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Introduction

- *Semantic priming*: words are responded to more quickly when preceded by semantically related (versus unrelated) primes. A large event-related potential (ERP) literature suggests that semantic priming results in an attenuation of the N400 to related targets.
- *Affective priming*: words are responded to more quickly when preceded by same valence (versus opposite valence) primes. The ERP signatures of affective priming have been more mixed, and studies have not fully controlled for semantic association.
- Question: Do both affective and semantic priming influence lexico-semantic processing?

The Present Study

- Two ERP experiments that fully crossed semantic (related vs. unrelated) and affective (same valence vs. opposite valence) relationships between prime and target words.
- Experiment 1: Participants judged whether each word pair was semantically related or unrelated (“Semantic Task”).
- Experiment 2: Different participants judged whether each word pair had the same or opposite valence (“Affective Task”).

Results

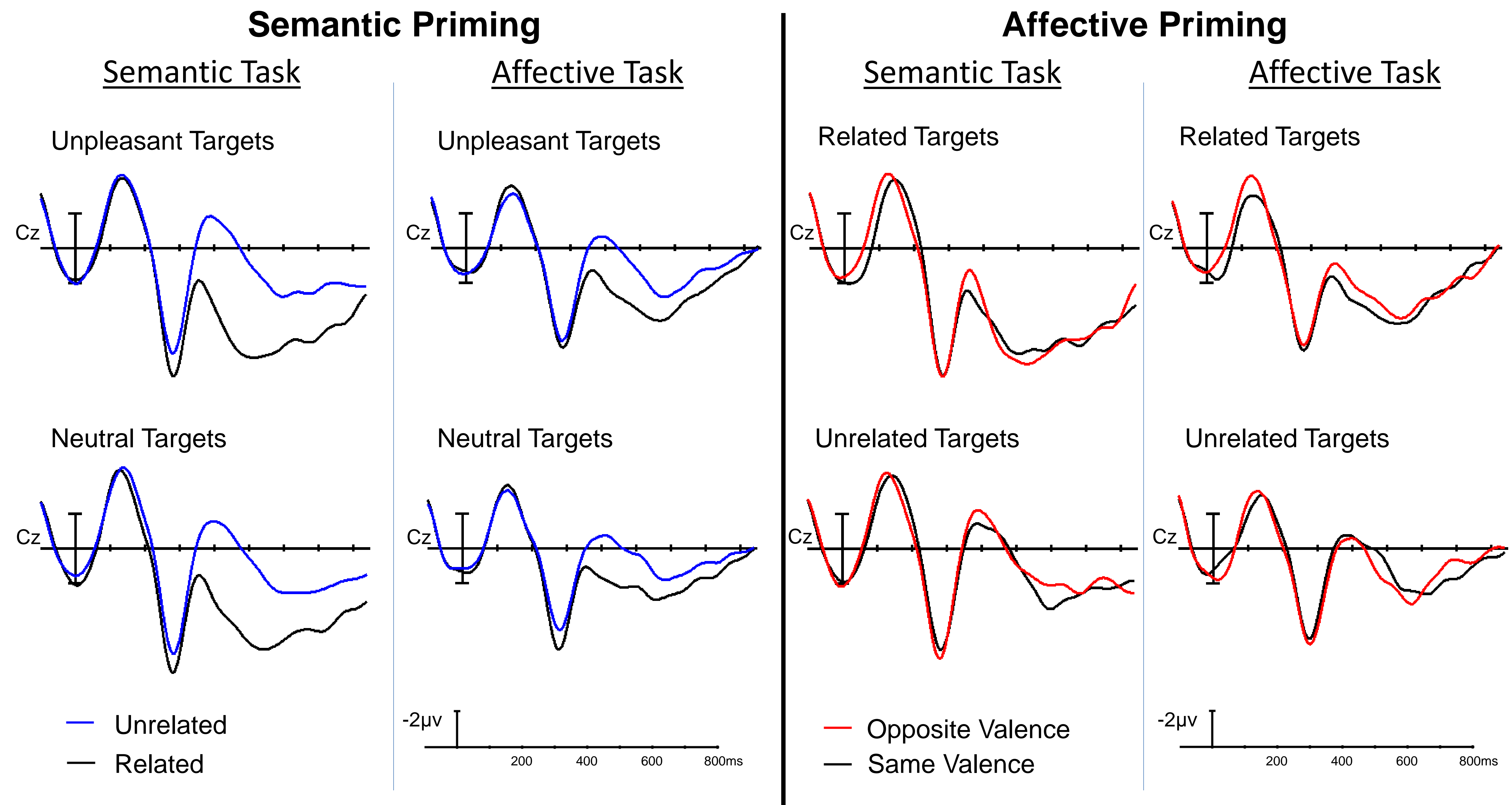


Figure 1: Both Unpleasant words and neutral words showed a large effect of semantic priming on the N400 component, with related words eliciting a smaller negativity than unrelated words. In contrast, we found no evidence of affective priming on either the N400 or late positivity.

Methods

Table 1 – Design and Example Stimuli

Target Emotion	Association	Relationship Type	Example
Unpleasant target	Related	Same valence (Synonym)	Devil - Demon
		Opposite valence (Antonym)	Angel - Demon
	Unrelated	Same valence	Uptight- Demon
		Opposite valence	Relaxed- Demon
Neutral target	Related	Neutral valence (Synonym)	Beneath - Under
		Neutral valence (Antonym)	Over - Under
	Unrelated	Neutral valence	Combine - Under
		Neutral valence	Separate - Under

Table 2A – Properties of the Primes

	Word Length	Freq.	Ortho. Freq.	Bigram Freq.	Concret-ness	Valence	Arousal	Association Strength
Unpleasant Synonyms	5.98	8.56	6.96	3547	3.43	2.22	3.94	0.245
Pleasant Antonyms	5.35	10.06	7.62	3831	3.63	5.62	4.04	0.230
Neutral Synonyms	5.48	9.62	7.90	3350	3.77	3.99	3.31	0.197
Neutral Antonyms	5.33	10.61	7.26	3638	3.88	4.05	3.13	0.200

Table 2B – Properties of the Targets

	Word Length	Freq.	Ortho. Freq.	Bigram Freq.	Concret-ness	Valence	Arousal
Unpleasant Targets	5.05	9.49	7.16	3630	3.67	2.12	3.97
Neutral Targets	5.3	10.59	7.66	3337	3.91	3.96	3.30

Conclusions

- As expected, we found clear N400 effects of semantic priming.
- N400 effects were larger when participants were asked to attend to semantic relationships (versus when they were asked to attend to affective relationships).
- No effects of affective priming on either the N400 or the late positivity ERP components in either experiment.
- This suggests that affective priming does not influence lexico-semantic processing

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