Using LLM–powered chatbot as an administrative modality in Psychological assessment

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We create a chatbot for purposes of Psychological assessment and contrast responses with traditional inventory responses. Large language model powers the chatbot – how do we train? We aim for an optimal–point estimate with the chatbot using the metaphor of a computerized adaptive test. Questions are tailored to respondent trait–level. These scores are compared against scores from traditional measures. Criterion associations are [better/similar/worse]

Keywords: keyword1, keyword2, keyword3

This is my introductory paragraph. The title will be placed above it automatically. *Do not start with an introductory heading* (e.g., "Introduction"). The title acts as your Level 1 heading for the introduction.

Details about writing headings with markdown in APA style are here.

Displaying Figures

A reference label for a figure must have the prefix `fig-`, and in a code chunk, the caption must be set with `fig-cap`. Captions are in title case.

To refer to any figure or table, use the `@` symbol followed by the reference label (e.g., Figure 1).

Correspondence concerning this article should be addressed to Diego Figueiras, Ana and Blanca's University, 1234 Capital St., Albany, NY, USA, Email: sm@example.org
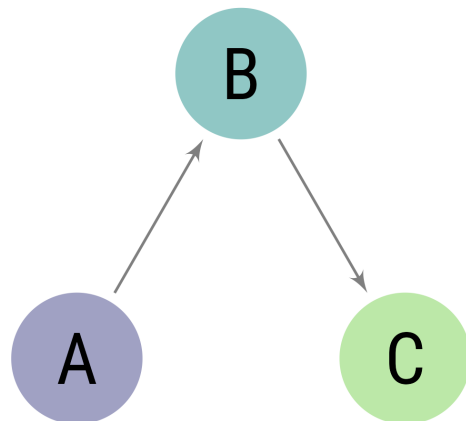
Figure 1

The Figure Caption
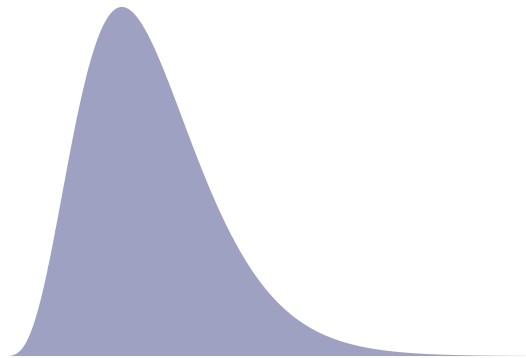
Note. This is the note below the figure.

Imported Graphics

One way to import an existing graphic as a figure is to use `knitr::include_graphics` in a code chunk. For example, Figure 2 is an imported image. Note that in apaquarto-pdf documents, we can specify that that a figure or table should span both columns when in journal mode by setting the `apa-twocolumn` chunk option to `true`. For other formats, this distinction does not matter.

Figure 2

An Imported Graphic

Note. A note below the figure

Figure graphics can be imported directly with Markdown, as with Figure 3.
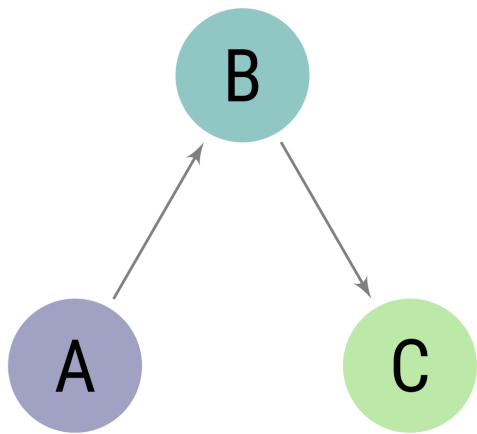
Which style of creating figures you choose depends on preference and need.

Displaying Tables

We can make a table the same way as a figure. Generating a table that conforms to APA format in all document formats

Figure 3

Another Way to Import Graphics

Note. A note below the figure

can be tricky. When the table is simple, the `kable` function from knitr works well. Feel free to experiment with different methods, but I have found that David Gohel's flextable to be the best option when I need something more complex.

Table 1

The Table Caption

Numbers	Letters
1	A
2	B
3	C
4	D

Note. The note below the table.

To refer to this table in text, use the @ symbol followed by the reference label like so: As seen in Table 1, the first few numbers and letters of the alphabet are displayed.

In Table 2, there is an example of a plain markdown table in a fenced div.

Table 2

Table Caption of a Markdown Table

Default	Left	Right	Center
12	12	12	12
123	123	123	123
1	1	1	1

Note. This is a note below the markdown table.

Table 3 is an example of a plain markdown table without a fenced div. Note the that the caption begins with a colon.

Table 3

My Caption.

Tables and Figures Spanning Two Columns in Journal Mode

When creating tables and figures in journal mode, care must be taken not to make figures and tables wider than the columns, otherwise LaTeXsometimes makes them disappear.

As demonstrated in Figure 4, you can make figures tables span the two columns by setting the `apa-twocolumn` chunk option to `true`.

Math and Equations

Inline math uses LaTeXsyntax with single dollar signs. For example, the reliability coefficient of my measure is $r_{XX} = .95$.

If you want to display and refer to a specific formula, enclose the formula in two dollar signs. After the second pair of dollar signs, place the label in curly braces. The label should have an `#eq-` prefix. To refer to the formula, use the same label but with the @ symbol. For example, Equation 1 is Euler's Identity, which is much admired for its elegance.

Citations

See here for instructions on setting up citations and references.

A parenthetical citation requires square brackets (Cameron & Trivedi, 2013). This reference was in my bibliography file. An in-text citation is done like so:

Cameron and Trivedi (2013) make some important points …

See here for explanations, examples, and citation features exclusive to apaquarto. For example, apaquarto can automatically handle possessive citations:

Schneider and McGrew's (2012) position was …

Masking Author Identity for Peer Review

Setting `mask` to `true` will remove author names, affiliations, and correspondence from the title page. Any references listed in the `masked-citations` field will be masked as well. See here for more information.

$$e^{i\pi} + 1 = 0 \tag{1}$$

Block Quotes

Sometimes you want to give a longer quote that needs to go in its own paragraph. Block quotes are on their own line starting with the > character. For example, Austen's (1814/1990) *Mansfield Park* has some memorable insights about the mind:

> If any one faculty of our nature may be called more wonderful than the rest, I do think it is memory. There seems something more speakingly incomprehensible in the powers, the failures, the inequalities of memory, than in any

Figure 4

A Figure Spanning Two Columns When in Journal Mode
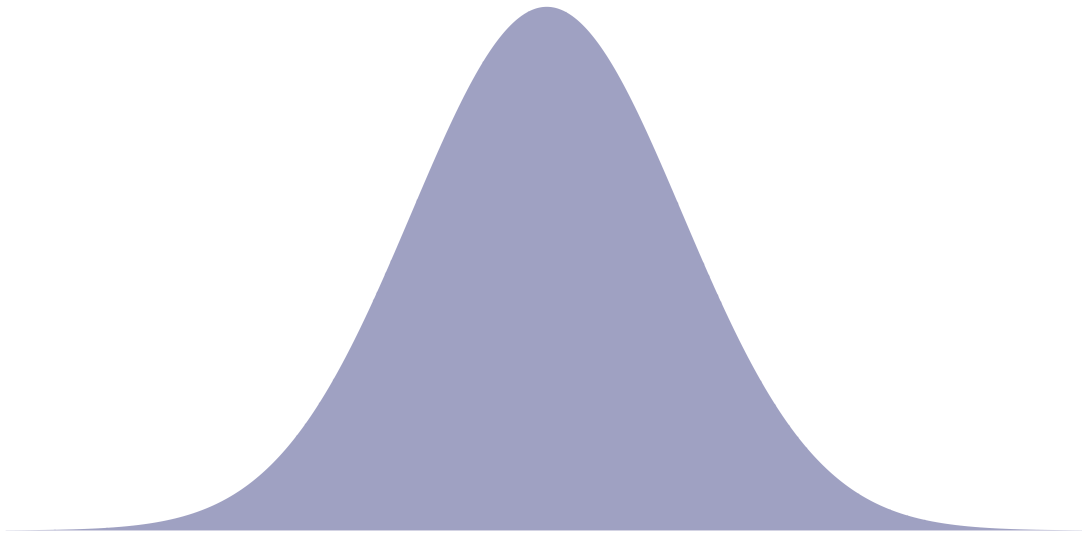
Note. Figures in two-column mode are only different for jou mode in .pdf documents

other of our intelligences. The memory is sometimes so retentive, so serviceable, so obedient; at others, so bewildered and so weak; and at others again, so tyrannic, so beyond control! We are, to be sure, a miracle every way; but our powers of recollecting and of forgetting do seem peculiarly past finding out. (p. 163)

If your quote has multiple paragraphs, like this passage from Brown (2012), separate them with a lone **>** character between the lines:

In the entire field of astronomy, there is no word other than *planet* that has a precise, lawyerly definition, in which certain criteria are specifically enumerated. Why does *planet* have such a definition but *star*, *galaxy*, and *giant molecular cloud* do not? Because in astronomy, as in most sciences, scientists work by concepts rather than by definitions. The concept of a star is clear; a star is a collection of gas with fusion reactions in the interior giving off energy. A galaxy is a large, bound collection of stars. A giant molecular cloud is a giant cloud of molecules. The concept of a planet—in the eight-planet solar system—is equally simple to state. A planet is a one of a small number of bodies that dominate a planetary system. That is a concept, not a definition. How would you write that down in a precise

definition?

I wouldn't. Once you write down a definition with lawyerly precision, you get the lawyers involved in deciding whether or not your objects are planets. Astronomers work in concepts. We rarely call in the attorneys for adjudication. (p. 242)

Hypotheses, Aims, and Objectives

The last paragraph of the introduction usually states the specific hypotheses of the study, often in a way that links them to the research design.

Method

chatbot for assessment & contrast with traditional psychological assessment/inventory

LLM tells chatbot what to ask and how to respond

optimal point estimate with chatbot (e.g., how many questions necessary prior to minimizing error in construct estimate?) KULAS PREFERENCE

Use metaphor of IRT - tailor questions toward trait level & stop asking when error minimized on trait estimate (train on different levels of trait)

Method: contrast trait estimates with other measures of trait - correlate all with criterion

Participants

Who are they? How were they recruited? Report criteria for participant inclusion and exclusion. Perhaps some basic demographic stats are in order. A table is a great way to avoid repetition in statistical reporting.

Measures

GPT–4 is best suited for a conversational chat–bot because DeepSeek 03mini are better for solving logic problems or fix code. For generating *text*, GPT–4 is bettwer (Diego personal communication, 4/16/25)

Procedure

What did participants do? How are the data going to be analyzed?

Results

Descriptive Statistics

Describe the basic characteristics of the primary variables. My ideal is to describe the variables well enough that someone conducting a meta-analysis can include the study without needing to ask for additional information.

Discussion

Describe results in non-statistical terms.

Limitations and Future Directions

Every study has limitations. Based on this study, some additional steps might include…

Conclusion

Describe the main point of the paper.

References

Austen, J. (1990). *Mansfield Park*. Oxford University Press. (Original work published 1814)

Brown, M. (2012). *How I killed Pluto and why it had it coming*. Spiegel & Grau.

Cameron, A. C., & Trivedi, P. K. (2013). *Regression analysis of count data* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781139013567

Schneider, W. J., & McGrew, K. S. (2012). The Cattell-Horn-Carroll model of intelligence. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary intellectual assessment: Theories, tests, and issues* (3rd ed., pp. 99–144). Guilford Press. https://psycnet.apa.org/record/2012-09043-004
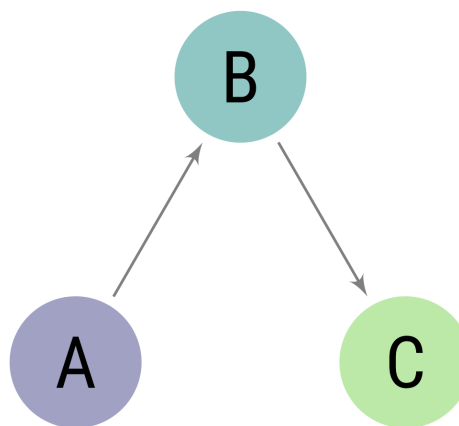
Appendix
The Title for Appendix

If there are multiple appendices, label them with level 1 headings as Appendix A, Appendix B, and so forth.

Tables and figures in the first appendix automatically get the prefix "A", and the numbering starts again at 1. See Figure A1.

If there were a second appendix, tables and figures would get the prefix "B", and the numbering starts again at 1. Make as many appendices as needed.

Figure A1

Appendix Figure

Note. A note below the figure