

Does encouragement lead to better attitudes?

A randomized encouragement study of the effect of weekly emails in an introductory statistics course

Nathan Taback & Alison Gibbs

Department of Statistical Sciences

University of Toronto

nathan.taback@utoronto.ca

alison.gibbs@utoronto.ca



Statistical Sciences
UNIVERSITY OF TORONTO

The Context

Background and Rationale:

- Multi-section introductory (non-calculus) statistics course. 1600 students (2016).
- In 2015, students had negative or no change in their attitudes towards statistics from the beginning to the end of the course.
- Is there a simple intervention that can help to improve attitudes towards statistics?
- Might changing the default options that students have to engage with the material “nudge” students toward having better attitudes?

Study Design:

- A randomized encouragement design was used. In 2016, all students were randomized to receive either:
 - “Interesting” weekly emails that contained amusing and thought-provoking stories related to course content + current information about the course.
 - “Plain” weekly emails that contained current information about the course.
- The randomization was balanced by CGPA and section.
- In 2015, students didn’t receive a regular weekly email so the 2015 students were used as a control group.

Data Collected:

- Attitudes: SATS-36 survey pre- and post-course. Dimensions: affect, cognitive competence, value, difficulty, interest, and effort.
- Student data: CGPA, program of study, year of study, sex, full- or part-time.

Acknowledgements

Thanks to Candace Schau for the use of SATS-36. Funding was provided by a Faculty of Arts and Science Teaching Stream Pedagogical Grant and the Department of Statistical Sciences.

Research Question

What is the effect of weekly emails on students’ attitudes towards statistics?

2015 Results

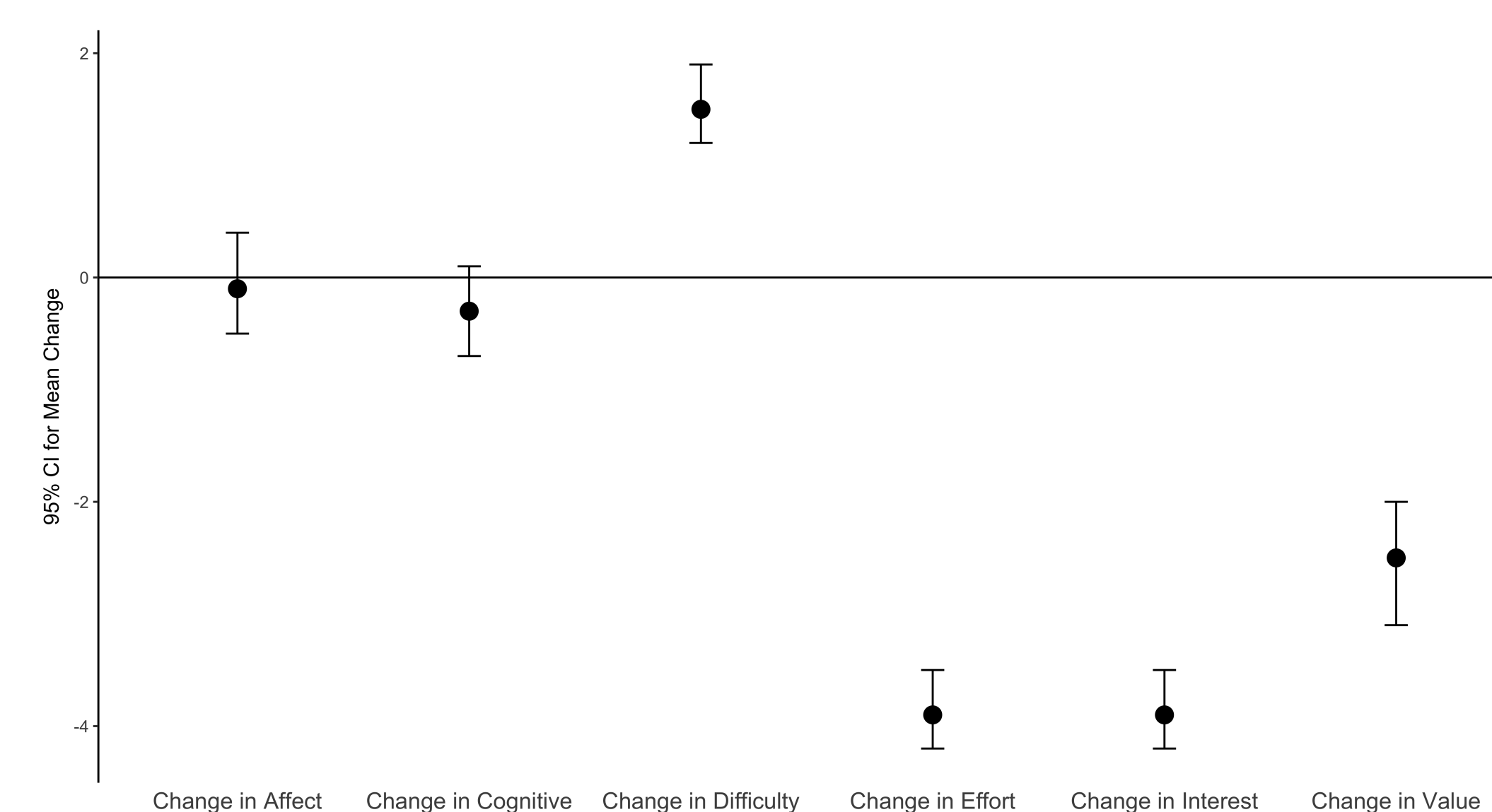


Figure 1: Changes in attitudes towards statistics in 2015. Students in 2015 did not receive weekly course emails.

2016 Results

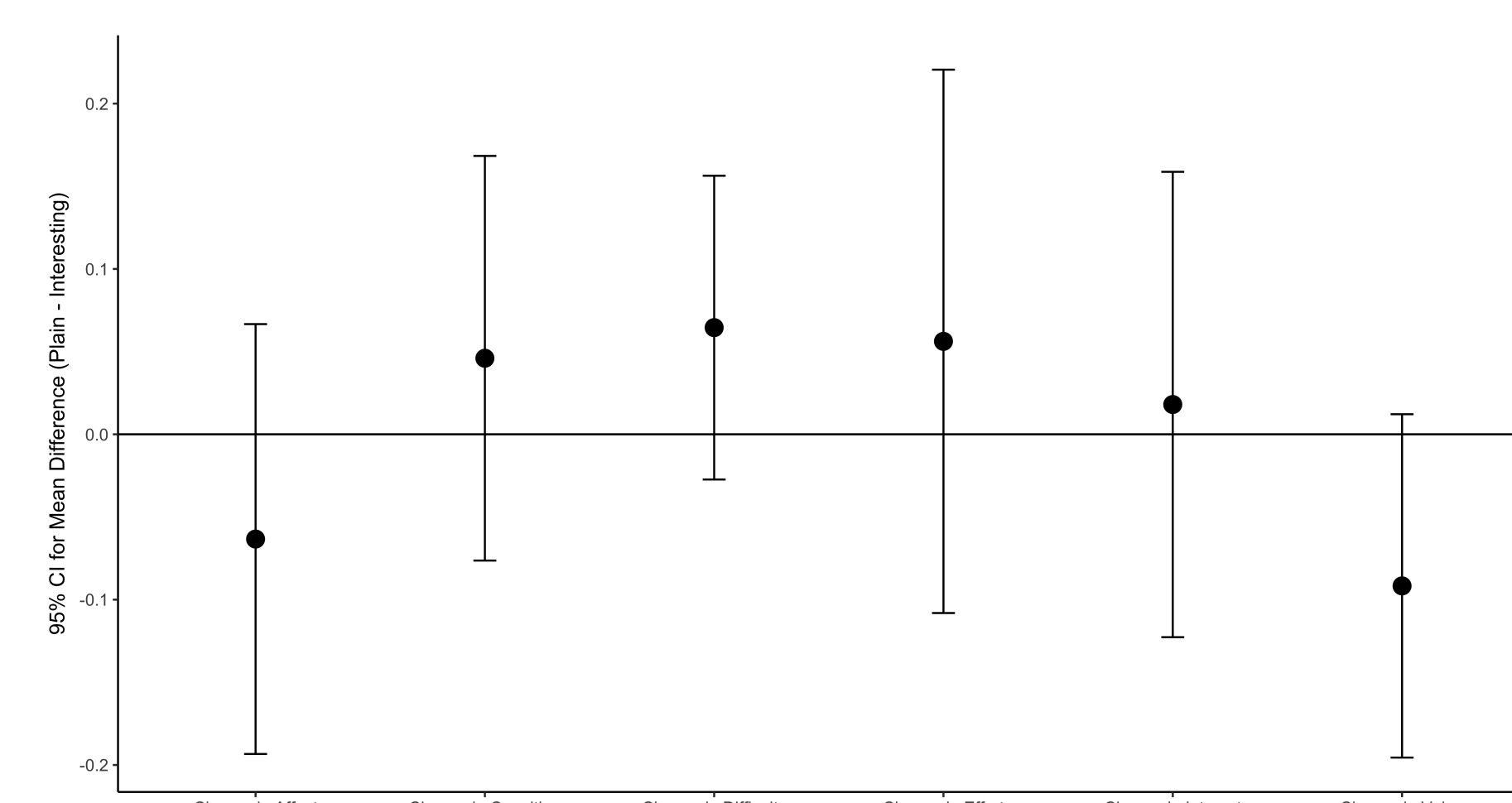


Figure 2: Differences in changes of attitudes between “plain” email group and “interesting” email group.

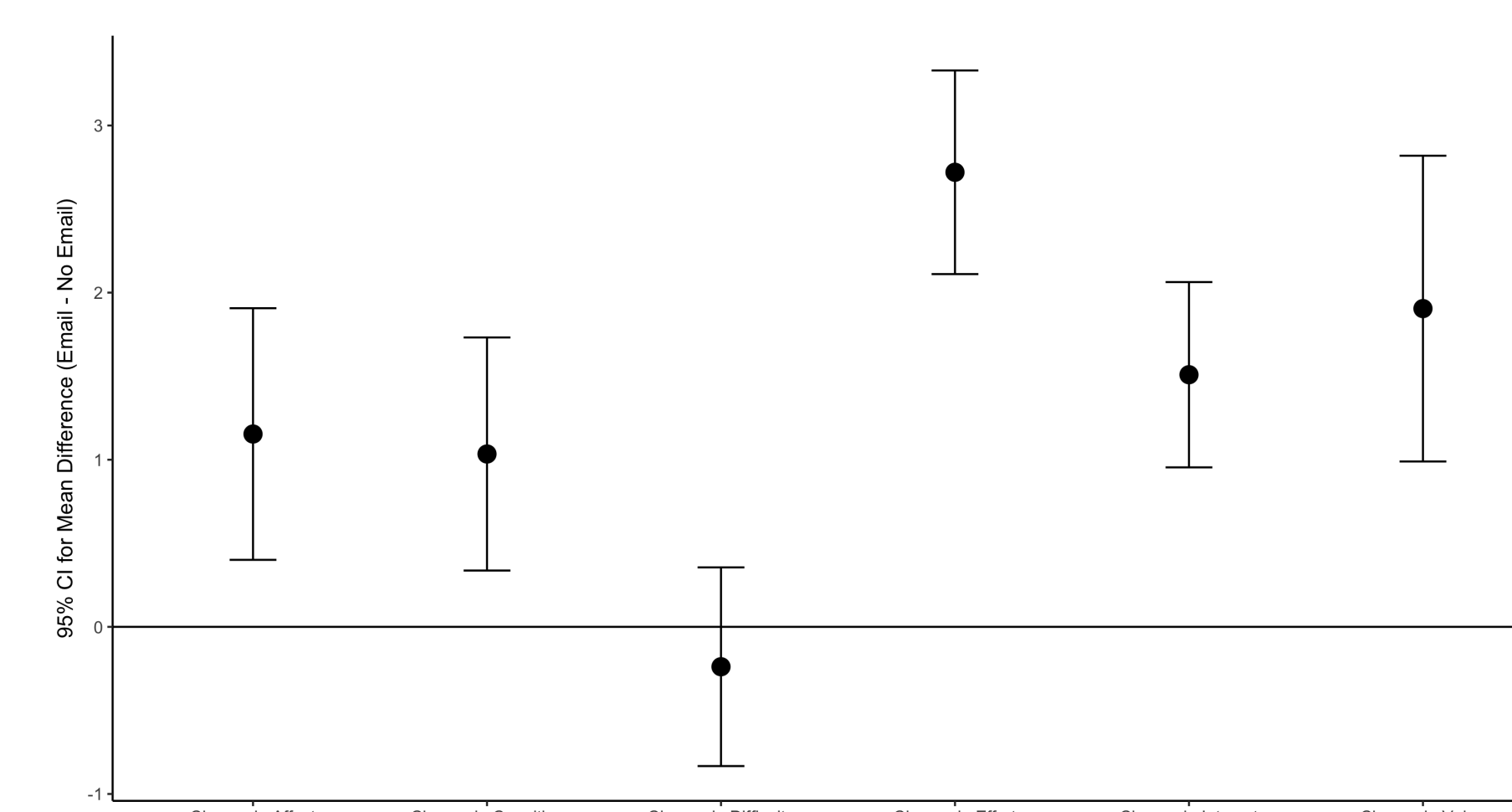


Figure 3: Differences in change of attitudes between email group (2016) and no email group (2015), adjusted for instructor, sex, and CGPA.

Results

- For students who did not receive weekly course emails, from the beginning to the end of the course they found statistics more difficult, put in less effort, had less interest, and saw less value in statistics.
- For students who received weekly course emails, there were no significant differences in changes in attitudes between the students who received “plain” emails and those who received “interesting” emails.
- Changes in all dimensions of attitudes, except for difficulty, were significantly higher for students who received weekly emails than for students who did not receive weekly emails.

Weekly emails

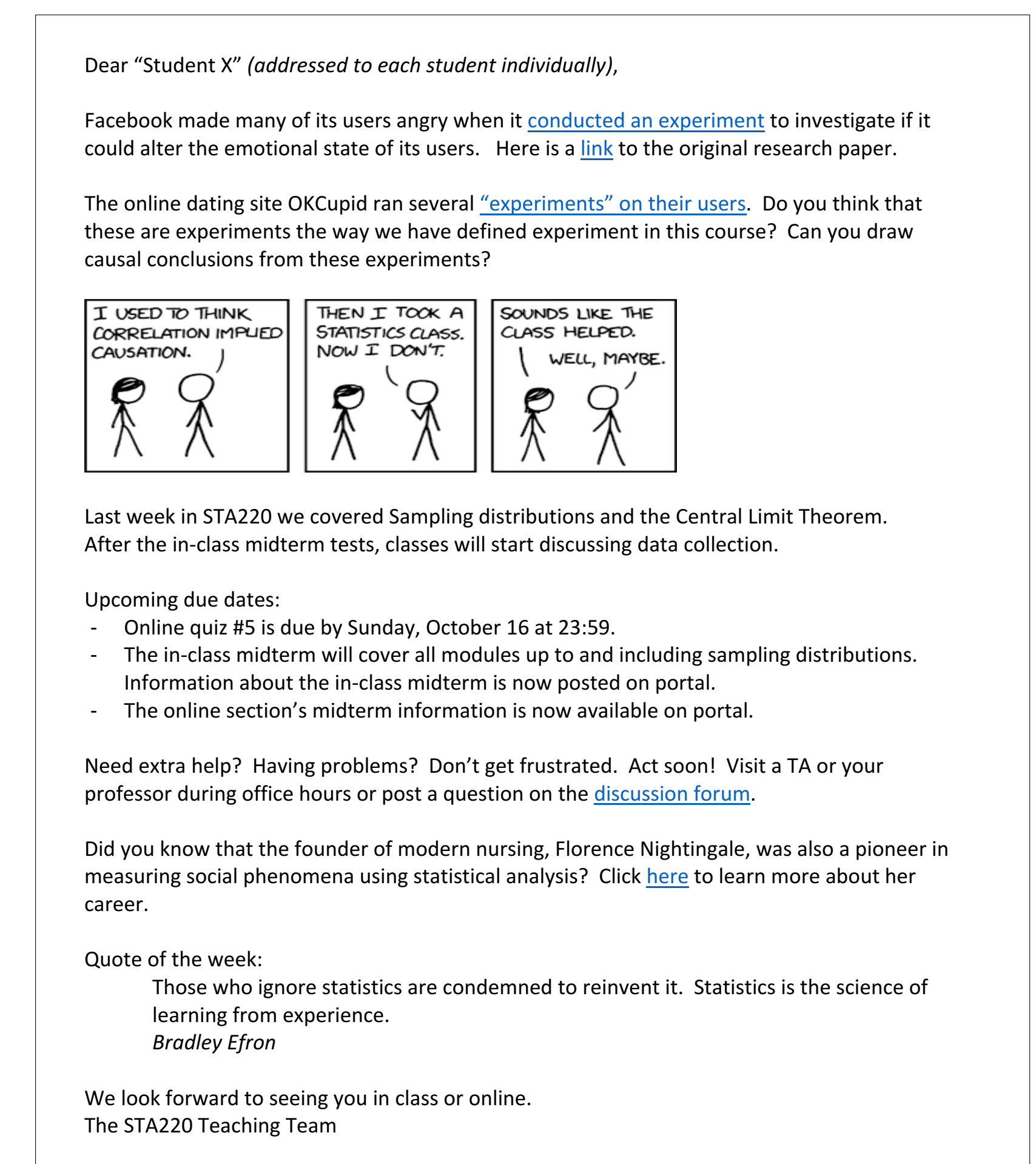


Figure 4: Example of an “interesting” email

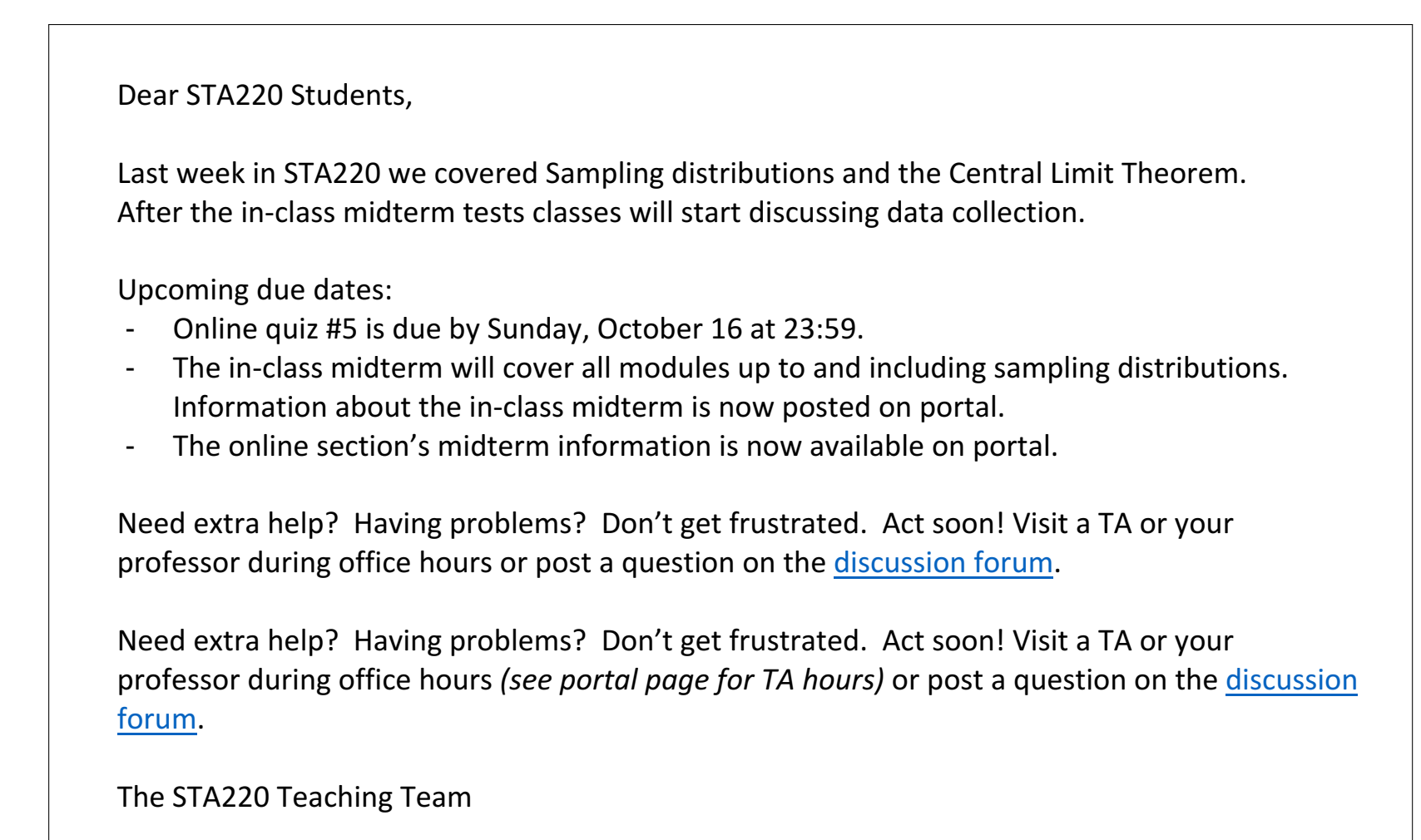


Figure 5: The corresponding “plain” email

Conclusions

- Weekly emails can help an instructor engage with a large number of students and improve students’ attitudes towards statistics.
- A weekly email communicating basic course information, such as upcoming milestones and how to access different course resources, may help to improve students’ attitudes towards statistics.