Psychological Priming: Theory, Method, & Controversy

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BizLab 2015 Workshop in Experimental Methods: The replicability crisis in the social sciences and how to address it.
bread

bread

bread

butter

Word or not?
• Thinking of old people makes you walk slower
• Thinking of intelligent people makes you more intelligent
• Thinking of romantic partners makes you pay more for conspicuous consumer goods
• Holding warm cups increases perceived warmth of a stranger
• Connecting dots on a piece of paper makes you feel emotionally closer to family
(Ir)rationality assumption

- BREAD ----- BREAD       NURSE---DOCTOR

- Connecting dots
How does (social) priming work?

• Stimulation of mental representations of a target, event, situation
• Downstream (long lasting) consequences on behaviour
• Outside awareness OR
• Outside intention to utilize activated representation

“subtly influences peoples responses even when they do not deliberately connect these cues to their current thoughts and actions” (Molden, 2014)
Direct access or misattribution?

• Raised accessibility directly impacts behaviour (automatic activation – Bargh)

• Accessibility plus misattribution
  – Failures of ‘source monitoring’ introduces errors and produces priming.
“If, for example, people were exposed to words related to the concept of hostility (e.g., “hit,” “punch,” “aggress”), it could reasonably be predicted that they would subsequently:

• (a) be faster to identify a gun (semantic priming)
• (b) perceive another individual as more hostile (construal priming)
• (c) behave in a more hostile manner themselves (behavior priming)
• (d) become motivated to actively seek out an opportunity to aggress against some other person or object (goal priming)”

Loersch & Payne, 2011
Cognitive

PRIME

SOCIAL
Method

• “It doesn’t seem like rocket science”

• Priming material (word lists, anagrams, drawing task)

• Target behaviour (walking, risky choice, intelligence)

• Measure(s) of target behaviour
Priming intelligent behavior?

Phase 1: list the appearance, lifestyle, and behaviour of a typical professor/soccer hooligan

Phase 2: answer multiple-choice general knowledge questions

What is Europe's longest river? Danube/Volga/Dnieper

Table 4
Experiment 4: Number of Correct Answers (Percentages)

<table>
<thead>
<tr>
<th>Target</th>
<th>Direction of prime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intelligent</td>
</tr>
<tr>
<td>Stereotype</td>
<td>55.6</td>
</tr>
<tr>
<td>Trait</td>
<td>46.0</td>
</tr>
</tbody>
</table>
9 experiments with 475 participants… none of the experiments obtained the effect. …A Bayesian analysis reveals considerable evidential support for the null hypothesis.
“the Shanks et al. paper will only lead to skepticism about (non)replications. Moreover, publishing sub-standard experiments is harmful to colleagues, it is misleading to readers, and it is damaging to science.”

“We do not believe it is appropriate in a scholarly exchange to suggest, without concrete evidence, that another group’s research practices are unprofessional.”

http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0056515
Choice Preferences Without Inferences: Subconscious Priming of Risk Attitudes

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ABSTRACT

We present a procedure for subconscious priming of risk attitudes. In Experiment 1, we were reliably able to induce risk-seeking or risk-averse preferences across a range of decision scenarios using this priming procedure. In Experiment 2, we showed that these priming effects can be reversed by drawing participants’ attention to the priming event. Our results support claims that the formation of risk preferences can be based on pre-conscious processing, as for example postulated by the affective primacy hypothesis, rather than rely on deliberative mental operations, as posited by several current models of judgment and decision making. Copyright © 2002 John Wiley & Sons, Ltd.

KEY WORDS risk attitudes; priming effects; risk preferences; deliberative mental operations
Priming Risky Choice

Prime: risk-seeking (*adventurous*), risk-averse (*careful*) words rank frequency

Target Behaviour: risky choices in vignettes (e.g., bet on long-shot vs favourite)

Measure: proportion of risky choices
Priming Risky Choice

Experiment 1: Replicate predicted pattern (in NHST, partially in Bayesian stats)

Experiment 2: null result

Experiment 3: null result

Newell & Shaw (under review)
Reliability vs. validity, or generalisability – what do we want to know?
Romance, Risk, and Replication: Can Consumer Choices and Risk-Taking Be Primed by Mating Motives?

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Interventions aimed at influencing spending behavior and risk-taking have considerable practical importance. A number of studies motivated by the costly signaling theory within evolutionary psychology have reported that priming inductions (such as looking at pictures of attractive opposite sex members) designed to trigger mating motives increase males’ stated willingness to purchase conspicuous consumption items and to engage in risk-taking behaviors, and reduce loss aversion. However, a meta-analysis of this literature reveals strong evidence of either publication bias or p-hacking (or both). We then report 8 studies with a total sample of over 1,600 participants which sought to reproduce these effects. None of the studies, including one that was fully preregistered, was successful. The results question the claim that romantic primes can influence risk-taking and other potentially harmful behaviors.

Keywords: risk, consumer behavior, decision making, priming, meta-analysis

Supplemental materials: http://dx.doi.org/10.1037/xge0000116.supp
Mean effect size

More precise smaller effect

Less precise larger effect

Shanks et al. (2015) JEP: General
"The studies are like a torrent, rolling down the mountain of significance. The image is not so much a funnel plot as an avalanche plot." (Neuroskeptic blog)

Shanks et al. (2015) JEP:General

“evidence of either p-hacking in previously published studies or selective publication of results (or both).” (Shanks et al., 2015)
“How typical is the word ‘wheelchair’ for the category of ‘vehicle’?”
A) Experiment 1: Visual Induction

Typicality

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>3.68</td>
</tr>
<tr>
<td>Local</td>
<td>2.47</td>
</tr>
<tr>
<td>Control</td>
<td>3.04</td>
</tr>
</tbody>
</table>

$F (2, 57) = 8.93; p < .05$
Figure 5. A sequential graph of the activity of the Bayes factor for Experiment 2 as evidence accumulates. The Bayes factor in this analysis demonstrates strong evidence in favor of the null hypothesis, based on the categories defined by Jeffreys (1961). The vertical dotted line indicates the point at which we began to monitor the Bayes factor, per our sampling plan. Figure adjusted from the JASP output (jasp-stats.org).
Resolution?

• Improve research practices - transparency

• Improve theory?

• “Us” vs. “them” (is bad)
“the most exciting time to be an Australian”
Thank you for listening

Additional References:


*(Republished in):*