Business Research Methods

Module 1

Introducing a scientific-based decision making framework

Hypothesis Testing Framework

Generate hypotheses to support theory

- Null hypothesis significance testing (Fisher, 1925)
  - Null hypothesis vs. alternative hypothesis

Hypothesis Testing Framework

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- Null hypothesis significance testing (Fisher, 1925)

Null hypothesis:

A statistical test of the hypothesis that suggests that there is no difference between specified populations (or no relation between constructs) and that any observed difference is due to sampling or experimenter error.

$r = 0$

Alternative hypothesis:

A statistical test of the hypothesis that suggests that there is a difference between specified populations (or relation between constructs).

$r \neq 0$

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Null hypothesis:

There is no relation between emotional exhaustion and turnover behavior

Emotional exhaustion → Turnover
$r = 0$

Alternative hypothesis:

There is a positive relation between emotional exhaustion and turnover behavior

Emotional exhaustion → Turnover
$r > 0$

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BUT HOW DO WE DETERMINE WHETHER OR NOT WE CAN TRUST THE RESULT?

(SPECIFICALLY, WHAT MUST OCCUR FOR US TO "BELIEVE" THAT EMOTIONAL EXHAUSTION IS ASSOCIATED WITH AND, THUS, MAY CAUSE AN INDIVIDUAL TO QUIT THEIR JOB?)

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IN A NUTSHELL, THE P-VALUE MUST BE LESS THAN .05.

BUT, WHAT DOES THAT MEAN?

Hypothesis Testing Framework

Generate hypotheses to support theory

- $p < .05$
  - The Lady Tasting Tea (Fisher, 1956)
  - The take-home point…
    - When there was a very small probability that the woman could complete the tea-task by luck alone would we conclude that she had a genuine skill in detecting whether milk was poured into a cup before or after the tea.
    - If there is a very small probability that *emotional exhaustion* is associated with *turnover behavior* (i.e., by chance; 5%), we begin to "believe" that they are related to each other

Hypothesis Testing Framework

Generate hypotheses to support theory

- $p < .05$
  - If there is a very small probability that *emotional exhaustion* is associated with *turnover behavior* (i.e., by chance; 5%), we begin to "believe" that they are related to each other
  - In this case, we would *reject the null hypothesis* (basically, we say that it is wrong to say that the two constructs are unrelated)
  - Furthermore, we conclude that the relation between EE and TO is *statistically significant*

Hypothesis Testing Framework

Generate hypotheses to support theory

- $p > .05$
  - If we observed no relation between emotional exhaustion and turnover behavior (i.e., $p > .05$), we would *fail to reject the null hypothesis*
  - Note that we do not accept the null hypothesis
  - Furthermore, we could state that the relation between EE and TOI is *not statistically significant* because the corresponding *p*-value is greater than .05

Hypothesis Testing Framework

Generate hypotheses to support theory

- $p > .05$ (diving deeper!)
  - What does a *p*-value ***really*** tell us?
  - In a nutshell, the *p*-value tells us how well the independent variable predictors the dependent variable
  - In other words, the *p*-value tells us how well the independent variable explains the behavior of the dependent variable

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Hypothesis Testing Framework

Generate hypotheses to support theory

- Summary

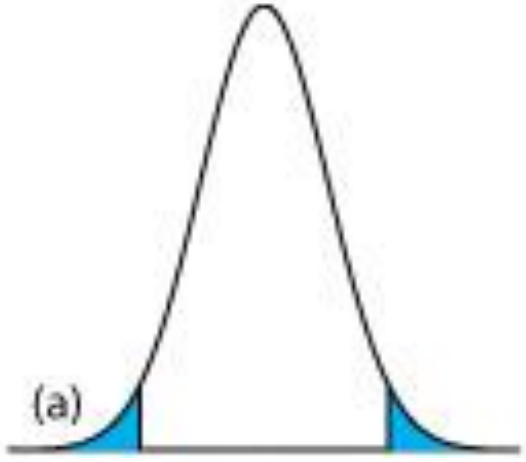
	When the *p*-value is…	
	> .05	**< .05**
	Fail to reject the null	**Reject the null**
	Claim that the effect is likely not to be present	**Claim that the effect is likely to be present**
We…	**(Informally, we are saying that is likely wrong to say that an effect is present)**	**(Informally, we are saying that is likely wrong to say that there is no effect)**
	State that the observed result is not statistically significant	**State that the observed result is statistically significant**
	Should not use propose an evidence-based practice recommendation	**Have grounds to make an evidence-based practice recommendation**

- NOTE: We never claim to “accept the null” or to “accept the alternative”

Hypothesis Testing Framework

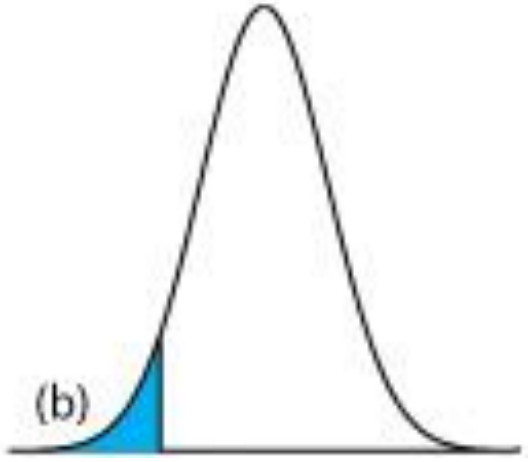
Generate hypotheses to support theory

- Null hypothesis significance testing (Fisher, 1925)
  - One- vs. two-tailed tests



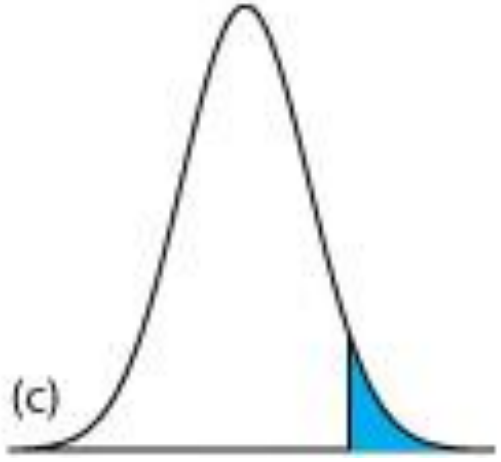
Two-tailed test

There is a relation between emotional exhaustion and turnover behavior.



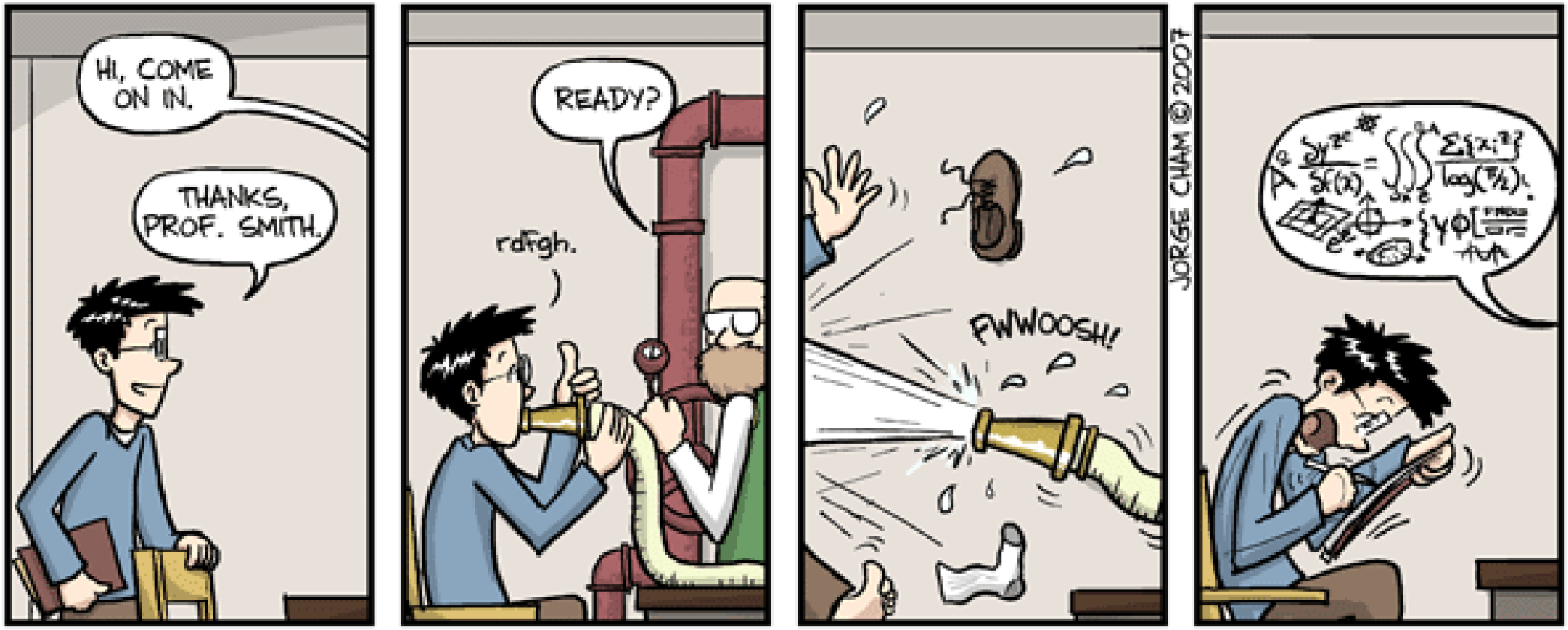
One-tailed test

There is a negative relation between emotional exhaustion and turnover behavior.



One-tailed test

There is a positive relation between emotional exhaustion and turnover behavior.



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