Effects of a Professional Development Program on GTA Teaching Effectiveness

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UPC

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Physics GTA Preparation

- Integration of **pedagogy**, **physics**, and **professional development** strategies

- One-credit course, approx. 17 contact hours
  - "JumpStart" before the semester (~12 hrs)
  - "Check-in Meetings" during semester (~5 hrs)
  - Classroom observations (instructor observes new GTAs; new GTAs observe experienced GTAs)

- Established in 2013; yearly assessments (e.g., surveys, evaluations) and curriculum revisions

- Number of grad students who have gone through the program so far: **92**

Pedagogy

GTA Preparation

Physics

Professional Development

Teaching Assistant Opinion Survey (TAOS)

- End-of-semester student evaluations; managed by GT Office of Assessment

- 12 Likert questions (5-point-scale), 3 free-response items
  - o Oral communication skills
  - o Written communication skills
  - o Explained concepts clearly
  - o Familiarity with course concepts
  - o Respect for students
  - o Attitude about teaching
  - o Stimulated students' interest in subject
  - o Approachability
  - o Preparedness
  - o Classroom management
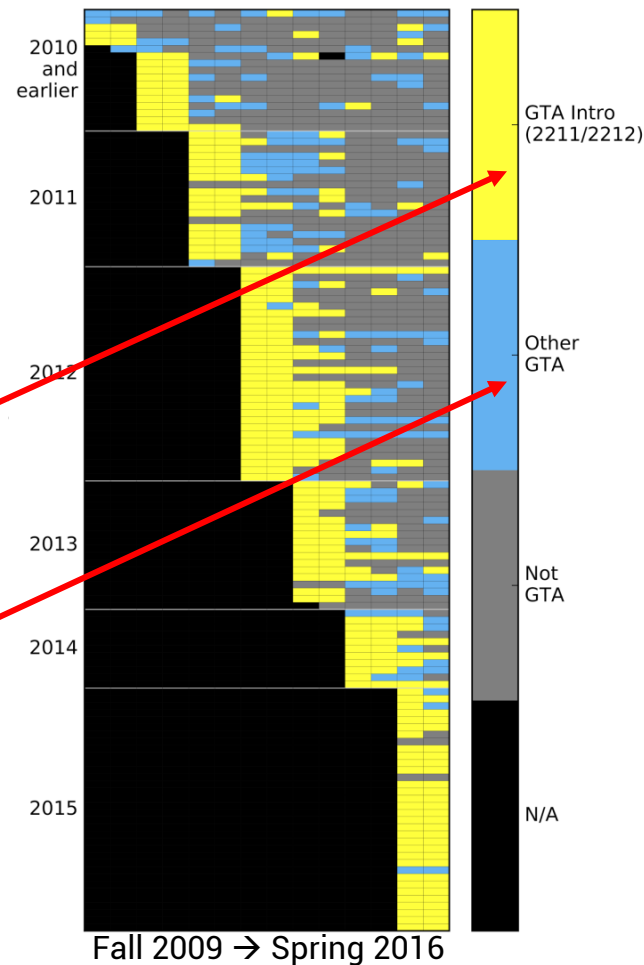 - o Actively engaged students
  - o Overall effectiveness
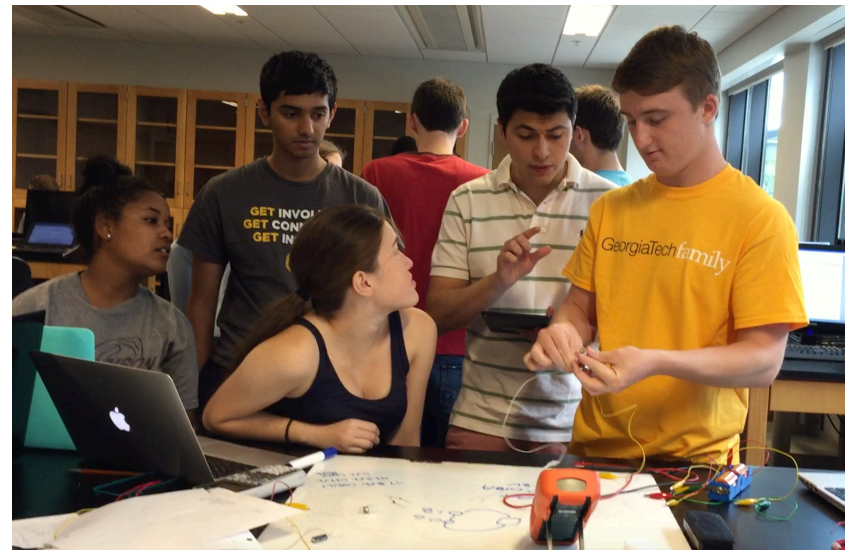
PhD Student Population

- Spring 2016 snapshot
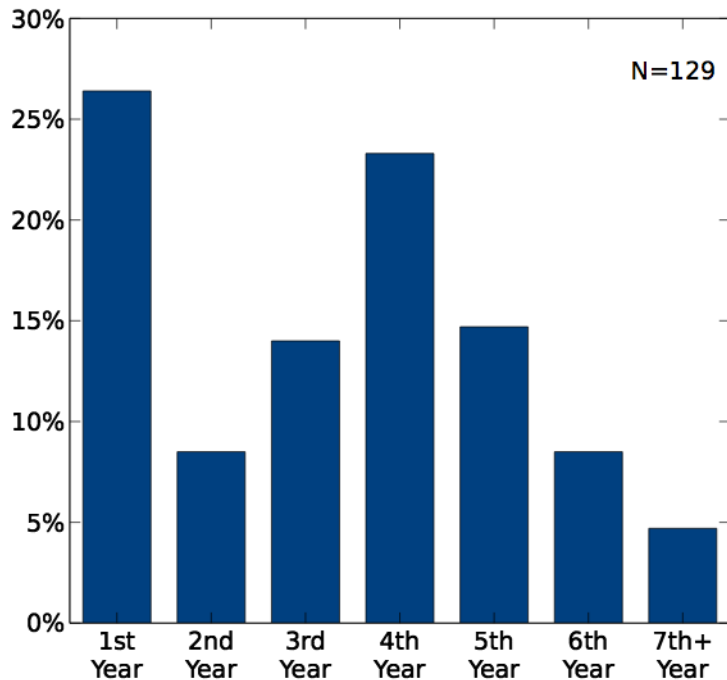
Leading lab or recitation

Grading only (usually)

Fall 2009 → Spring 2016

TAOS Data

- Look at TAOS for **intro courses**, and focus only on first year of teaching
  - **Pre-intervention** group: first-year PhD students in 2011, 2012 (some have graduated already)
  - **Post-intervention** group: first-year PhD students in 2013, 2014, 2015 (some have left since then)

TAOS data available from 2011 and onwards

GTA preparation program starts in 2013



Fall 2009 → Spring 2016
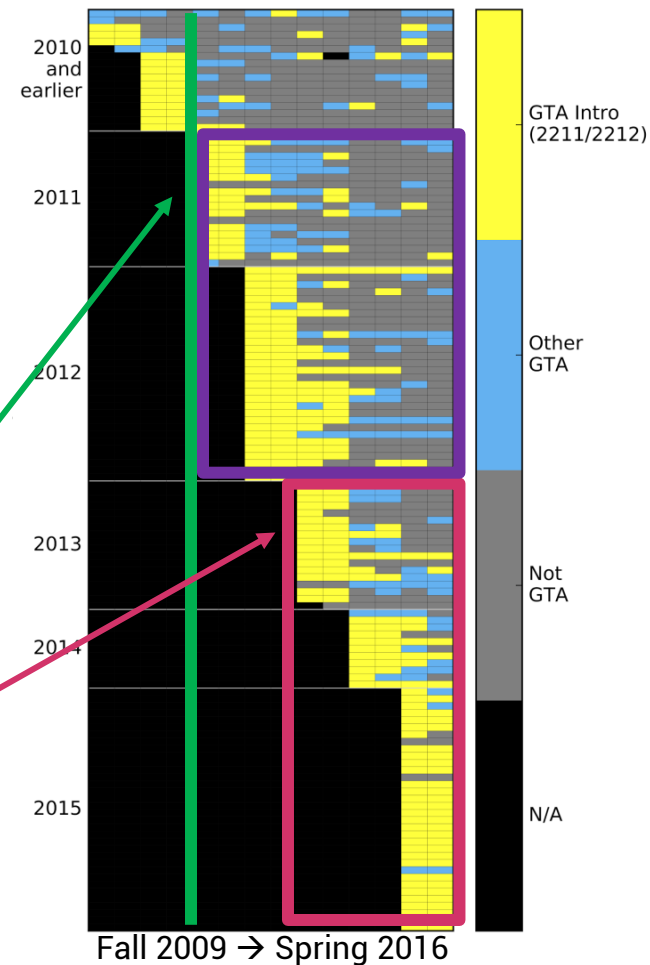
Data Analysis

- For each GTA:
  - 1 set of TAOS data for each section taught every semester (response rate varies)
  - Interpolated median for 12 TAOS items (Likert 1-5 scale) in each set
- Group score distributions for each item are not normal (skewed towards 5)
  - Mann-Whitney test used to compare distributions
- Main analysis: pre/post
  - Are there statistically significant differences in TAOS scores for first-time GTAs before and after the GTA preparation program went into effect?
  - First fall semester, first spring semester (independent samples)
- Other analyses: national vs international GTAs, differences by GTA assignment, time evolution of returning GTAs... and more in the future
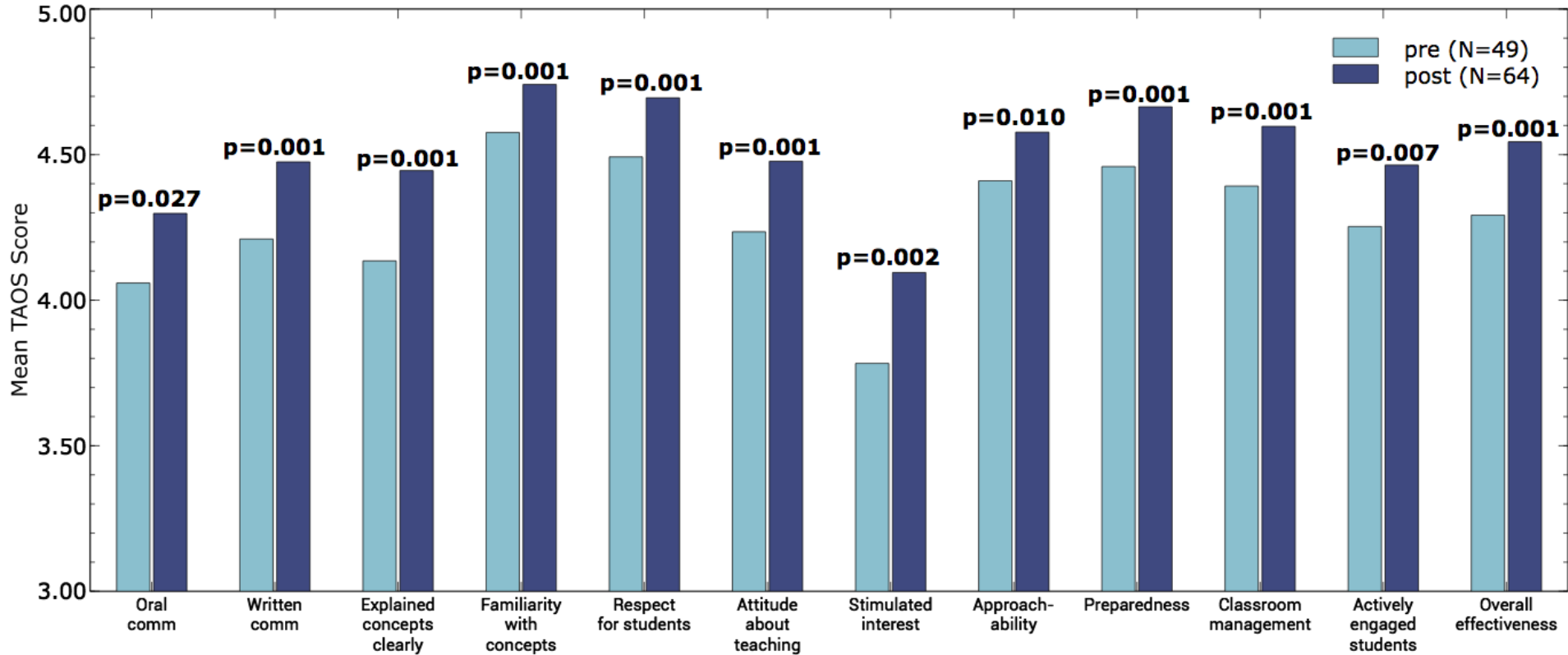
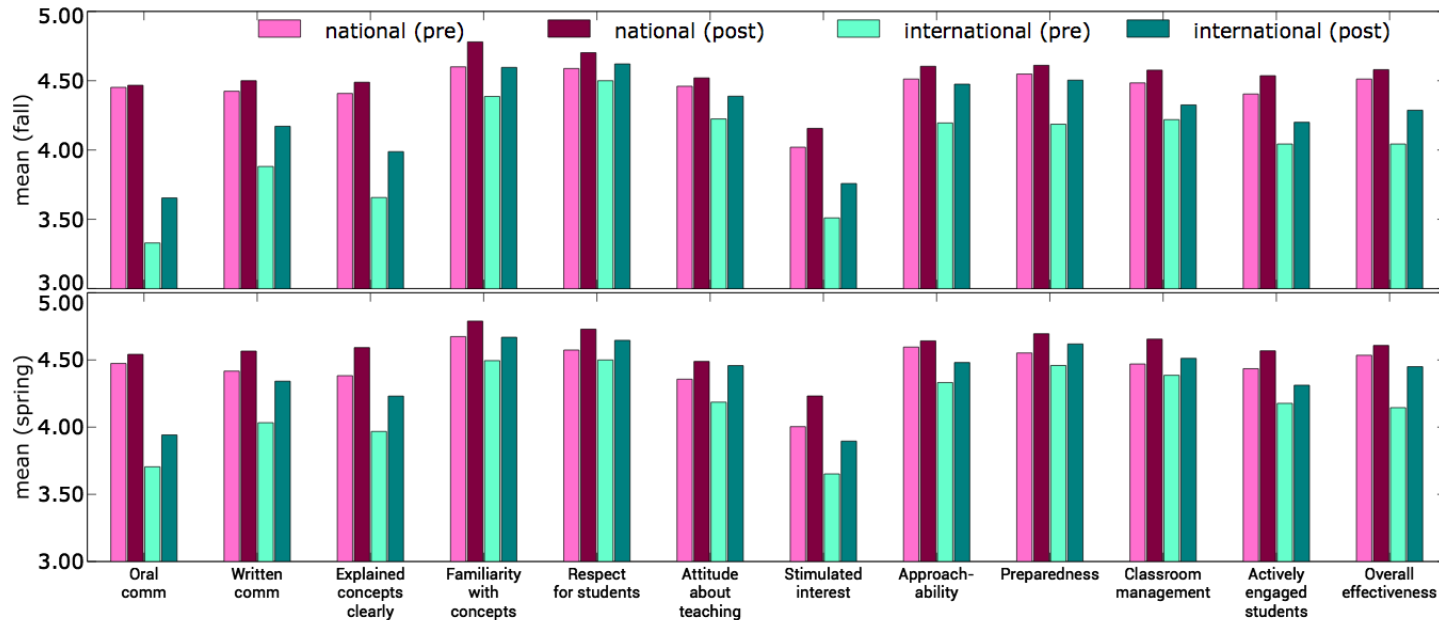# First Fall Semester

(statistical difference if p<0.05)
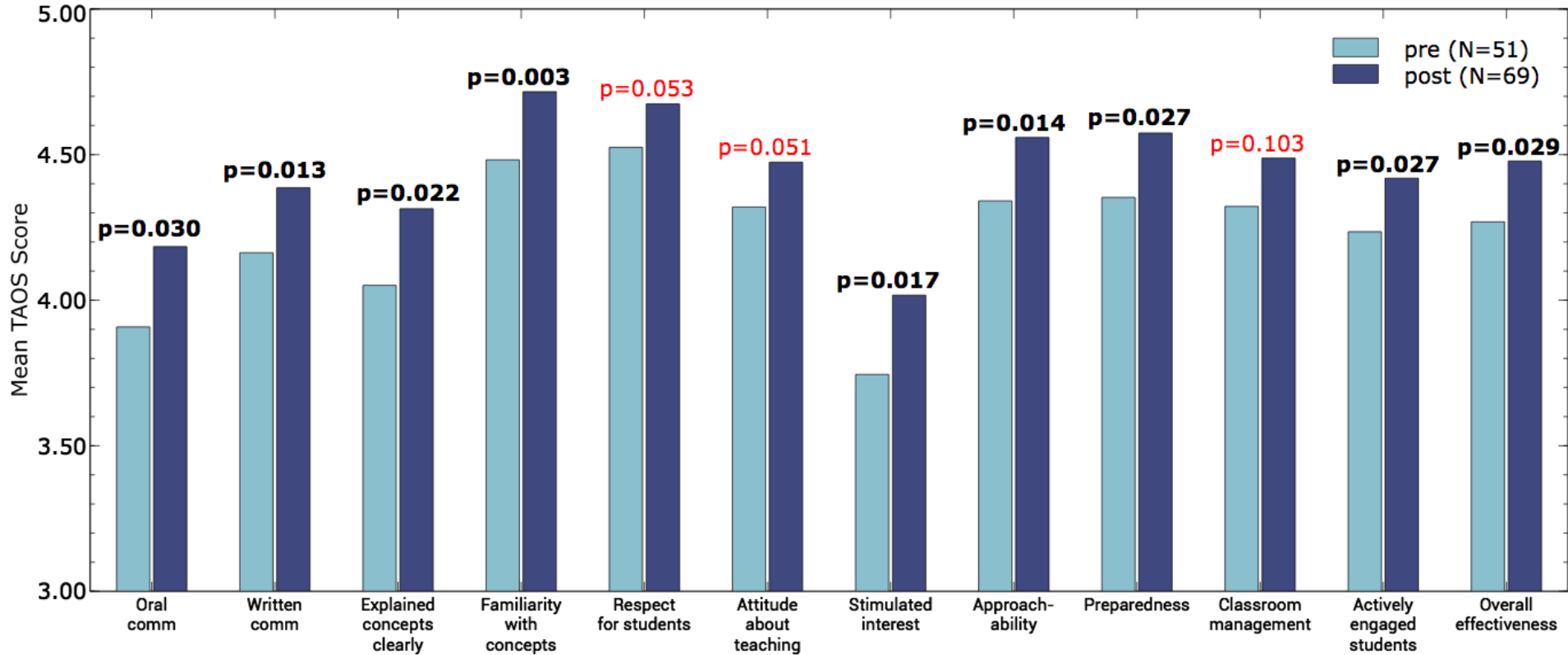
First Spring Semester

(statistical difference if p<0.05)

National / International GTAs

- Approx. 30-40% of GTAs (mostly non-native English speakers)

- Post groups (both national and international) have higher TAOS scores

- Better improvement in first Spring semester for both national and international GTAs

Conclusions

- Students tend to not give very low ratings (1 or 2, out of 5) in TAOS
- TAOS scores for first-time GTAs across the board are **higher** after GTA preparation program went into effect
  - **Statistically significant improvement** in most categories for first Fall semester, and in all categories for first Spring semester
  - GTA preparation most likely cause of improvement in first Fall semester
  - Improvement in first Spring semester is more complicated (GTA preparation + one semester of teaching experience + …?)
- International GTAs receive lower TAOS scores than US-native GTAs
  - But also show more improvement after GTA preparation
- More in-depth data exploration needs to be done!