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# Event-based Priming

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Several recent articles have emphasized event representations and their role in language processing. For example, Vu et al. (2003) used subject nouns such as *astronomer* versus *director* to promote a situation model that led to disambiguating the meaning of a sentence-final word such as *star*. They found that their manipulation was sufficient to activate selectively the dominant or subordinate meaning of the ambiguous noun. Ferretti, McRae, and Hatherell (2001) used short stimulus onset asynchrony priming to provide evidence that verbs denoting events quickly activate knowledge of typical aspects of those events (verbs primed typical agents, patients, and instruments). McRae et al. (2004) found that nouns denoting typical aspects of events activate verbs, thus suggesting that event knowledge is computed quickly via means other than the name of the event (i.e., a verb). The goal of the present study was to extend this research by testing for priming between nouns that denote events or typical aspects of them.

We used generation norms to select six groups of items. For event nouns such as *baptism*, subjects were asked to "List the types of people and/or animals that are typically found at these events." The norming produced 18 prime-target pairs such as *baptism-priest*. A separate norming study asked subjects to "List the types of things that are typically found at these events." This produced 26 event-thing pairs such as *trip-luggage*. For location nouns such as *tavern*, subjects were asked to "List the people and/or animals that you commonly see in/at each of these locations." This produced 24 items such as *tavern-bartender*. This norming also was conducted for locations and things, producing 30 items such as *garage-car*. Similar norming was also conducted with instrument nouns such as *wrench*. These norming studies produced 24 instrument-living thing pairs such as *wrench-plumber* and 24 event-thing pairs such as *key-door*. Care was taken to exclude event and instrument nouns that are often used as verbs, and to exclude prime-target pairs that form common phrases.

We hypothesized that if people's memory representations are shaped by their experiences with events, then common aspects of events should activate one another. In our priming task, the prime was presented visually for 200 ms, followed by a blank screen for 50 ms, and then the target word was presented until the subject responded. For the people/animals experiments, subjects decided as quickly and accurately as possible whether or not the target referred to a living thing. For the "thing" experiments, subjects decided whether or not the target referred to a concrete object.

There was a 32 ms priming effect for event-people/animal pairs (related:  $M = 590$  ms; unrelated:  $M = 622$  ms;  $F_1(1, 18) = 5.30, p < .05, F_2(1, 16) = 7.74, p < .05$ ), and a 32 ms priming effect for event-thing pairs (related:  $M = 738$  ms; unrelated:  $M = 771$  ms;  $F_1(1, 18) = 7.74, p < .05, F_2(1, 24) = 4.71, p < .05$ ). Both priming effects for locations were also significant: 37 ms for location-people/animals (related:  $M = 728$  ms; unrelated:  $M = 765$  ms;  $F_1(1, 20) = 4.39, p < .05, F_2(1, 22) = 5.29, p < .05$ ); and 29 ms for location-things (related:  $M = 646$  ms; unrelated:  $M = 675$  ms;  $F_1(1, 18) = 8.60, p < .01, F_2(1, 28) = 5.16, p < .05$ ). Finally, there was a significant 58 ms priming effect for instrument-things (related:  $M = 735$  ms; unrelated:  $M = 793$  ms;  $F_1(1, 16) = 9.59, p < .01, F_2(1, 28) = 10.72, p < .01$ ), but a nonsignificant -10 ms effect for instrument-people (related:  $M = 766$  ms; unrelated:  $M = 756$  ms; both  $F$ 's  $< 1$ ).

The present study provides additional evidence that semantic memory is organized so that knowledge regarding various aspects of common events can be computed quickly from multiple types of linguistic cues, thus providing valuable information for interpreting language on-line and generating expectancies during language comprehension. As Sanford and Garrod (1981) have stated, "we use a linguistic input to call up representations of situations or events from long-term memory as soon as we have enough information to do so" (p. 115). The present studies, and other recent ones related to them, suggest that nouns that denote typical aspects of common events are often "enough information".

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