

Evidence that Syntactic Priming is Long Lasting

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Who Cares If It Is?

Psychologists do:

There has been a movement to try to unify the theories behind priming and implicit learning, skill acquisition and automaticity.

A first step in this direction has been the claim that the effects of syntactic priming are not transitory but relatively long-lasting (Bock et al., 1996).

Linguists do:

Linguists have also shown an interest in processing (Bybee; Croft; Langacker), suggesting that processes like priming may contribute to language learning & development, and to historical language change.

Both linguists and psychologists have hypothesized that syntactic priming is long lasting but none have demonstrated it.

Though many have suggested that this effect should take place over extended time periods, the existing evidence falls short in several ways.

- ◆ **Bock et al (1996) showed that syntactic priming effects extend through 10 intervening trials but this is still only about 2 minutes;**
- ◆ **E. Saffran (1997) showed that aphasics showed priming as long as a week, for structures on which they were impaired but it is not clear this should generalize to normals, who are highly practiced on the syntactic constructions in question, since it is known that priming is most effective on less familiar items;**
- ◆ **Many (e.g. Sloman & Hayman 1988) have shown long-lasting priming of lexical items but syntactic priming is considered to be distinct from lexical priming (Bock & Loebell, 1988).**

Longevity of syntactic priming is not (and should not be) a foregone conclusion

Syntactic structures (at the level of Active vs. Passive, or the dative alternation) **are so overlearned in normals that it might be surprising for a tiny amount of further practice to have more than a momentary effect.**

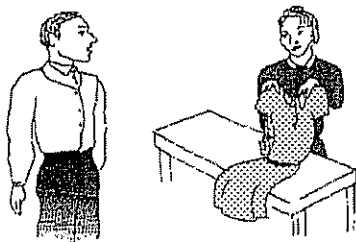
This would not be a problem for

- ♦ **priming of open-class lexical items, which are less overlearned;**
- ♦ **or for aphasics, who are impaired on the syntactic structures;**
- ♦ **furthermore, an effect lasting 20 minutes is an order of magnitude greater than an effect lasting 2 mins.**

How Did We Look For The Effect?

Priming is measured by difference between behavior on unprimed trials versus primed trials.

UNPRIMED



The lady showed
a man the dress

No

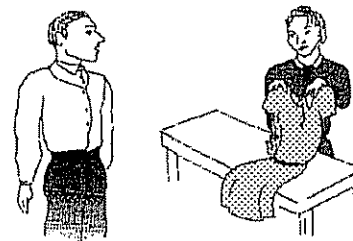


Encountered before:

Y or N?

PRIMED

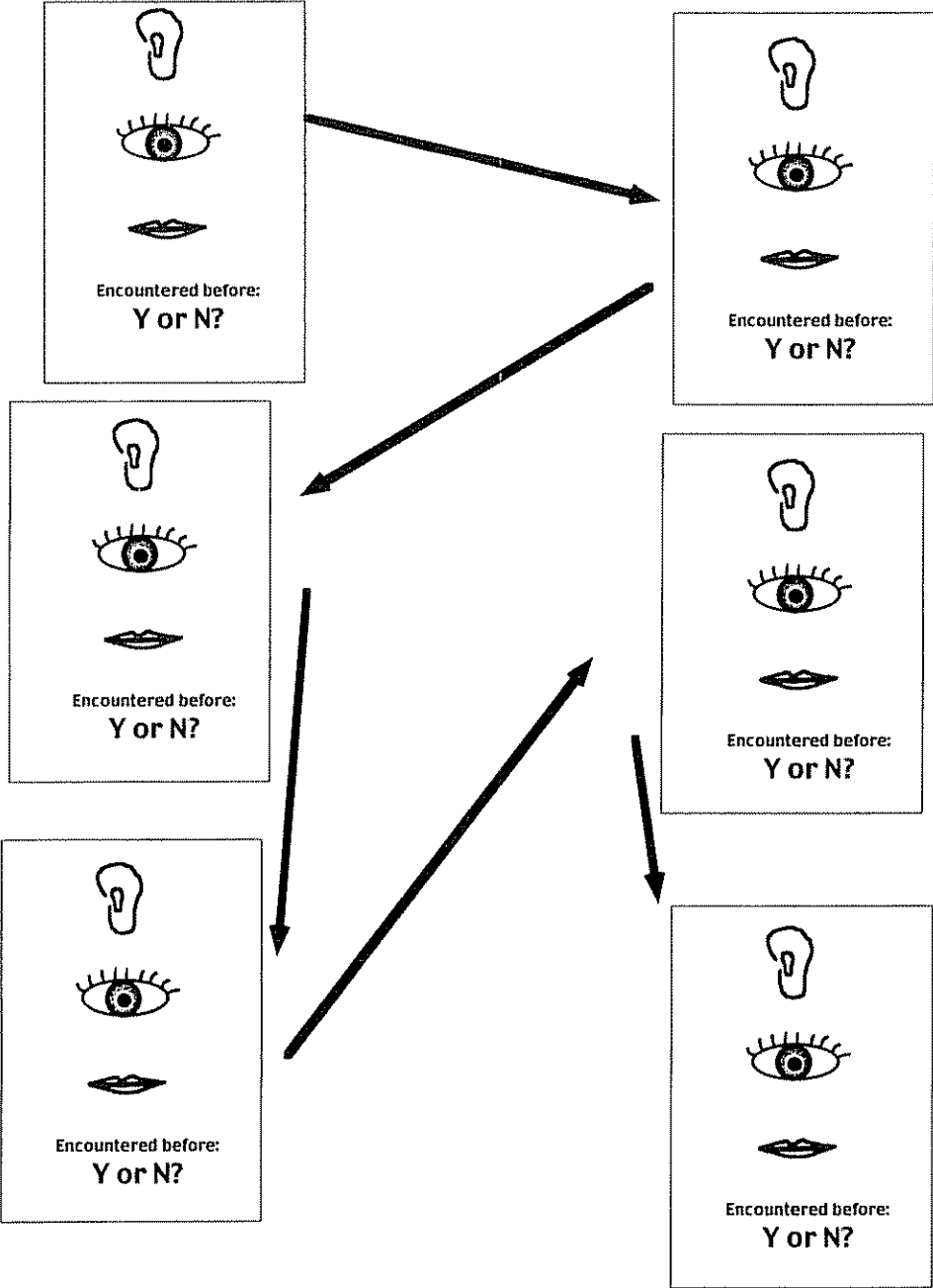
The governess
poured a pot of tea
for the princess



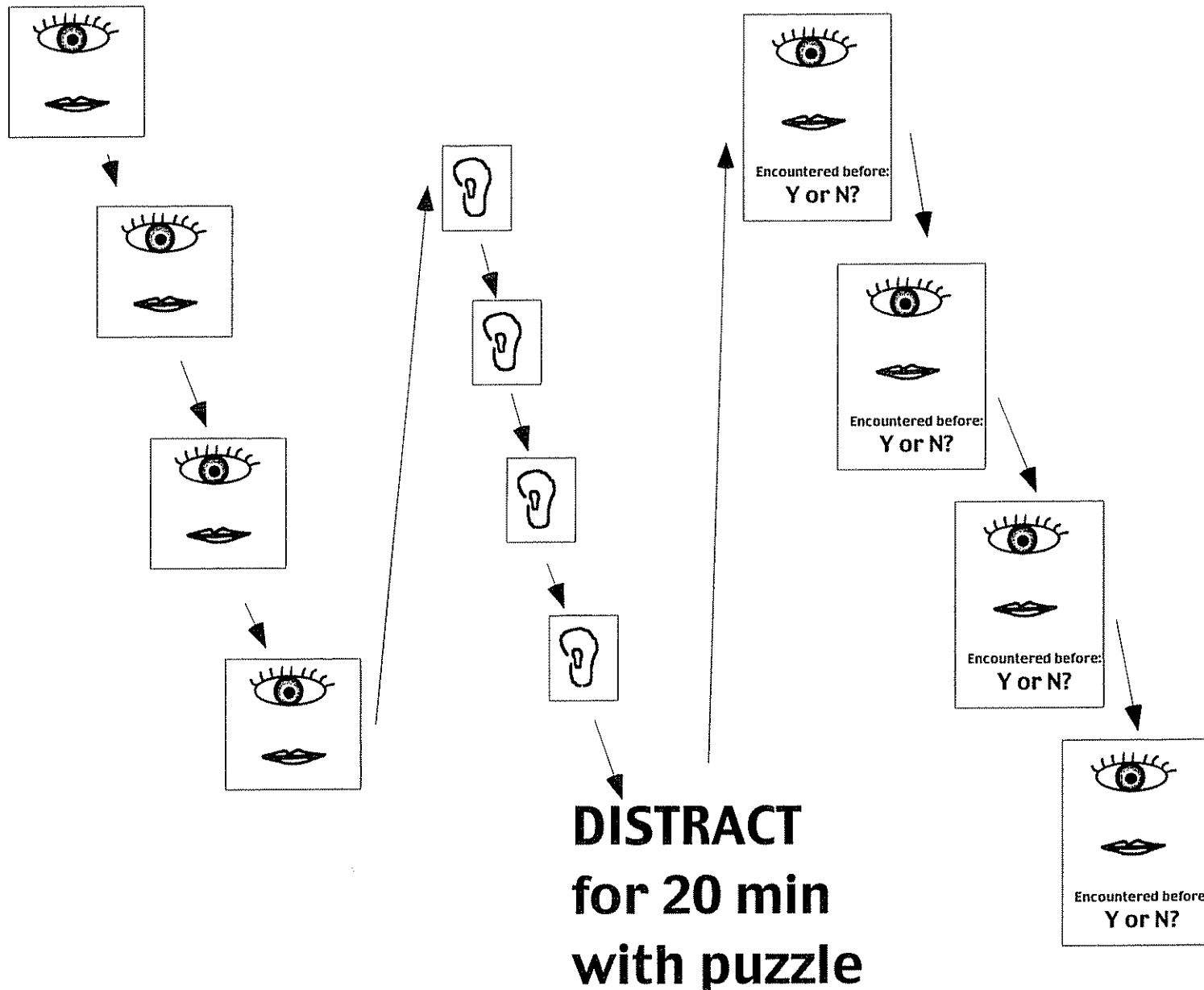
The lady showed
the dress to a man

No

In standard (short-term) priming experiments,



To achieve long delay, experiment in four stages:



BASELINE
(pre-prime)

24 pictures
to describe
(plus fillers)

PRIMING

54 sentences
to listen to

DELAY
a series of
geometric
puzzles

TEST

(post-prime)

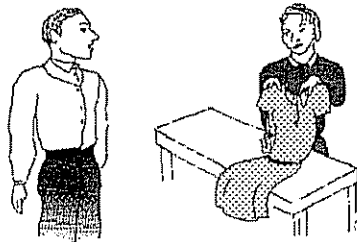
24 new pictures
to describe
(plus fillers)

plus
12 of the original
set of 24 pictures

Did The Results Show Priming?

Priming is measured by difference between behavior on unprimed trials versus primed trials divided by number of trials.

UNPRIMED

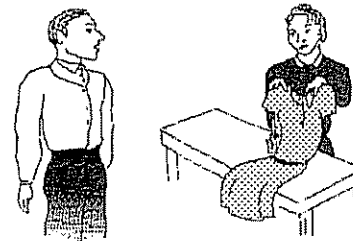


The lady showed a man the dress

-1

PRIMED

The governess poured a pot of tea for the princess



The lady showed the dress to a man

+1

$$(1 - -1)/2 = 1$$



**For the 24 new pictures,
primed picture descriptions scored
significantly over baseline ($p < .005$)
which is the right direction.**

**Primed picture descriptions were more likely to
match the structure of the prime, than were picture
descriptions from the baseline phase (pre-prime).**

**Even for the 12 re-used pictures,
primed targets scored significantly
different from baseline ($p < .05$).**

**This means that people were changing their
descriptions of pictures they had already described
before, overriding whatever bias they had
originally had for describing that picture.**

What Does This Buy Us?

Converging evidence for unifying theories

The finding that syntactic priming can be long-lasting supports Bock et al in their argument that syntactic priming is a manifestation of implicit learning.

Similar arguments by Kirsner & Speelman (1993) and by Logan (1990), linking priming with automaticity, also gain support.

Mere exposure can change people's use (and representation?) of language

Lifespan Language Learning & Development

This change in adults' language use, induced by experience, shows that adults' language systems still show plasticity. Coupled with earlier results (Boyland & Anderson, 1997) that mere exposure triggers priming, these results extend the idea (J. Saffran et al., 1996) that mere exposure influences adult language. Indeed, they show that experience influences adults' use of syntax, not just in an artificial language, but even in natural language.

Historical Language Change

The fact that priming for syntax increases a speaker's likelihood of using a particular syntactic construction offers a cognitive mechanism for theories of historical language change, such as Bybee's (1983) or Boyland's (1996, 1998), that observe that the more frequent a syntactic construction, the more likely it is that the construction will increase yet further in frequency.

Such positive-feedback-based theories are the leading candidates for explaining the phenomenon of grammaticalization, through which constructions (such as "I am going to") increase in frequency, decrease in phonetic distinctiveness, and finally turn into grammatical morphemes ("ommina").