***SI Text***

**Interactions of Electrode with Language and Compatibility** **in analysis of self category words**

N200

We observed a significant interaction between Language and Electrode (*F*8,184 = 3.41, *p* = 0.009, = 0.13). *Post hoc* comparisons showed that English relative to Chinese words elicited increased N200 amplitudes on F3, F1, Fz, and FC1 electrodes (*p*s < 0.05) but not on the other five electrodes (*p*s > 0.05). The Compatibility × Electrode interaction (*p* = 0.526) and the Language × Compatibility × Electrode interaction (*p* = 0.531) were not significant.

P3

The interaction between Language and Electrode was significant (*F*5,115 = 4.11, *p* = 0.008,  = 0.15). Pairwise comparisons showed that Chinese relative to English words increased P3 amplitudes on FC1 electrode (*p* = 0.022) whereas no language differences were found on any other electrodes (*p*s > 0.1). In Chinese, P3 amplitudes were larger on FC1 electrode than on FCz electrode (*p* = 0.012) and also larger on C1 than on Cz (*p* = 0.017), whereas in the English context, P3 amplitudes were larger on C1 than on FCz (*p* = 0.037). The interaction between Compatibility and Electrode was also significant (*F*5,115 = 3.12, *p* = 0.025, = 0.12). That is, the P3 in the compatible condition was more positive than that in the incompatible condition on FC1 and C1 electrodes (both *p*s < 0.01) whereas no significant compatibility effects were found on other electrodes (*p*s > 0.1). The P3 in the compatible condition was larger on FC1 than on FCz (*p* < 0.001) and also larger on C1 than on Cz and FCz (*p*s < 0.01), while no difference was found between electrodes in the incompatible condition (*p*s > 0.1).

Theta

Electrode did not significantly interact with Language (*p* = 0.42) or Compatibility (*p* = 0.056).

Alpha

In the time range of 200 – 400 ms, the analysis of alpha band in the frontal-central region yielded no significant interactions of Electrode with the other two factors (Language × Electrode: *p* = 0.387; Compatibility × Electrode: *p* = 0.085). With regards to alpha power over the parieto-occipital region, we found a significant interaction between Language and Electrode (*F*5,115 = 3.05, *p* = 0.039, = 0.12). *Post hoc* analysis revealed that Chinese relative to English words elicited increased ERD (*p* = 0.04) on P1 while no language differences were observed on other electrodes (*p*s > 0.05). The interaction between Compatibility and Electrode was not significant (*p* = 0.545).

**Analysis of other category words**

We conducted a repeated-measures ANOVA with Language, Compatibility, and Electrode as within-subject factors. Regarding electrode-related effects, given our primary interest in compatibility variations between different languages, we only included the interactions of Electrode with Language and/or Compatibility.

N200

We found a significant main effect of Language (*F*1,23 = 9.78, *p* = 0.005, = 0.29), with larger responses to other words in English than to Chinese equivalents. No other main effect or interaction was significant (Compatibility: *p* = 0.664; Language × Compatibility: *p* = 0.821; Language × Electrode: *p* = 0.204; Compatibility × Electrode: *p* = 0.073; Language × Compatibility × Electrode: *p* = 0.763).

P3

There was a significant main effect of Language (*F*1,23 = 12.09, *p* = 0.002, = 0.34), with increased P3 induced by Chinese relative to English words. The interaction between Language and Electrode was significant (*F*5, 115 = 6.45, *p* = 0.001, = 0.22). Pairwise comparisons revealed that Chinese relative to English words elicited enhanced P3 responses (*p*s < 0.01) on FC1, FCz, and Cz electrodes. While the main effect of Compatibility was not significant (*F*1,23 = 3.79, *p* = 0.064, = 0.14), the Compatibility × Electrode interaction was significant (*F*5,115 = 2.77, *p* = 0.038, = 0.108), showing that in the incompatible condition the P3 was more positive on FC1 than on FCz and also more positive on C1 than on FCz and Cz (*p*s < 0.05). There was no significant interaction between Language and Compatibility (*p* = 0.977). The interaction between Language, Compatibility, and Electrode was significant (*F*5,115 = 3.13, *p* = 0.031, = 0.12). To deconstruct it, we conducted Language × Compatibility *post hoc* ANOVAs for each electrode separately. The analyses showed that the main effect of Language was significant on FCz and Cz electrodes (FCz: *F*1,23 = 12.14, *p* = 0.002, = 0.35; Cz: *F*1,23 = 11.57, *p* = 0.002, = 0.34), with more augmented amplitudes for Chinese than for English words. Also, on FCz and Cz, other category words in the compatible condition significantly increased P3-like amplitudes than those in the incompatible condition (*F*1,23 = 6.43, *p* = 0.018, = 0.22; *F*1,23 = 8.57, *p* = 0.008, = 0.27).

Theta

Theta activity showed no significant main effects or interactions (Language: *p* = 0.468; Compatibility: *p* = 0.295; Language × Compatibility: *p* = 0.722; Language × Electrode: *p* = 0.301; Compatibility × Electrode: *p* = 0.34; Language × Compatibility × Electrode: *p* = 0.482).

Alpha

The analysis of alpha band in the frontal-central region yielded a significant main effect of Language (*F*1,23 = 4.55, *p* = 0.044, = 0.17), with more pronounced ERD following Chinese than English words. No other significant main effect or interaction was observed (Compatibility: *p* = 0.916; Language × Compatibility: *p* = 0.445; Language × Electrode: *p* = 0.45; Compatibility × Electrode: *p* = 0.253; Language × Compatibility × Electrode: *p* = 0.186). With regards to alpha power over the parieto-occipital region, we found no significant main effects or interactions (Language: *p* = 0.185; Compatibility: *p* = 0.141; Language × Compatibility: *p* = 0.902; Language × Electrode: *p* = 0.164; Compatibility × Electrode: *p* = 0.859; Language × Compatibility × Electrode: *p* = 0.844).

Taken together, we observed no significant main effect of Compatibility or the interaction between Compatibility and Language for other category words.

**Analysis of attribute words**

We conducted a three-way repeated-measures ANOVA with Language, Compatibility, and Electrode as within-subject factors. Regarding electrode-related effects, given our primary interest in compatibility variations between different languages, we only included the interaction of Electrode with Language and/or Compatibility.

N200

There was no significant main effect (Compatibility: *p* = 0.947; Language: *p* = 0.414). The interaction between Language and Compatibility (*p* = 0.684) and the interaction between Compatibility and Electrode (*p* = 0.684) were not significant. We observed a significant interaction between Language and Electrode (*F*8,184 = 9.68, *p* < 0.001, = 0.29). *Post hoc* comparisons revealed that the N200 elicited by attribute words in Chinese was more negative than that for those in English on C3, Cz, and FC3 electrodes (*p*s < 0.05), while on Fz, the N200 was more negative in response to English than to Chinese words (*p*s < 0.05). The Language × Compatibility × Electrode interaction was not significant (*p* = 0.237).

P3

There was no significant main effect or interaction (Compatibility: *p* = 0.31; Language: *p* = 0.724; Language × Compatibility: *p* = 0.134; Compatibility × Electrode: *p* = 0.339; Language × Electrode: *p* = 0.673; Language × Compatibility × Electrode: *p* = 0.73).

Theta

The main effect of Language was significant (*F*1,23 = 56.93, *p* < 0.001, = 0.71), with attenuated theta ERS in processing English relative to Chinese attribute words. No significant main effect of Compatibility or interaction between Language and Compatibility was found (Compatibility: *p* = 0.214; Language × Compatibility: *p* = 0.621). There was no significant interaction between Compatibility and Electrode (*p* = 0.352) or between Language and Electrode (*p* = 0.362). However, we observed a significant three-way interaction (*F*5,115 = 2.93, *p* = 0.038, = 0.11). To deconstruct it, we conducted Language × Compatibility *post hoc* ANOVAs for each electrode separately. The analyses showed that there was a significant interaction between Language and Compatibility on the FC2 electrode (*F*1,23 = 5.79, *p* = 0.025, = 0.2). Pairwise comparisons revealed that in the English context, the compatible condition, as compared to the incompatible condition, elicited more pronounced ERS (*p* = 0.003), while no such difference was observed in the Chinese context (*p* = 0.766).

Alpha

With regards to alpha ERD in the frontal region, we found a significant main effect of Language (*F*1,23 = 14.43, *p* = 0.001,  = 0.39) such that English attribute words relative to Chinese equivalents elicited greater alpha ERD. No significant main effect of Compatibility or interaction between Language and Compatibility was found (Compatibility: *p* = 0.898; Language × Compatibility: *p* = 0.509). Also, there was no significant interaction between Electrode and the other factors (Compatibility × Electrode: *p* = 0.097; Language × Electrode: *p* = 0.234; Language × Compatibility × Electrode: *p* = 0.715). The analysis of alpha activity in the parieto-occipital region revealed a significant effect of Language (*F*1,23 = 9.68, *p* = 0.005, = 0.29), with increased alpha ERD in response to English relative to Chinese attribute words. Neither the main effect of Compatibility nor the interaction between Language and Compatibility was significant (Compatibility: *p* = 0.184; Language × Compatibility: *p* = 0.495). While the interaction between Language and Electrode was not significant (*p* = 0.713), there was a significant interaction between Compatibility and Electrode (*F*5,115 = 3.76, *p* = 0.014, = 0.14). *Post hoc* comparisons revealed that in the incompatible condition, ERS on P1, P2 and Pz was more pronounced than that on POz (*p*s < 0.05). As compared to the compatible pairings, the incompatible pairings augmented ERD on P2 and PO4 electrodes (*p*s < 0.05), whereas no significant compatibility effects were found on other electrodes (*p*s > 0.1). The Language × Compatibility × Electrode interaction was not significant (*p* = 0.167).

The absence of significant effect of Compatibility and modulation of the effect by Language indicates that responses to attribute words were different from those to category words. The effects of compatibility on the N200 and P3-like/LPC were confined to the processing of self words and did not occur in the processing of valenced attributes, suggesting that it is not the compatibility *per se* that drives the ERP and ERSP effects observed with self words (otherwise, we should have observed similar effects for attribute words as well) but rather the automatic activation of the intrinsic association as a consequence of being presented with self words. The link from attributes to self is not as strong as the link from self to attributes given that the presentation of attribute words does not activate an individual’s attitude automatically whereas the presentation of self words does (Wu et al., 2014).

References

Wu, L., Cai, H., Gu, R., Luo, Y. L., Zhang, J., Yang, J., ... & Ding, L. (2014). Neural manifestations of implicit self-esteem: An ERP study. *PloS ONE, 9*(7), e101837.