Dumb or smart? Subliminal perception of valence uses small pieces of words
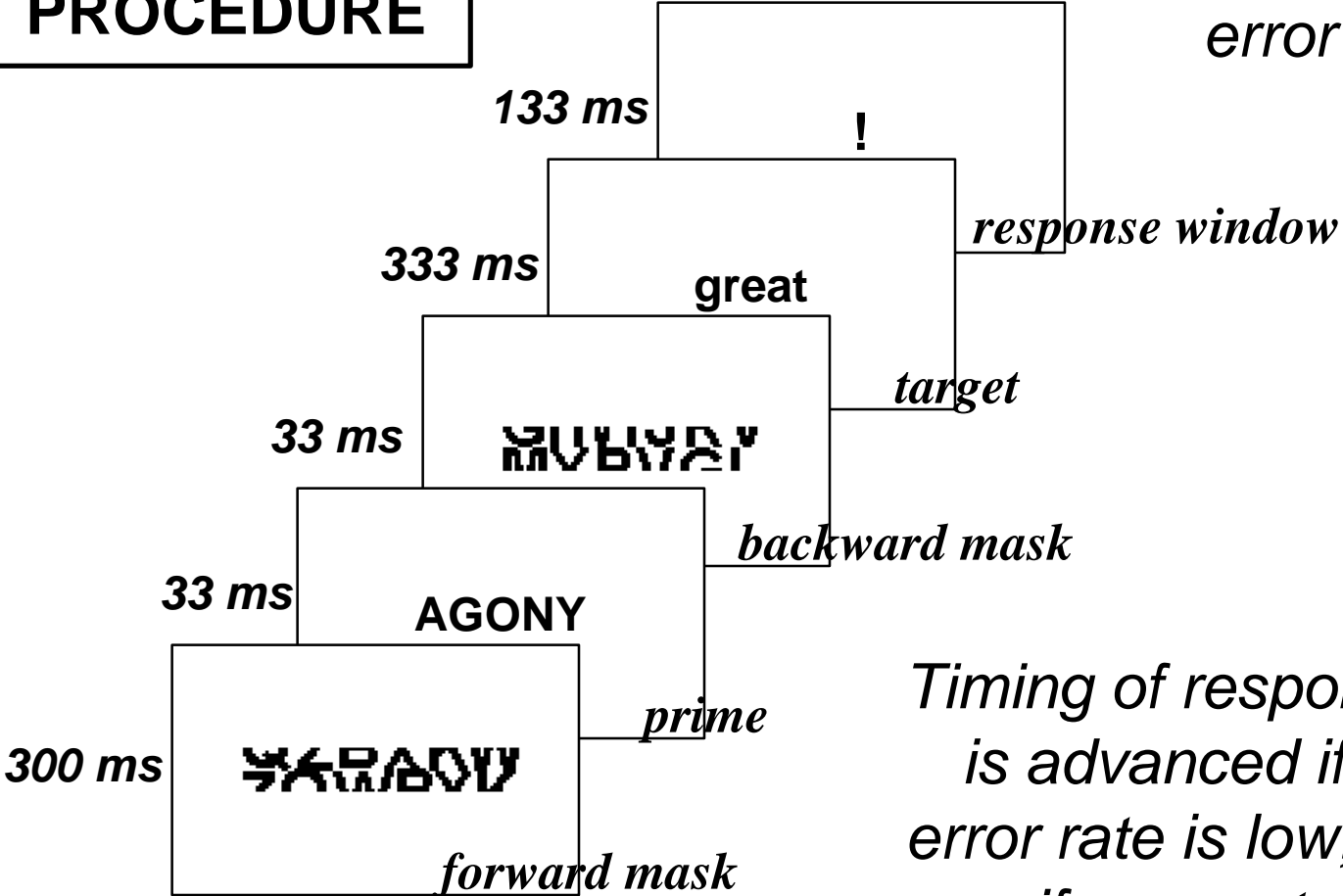
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valence classification task instructions

- **Press the right key if the word is pleasant in meaning**

- **Press the left key if the word is unpleasant in meaning**

- **Respond while the exclamation point is on the screen**

RESPONSE WINDOW PROCEDURE

Priming effect appears on error rate

133 ms !

response window

333 ms **great**

target

33 ms ᴹⱽᴸᴸⱽᴬⱽ

backward mask

33 ms **AGONY**

prime

300 ms ᵞᴷᴾᴬᴰⱽ

forward mask

Timing of response window is advanced if subject's error rate is low, or delayed if error rate is high
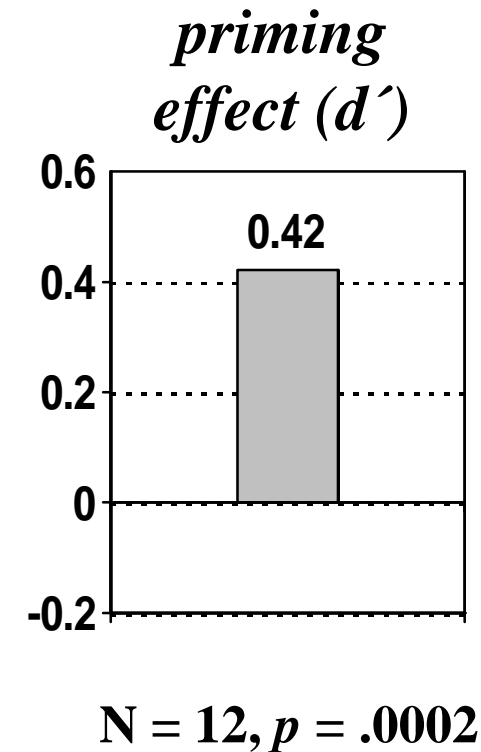
*To simplify presentation, experiments
will be summarized by showing only*

- **stimuli used as targets**

- **stimuli used as primes**

- **priming effects, measured as sensitivity (d')
  of the target response to the prime stimulus**

*The data are from subjects who are known to
perform at or very near chance on measures
of perceptibility of the masked primes*

'STANDARD' FINDING

	unpleasant	*pleasant*
practice & ***test target*** ***stimuli*:**	anger blind grief jail	home kiss ocean happy
***test (masked) primes*:**	ANGER BLIND GRIEF JAIL	HOME KISS OCEAN HAPPY

priming effect (d´)

0.42

0.6

0.4
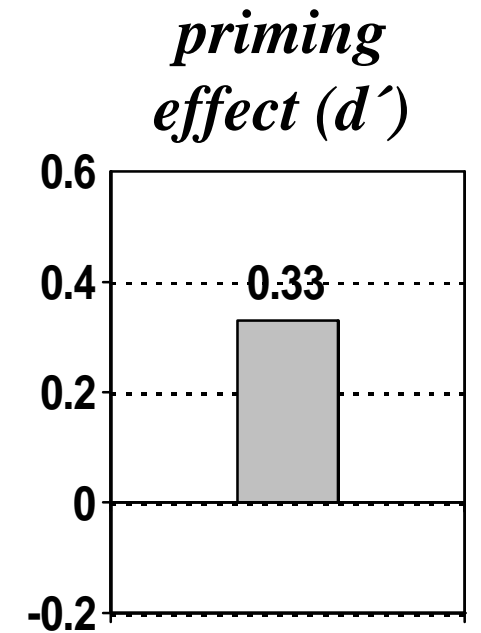
0.2

0

-0.2

N = 12, *p* = .0002

Note 1: *Multiply d´ by 0.4 to get approximate effect of prime on error rate*.

Note 2: *No error bars are shown, but SD(d´) is typically about 0.20*

NONWORD 'HYBRID' PRIMES

	unpleasant	*pleasant*
practice & test target stimuli:	smut bile dread scream	tulip humor angel cheer
test (masked) primes:	BIUT SCREAD	HULIP CHEEL

priming effect (d´)

N = 12, *p* = .0002

Abrams & Greenwald, *Psychological Science,* **in press.**
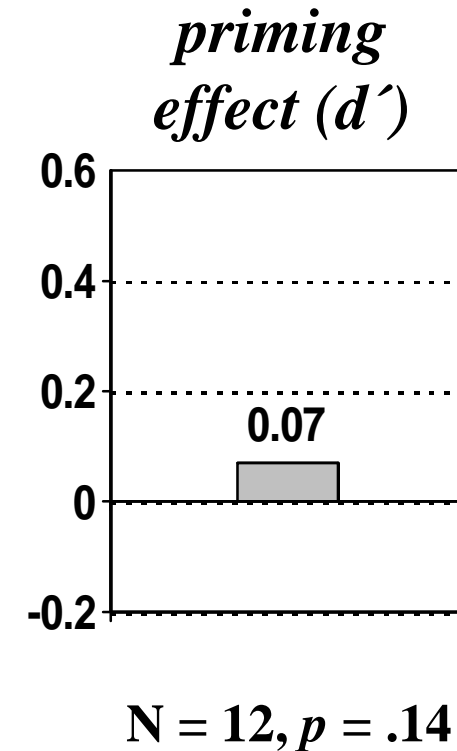
CONCLUSIONS SO FAR

- **Nonword hybrid primes act subliminally as if they had the valence of their 'parent' words**

- **Subliminal priming is capable of analyzing information from subword units**

UNPRACTICED ('ORPHAN') PRIMES

	unpleasant	pleasant
practice & test target stimuli:	dumb menace victim waste	dance nature rich warmth
test (masked) primes:	ANGER BLIND GRIEF JAIL	HOME KISS OCEAN HAPPY

priming effect (d´)

0.6
0.4
0.2
0.07
0
-0.2

N = 12, *p* = .14

Abrams & Greenwald, *Psychological Science*, in press.

PARADOXICAL 'HYBRID' WORD PRIMES

	unpleasant	pleasant
practice & test target stimuli:	smut bile dread scream	tulip humor angel cheer
test (masked) primes:	SMILE DREAM	TUMOR ANGER

priming effect (d´)

0.24

N = 34, $p = 10^{-9}$
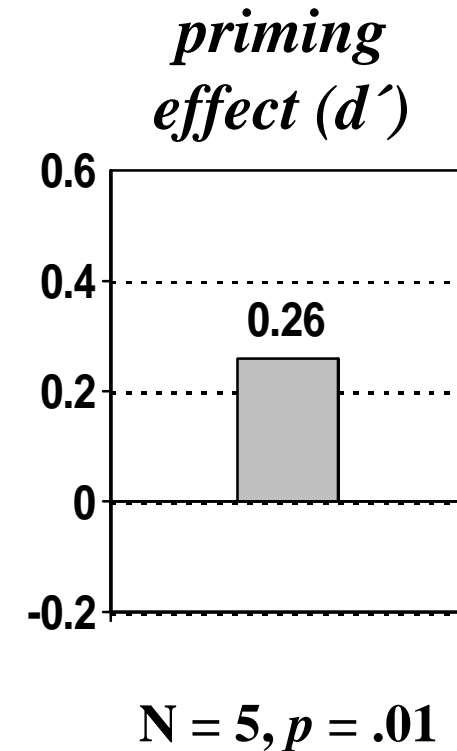
Abrams & Greenwald, *Psychological Science*, in press.

ADDITIONAL CONCLUSIONS

- **Words not practiced as targets ('orphans') act weakly (if at all) as subliminal primes**

- **Paradoxical hybrid word primes (just like nonword hybrids) act subliminally as if they had the valence of their oppositely valenced 'parent' words**

- **No evidence requiring the conclusion that subliminal priming uses word meaning**
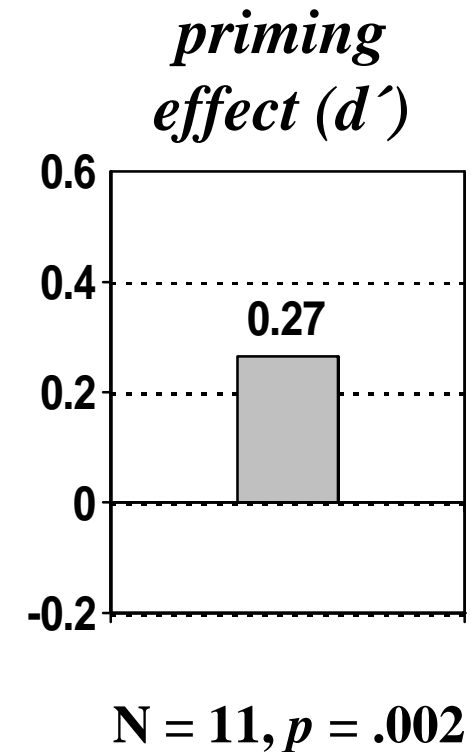
NONWORD (REARRANGED-WORD) PRIMES

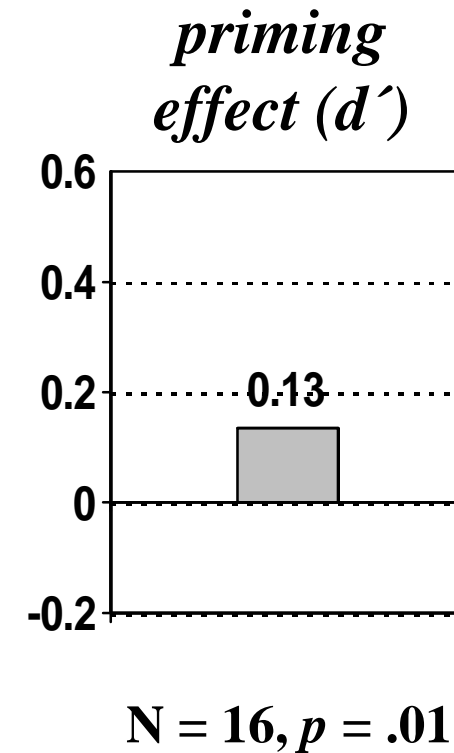|	*unpleasant*	*pleasant*
practice & *test target* *stimuli*:	harm debt jerk ugly	mint silk posh cozy
test *(masked)* *primes*:	AHMR EDTB KREJ GUYL	TNIM ISKL HSOP OCYZ

priming effect (d´)

0.26

N = 5, *p* = .01

'FRANKENSTEIN' PRIMES

	unpleasant	*pleasant*
practice & test target stimuli:	**bleed** **mice** **geek**	**swan** **toy** **purr**
test (masked) primes:	**MBLD** **GKCB** **CMLG**	**STPW** **TYSR** **PNYR**

priming effect (d´)

0.27

N = **11**, *p* = .002

REPEATED-CONSONANT PRIMES

	unpleasant	*pleasant*
practice & test target stimuli:	puny war soot	medic big like

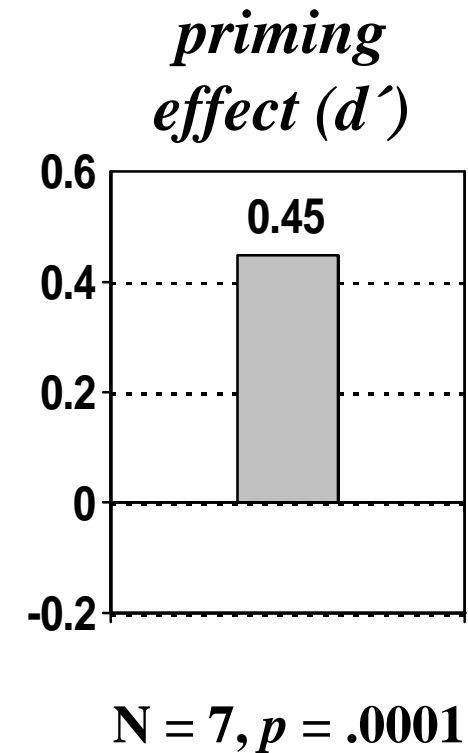| *test (masked) primes*:	NNNN RRRR YYYY	DDDD GGGG KKKK

priming effect (d´)

N = 16, *p* = .01

ADDITIONAL CONCLUSIONS

- **Subliminal priming is achieved easily by stimuli composed of ill-fitting parts**
  - **nonword anagrams of training target words**
  - **consonants from multiple training target words**

- **Repeated single letters from training target words suffice to produce subliminal priming**

WORD PRIMES REQUIRING MULTI-LETTER ANALYSIS

	unpleasant	*pleasant*
practice & ***test target*** ***stimuli*:**	hurt cold weep hate slum lose gang	cute host help warm glee song laud
test ***(masked)*** ***primes*:**	HURT COLD WEEP HATE SLUM LOSE GANG	CUTE HOST HELP WARM GLEE SONG LAUD

priming effect (d´)

0.45

0.6
0.4
0.2
0
-0.2

N = 7, *p* = .0001

OVERALL CONCLUSIONS

- **Subliminal priming responds to small pieces of practiced target words**

- **These pieces can be individual letters, but also include some multi-letter information**

- **No evidence requiring the conclusion that subliminal priming can make use of word meaning**

This is a huge departure from the thesis that *"Nonconscious perceptual processes automatically redescribe sensory data into every representational form and to the highest levels of description available to the organism"* *(Marcel, 1983)*