INTRO PSYCH SCIENTIFIC REASONING MODULE: DEPRESSION TREATMENT

INSTRUCTOR GUIDE FOR SMALL CLASSES

TOPIC: CLINICAL PSYCHOLOGY / TREATMENT OF PSYCHOLOGICAL DISORDERS

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Summary

In this module, students consider how to evaluate evidence for depression treatment. Students typically bring prior knowledge and beliefs about depression to Intro Psych. Here, students learn how psychological scientists approach questions about treatment efficacy with greater depth and precision than the lay public, including consideration of important aspects of research design. The module emphasizes the challenge of placebo effects in treatment research and identifying a good comparison group.

Topic Treatment of Psychological Disorders

Source Article

Noorbala, A., Azhondzadeh, S., Tahmacebi-Pour, N., & Jamshidi, A. (2005). Hydro-alcoholicextrac of Crocus sativus L. versus fluoxetine in the treatment of mild to moderate depression: A double-blind, randomized pilot trial. *Journal of Ethnopharmacology, 97*, 281-284.

Content Specific Student Learning Objectives

1. Think critically about possible treatments for depression.
2. Evaluate the relative benefits or merits (and side effects) of various kinds of treatment.
3. Evaluate potential biases in reports of study findings (e.g., conflict of interest; unpublished findings with null effects).
4. Draw conclusions about potential treatments and preventative measures.
5. Differentiate between statistical significance and clinical significance.

APA Learning Objectives (2.0)

1.1 Describe key concepts, principles, and overarching themes in psychology.
1.3 Describe applications of psychology.
2.1 Use scientific reasoning to interpret psychological phenomena.
2.2 Demonstrate psychology information literacy.
2.4 Interpret, design, and conduct basic psychological research.

MCAT Learning Objectives (2015)

Psychological, Social, & Biological Foundations of Behavior: Foundational Concept 7A
Scientific Inquiry & Reasoning Skills
Skill 2: Scientific Reasoning and Problem-solving
Skill 3: Reasoning about the Design and Execution of Research
Skill 4: Scientific Statistical Reasoning

Class Time 30 - 45 minutes

Other Resources For This Module

Student Handout, PowerPoint Slides

BEFORE CLASS

Copy Student Handouts – 1 per student.

Read through this guide, getting an estimate for how much time to spend on each piece, depending on the time you have available.

Consider what alternate patterns of data you'll want to show on the whiteboard during full class discussion.

DURING CLASS

SET THE STAGE

[Slide 1] (title slide)

- Ask class to list possible treatments for depression
- Students will likely come up with drugs and therapy on their own, maybe also exercise
- Discuss that one goal of Psychology is to collect research on the effectiveness of different possible treatments… but that evaluating treatments is more challenging than it seems
- Introduce activity – evaluating a published research study on a possible treatment for depression

ACTIVITY

[Slide 2] (two possible treatments)

- Break class into small groups
- Explain that you will be passing out a summary from a published research study examining whether saffron is an effective natural treatment for depression, and comparing it to Prozac (fluoxetine). Students' job is to read the summary and discuss the questions at the end in their groups
- **While students work, recopy one of the data figures onto the white board – this can be used during full class discussion to dynamically consider different data patterns, including adding a 'no treatment control group'**
- While students work, circulate among groups to check for student errors in understanding and guide students to consider alternative possibilities

- Q1: be sure students identify the full set of outcome variables (depression scores, but also the side effects). Students should also identify that there are two predictor variables (1) treatment type, saffron vs prozac, and (2) time, baseline vs 6 weeks post
- Q2: many students will believe the data provide causal evidence for the role of saffron in reducing depression symptoms. If students make this error, they can be probed to consider why a drug treatment is the comparison. What assumption does this make? How do we know depression won't spontaneously remit over six weeks' time? Although this is an experimental study (where you <u>might</u> be able to draw causal claims) there is a major design flaw in that we don't have a no treatment control group
- Q3: students can be guided to consider both the p-values, as well as different ways the researchers might have organized the data. For example, students might consider how results would change if side effects were averaged together, or if there are possible un-measured side effects of either treatment

[Slide 3] (analyzing the study)

- Bring class back together for larger class-level discussion on key points
- Consider what evidence is needed to make causal claims
  - Why are drugs considered the 'gold standard' for measuring effectiveness? Why isn't there a no-treatment control group in this study?
  - What would you want to know to determine that drugs are a good comparison? Can bring in recent meta-analyses (e.g., Kirsch et al 2008) showing that for mild to moderate depression, fluoxetine is no more effective than the passage of time
  - **On board, edit the graph that was recopied -** Discuss possible patterns of data that <u>would</u> support a causal claim, drawing bar graphs on the board to illustrate possible patterns of results for an added no-treatment control group
- Consider range of possible treatments for depression (e.g., exercise, sunlight, being around other people)
  - Why do drugs tend to be the go-to treatment? What are the implications of this for our conceptualization of depression?
  - What other non-pharmacological treatments might exist?
  - For exercise, discuss benefits in terms of few negative side effects, but other benefits in terms of overall physical health

        - Caveat for those with severe depression—may not be realistic to have them begin an exercise program; some patients may not be able to participate (e.g., those with specific underlying health problems)

    - Patient willingness is critical—drugs (whether pharmacological or plant based) are the "easiest" in terms of not having to make a lifestyle change or spent time on treatment

- Discuss the role of placebo with all of these treatments

    - In many cases, it is clear which group the participant was in (e.g., what would be a placebo for exercise?); how much of the effect could be due to the patient thinking that the treatment will be effective?

    - Exercise may have physiological benefits, but also benefits in terms of personal control (Babyak et al., 2000); importance of attributions. Is there an ideal control condition that could be applied?

    - Those who lives in communities in which members get lots of strenuous activity, have strong community ties, and get plenty of sleep (e.g., Amish farming communities in North America) rarely experience depression (Ilardi et al., 2008 as cited by Myers textbook)

[Slide 4] (How do your studies look?)

- If time, have a few groups share their proposed studies

- As studies are shared, lead the class in critiquing the studies using some of the issues raised earlier (e.g., could a placebo effect explain results? What is the nature of the comparison/control group?)

CONCLUDING THOUGHTS

- End class with discussion about differences in prevention vs treatment, and the importance of critically examining claims for the effectiveness of treatments

    - Conclude by pointing out how one study never tells the whole story. Each new study contributes evidence in support of a theory. Multiple studies with different features that converge on the same set of findings help us best understand the question