Compounds in the multilingual lexicon: Internal structure and cross-linguistic influence

Much research on native speakers (e.g., Fiorentino & Poeppel, 2007) has shown that the morphological structural information of words is stored in the lexicon and retrieved during processing. It has been proposed that the semantic and thematic relations established between the constituents of a compound word play a role in compound processing (e.g., Gagné, 2002; Ji et al., 2011). For non-native speakers, some studies (e.g., Clahsen et al., 2013) report no involvement of morphological structure in the processing of complex words, while others claim qualitatively similar processing to natives (e.g., Diependaele, Duñabeitia, Morris, & Keuleers, 2011). It is still unknown if morphological information used by native speakers—in the Gagné sense—is also available to nonnative speakers during processing.

This study investigates (i) whether information about compounds' constituent structures exists in the English non-native lexicon, and (ii) the potential role of relational structures (i.e., thematic relations between the constituents) in non-native processing. Constituent structure was examined via a lexical decision task with masked priming (L1 English: n = 71; L1 Spanish-L2 English: n = 78), with English N(oun)V(erb)-er compounds (e.g., *fundraiser*) as critical stimuli, preceded by the subliminal presentation of: a) their first constituent (e.g., *fund*); b) their second constituent (e.g., *raiser*); c) an orthographic control for the first constituent (e.g., *funk*); d) an orthographic control for the second constituent (e.g., *raisin*); e) an unrelated word (e.g., *table*). Both groups displayed a significant priming effect, as compared to the unrelated condition, when compounds were preceded by one of their constituents (both $p < .001$), but no effect when the prime was an orthographic control (first control: $p = .58$; second: $p = .82$).

A second experiment investigated if relational structures are used in nonnative compound processing. Participants included an English control group (n = 15) and three groups of nonnative speakers: L1 Spanish L2 English (n = 38), L1 Basque L2 Spanish L3 English (n = 37) and L1 Spanish L2 Basque L3 English (n = 44). Both trilingual groups were early Basque-Spanish bilinguals that differed only in their first and dominant language. Our materials exploited a/symmetries in the formation of NV-er compounds between English, Spanish and Basque. While Basque and English present comparable structures, Spanish (productive) semantic equivalents follow the structure V+N (e.g., *lavaplatos*, lit. washes-dishes, *dishwasher*). A standard lexical decision task was conducted with the same critical stimuli as in Experiment 1. Having a comparable relational structure in their first and dominant language, we predicted the Basque-dominant group to show faster response times. While no overall significant difference was found in accuracy or response times between nonnative groups, an analysis of response bias revealed that English native speakers and Basque-dominant trilinguals aligned together, with no bias, whereas the L1 Spanish groups showed a strong conservative bias towards compounds (i.e., a tendency to reject these words). Interpreted in light of morphological processing models, these results provide information on several understudied domains, such as the nature of morphological structure in the nonnative lexicon and the dynamics of cross-linguistic influence in multilingual processing.

EXAMPLES

(1) story teller (English)
(2) ipuin konta-laria (Basque)
story tell -er
(3) cuentacuentos (Spanish)
tell$_{[3SG]}$*stories*

RESULTS

Table 1. Percentage of correct responses and mean RTs (milliseconds) per condition and group in Experiment 1.

CONDITION	ACCURACY		RESPONSE TIME	
	L1	L2	L1	L2
Unrelated	95.07	82.69	727	1068
1st Morphological	95.45	85.42	680	1020
Effect	*0.38*	*2.73*	*47**	*48**
2nd Morphological	95.64	85.87	670	998
Effect	*0.57*	*3.18*	*57**	*70**
1st Orthographic	95.51	86.70	705	1074
Effect	*0.44*	*4.01*	*22*	*–6*
2nd Orthographic	93.75	86.06	725	1056
Effect	*–1.32*	*3.37*	*2*	*12*

The effect is calculated in each cell by subtracting from the corresponding score or time in the unrelated condition. Significant effects (at $p < .05$) are signalled with an asterisk.

Table 2. Nonparametric discriminability power (A'), response bias (B''_D), and hit and false alarm (FA) rates in the nonnative groups, Experiment 2.

CLASS	GROUP	A'	B''_D	Hit rates	FA rates
Compound-like	ES-bi	0.908	0.226	0.806	0.128
	BA	0.915	0.000	0.867	0.163
	ES	0.913	0.216	0.824	0.125
Noncompound-like	ES-bi	0.937	-0.813	0.988	0.235
	BA	0.931	-0.924	0.990	0.259
	ES	0.936	-0.912	0.989	0.240

A' values near unity indicate good discriminability, values near 0.5 indicate chance performance. Negative, equal to zero, and positive B''_D values indicate a liberal bias (i.e., a tendency to accept the item), no bias, and a conservative bias (i.e., a tendency to reject the item), respectively.

Note: ES-bi =L1 Spanish bilinguals; BA = L1 Basque trilinguals; ES = L1 Spanish trilinguals.