

Supplemental Material

CBE—Life Sciences Education

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APPENDIX A

Justification for symmetrizing data in interaction matrix

Stork and Richards (1992) suggest that assuming reciprocal ties is justified if actors who responded to the survey (respondents) are similar to actors who did not respond to the survey (non-respondents). We have followed their approach for comparing respondents and non-respondents. We used chi-square tests, Fisher's exact tests, and t-tests to compare individual-level data and data that describe the patterns of interactions in the network (Stork and Richards 1992), and these results also support our decision to symmetrize. Respondents and non-respondents were similar in their academic positions ($X^2 = 2.25$, $p = 0.324$), whether they held a DBER position (Fisher's exact test, $p = 0.298$), and their prior attendance at an intensive regional professional development conference ($X^2 = 1.30$, $p = 0.253$). Women were over-represented among respondents ($X^2 = 4.14$, $p = 0.04$), making up 33% of the respondent sample, and 15% of non-respondents. Respondents reported on their interactions with all departmental colleagues, so we have data about the ties received (i.e., nominations) for both respondents and non-respondents. Therefore, we could compare the ties received and from whom ties were received for these groups. Respondents received more ties ($M = 10.03$, $SD = 0.259$) than non-respondents ($M = 4.42$, $SD = 0.214$) and a t-test indicated this difference was statistically significant ($t_{474} = -11.74$, $p < .001$). This difference is likely caused by an unmeasured construct, such as interest or engagement in teaching, which affects both likelihood of participating in studies about undergraduate education and the likelihood of interacting about teaching. Importantly, the individual characteristics of the people from whom respondents and non-respondents received ties did not differ. We did not detect significant differences in gender ($X^2 = .107$, $p = 0.744$), academic position ($X^2 = 3.169$, $p = 0.205$), position type ($X^2 = 0.007$, $p = 0.934$), or whether or not they participated in teaching PD ($X^2 = 0.405$, $p = 0.816$) of tie senders.

We were also able to test the assumption of reciprocal ties by calculating reciprocity, or the percentage of ties among survey respondents that were reciprocal (Table 2). We asked: if person A nominated person B, did person B also nominate person A? Stork and Richards (1992) refer to this as reliability, as it describes the consistency with which actors report the same interactions. The reciprocity observed in a dataset varies considerably depending on the respondents and the type of data being collected. For example, Vaquera and Kao (2006) found that the reciprocity rate of best friend nomination in a sample of adolescents ranged from 46% (among Black male respondents) to 75% (white female respondents). In another study where 188 undergraduates were asked to nominate up to 10 close peers in their residential hall, the calculated reciprocity was around 58% (Barnett,

Qtt&Clark 2014). Reciprocity ranged from 43% to 55% in the four departments we investigated, which is sufficient (Table 2). The question we asked did not have a time delineation, meaning that survey respondents were asked to nominate any colleague with whom they had interacted about undergraduate teaching, without specification of a time frame for these interactions. Some respondents may have answered this question by trying to recall any colleague with whom they had ever interacted about teaching, whereas others may have answered by recalling only more recent interactions. Since faculty often continue to work in the same department for many years, it is reasonable that memories of interactions will not always align.

REFERENCES

- Barnett NP, Ott MQ, Clark MA (2014). The Relevance of Network Prominence and Reciprocity of Relationships for Alcohol Use and Alcohol-Related Problems in a College Residence Hall Network. *Psychol Addict Behav* 28(4), 980-989.
- Stork D, Richards WD (1992). Nonrespondents in communication network studies: Problems and Possibilities. *Group and Organization Management* 17, 193-209.
- Vaquera E, Kao G (2008). Do You Like Me as Much as I Like You? Friendship Reciprocity and Its Effects on School Outcomes among Adolescents. *SocSci Res* 37(1), 55-72.

APPENDIX B INTERVIEW PROTOCOL

The questions that most commonly produced quotes about opinion leaders members are noted with italics and red font.

1. What is your position at [this institution]?
2. For how long have you held that position?
3. Is [insert unit] your only departmental home?
4. What undergraduate courses do you teach?
 - a. How often do you teach those courses?
 - b. How many students and in that class?
5. About what percentage of your work time is spent on teaching-related tasks?
6. Thinking about your department now: How important would you say teaching is to faculty in your department?
 - a. On a scale from 1 to 10 where 1 means teaching is not at all important and 10 means that teaching is the most important thing, where would you place your department?
 - b. What does the distribution look like? Lots of 1's and 10's? Most people around a 5?
 - c. And where would you put yourself?
 - d. Probe for examples of interactions with other faculty that informed their answer to this question.
7. Do you feel like your work as a teacher is respected by your colleagues?
 - a. Why or why not?
- 8. *What is going on in your department that helps you to be a good teacher?(17.0% of quotes about opinion leaders elicited by this question)***
 - a. Probe for specific examples and explanations about WHY or HOW it helps them be a good teacher.
9. And what is going on in your department that makes it harder to be a good teacher?
 - a. Probe for specific examples and explanations about WHY it makes it harder for them to be a good teacher.
10. In what ways are faculty acknowledged for good teaching in your department?
 - a. Do you think anyone gets raises based on good teaching?

I'd like to consider a hypothetical situation and how it might play out in your department. Imagine that a junior faculty member has had very poor student course evaluations for a few years.

11. *How would your department handle that, if at all?(9.4% of quotes about opinion leaders elicited by this question)*

- a. What would the role of the department head be?
 - b. Would anyone else be involved?
 - c. What would be done?
 - d. Probe for examples of why they think it would be handled that way.
12. Would this situation be handled differently if the faculty member was tenured?
 - a. Probe for examples of why they think it would be handled that way.

Departmental leadership has the potential to impact how faculty approach their teaching. I have a few questions about the current leadership in your department. If you think that previous or upcoming leadership is important as well, please talk about that too.

13. What role does the department head play in undergraduate teaching in your department?
 - a. Assigns teaching responsibilities?
 - b. Oversees review of teaching?
 - c. If not the dept. head, who is responsible for making teaching assignments?
 - d. Securing graders or TAs?
14. **FOR DEPARTMENT HEAD ONLY:** Tell me about the vision you think your department head has for undergraduate teaching, if any.
15. How important would you say teaching is to your department head?
 - a. On a scale from 1 to 10 where 1 means teaching is not at all important and 10 means that teaching is the most important thing, where would you place your department?
 - b. What does he or she do to give you this perspective?
16. Is there anyone in your department who you feel has a different perspective on undergraduate education?
 - a. Is there anyone who you think has a less positive perspective?

17. *Is there anyone in your department who you would say is particularly influential to undergraduate teaching?*(22.6% of quotes about opinion leaders elicited by this question)

Thank you. Your detailed answers are very useful to the study. Next I would like to talk about specific practices related to undergraduate teaching in your department. I'm going to give you a stack of notecards that list different practices. Please sort them into piles based on whether or not the practice occurs in your department.

Cards listed:(1)Teaching demonstration during interview process, (2)formal peer observation, (3) informal peer observation, (4) teaching professional development, (5) teaching mentorship, (6) review evidence of teaching effectiveness for tenure and promotion, (7) teaching awards, (8) teaching materials as part of job application, (9) other practice related to teaching.

18. For each card, confirm to what extent the practice takes place in their department. Probe for:
 - a. In what way? What does that look like?
 - b. How often?
 - c. Formal or informal?
 - d. Who is involved?
 - e. Mandated or voluntary?
 - f. Consistent across faculty?
19. What resources are available for pre-tenure faculty in your department to use in preparation for submitting the teaching-focused sections of their dossier

For some faculty, the department is not the group of people who most influence their teaching.

20. *Are there other people, at [this institution] or elsewhere, that influence your teaching as much or more than people in your department?*(10.4% of quotes about opinion leaders elicited by this question)

- a. In what ways are they influential?
- b. Are they more influential than people in your department?
- c. Why or why not?

Everything we've talked about today, including practices, attitudes, and behaviors in your department, are collectively referred to as departmental teaching climate. To wrap up our conversation, I'd like to discuss how departmental teaching climate affects you.

21. We have talked about a lot of different elements of the climate for teaching in your department. What is most influential to your teaching?
22. What changes would you like to see in your department's climate for teaching?
23. What strengths do you see in your department that will facilitate that sort of change?
 - a. And how will these strengths help you achieve the change you would like to see in your department?

Those are all of my questions. You've been so helpful. I really appreciate the time you've taken to talk with me. Thank you very much.