Raindrop in a river: The paradox of ephemeral subliminal priming of evaluation

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SPSP, 2000: Nashville, TN

What’s the Paradox?

Two necessary components of subliminal priming experiments

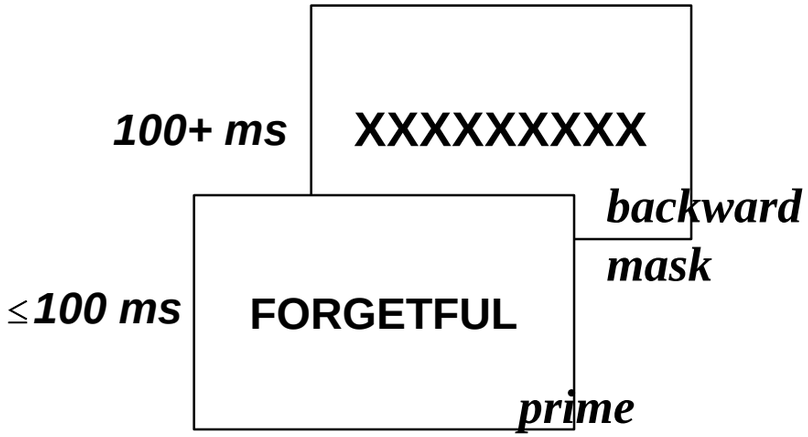
- **A *direct measure***
  (measuring perceptibility of the prime)
- **An *indirect measure***
  (measuring the priming effect)

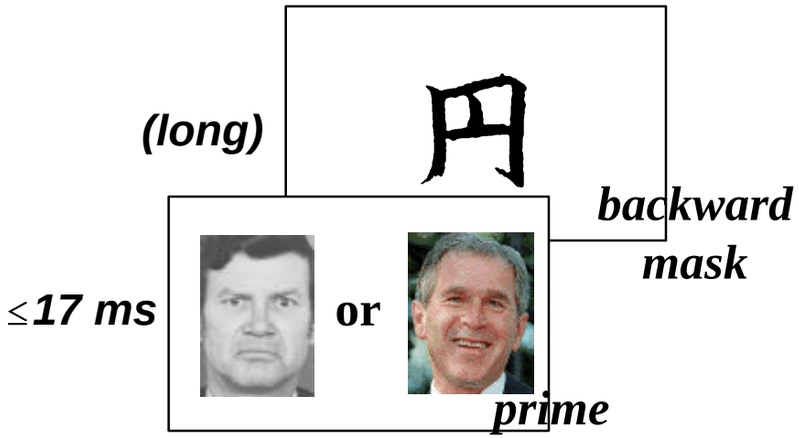
A Tale Of Two Procedures

Different methods for subliminal priming were developed in Ann Arbor and Seattle

(Both the direct and indirect measures are different)

ANN ARBOR Procedure





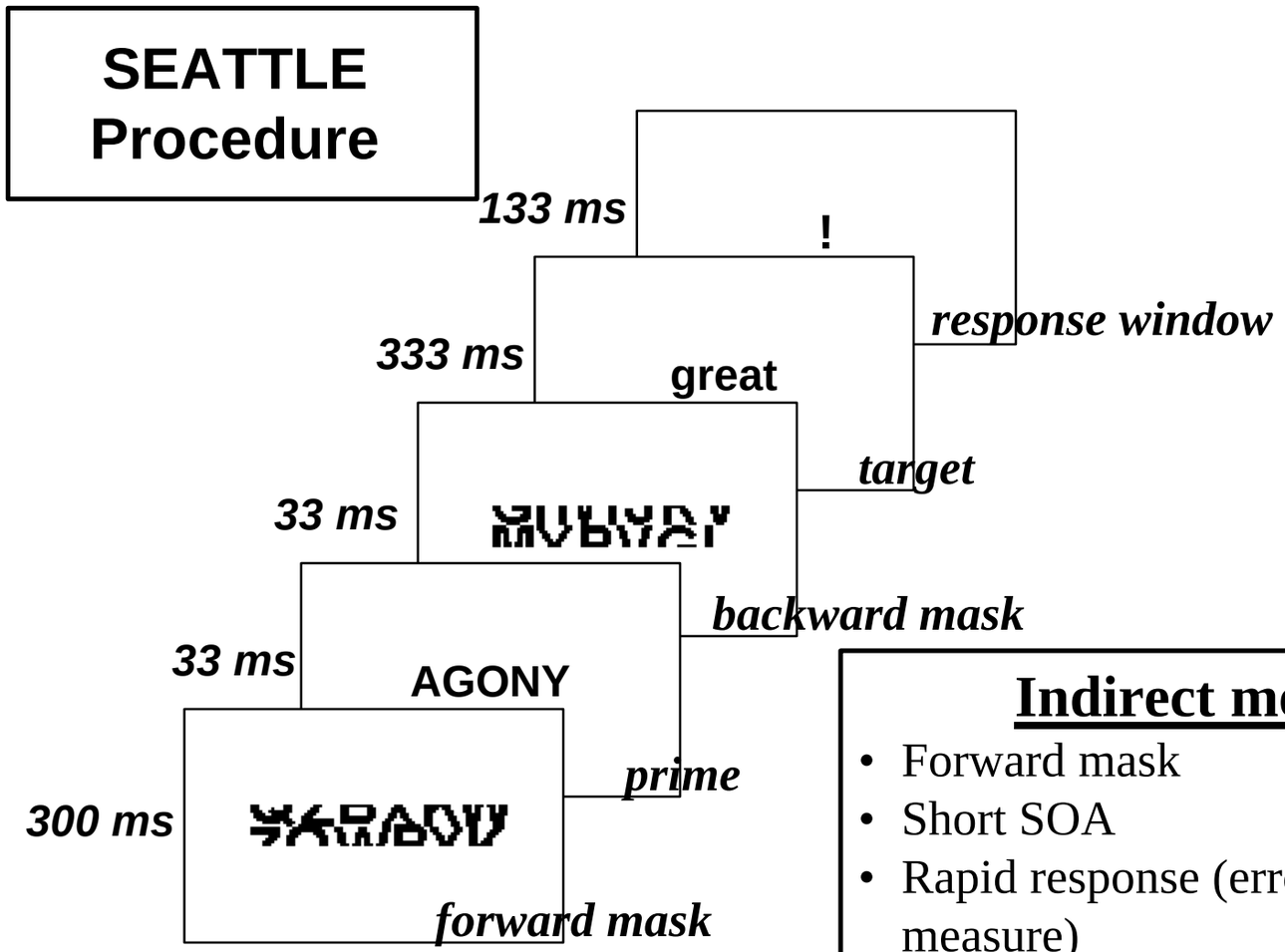
Indirect measure

- Either
  - judgment of mask valence, or
  - trait-primed judgment or action
- Moderate to substantial delay

Direct measure

- Often delayed (memory-based)
- Sometimes requiring difficult discrimination

SEATTLE Procedure



Indirect measure

- Forward mask
- Short SOA
- Rapid response (error-based measure)

Direct measure

- 2-category forced choice
- Minimal reliance on memory
- Many trials

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**

Results from the Seattle Procedure

Experiments are summarized by showing only

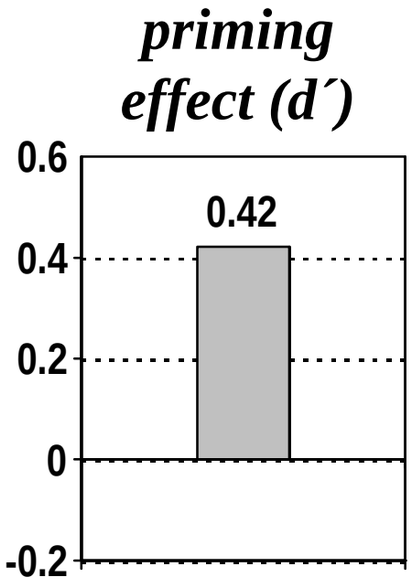
- **stimuli used as PRIMES (presented in CAPS)**
- **stimuli used as targets (presented in lower case)**
- **priming effects, measured as sensitivity (*d´*) of the target response to the prime stimulus**

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

	unpleasant	*pleasant*
***test (masked)* PRIMES:**	ANGER BLIND GRIEF JAIL	HOME KISS OCEAN HAPPY



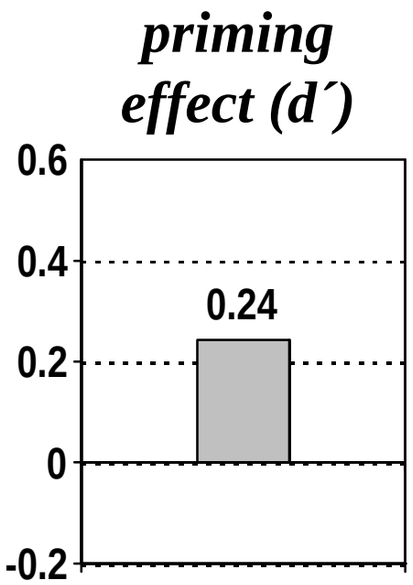
N = 12, *p* = .0002

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

Four results showing that,
in the Seattle procedure,
PARTS of words are analyzed

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



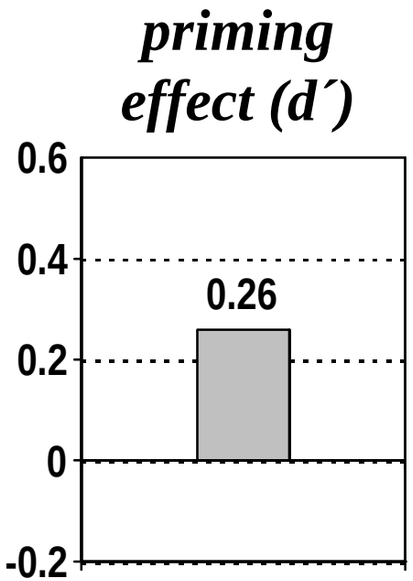
N = 34, $p = 10^{-9}$

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

NONWORD (REARRANGED-WORD) PRIMES

	unpleasant	*pleasant*
***practice & test target stimuli*:**	harm	mint
	debt	silk
	jerk	posh
	ugly	cozy

***test (masked) primes*:**	AHMR	TNIM
	EDTB	ISKL
	KREJ	HSOP
	GUYL	OCYZ

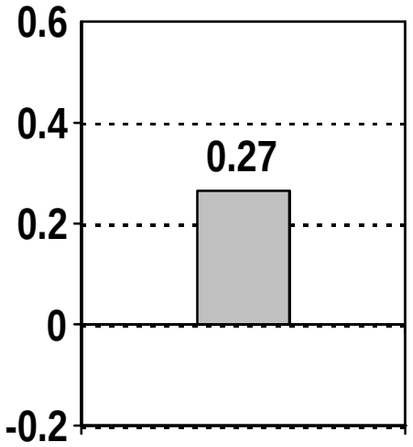


N = 5, *p* = .01

‘FRANKENSTEIN’ PRIMES

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

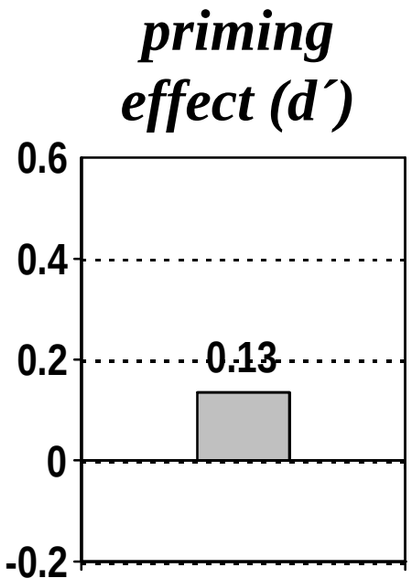
priming effect (d´)



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

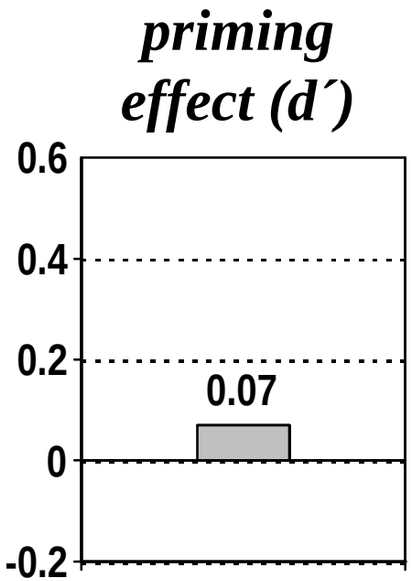


N = 16, *p* = .01

Two results indicating that,
in the Seattle procedure,
word meanings are NOT analyzed

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



N = 12, *p* = .14

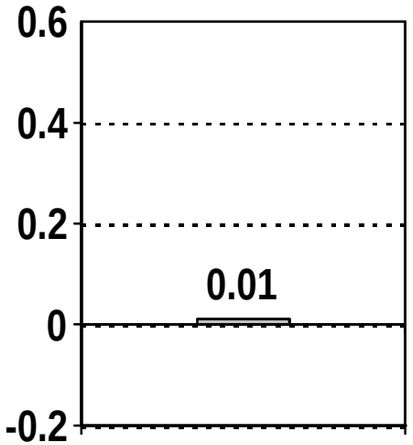
Abrams & Greenwald, *Psychological Science*, in press.

TOTAL ‘ORPHAN’ PRIMES

	unpleasant	*pleasant*
***practice & test target stimuli*:**	**barf** **damp** **doom** **drab**	**food** **posh** **prom** **shop**

***test (masked) primes*:**	**EVIL** **GEEK** **JUNK** **QUIT**	**CUTE** **GLEE** **LIVE** **LUCK**

priming effect (d´)



N = 17, *p* = .53

CONCLUSIONS

In the Seattle Procedure:

- Subliminal priming responds to small pieces of practiced target words
- There has been no evidence requiring the conclusion that subliminal priming can make use of word meaning

DURABLE VS. EPHEMERAL SUBLIMINAL PRIMING EFFECTS

	Ann Arbor Procedure	**Seattle Procedure**
Prime duration	variable, up to 100 ms	≤ 35 ms
Visual masking method	backward	forward and backward
Location of prime	variable, often peripheral	central (foveal)
Level of analysis of prime	**activation of categories** (stereotypes, traits, evaluation)	**no evidence for analysis of word meaning**
Durability of prime effect	**seconds or minutes**	**100 ms or less**
Example studies	Bargh & Pietromonaco (1982); Devine (1989); Baldwin, Carrell, & Lopez (1990); Krosnick, Betz, Jussim, & Lynn (1992); Murphy & Zajonc (1993); Bargh, Raymond, Prior, & Strack (1995); Levy (1996); Chen & Bargh (1997); Glassman & Andersen (1999)	Greenwald, Draine, & Abrams (1996); Draine & Greenwald (1998); Klinger & Abrams & Greenwald (in press)