

Cognitive load theory helps students learn programming and statistics

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Question

Can we use elements of cognitive load theory to teach R programming throughout a statistics course?

- Will students learn to do more things in R?
- Will students feel better while learning R?

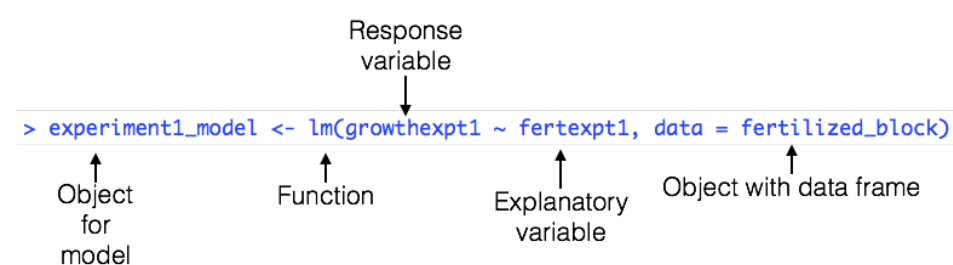
Methods

- We used the completed question, partially completed question and not-split attention elements of cognitive load theory to design R assignments for two courses (Intro to biostatistics and Ecological methodology)
- We surveyed students in two cohorts, one cohort before implementing the R assignments (control) and another cohort after (treatment)
- We analyzed their survey answers and lab reports.

Assignment examples

Elements of cognitive load theory

Non-split attention elements



Partially completed questions

First, create a vector called `new_vector` that contains the numbers from 1 to 10.

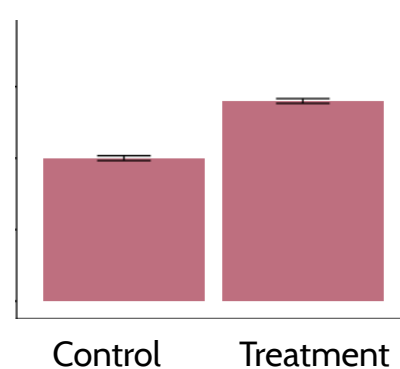
Fill in the blanks to complete this line of code:

```
> new_vector <- ___ : ___
```

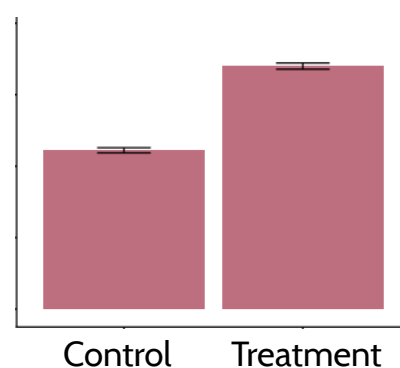
Results

Survey

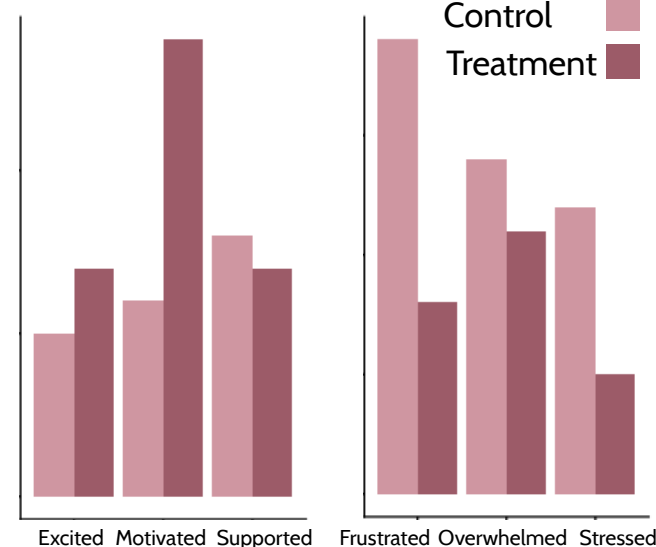
I would rate my programming proficiency as high



I would put the ability to use R in my CV



I felt:



"The description of the functions were terrific! I found the quizzes very helpful in developing my understanding of R throughout the course as well [D28]"

"I really liked how the [R] instructions walked us through the process so it was less overwhelming [D7]"

