

Swear Words Stay Strong: The Brain Doesn't Listen to Context

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Abstract

Swearing is a ubiquitous feature of everyday communication. Previous research has shown that mild swearing (e.g., I have so much shit to do today!) is generally acceptable in casual or informal settings, whereas harsh swearing (e.g., You motherfucker! I can't believe you failed that easy test!) is considered unacceptable in most situations. This ambivalent relationship appears to depend on contextual factors. Although it is generally agreed that swearing occurs more naturally in negative contexts (e.g., Your fucking cat scratched my new couch!), than swearing in positive contexts (e.g., No fucking way — that award! I'm so proud of you!), although becoming increasingly common, has received little attention.

The present experiment was designed to examine whether positive and negative contexts differentially modulate the processing of swear words using the event-related brain potential (ERP) technique. The hypothesis was straightforward: if context valences affect swearing processing, different brain responses should be observed; otherwise, the response should remain similar. A total of 29 native speakers of Taiwanese Mandarin participated in the experiment. They were instructed to read 140 contextual sentences in Taiwanese Mandarin, half positive and half negative (Positive: "這幾天都吃到媽媽的手藝，真的是倍感幸福" (I've been eating my mom's cooking these past few days, and it's been wonderful); Negative: "有個肥宅站在我旁邊，體味濃厚到想吐" (A fat nerd is standing next to me, and his body odor is so strong that it makes me want to vomit.)), followed by either a swear word ("gan" 幹) or a non-swear word ("en" 嗯) (see Table 1 for experiment design). They then had to complete a memory task, in which they judged whether a presented item had appeared previously. Mean amplitudes within time windows of 150-250 (P200) and 550-750 ms (late positivity component, LPC) were analyzed at frontal (F3, FZ, F4) and posterior (P3, PZ, P4) regions. The results revealed robust P200 effects (150–250 ms) in both anterior and posterior regions: the anterior P200 was elicited by the swear word (swear vs. non-swear words: $p < 0.0001$), reflecting its lexical-emotional salience, whereas the posterior P200 was induced by the negative context (negative vs. positive: $p < 0.005$), reflecting contextual emotion (see Figure 1 for the anterior and posterior P200, respectively). Importantly, a significant Context x Word interaction was observed during 550-750 ms: swear word that follows positive contexts evoked a greater LPC than following

negative ones (positive vs. negative: $p < 0.001$), indexing reanalysis for swearing in an incongruent positive context.

The results indicate that contextual valence does not modulate the processing of the swear word *gan* until 550–750 ms. This may be because *gan*, like English four-letter swear words, has sexual reference and strong threatening or aggressive connotations. Since the human brain prioritizes threat-related information, this prioritization elicits a P200 response to *gan* regardless of its contextual valence during early processing. In contrast, using *gan* in a positive context is a pragmatic innovation; it requires reanalysis, enabling listeners to integrate its meaning appropriately in a later time window.

Examples and graphics

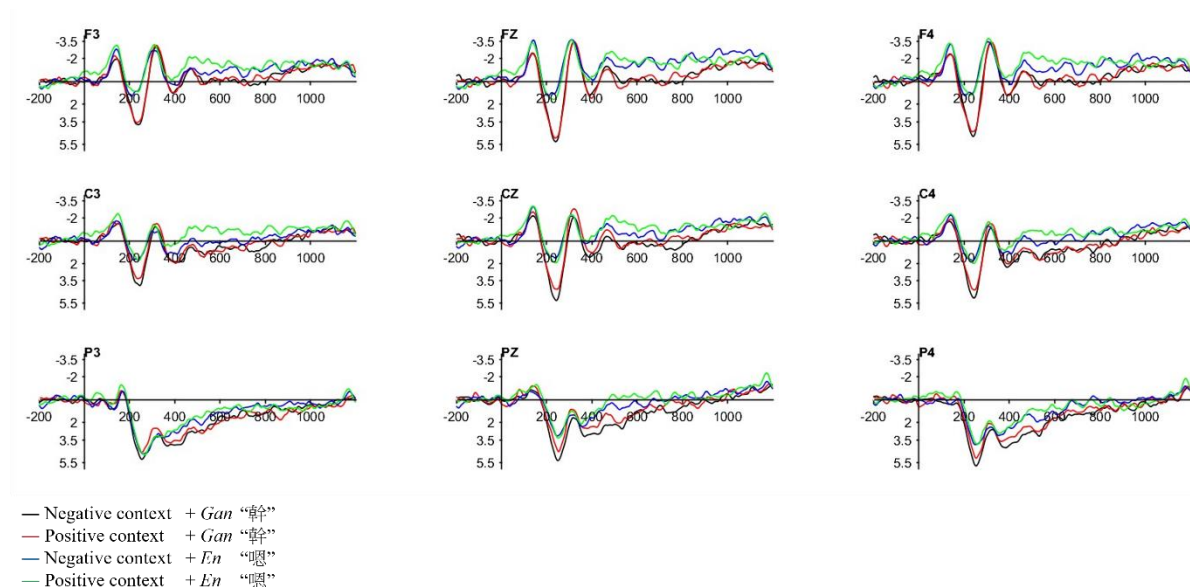


Figure 1. Brainwaves of the swear word *Gan* “幹” and the non-swear word *En* “嗯” in four conditions.

Table 1. Experimental design

		Word	
		Swear	Non-swear
Context	Positive	這幾天都吃到媽媽的手藝，真的是倍感幸福。 幹！ A fat nerd is standing next to me, and his body odor is so strong that it makes me want to vomit. Fuck!	尾牙抽中三十萬現金，我愛公司，老闆我愛你。 嗯！ I won NTD 300,000 in cash at the year-end party! I love this company, and I love my boss. En!
	Negative	今天捷運上有個肥宅站在我旁邊，體味濃厚到想吐。 幹！ I’ve been eating my mom’s cooking these past few days, and it’s been wonderful. Fuck!	部長你給我來超商排隊看看，講什麼五分鐘搞定。 嗯！ Minister, please come and check on me while I’m in line at the convenience store. They said it would be ready in five minutes. En!

Selected references

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