceedings of the V European Congress of Methodology*.
2. Uzaheta, A. & **Cervantes, V. H.** (2011). How to use the sampling weights in estimating of Item Parameters in Educational Surveys (p. 150). In: *Proceedings of the 4th Conference of the European Survey Research Association*

(ESRA).

1. **Cervantes, V. H.** & Uzaheeta, A. (2011). Estimating item parameters for the dichotomous Rasch model with a complex sampling design (p. 17). In: *Proceedings of the 8th International Amsterdam Multilevel Conference*.

## NON PEER REVIEWED PUBLICATIONS

5. Lopera, C., **Cervantes, V. H.** & Quintero, L. (2011). *Orientaciones para la lectura e interpretación de los resultados históricos de SABER 5° y 9°*. [Reading Guide for SABER 5 y 9 Historical Results]. Bogotá, Colombia: ICFES.
4. Lopera, C., Ronderos, N., Uzaheeta, A., **Cervantes, V. H.** & Quintero, L. (2010). *Informe nacional de resultados de SABER 5° y 9°, 2009. Resumen ejecutivo*. [SABER 5 y 9 2009 National Results. Executive Summary]. Bogotá, Colombia: ICFES. ISBN:978-958-11-0500-7
3. Lopera, C., Ronderos, N., Uzaheeta, A., **Cervantes, V. H.** & Quintero, L. (2010). *Informe nacional de resultados de SABER 5° y 9°, 2009* [SABER 5 y 9 2009 National Results Report]. Bogotá, Colombia: ICFES. ISBN:978-958-11-0548-9
2. Fernandes, I., **Cervantes, V. H.** & Lopera, C. (2010). *Resultados de Colombia en TIMSS 2007* [TIMSS 2007 National Report]. Bogotá, Colombia: ICFES. ISBN:978-958-11-0557-1
1. Martínez, W., & **Cervantes, V. H.** (2010). *Metodología utilizada para la detección de los casos de indicios de copia en SABER 5° y 9°, 2009* [SABER 5 y 9 2009 Copy Detection Methodology]. Bogotá, Colombia: ICFES.

## Other production

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### SOFTWARE

2. **Cervantes, V. H.** (2014-2016). *DFIT: Differential Functioning of Items and Tests* . <https://CRAN.R-project.org/package=DFIT>
1. Arias, C. A., & **Cervantes, V. H.** (2012-2016). *pcaPA: Parallel Analysis for Ordinal and Numeric Data using Polychoric and Pearson Correlations with S3 Classes* . <https://github.com/herulor/pcaPA>

### PUBLIC DATASETS

1. **Cervantes, V. H.** & Dzhaferov, E. N. (2019). *Contextuality in a psychophysical double-identification experiment*. Harvard Dataverse: V1, UNF:6:is0hu0OPGy+KIYBcl/e+Ng==. <https://doi.org/10.7910/DVN/FCT9VO>