Behavioural evidence of suppression-induced forgetting and its interaction with psychological traits

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ABSTRACT
During the past two decades, Anderson and colleagues continuously reported significant No-Think suppression effect - also known as suppression-induced forgetting - with behavioural as well as neurophysiological studies. Notwithstanding, many researchers, including Wessel et al. (2020. A multiverse analysis of early attempts to replicate memory suppression with the Think/No-think Task, . 870-887) reported failed replications of this effect. Here, we report two studies examining the Think/No-Think paradigm. In Study 1 ($N = 46$) we report significant suppression-induced forgetting effect despite a smaller frequency of suppression attempts (compared to Anderson) as a result of *behavioural only* experiments. In the pre-registered Study 2, we examined the Think/No-Think paradigm in relation to psychological traits: obsessive compulsive disorder and post-traumatic stress disorder. In Study 2, after screening $N = 367$ subjects, we recruited the highest and lowest scorers on Yale-Brown Obsessive Compulsive Scale and PTSD-CheckList - Civilian Version scale ($N = 75$) employing the Think/No-Think paradigm . Overall, we report successful suppression-induced forgetting effect, and that the low trait scorers were relatively more capable of forgetting unwanted memories than the high trait scorers. In addition, our studies demonstrate opposing patterns of the Think manipulation effect with respect to the type of testing with the original cue versus an independent cue, suggestive of the cognitive bias, *functional fixedness*.

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1. Introduction

This is an example of how to use this template to render journal articles. This template is inspired by the Taylor and Francis rticles template for rmarkdown, repurposed for the Quarto publishing system.

This quarto extension format supports PDF and HTML outputs. This template is primarily focused on generating acceptable LaTeX outputs from Quarto, but renders an acceptable HTML output using the standard Quarto options.

2. Quarto

Quarto enables you to weave together content and executable code into a finished document. To learn more about Quarto see https://quarto.org.

3. Running Code

When you click the **Render** button a document will be generated that includes both content and the output of embedded code. You can embed code like this:

```
[1] 2
```

This format hide chunks by default, but you can set `echo` option to `true` locally in the chunk:

```
# install.packages("broom")
# install.packages("kableExtra")
data("quine", package = "MASS")
m_pois <- glm(Days ~ (Eth + Sex + Age + Lrn)^2, data = quine, family = poisson)
kableExtra::kable_styling(
  kableExtra::kbl(broom::tidy(m_pois))
)
```

4. Markdown Basics

This section of the template is adapted from Quarto's documentation on Markdown basics.

4.1. *Text Formatting*

Markdown Syntax	Output
`*italics* and **bold**`	*italics* and **bold**
`superscript^2^ / subscript~2~`	superscript^2 / subscript$_2$
`~~strikethrough~~`	~~strikethrough~~
`` `verbatim code` ``	`verbatim code`

Table 1.: A table.

term	estimate	std.error	statistic	p.value
(Intercept)	2.9324591	0.0982638	29.8427305	0.0000000
EthN	-0.1739938	0.1213351	-1.4339937	0.1515741
SexM	-0.7145197	0.1222943	-5.8426235	0.0000000
AgeF1	-0.0426993	0.1269111	-0.3364507	0.7365310
AgeF2	-0.0863239	0.1616403	-0.5340495	0.5933073
AgeF3	-0.1528978	0.1189753	-1.2851227	0.1987494
LrnSL	0.2160818	0.1455811	1.4842716	0.1377369
EthN:SexM	0.4390243	0.0920790	4.7679077	0.0000019
EthN:AgeF1	-0.9288934	0.1465738	-6.3373786	0.0000000
EthN:AgeF2	-1.3339773	0.1350383	-9.8785113	0.0000000
EthN:AgeF3	-0.1124246	0.1347842	-0.8341080	0.4042202
EthN:LrnSL	0.2641524	0.1137843	2.3215200	0.0202588
SexM:AgeF1	-0.0556536	0.1630311	-0.3413682	0.7328264
SexM:AgeF2	1.0994244	0.1528125	7.1945973	0.0000000
SexM:AgeF3	1.1594892	0.1385899	8.3663319	0.0000000
SexM:LrnSL	0.0414270	0.1371756	0.3019998	0.7626522
AgeF1:LrnSL	-0.1301879	0.1568800	-0.8298561	0.4066201
AgeF2:LrnSL	0.3734020	0.1456293	2.5640585	0.0103456
AgeF3:LrnSL	NA	NA	NA	NA

4.2. *Headings*

Markdown Syntax	Output
`# Header 1`	**5. Header 1**
`## Header 2`	**5.1. *Header 2***
`### Header 3`	*5.1.1. Header 3*

5.2. *Equations*

Use $ delimiters for inline math and $$ delimiters for display math. For example:

Markdown Syntax	Output
`inline math: $E = mc^{2}$`	inline math: $E = mc^2$
`display math:`	display math:
`$$E = mc^{2}$$`	$$E = mc^2$$

If assigned an ID, display math equations will be automatically numbered:

$$\frac{\partial C}{\partial t} + \frac{1}{2}\sigma^2 S^2 \frac{\partial^2 C}{\partial C^2} + rS\frac{\partial C}{\partial S} \; = rC \tag{1}$$

5.3. *Other Blocks*

Markdown Syntax	Output
`> Blockquote`	Blockquote
`| Line Block`	Line Block
`|   Spaces and newlines`	Spaces and newlines
`|   are preserved`	are preserved

5.4. *Cross-references*

Markdown Format	Output
`@fig-sunflower is pretty.`	Figure 1 is pretty.
`@tbl-glm was created from code.`	Table 1 was created from code.
`@sec-crf is this section.`	Section 5.4 is this section.
`@eq-black-scholes is above.`	Equation 1 is above.

See the Quarto documentation on cross-references for more.

6. Citations

This section of the template is adapted from the Quarto citation documentation.

Quarto supports bibliography files in a wide variety of formats including BibTeX and CSL. Add a bibliography to your document using the `bibliography` YAML metadata field. For example:

```
---
title: "My Document"
bibliography: references.bib
---
```

See the Pandoc Citations documentation for additional information on bibliography formats.

7. Citations

This section of the template is adapted from the Quarto citation documentation.

Quarto supports bibliography files in a wide variety of formats including BibTeX and CSL. Add a bibliography to your document using the `bibliography` YAML metadata field. For example:
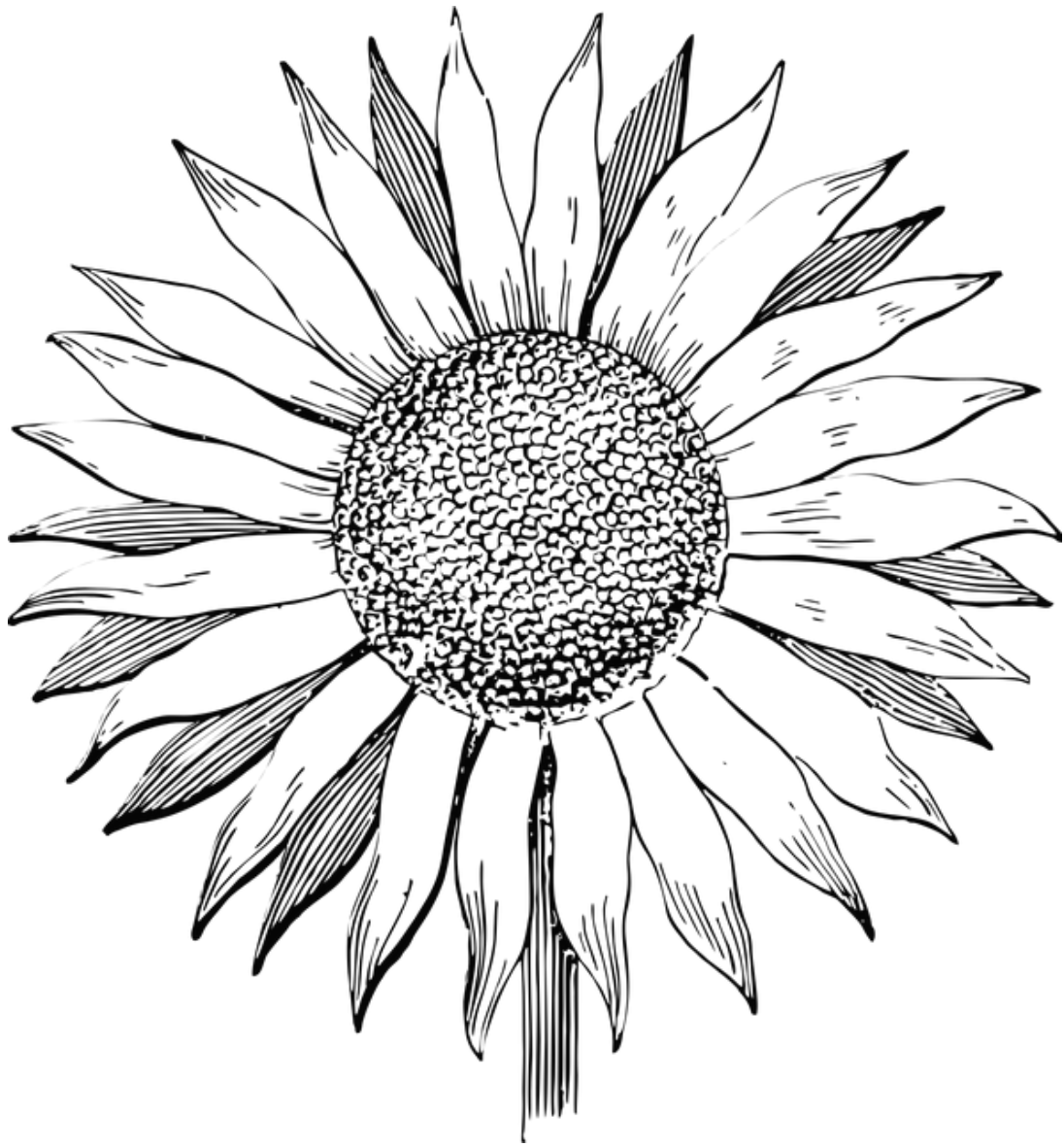
Figure 1.: A sunflower

```
---
title: "My Document"
bibliography: references.bib
---
```

See the Pandoc Citations documentation for additional information on bibliography formats.

7.1. *Citation Syntax*

Quarto uses the standard Pandoc markdown representation for citations. Here are some examples:

Markdown Format	Output
`Blah Blah [see @knuth1984, pp. 33-35; also @wickham2015, chap. 1]`	Blah Blah (see Knuth 1984, 33–35; also Wickham 2015, chap. 1)
`Blah Blah [@knuth1984, pp. 33-35, 38-39 and passim]`	Blah Blah (Knuth 1984, 33–35, 38–39 and passim)
`Blah Blah [@wickham2015; @knuth1984].`	Blah Blah (Wickham 2015; Knuth 1984).
`Wickham says blah [-@wickham2015]`	Wickham says blah (2015)

You can also write in-text citations, as follows:

Markdown Format	Output
`@knuth1984 says blah.`	Knuth (1984) says blah.
`@knuth1984 [p. 33] says blah.`	Knuth (1984, 33) says blah.

See the Pandoc Citations documentation for additional information on citation syntax.

To provide a custom citation stylesheet, provide a path to a CSL file using the `csl` metadata field in your document, for example:

```
---
title: "My Document"
bibliography: references.bib
csl: nature.csl
---
```

References

Knuth, Donald E. 1984. "Literate Programming." *The Computer Journal* 27 (2): 97–111.

Wickham, Hadley. 2015. *R Packages*. 1st ed. O'Reilly Media, Inc.