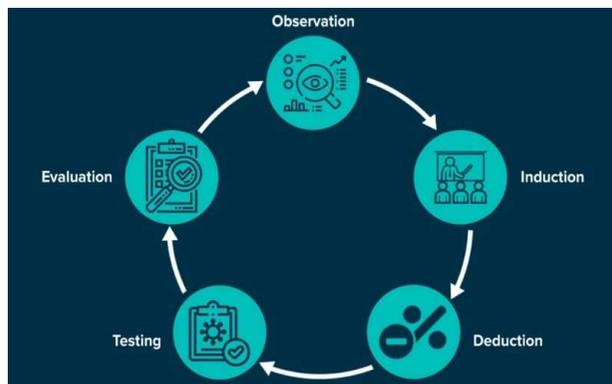# *Empirical research in management and economics*
Exercise

Thorsten Pachur, Linus Hof, Rebecca West,
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Technical University of Munich
School of Management
Chair of Behavioral Research Methods

Things specified in a preregistration

1. Have any data been collected for this study already?

2. What's the main question(s) being asked or hypotheses being tested in this study?

3. Describe the key dependent variable(s) specifying how they will be measured.

4. How many and which conditions will participants be assigned to?

5. Specify exactly which statistical analyses you will conduct to examine the main questions/hypotheses.

6. Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

7. How many observations will be collected or what will determine sample size? (No need to justify decision, but be precise about exactly how the number will be determined.)

8. Anything else you would like to preregister?

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Research Article

aps
ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

The Effect of Auditory and Visual Recommendations on Choice

$SAGE

Shwetha Mariadassou[1], Christopher J. Bechler[2], and Jonathan Levav[1]
[1]Graduate School of Business, Stanford University, and [2]Mendoza College of Business, University of Notre Dame

Abstract
We explore the effect of recommendation modality on recommendation adherence. Results from five experiments run on various online platforms ($N = 6{,}103$ adults from TurkPrime and Prolific) show that people are more likely to adhere to recommendations that they hear (auditory) than recommendations that they read (visual). This effect persists regardless of whether the auditory recommendation is spoken by a human voice or an automated voice and holds for hypothetical and consequential choices. We show that the effect is in part driven by the relative need for closure—manifested in a sense of urgency—that is evoked by the ephemerality of auditory messages. This work suggests that differences in the physical properties of auditory and visual modalities can lead to meaningful psychological and behavioral consequences.

New technologies have increased the accessibility of information in diverse modalities. Indeed, smart speakers are among the world's fastest-growing technology segments and allow people to hear the same information that in the past they could only read on a browser (Canalys, 2018; Molla, 2018; Munz & Morwitz, 2020). For instance, prior to choosing a restaurant, a person might read about a recommended restaurant online, or they might hear the same recommendation from Alexa or volume of communication, have been shown to have a significant impact on perceptions of the communicator's attitude and confidence (Mehrabian & Wiener, 1967; Van Zant & Berger, 2020).

In contrast, we focus on how the physical properties of auditory and visual information affect the recipient, independent of the recipient's perceptions of the communicator. Specifically, we show that the ephemerality of auditory messages relative to visual messages influ

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Recommendation Modality – Humanness 1200 (#45483)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
We predict that auditory recommendations will be more likely to be followed than visual recommendations.

3) Describe the key dependent variable(s) specifying how they will be measured.
Participants will consider four categories. For each category, participants will choose among three options, one of which is the recommended option. The key dependent variable will be if participants followed the recommendation for that category.

4) How many and which conditions will participants be assigned to?
Participants will be randomly assigned to one of three modality conditions.
1) Auditory recommendations, spoken by a human voice
2) Auditory recommendations, using text-to-speech software
3) Handwritten visual recommendations

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will use a mixed-effects logistic regression model. The key dependent variable will be a binary variable: if participants followed the recommendations. The independent variable will be the modality of the recommendations. We will include random effects for participants and the product categories. We will compare each of the three modality conditions to one another.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

(download from Materials folder)

Empirical research in management and economics (Pachur)

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For further examples and tips:
(download from Materials folder)

Your Study Here: AsPredicted Easy-Use Template & Tips for Pre-Registration Beginners

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Special Thanks To: Jessica Schleider, PhD and Michael Mullarkey, MA for providing feedback on the following materials. Thank you!

While there are multiple pre-registration formats, AsPredicted tends to be the simplest format for beginners to pre-registration. The AsPredicted pre-registration format involves answering 8 questions about your study (hypotheses, sample, methods). *Template responses are provided in italicized text* below, with [bracketed words and phrases] representing places for you to add in your specific information. Some key phrases are hyperlinked for more information.

Links to specific pre-registration examples and instructions for submitting a pre-registration are included at the end of this document.

1. Have any data been collected for this study already?

This one is relatively straightforward, you just select one of these three options:
- *Yes, at least some data have been collected for this study already*
- *No, no data have been collected for this study yet*
- *It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.**

*note: this third option is appropriate when you are doing a secondary data analysis, but have not yet accessed/seen the data. Later in this pre-registration, you'll need to explicitly state exactly how, and to what capacity, you've been exposed to the data previously. When you are hoping to pre-register, the general rule of thumb is: the less involvement you've had with the data, the better.

2. What's the main question being asked or hypothesis being tested in this study?

What specific questions are you trying to answer? What do you think you will find? Your questions should be specific and testable. If you have > 1 hypothesis, you need to write multiple statements (one per hypothesis) using the template(s) below. I find it helpful to write hypotheses in bulleted or numbered format: it forces me to really be clear/concise when referring to them later in question 5 (e.g."*To answer hypothesis 1, we did this…*").

Exercise

- Goal: Prepare the preregistration of an empirical study

- Get together in groups of 3-4

- Find a research question that you would be interested in

- Develop a research plan including a preregistration document that could be submitted to https://aspredicted.org/.

- Fill in the file "Preregistration form" (download from the Materials folder)

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? Redesign 2025

AsPredicted
Pre-registrations

AsCollected
Results Provenance

ResearchBox
Data | Code | Materials

New Pre-registration **CREATE**

Your Pre-registrations [your@email.com] **SIGN IN**
I no longer have access to the email account i have used in the past

Public Pre-registrations **LOOK UP**
(lookup an AsPredicted referenced in published paper by # only)

WHAT IS ASPREDICTED?

A platform that makes pre-registrations easy to make and evaluate. All pre-registrations can be downloaded as single page PDFs that are time-stamped and include a unique URL for verification.

HOW DOES IT WORK?

- One author creates the pre-registration.
- Coauthors get an email asking for approval.
- Pre-registration remains private until an author makes it public (why?)

IF NOT 'AS PREDICTED'?

- 'Contrary to expectations, we found that...'
- 'Unexpectedly, we also found that...'
- 'In addition to the analyses we pre-registered we also ran...'

WHAT IS ASPREDICTED?

A platform that makes pre-registrations easy to make and evaluate. All pre-registrations can be downloaded as single page PDFs that are time-stamped and include a unique URL for verification.

Example: https://aspredicted.org/kv692.pdf

HOW DOES IT WORK?

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- Coauthors get an email asking for approval.
- Pre-registration remains private until an author makes it public (why?)
- Public pre-registrations cannot be modified and are automatically backed up in the Web Archive.

IF NOT 'AS PREDICTED'?

- 'Contrary to expectations, we found that...'
- 'Unexpectedly, we also found that...'
- 'In addition to the analyses we pre-registered we also ran...'

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