

# GTA Preparation from a Communities of Practice Perspective

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eCOTS - May 22, 2018



PACIFIC  
LUTHERAN  
UNIVERSITY

# Graduate Teaching Assistants (GTAs)

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Graduate students hired by their universities to

- Teach courses, or
- Assist with the teaching of courses

Includes

- Instructors of a (usually small) section of a course
- Lab facilitators
- Discussion section leaders (with office hours)
- Clerical workers/ paper graders



Please go to: [PollEv.com/nicolajustic433](https://PollEv.com/nicolajustic433)

What word(s) best describe  
your experiences with graduate  
student preparation for teaching  
statistics?

**What word(s) best describe your experiences with graduate student preparation for teaching statistics?**

Please go to: [PollEv.com/nicolajustic433](https://PollEv.com/nicolajustic433)

What strategies does your department use for preparing graduate students for teaching?

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Studies of statistics GTAs often focus on problems

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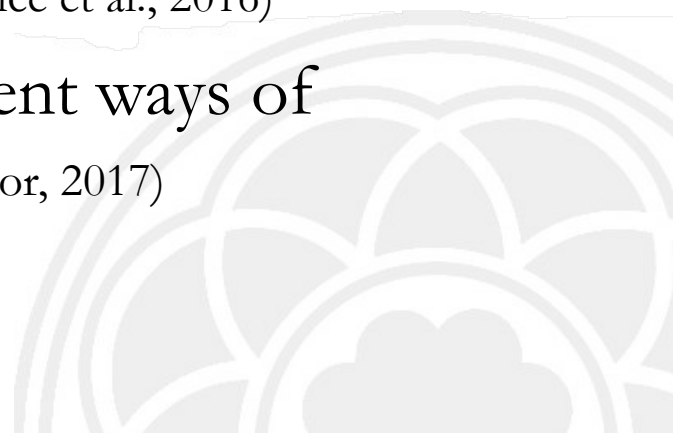


# Studies of statistics GTAs often focus on problems

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## Many GTAs in statistics...

- Often lack important content knowledge for teaching (Noll, 2011)
  - Can feel unprepared and unsupported for certain aspects of their teaching (Green, 2010)
  - Many not familiar with current professionally-endorsed recommendations for teaching statistics (e.g., GAISE, ASA, 2005, 2016) (Justice et al., 2016)
  - Have difficulty coordinating different ways of thinking about  $p$ -values (Dolor, 2017)
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# One line of research: Interventions for GTA preparation

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## Strategies:

- Workshops
- Courses
- Weekly meetings
- Mentoring
- Observations with Feedback
  - Using video or in-person



# One line of research: Interventions for GTA preparation

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Results are mixed; no holy grail...

- Some studies achieve desired outcomes; some don't

Methodological concerns include:

- No control group
- Bundling of many interventions



# Another line of research: GTA Socialization

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# Another line of research: GTA Socialization

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GTAAs appear to value interactions with one another

- Seek information from each other first

(e.g., Darling & Dewey, 1990; Wulff et al., 2004)

- Rate interactions with each other as most helpful

(Myers, 1994; 1998; Williams & Roach, 1992)

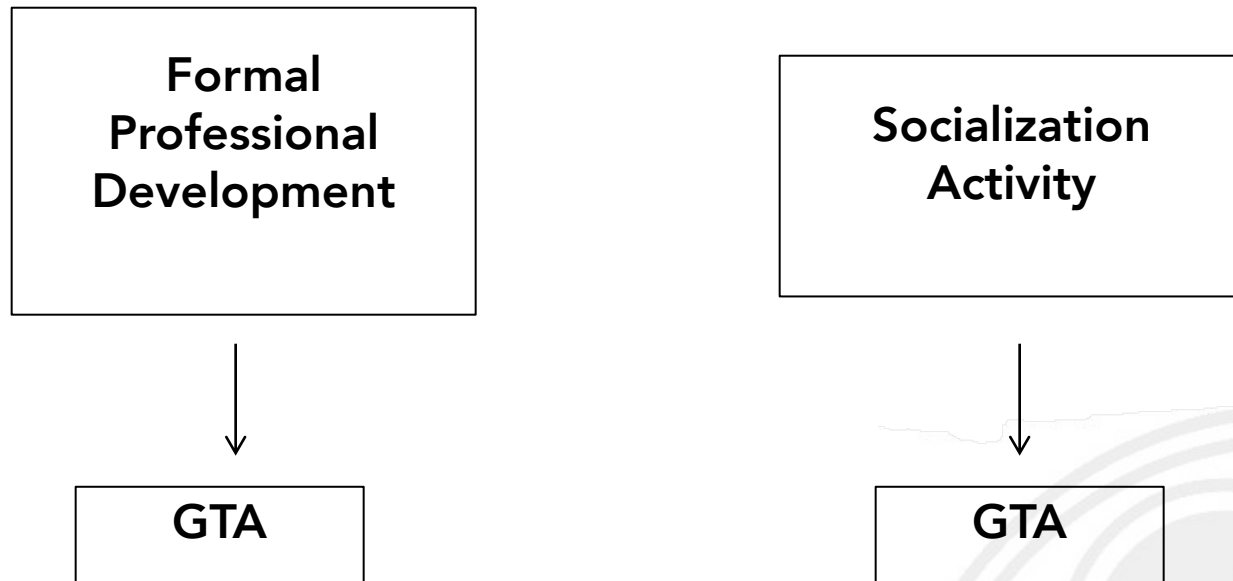


# Problem

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There is disconnect between the two lines of research



# Example

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After a teaching observation, Dr. X encourages Mario to work on allowing longer wait times for students to think.

Mario mentions this to Emmanuel.

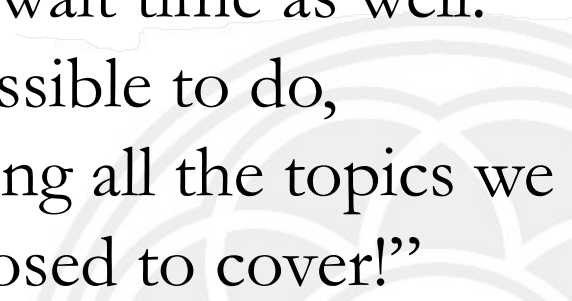
Emmanuel replies:

## SCENARIO 1:

“Dr. X encouraged me to work on wait time as well. It’s hard to do!”

## SCENARIO 2:

“Dr. X encouraged me to work on wait time as well. It’s impossible to do, considering all the topics we are supposed to cover!”

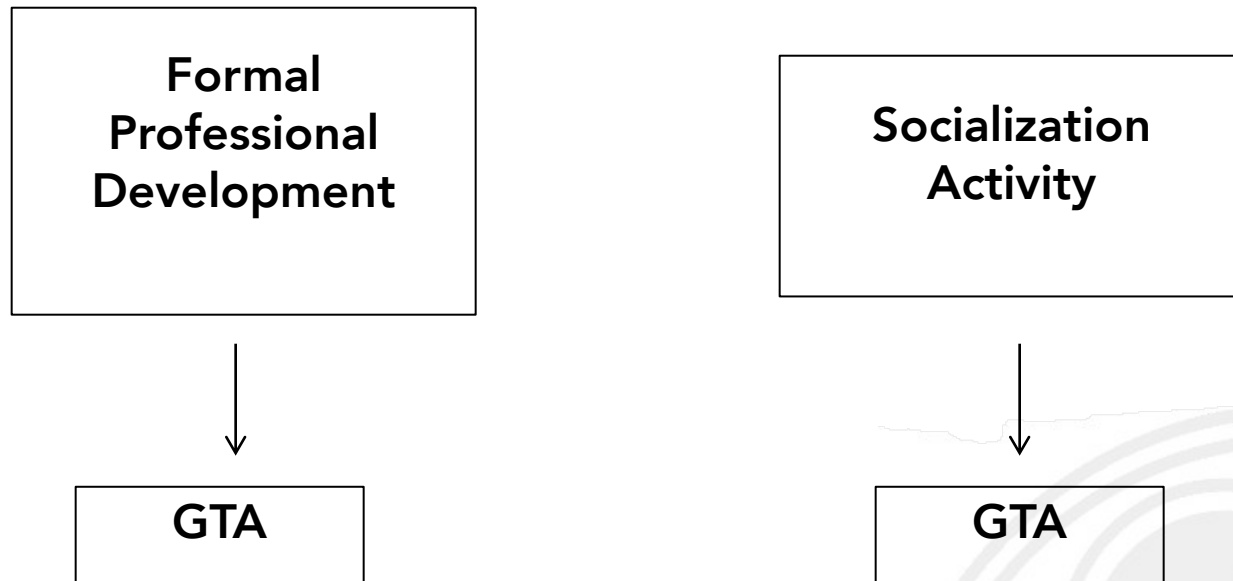


# Problem

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When the two lines of research are disconnected, research results can be confounded.



# Communities of Practice

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## Origins:

- Lave and Wenger (1991) intended to conduct ethnographic studies of mentoring
- Discovered novices were not mentored by one person
- Novices learned by participating in a community of practitioners





# Communities of Practice

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“Communities of Practice are groups of people who share... a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.”

(Wenger, McDermott, & Snyder, 2002, p. 4 )



# Communities of Practice (CoPs)

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- Composed of practitioners
  - Not just a group of interested discussants
  - Includes novices and experts
- Can be formal or informal
- Can be unrecognized by host institution
- Not necessarily benevolent to host

(Schlager & Fusco, 2003; Wenger, 1998)



# Research foundations

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- CoPs have been applied in many fields
- In education, evidence suggests associated with:
  - Successful adoption of new teaching curricula
  - Significantly improved tenure rates
- CoPs are one model that “addresses the disconnect”
  - Experiences in formal interventions are one way to participate in the CoP



# Research question

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How are statistics graduate students' perceptions of their experiences in CoPs related to their beliefs about teaching statistics?



# Research question

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How are statistics graduate students' perceptions of their experiences in CoPs related to their **beliefs about teaching statistics**?

**beliefs about teaching statistics**

- extent to which teaching beliefs are teacher-centered versus student-centered (Kember, 1997).




# Research question

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How are statistics graduate students' perceptions of their **experiences in CoPs** related to their beliefs about teaching statistics?

## **experiences in CoPs**

- Used 4 categories
  - Based on previous literature
  - Examined several models of the possible relationship
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# Data Collection

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- Two waves of e-mail invitations
  - Executive Director of the American Statistical Association e-mailed department chairs
  - Researcher e-mailed faculty contacts
- Faculty were asked to forward the survey invitation to their graduate students
- Participants entered into a random drawing for one of five Amazon.com gift cards



# Results of Data Collection

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- $N=218$  respondents with useable for final model
- About 70% statistics; 30% biostatistics
- Nearly 80% consider themselves doctoral students
- About 25% international students
- About 50% plan to teach as part of their career





# Institutions Represented by Sample

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Baylor U.	Purdue U.	U. of Minnesota
Brown U.	Rice U.	U. of Nebraska, Lincoln
Carnegie Mellon U.	State U. of New York	U. of New Mexico
Columbia U.	Texas A&M U.	U.N.C., Chapel Hill
Duke U.	Truman State U.	U. of Rochester
Emory U.	U.C. Berkeley	U. of South Carolina
Iowa State U.	U.C. Irvine	U. of Texas, Austin
Johns Hopkins U.	U.C. Los Angeles	U. of Utah
Medical U. of S.C.	U. of Georgia	U. of Washington
Montana State U.	U. of Iowa	U. of Wisconsin, Madison
N.C. State U.	U. of Kentucky	Vanderbilt U.
Ohio State U.	U. of Massachusetts, Amherst	
Penn State U.	U. of Michigan, Ann Arbor	



# Spoiler Alert

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How are statistics graduate students' perceptions of their **experiences in CoPs** related to their beliefs about teaching statistics?



# Spoiler Alert

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How are statistics graduate students' perceptions of their experiences in CoPs related to their beliefs about teaching statistics?

In my study I did **not** find any significant relationship between beliefs and experiences in CoPs.



# Spoiler Alert

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How are statistics graduate students' perceptions of their experiences in CoPs related to their beliefs about teaching statistics?

In my study I did not find any significant relationship between beliefs about teaching statistics and experiences in CoPs.

The best predictor of GTAs' current beliefs?

**Prior beliefs about teaching statistics**



# Why no relationship detected?

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Many Possible Reasons, Including:

- Hypothesized relationships do not exist
- Sample size too small to detect relationships
- Not properly measuring the important aspects of CoPs



# More Results...

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- ICOTS-10!
  - presentation
  - paper
- Dissertation posted on the IASE website
  - <https://iase-web.org/Publications.php?p=Dissertations>
- Stay tuned for publication



# Future Research

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- What do statistics GTA CoPs look like?
- What are the important aspects of participation in a statistics GTA CoP?
- How can we measure the important aspects of GTAs' experiences in CoPs?



Please go to: [PollEv.com/nicolajustic433](https://PollEv.com/nicolajustic433)

What strategies does your department use for developing CoPs among graduate students?



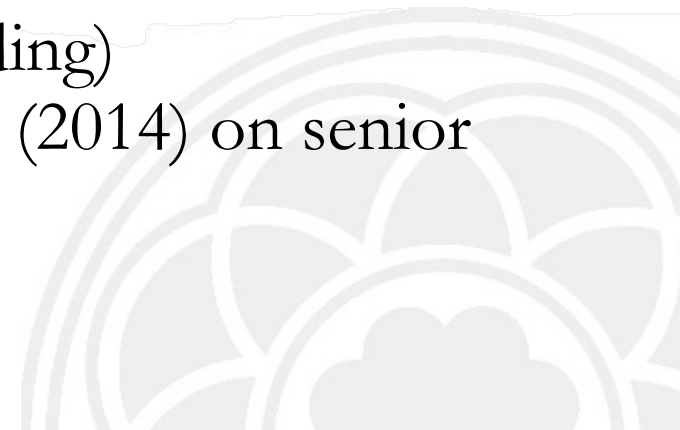
**What strategies does your department use for developing relationships among graduate students?**

# Recommendations for supporting GTA CoPs

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- Provide a shared space
  - Even if temporary
- Provide good food/coffee cards/sponsored happy hrs
- Honor exemplars in meaningful ways
  - scholarships, stipends
  - office space
- Capitalize on peer socialization
  - peer observations (with scaffolding)
  - Schwab & Blankenship webinar (2014) on senior GTA mentoring



# More Recommendations

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- GTAs
  - find a buddy
  - go visit a peer in their classroom; invite them to yours
- GTA researchers
  - acknowledge the social contexts of learning



contact: Nicola Justice [njustice@plu.edu](mailto:njustice@plu.edu)

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Next Step for senior/graduating GTAs:


ASA Stat Ed Mentoring Talk

Thursday 1:30 pm

Mentoring program is accepting applicants!

(e-mail Nicola for application)

Thankyou!

- Joan Garfield, Andy Zieffler, Bob delMas, Yuhong Yang
  - Ron Wasserstein (ASA), CAR (ASA)
  - Causeweb
  - GTAs who participated in the survey
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extra slides

# Goals for this talk

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## Share about my dissertation study

- Connections in the literature
- (Briefly) Results of my study

## Give ideas to...

- Supporters of graduate students for teaching statistics
- Current statistics graduate students
- Researchers studying statistics GTAs

## Gather ideas from listeners

- Please open a browser window
- Go to: [PollEv.com/nicolajustic433](https://PollEv.com/nicolajustic433)



# Thank you: ASA Stat Ed Mentoring Program

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- This talk initially shared with Mentoring Program
- They requested to give me more time
- GTAs or New Faculty
  - Sign up to be mentored (e-mail [njustice@plu.edu](mailto:njustice@plu.edu))
  - Attend the Thursday 1:30 pm EASTERN talk



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