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Low-constraint facilitation in lexical decision with single-word contexts

GEORGIJE LUKATELA
University of Belgrade, Yugoslavia

CLAUDIA CARELLO
Trinity College, Hartford, Connecticut

ALEKSANDAR KOSTIĆ
University of Belgrade, Yugoslavia

M. T. TURVEY
University of Connecticut and Haskins Laboratories

Single-word, low-constraint adjective contexts were used to "prime" lexical decision to noun targets in Serbo-Croat. Semantically congruent situations consisted of adjective-noun pairs that were not highly predictable but were nonetheless plausible (e.g., GOOD-AUNT). Semantically incongruent situations used pairs that were implausible (e.g., SLOW-COAT). All adjective-noun pairs were grammatically congruent and were compared with a neutral XXX baseline. In Experiment 1, at a stimulus onset asynchrony of 300 ms, congruous situations showed 59 ms of facilitation while incongruous situations did not differ from the baseline. The same pattern was repeated in Experiment 2, at a stimulus onset asynchrony of 800 ms. Congruous situations were facilitated 67 ms. Results are discussed in terms of a message-level coherence check in Forster's (1979) model of autonomous levels of language processing.

The existence of facilitating sentence-context effects is of much theoretical significance. Recent interest has centered on the difference between low-constraint or unfocused contexts (those for which many completions are appropriate but no one is particularly predictable) and high-constraint or focused contexts (those for which a particular completion is highly predictable). The issue concerns whether low-constraint context effects occur and, if they do, whether they can or should be interpreted as arising from generalized priming. A generalized-priming interpretation means that (a) a very large set of lexical items is primed, (b) features generated are few and general, or (c) subjects' attention is focused on a wide range of completions. Such explanations suggest that higher level knowledge and expectations

AMERICAN JOURNAL OF PSYCHOLOGY
Spring 1988, Vol. 101, No. 1, pp. 15–29

can relate interactively with lower level processes such as word recognition (e.g., Sanocki et al., 1985; Schwanenflugel & Shoben, 1985).

Such an account contrasts with approaches that maintain the autonomy of different levels of processing (e.g., Forster, 1979, 1981; West & Stanovich, 1982). The levels are separate and hierarchically arranged: The lexical processor receives input only from feature analysis; the syntactic processor receives input only from the lexical processor; the message processor receives input only from the lexical processor and the syntactic processor. Clearly, sentence context effects cannot influence lexical processing.

> [E]ffects due to *lexical* context (i.e., single word contexts) are entirely acceptable within this theory, since they can be described as *within* level effects rather than between level effects. That is, the lexical context effect is assumed to be mediated by structural properties entirely internal to the lexical processor itself, and no other level of processing need be involved (Forster, 1979). Viewed from this perspective, then, the possibility that lexical and sentence context effects might have different properties takes on considerable significance. (Forster, 1981, p. 471)

The data from semantic sentence context effects reveal that appropriate semantic completions are fast relative to inappropriate completions. But when compared with a neutral baseline, results are mixed. For high-constraint sentences, appropriate completions are usually facilitated and inappropriate completions are inhibited (Forster, 1981; Schwanenflugel & Shoben, 1985; but see Fischler & Bloom, 1979, for predictable completions that did not differ significantly from the baseline). For low-constraint sentences, inappropriate completions are inhibited, but appropriate completions either show no difference relative to a neutral baseline (Fischler & Bloom, 1979; Forster, 1981) or show significant facilitation that is less than that found for predictable completions (Schwanenflugel & Shoben, 1985).

The Serbo-Croatian language has provided a convenient medium for exploring low-constraint contexts. Although the investigations have used syntactic rather than semantic contexts, they are nonetheless instructive for present purposes. As an inflected language, Serbo-Croat permits the creation of highly salient grammatical contexts with a single word (note, in contrast to Forster, 1981, that single words need not be simply lexical contexts). Furthermore, Serbo-Croat does not require that word class be violated to obtain grammatical incongruency as is typically done with English language materials (e.g., Wright & Garrett, 1984). For example, adjectives and nouns must agree in gender (masculine, feminine, or neuter), case (e.g., nominative, dative, accusative, etc.), and number (singular or plural). When a context and target agree on these dimensions, lexical decision is

faster than when one or more of the dimensions is incongruent (Gurjanov, G. Lukatela, Moskovljević, Savić, & Turvey, 1985). Similar effects have been found for pronoun-verb pairs with respect to person (G. Lukatela et al., 1982), preposition-noun pairs with respect to case (G. Lukatela, A. Kostić, Feldman, & Turvey, 1983), and possessive adjective-noun pairs with respect to gender (Gurjanov, G. Lukatela, K. Lukatela, Savić, & Turvey, 1985). To date, these grammatical congruency effects have been defined over the difference between congruent and incongruent situations and have not employed a neutral baseline. Relative amounts of facilitation and inhibition are not known.

These low-constraint syntactic context effects are germane to the current discussion because they have been interpreted within a framework that is continuous with Forster's (1979) model of autonomous levels. The outputs of each level are considered to be available to the decision-making device. In the normal course of language comprehension, all of these outputs are important and the processor heeds all of them. When the processor becomes specialized for lexical decision, it cannot obviate this characteristic. That is to say, even though lexical decision requires output from the lexical processor alone, the other subprocessors cannot be disengaged; their outputs—in the form of syntactic and pragmatic coherence checks—bias the decision-making device. A positive bias, as when the context and target are grammatically congruent or pragmatically plausible, hastens lexical decisions relative to a negative bias, as when the context and target are an ungrammatical or implausible combination.

It is important to note that in contrast to associative priming, these context effects are postlexical. They do not change the speed with which a lexical entry is found. And they allow a form of *automatic* processing (deGroot, Thomassen, & Hudson, 1982) that is different from the spreading activation assumed to operate in the lexicon. If information needed for the coherence evaluation is provided in the lexical entries for context and target, then low-constraint contexts (e.g., minimal grammatical contexts, unfocused sentence contexts) can have a facilitating (or, unlike spreading activation, an inhibiting) influence on lexical decision times without entailing the unlikely assumption that broad classes of items in the lexicon—for example, all feminine singular nouns—are activated or attended to.

One-word contexts are useful because they allow tight control on the context-target associative relationship (e.g., it cannot accumulate insidiously from several words in the context) and on the stimulus onset asynchrony (SOA). This last benefit is of importance because in contrast to spreading activation, which decays over time, postlexical coherence checks should be indifferent to the interval between context

and target. Their output is simply "coherent" or "not coherent," and this will not change over time (although, presumably, there is an upper limit after which the context and target will no longer be considered as part of the same situation). Whatever pattern of facilitation and inhibition is found at a short SOA, therefore, should be repeated at a long SOA.

The situations to be explored in the present experiments are low-constraint, single-word semantic contexts. Grammatically congruent, semantically plausible adjective-noun pairs and grammatically congruent, semantically implausible adjective-noun pairs will be evaluated relative to XXX-noun baselines.[1] A positive bias from both the syntactic and message processors should produce facilitation relative to the neutral baseline. But a positive bias from the syntactic processor coupled to a negative bias from the message processor should effectively cancel each other, making that condition no different from a neutral context. Experiment 1 investigates this contrast at an SOA of 300 ms, and Experiment 2 at an SOA of 800 ms.

EXPERIMENT 1

METHOD

Subjects

Twenty-six students from the Department of Psychology in the Faculty of Philosophy at the University of Belgrade participated in the experiment in partial fulfillment of a course requirement. All subjects had previously participated in reaction time experiments.

Materials

Critical context-target pairs consisted of 26 congruous adjective-noun pairs (e.g., BELI GOLUB, "white pigeon") and 26 incongruous adjective-noun pairs (e.g., VUNENA ŠKOLA, "woolen school") drawn from the midfrequency range (Dj. Kostić, 1965). Targets were 4 to 7 letters in length. (Because associative norms do not exist for Serbo-Croat, possible associative relationships were eliminated on the basis of a pretest.) All pairs were in the nominative case. Half of the pairs (in both conditions) were feminine and half were masculine. In addition, 52 adjective-pseudonoun pairs were constructed in which the pseudonouns differed from real words by replacing one or two letters while preserving the inflectional ending so that the pairs would not be grammatically incongruent.[2] The adjectives were the same as those that had been paired with the nouns. Finally, 104 baseline pairs were constructed by appending a context of three crosses (XXX) to all of the nouns and pseudonouns.

Design

Each subject saw 26 adjective-noun pairs (half congruent and half incongruent), 26 adjective-pseudonoun pairs, 26 XXX-noun pairs, and 26 XXX-pseudonoun pairs. Subjects were randomly assigned to one of two counterbalanced groups as illustrated in Table 1. Each subject encountered any given target or context (except XXX) only once.

Procedure

A subject was seated before the CRT (cathode ray tube) of an Apple IIe computer in a dimly lit room. A fixation point was centered on the screen. On each trial, the subject heard a brief warning signal after which an adjective or XXX appeared for 300 ms centered above the fixation point. Immediately after the context disappeared (SOA of 300 ms), a noun or pseudonoun appeared below the fixation point for 1,400 ms. All letter strings appeared in uppercase roman type. Subjects were instructed to decide as rapidly as possible whether the second stimulus was a word. To ensure that subjects were reading the contexts, they were occasionally asked to report both stimuli after the lexical decision had been made. Decisions were indicated by depressing a telegraph key with both thumbs for a *no* response or by depressing a slightly farther key with both forefingers for a *yes* response. Latencies were measured from the onset of the target. If the response latency was longer than 1,500 ms, a message appeared on the screen requesting that the subject respond more quickly. The experimental sequence was preceded by a practice sequence of 20 different context-target pairs.

RESULTS

Latencies in excess of 1,500 ms or less than 350 ms were excluded from the analysis. The means of the subjects' latencies are shown in Figure 1, and their percentage errors (wrong and slow responses) are presented in Table 2 (none of the error analyses revealed any significant differences). A Prime × Congruence ANOVA on the acceptance latencies revealed a main effect of prime, $F(1, 25) = 8.04$, $MS_e =$

Table 1. Illustration of the design and (translated) examples of stimuli used in the experiments

		Context-target relation			
Group	Noun gender	Congruous	Incongruous	Neutral	Pseudoword
A	F	THIN-HAIR	SLEEPY-DOOR	XXX-AUNT	GOOD-GREEB
	M	DEEP-POT	SLOW-COAT	XXX-DEER	SPEEDY-CLUD
B	F	GOOD-AUNT	SOUR-CAT	XXX-HAIR	THIN-SPORL
	M	SPEEDY-DEER	HAPPY-NAIL	XXX-POT	DEEP-LORT

1909.44, $p < .01$ (word primes averaged 674.5 ms, and XXX primes averaged 699 ms), and congruence, $F(1, 25) = 5.54$, $MS_e = 2452.07$, $p < .03$ (congruent situations averaged 675.5 ms, and incongruent XXX primes averaged 698 ms). The Prime × Congruence interaction was significant, $F(1, 25) = 28.85$, $MS_e = 1083.95$, $p < .001$. Protected t tests (Cohen & Cohen, 1975; the error term from the ANOVA is used as the estimate of the variance) were conducted on the means for congruous versus baseline, $t(25) = 4.87$, $p < .01$, and incongruous versus baseline, $t(25) = .82$, $p > .10$. In other words, there was facilitation but no inhibition.

The pattern of results was largely corroborated by the stimulus analysis of acceptance latencies. The effect of prime was again significant, $F(1, 50) = 6.24$, $MS_e = 2588.71$, $p < .02$, but the effect of

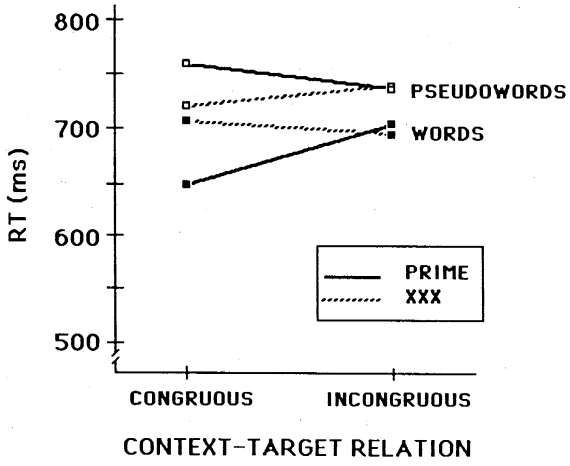

Figure 1. Average lexical decision latencies to word and pseudoword targets as a function of the semantic relationship between context and target at an SOA of 300 ms (Experiment 1)

Table 2. Percentage of incorrect lexical decisions for semantically congruous and incongruous pairs with an SOA of 300 ms

	Words		Pseudowords	
Context-target relation[a]	Prime	XXX	Prime	XXX
Congruous	1.18	2.07	1.48	1.18
Incongruous	2.37	2.66	2.37	0.59

[a] Labels are defined for words and applied to pseudowords with corresponding contexts.

congruence was not, $F(1, 50) = 3.51$, $MS_e = 3804.01$, $p < .07$. The interaction, $F(1, 50) = 11.78$, $MS_e = 2588.71$, $p < .001$, revealed the same pattern of facilitation as was found in the subjects analysis: Protected t tests indicated that there was facilitation for congruous situations, $t(50) = 5.93$, $p < .01$, but not inhibition for incongruous situations, $t(50) = .93$, $p > .10$.

For the rejection latencies, there was no effect of congruence, $F < 1$. The effect of prime was significant, $F(1, 25) = 10.91$, $MS_e = 891.73$, $p < .01$ (word primes averaged 744.5 ms; XXX primes averaged 725.0 ms). Their interaction was significant, $F(1, 25) = 11.17$, $MS_e = 1175.95$, $p < .01$. Protected t tests revealed inhibition of the "congruent" pseudowords, $t(25) = 5.07$, $p < .01$, but no effect on "incongruent" pseudowords, $t(25) = .30$, $p > .10$.

This was duplicated in the stimulus analysis of rejection latencies. Prime was significant, $F(1, 50) = 5.05$, $MS_e = 2003.52$, $p < .03$, but congruence was not, $F < 1$. The interaction was again significant, $F(1, 50) = 6.52$, $MS_e = 2003.52$, $p < .02$. Protected t tests revealed inhibition in the congruous situations, $t(50) = 4.8$, $p < .01$, but no difference for incongruous situations, $t(50) = .30$, $p > .10$.

EXPERIMENT 2

METHOD

Subjects

Twenty-six students from the Department of Psychology in the Faculty of Philosophy at the University of Belgrade participated in the experiment in partial fulfillment of a course requirement. All had experience in reaction time experiments but none had participated in Experiment 1.

Materials and design

These were the same as for Experiment 1.

Procedure

The same procedure as for Experiment 1 was used, except that the SOA was 800 ms.

RESULTS

Latencies in excess of 1,500 ms or less than 350 ms were excluded from the analysis. The means of subjects' latencies are shown in Figure 2, and their percentage errors (wrong and slow responses) are presented in Table 3. A Prime × Congruence ANOVA on the acceptance

latencies revealed significant differences of prime, $F(1, 25) = 33.78$, $MS_e = 1082.71$, $p < .001$ (with word primes averaging 626.5 ms and XXX primes averaging 664 ms); congruence, $F(1, 25) = 4.93$, $MS_e = 2482.99$, $p < .04$ (with congruent situations averaging 634.5 ms and incongruent situations averaging 656 ms); and a Prime × Congruence interaction, $F(1, 25) = 17.92$, $MS_e = 1241.14$, $p < .001$. Protected t tests revealed significant facilitation for congruous nouns, $t(25) = 7.34$, $p < .01$, but not inhibition for incongruous nouns, $t(25) = .87$, $p > .10$. The error analysis revealed an effect of prime, $F(1, 25) = 10.21$, $MS_e = 10.92$, $p < .004$.

For the rejection latencies, there was an effect of prime, $F(1, 25) = 12.55$, $MS_e = 1572.83$, $p < .002$ (word primes averaged 728.5 ms, XXX primes averaged 701 ms), but neither congruence, $F(1, 25) =$

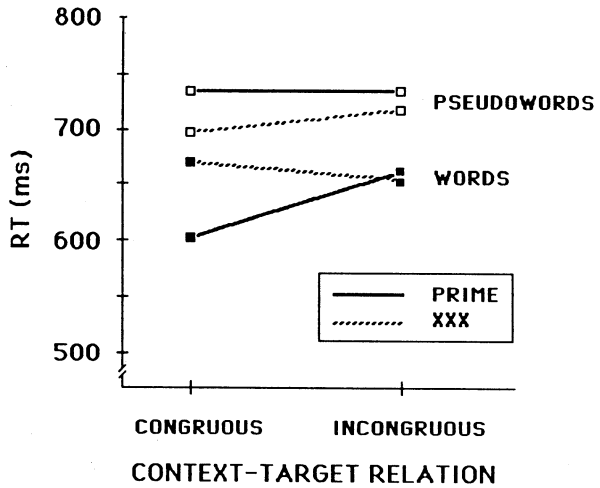

Figure 2. Average lexical decision latencies to word and pseudoword targets as a function of the semantic relationship between context and target at an SOA of 800 ms (Experiment 2)

Table 3. Percentage of incorrect lexical decisions for semantically congruous and incongruous pairs with an SOA of 800 ms

	Words		Pseudowords	
Context-target relation[a]	Prime	XXX	Prime	XXX
Congruous	0.89	2.07	2.66	0.89
Incongruous	1.18	4.14	2.07	1.48

[a] Labels are defined for words and applied to pseudowords with corresponding contexts.

3.34, MS_e = 1286.6, $p < .08$, nor the interaction, $F < 1$, reached significance. No differences were found by the error analysis.

In the stimulus analysis of acceptance latencies, the effect of congruence was not significant, $F(1, 50) = 2.49$, $MS_e = 4351.19$, $p > .10$. The main effect of prime, $F(1, 50) = 12.99$, $MS_e = 2925.91$, $p < .001$, and the interaction, $F(1, 50) = 8.29$, $MS_e = 2525.91$, $p < .01$, were significant. The error analysis showed an effect of prime, $F(1, 50) = 7.38$, $MS_e = 15.11$, $p < .01$. For rejection latencies, prime was significant, $F(1, 50) = 8.19$, $MS_e = 2589.09$, $p < .01$. Neither the effect of congruence nor the interaction reached significance, $F < 1$. No significance differences were found by the error analysis.

DISCUSSION

As expected, plausible low-constraint semantic contexts produced a facilitatory effect on word recognition, and implausible low-constraint semantic contexts yielded lexical decision times that were not different from a neutral baseline. The lack of inhibition for incongruous situations would not be predicted by a generalized priming story (e.g., Schwanenflugel & Shoben, 1985). This is particularly true at the longer SOA (cf. Neely, 1977) where the effect of attentional processes ought to be greater. Indeed, Becker (1980) has demonstrated inhibition dominance when the set of expected targets is not narrow. This latter result was obtained with associates, however (where the context was a category and the target could be a typical or nontypical member of that category), and would not have tapped the semantic plausibility of a particular pair. We conjecture that the lack of inhibition in the semantically implausible situations in the present experiments came about because all situations were grammatically congruent. This created a positive bias from the syntactic coherence check that canceled the negative bias from the message-level coherence check. The resulting situation was equivalent to having no context.[3]

Superficially, it might seem that the pseudoword data, which generally showed inhibition relative to the baseline, contradict this interpretation: Why is negative bias from the message processor not canceled by positive bias from the syntactic processor? We suspect that because of the way in which case is marked in nouns, the syntactic processor is put into a "holding pattern," giving neither negative nor positive bias. Negative bias is absent because the syntactic relationship of the adjective-pseudonoun pairs is not immediately suspect. A negative bias would occur if the pseudonoun's inflection unambiguously indicated that its case was inappropriate for the preceding adjective (e.g.,BELI BRAKU, "white _____," is unequivocally incongruent because

the nominative adjective is followed by a pseudonoun marked for the accusative case). But such situations were not used here. Nonetheless, a positive bias cannot be given either, because the inflections with which pseudonouns were constructed were ambiguous. For example, whether -A indicates that a singular noun is genitive (and, therefore, incongruent) or nominative (and, therefore, congruent) depends on the noun's gender (see Note 2). The problem arises because, for nouns, gender information is obtained from the lexicon, not the surface morphology of the letter string. There is, of course, no lexical entry for pseudonouns. This means that the syntactic processor continues to run, waiting for the information it needs to evaluate these syntactic situations. It would most likely be stopped only when a general system-level decision deadline is reached (cf. Coltheart, Davelaar, Jonasson, & Besner, 1977). In contrast, XXX contexts should not engage the syntactic processor; the situations they create should be recognized as situations not requiring syntactic evaluation. When an XXX-pseudoword (or XXX-word) is encountered, therefore, the syntactic processor makes no attempt to assign a syntactic structure to it. Decision time in nonsyntactic contexts can be influenced simply by the lexical processor, yielding faster responses than when the syntactic processor is caught up "waiting for Godot."

The question of whether or not the syntactic processor is engaged during the experimental situation also speaks to the difference between the present pseudoword data, where XXX contexts have a facilitating effect relative to word contexts, and other research, where the neutral context has an inhibiting effect (e.g., Balota, 1983; deGroot et al., 1982; Neely, 1976, 1977). As noted, the adjective-noun and adjective-pseudonoun situations used in the present investigation involved syntactic as well as semantic relations. More commonly, noun-noun associative pairs are employed, and these appear not to be treated as syntactic situations—e.g., two semantically unrelated nouns that are in the same case do not show facilitation relative to those same nouns in incongruent cases (G. Lukatela & Popadić, 1979). The difference between unrelated word contexts and XXX contexts is, as deGroot et al. have argued, attributable to the inhibiting influence of XXX. In the present experiments, that inhibiting influence was either nullified by the high proportion of XXX trials (see Note 1) or counteracted by the futile attempts at a syntactic evaluation.

Further support for an interpretation in the framework of autonomous coherence checks comes from the duplication of the facilitation pattern at the short and long SOAs. The amount of facilitation was similar—59 ms at SOA 300 ms and 67 ms at SOA 800 ms—and the amount of inhibition was small and not significant at either interval.

In contrast to a priming account, it can be argued that congruence effects defined at the syntactic or message levels ought to be rate-independent. Because the processing takes the form of a coherence evaluation with simply a positive or negative result, there is no avenue for time (other things being equal) to influence the outcome of the evaluation. The overall hastening of lexical decision from 300 ms SOA to 800 ms SOA (by 42 ms for words and 20 ms for pseudowords) is probably a general result of preparatory processes common to reaction time tasks (Gottsdanker, 1980) rather than an indication of a change in language processing at the two intervals.

It would be useful to investigate the time course of low-constraint facilitation in a naming task, because comparisons of lexical decision and naming are often informative (cf. West & Stanovich, 1982). In studies of associative priming, for example, deGroot (1984, 1985) has found that facilitation of lexical decision does not increase significantly over SOAs but facilitation of naming does. She suggests that "meaning integration" (the message processor) overshadows the effect of context-induced attentional processing in lexical decision, but in naming, which does not engage the message level, the effect of attention can be seen to increase over SOAs. Failures to date to find semantic priming of naming in Serbo-Croat (Katz & Feldman, 1983), however, prohibit such a comparison here. Lupker (1984) has pointed out that so-called semantic priming actually hinges on the associative relationship between the context and target. If this is controlled for completely, then purely semantic relationships would produce no facilitation. Comparing strong and weak associates in a naming task would not address the issue of facilitation by low-constraint *semantic* contexts.

Nonetheless, the present results are consistent with a number of experiments that exploit the inflectional nature of Serbo-Croat in investigations of syntactical processing. Neither spreading activation nor a prelexical attentional type of priming is supported by a pattern of findings that militate strongly for postaccess coherence checks. We will summarize the argument here, but see Gurjanov, G. Lukatela, Moskovljević, et al. (1985) for the complete line of reasoning. As already mentioned, the standard result is that the target in a grammatically congruent pair is evaluated more quickly than the target in a grammatically incongruent pair (e.g., Gurjanov, G. Lukatela, K. Lukatela, et al., 1985; Gurjanov, G. Lukatela, Moskovljević, et al.; G. Lukatela et al., 1982, 1983). Significantly, the magnitude of the grammatical congruence effect for adjective-noun pairs is matched by that found for pseudoadjective-noun pairs, both in visual (Gurjanov, G. Lukatela, Moskovljević, et al.) and auditory lexical decision (Katz, Boyce, Goldstein, & G. Lukatela, 1987). The observed influence of

a pseudoadjective on the processing of a noun could only have been achieved through a relating of their respective inflections. The information required in order that a syntactic device might evaluate such relations is of three kinds: (a) Inflections must be distinguished from stems; (b) word class must be identified; and (c) word gender must be identified. These three kinds of information are made available by lexical access.

What is the theoretical significance of low-constraint facilitation of word recognition? As the argument is usually developed, such effects are supposed to infirm models of autonomous processing because such effects imply that high-level information is interacting with low-level processes. In their summary of the issue, Sanocki et al. (1985, p. 147) observe:

> A facilitatory effect of low-constraint contextual information would be of particular theoretical interest, because it would implicate a linguistically powerful mechanism. . . . A facilitatory effect of such a context would implicate a high-level mechanism that could affect more words than word level mechanisms (e.g., Becker, 1980; Neely, 1977) could affect.

Forster, architect of perhaps the strongest autonomous model, also sees low-constraint sentences in the same light: "This theory clearly requires that sentence contexts should not influence lexical processing (either positively or negatively)" (1981, p. 471). We agree that a model of autonomous processing cannot accommodate such effects *on lexical processing,* but we do not agree that the existence of low-constraint context effects necessarily implies the existence of "a linguistically powerful mechanism" that is, indeed, influencing lexical processing. Rather, the message processor does its evaluation on the basis of *information available in the lexical entries* of the accessed words. As Forster (1979) has pointed out, this may require a reconceptualization of the kind of information that is thought to be contained in the lexicon. The automaticity of sentence context effects—especially as evidenced by their stability over SOAs—may demand such a reconceptualization.

In the model advocated here, sentence context effects arise because of the integrity of the language processor, which cannot short-circuit its own style of normal language comprehension. That is, the decision-making device ordinarily must use the outputs of all three subprocessors to understand sentences. Negative bias from any level may be "a signal that perception or comprehension has failed and that some reanalysis is called for" (Fischler & Bloom, 1979, p. 224; see also Kinoshita, Taft, & Taplin, 1985). For example, one might be alerted

to an unfamiliar or inappropriate word or to a questionable syntactic construction (e.g., is a double negative intentional?). These effects are decidedly postlexical, but they are no less automatic because of it.

Notes

This research was supported in part by National Institute of Child Health and Human Development Grants HD-08495 and HD-01994 to the University of Belgrade and Haskins Laboratories, respectively. Requests for offprints should be addressed to M. T. Turvey, Haskins Laboratories, 270 Crown Street, New Haven, CT 06510. Received for publication April 3, 1986; revision received July 29, 1986.

1. DeGroot et al. (1982) warn that the xxx baseline may, in fact, be inhibitory and that a more neutral context is provided by a word such as "blank." Because the Serbo-Croatian language is inflectional, however, all words are marked for a grammatical role. Consequently, almost any seemingly neutral word would necessarily facilitate those words with which it was grammatically congruent and inhibit those with which it was incongruent. An exception is provided by noun contexts for noun targets—such pairs do not create a syntactic situation (G. Lukatela & Popadić, 1979)—but these introduce the possibility of associative or semantic relatedness. Although the concerns of deGroot et al. are important, it may be that in Serbo-Croat, xxx contexts are as neutral as it gets. It has been suggested that a high proportion of baseline trials may serve to limit the inhibitory influence of xxx contexts (deGroot et al.). Both of our experiments follow this recommendation by including 50% baseline trials.

2. For pseudonouns following nominative adjectives, however, the pairs cannot be decisively congruent, because of the way in which case is marked in nouns. An inflection such as -A indicates nominative for feminine singular nouns but genitive for masculine singular nouns. That is, accessing the lexicon is required to render the inflection unambiguous.

3. Because association norms have not been compiled for the Serbo-Croatian language, one might argue that the experimental materials were, in fact, weak associates and nonassociates rather than low-constraint plausible and implausible contexts. If this were the case, however, then we should expect no effect on the former and inhibition on the latter (cf. deGroot et al., 1982).

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American Journal of Psychology
Spring 1988, Vol. 101, No. 1

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