Cognitive Psychology Quiz I on 05/21/19—
Name:

1. HEADLINE: Rewarding gone wrong
    LEAD: Parents and teachers naturally like to reward children at the sight of good behavior; however, rewarding can actually make children stop good behavior all together.

    What is at least one principle of Science Communication that this headline + lead sentence gets right and one principle that they get wrong? [2 pt]

    [**Apply**]
    -The title is not particularly attention grabbing; it's short but says little about the study
    -Neither the headline nor lead sentence mention or indicate in any way that this is from a scientific study, with concrete evidence
    -It does seemingly get at and convey the main point about reward in adult relationships with children; it mentions the 'So What'
    -Multiple answers are OK for this question so long as they are justified by what we have discussed in class and are backed by SciComm principles.

2. The likelihood principle states that [1 pt] **[Identify]**
    a. **we perceive the object that is most likely to have caused the pattern of stimuli we have received**
    b. we perceive size to remain the same size even when objects move to different distances
    c. it is easier to perceive vertical and horizontal orientations
    d. feature detectors are likely to create a clear perception of an object

3.
    Describe one perspective on why we perceive this mug the "wrong" way [1 pt].
    [Describe]

➔ A kind of Gestalt perspective would suggest that we see what is the most simple to see and perceive on this mug, which is real words (dig bick make no sense).
➔ Other theories would suggest a more learning-oriented perspective:
  o You perceive the mug incorrectly because you've learned a particular phrase or sentence more often, so you expect to see that on the mug. Basically: expectation is shaped by experience, causing the particular perception we have. In a Bayesian view, you enter with a prior, an initial belief that the mug would say "I got a big dick" instead of "I got a dig bick." Same with "You read that wrong" instead of "You that read wrong." As you reread the mug, you update your prior with evidence that it instead says "I got a dig bick". Same thing happens with the other sentences. Statistical regularity or learning perspective also would mention the likelihood of seeing one phrase (the wrong phrase) over our lifetime, which is why we expect to see it and then are startled when we realize that was incorrect.

4. Name one problem associated with the lack of open science in psychology and one solution for that problem. (1 pt) **[Identify**]

Publication bias: the tendency to publish positive results over negative results; incentivize publishing negative results with specific journal articles dedicated to that or value null results (Registered Reports; preregistration-oriented articles). Preregistering your hypotheses also helps with publication bias (null is null despite clear hypothesis). Other problem: Not being able to reproduce results from another lab given the data – having open-source code, sharing data, analysis, code, stimuli, etc. online helps; same with reporting all the measures in a study. Publishers incentivize all the above with badges for data sharing, code sharing, preregistration. Etc. Explicitly problems from slides or lab manual:

- Publication pressure & bias
- Selection bias
- Fraud
- Failure to replicate
- Inflation (p-hacking); demo1, demo2
- Questionable Research Practices (QRP)

Solutions:
-Reproducibility projects
-Crowdsourced projects
-Badges
-preregistration (Open Science Framework)
-open lab notebooks
-codebooks
-managing projects on the Open Science Framework
-Start-to-Finish Project checklists
-detailed documentation
-open materials
-cooperate with replicate studies
-changing the academic publishing system

Some solutions only fit with specific problems – the problem should match the solution.

5. Research has suggested that some areas of psychology have moved towards larger sample sizes from an online, crowdsourced, somewhat diverse Amazon Mechanical Turk database and away from standard psychology pool subjects or somewhat more diverse community-based samples. What is one problem and benefit that you see associated with this move? (1 pt) **[Apply]**

+ online samples means you can recruit a lot of people from many different places; you're not limited to your community or psych sample

+ perhaps sample will be less WEIRD (although Amazon Mechanical Turk is still WEIRD)

+ perhaps you'll get people who are more motivated to do your study, because they're crowdsourced and specifically on that site for that purpose

+ more participants means you can replicate your study easier

- no longer controlled as much (i.e., online participants – you don't know what they're doing in addition to your study)

- psych pool studies at least are in a very specific population, so you control more for individual differences and other small measures of individual variance that could affect your results

- community samples can be really important if you're in an underserved area and can access populations not typically surveyed in psychology studies

+/- willing to accept other answers so long as justified

6. You want to find some evidence suggesting that very young, not yet verbal infants understood a particular vocabulary word. Which of the following would be the best measure of their understanding? [1 pt] **[Apply]**
   a. **You could track where their eyes move: do they fixate on the image that is associated with the word spoken aloud?**
      i. This is inspired from research in Elika Bergelson's lab. The idea is that if the baby is looking to the image of the word spoken aloud, the baby recognizes the vocabulary word in the image, a visual representation of that word. If the baby doesn't know the word, there's no reason for why they'd direct their gaze to any representation of it in the environment.
   b. You could measure their scalp EEG and see whether they show enhanced processing for the particular words you're interested in vs. non-words.
      i. This is wrong because increased activity for words vs. non-words doesn't tell you anything about whether a baby understood *a particular word*. All it would tell you is how words are processed on a temporal scale as you hear them in real-time relative to non-words.
   c. You could put them in an fMRI scanner to examine whether they'll show enhanced neural processing of words vs. non-words.
      i. Same as above. All it would tell you is what brain regions might be involved in processing real language at a young age.
   d. You could give them toys that represent the word and see whether they show a preference for the toy word that you're interested in.
      i. This is too vague to ever be an answer. Preference for a toy doesn't mean anything. They could like the toy because it's bright colored or because their mom or dad gave it to them, etc.

7. The main difference between early and late selection models of attention is that in late selection models, selection of stimuli for final processing doesn't occur until the information is analyzed for [1 pt] **[Identify]**
   a. Modality (presentation mode, like auditory vs. visual)
      i. This is basically an early sensory memory/physical characteristic and is the same response as c and d.
   b. **Meaning**

> > > **i.** Late selection models basically posit that everything is processed through the meaning of the stimuli (higher level processing), at which point you've selected which stimuli are going to processed for top-down attentional goals. Early selection models, meanwhile, posit that things are processed at their basic characteristics before being filtered and selected for higher-level processing, like meaning.
> > c. Physical characteristics
> > d. Location

> 8. Name one effect that we've discussed that would be an example of top-down attention and one effect that would be an example of bottom-up attention. [1 pt]

[Identify]
Top-down: anything that has to do with our internal goals guiding our behavior –
- conjunction search or why our eadrums move 10 ms before the eye moves (they speculate top-down) or how we're able to go back and correct our perception of the mug or the cocktail party effect, etc.
- Bottom-up: attentional capture, the "pop-out" nature of a single feature search

The Stroop effect is the conflict between top-down goals (instructed to respond to the printed ink color) and bottom-up processing (automatic tendency to read the word, due to our learned habit). Fine if this is here so long as there is an explanation of both components to the Stroop.