

The impact of peer communication in second language acquisition

Paper presented at the 50th Poznań Linguistic Meeting

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keywords: social network analysis, second language acquisition, Study Abroad, peer interaction, centrality measures

Social networks play a vital role in the attainment of individuals, including second and third language acquisition. We present two studies investigating the influence of peer interaction dynamics and social graph topology on language acquisition outcomes, i) among Erasmus exchange students in Germany ($n=40$) and ii) in two cohorts of participants in an intensive summer course of language and culture in Poland ($n_1=181$; $n_2=210$).

To comprehensively characterise the structure of the learner networks, established metrics were used such as node degree, closeness, betweenness and other centrality measures as well as local clustering coefficients, using generalisations of these metrics to weighted graphs, which allows for both the number and strength of interactions to contribute to the metrics. Additionally, we used community detection algorithms and stochastic blockmodeling. The topological data were then overlaid over independently collected socio-biographical data and learning outcomes in order to carry out multi-faceted analyses of the mutual influence of individual on social factors and vice versa.

In the German course, we find among others i) that the best predictor of progress is reciprocal interactions between students *in the TL*, ii) that outgoing interactions in the TL are a stronger predictor than incoming interactions, iii) a negative relationship between performance and interactions with same-L1 speakers, and iv) more intense interactions taking place *across* proficiency groups.

In the Polish course, participants' patterns of social embeddedness in TL communication are significantly moderated by their i) *individual* entry TL competence (positively) and ii) psychosituational portrait, while iii) negatively by competence in *lingua-franca* English. iv) Outdegree centrality in the TL is also negatively impacted by the intensity of communication with the teacher in a (non-L1) non-target language. v) The influence of the network is strongest in the domains of pronunciation and lexis, where degree centrality *in TL* positively correlates with progress, while betweenness *in total communication* is significantly anticorrelated. vi) This mirrors the influence direction—on global TL progress—of closeness centrality. Combined with the detrimental impact on language acquisition of a high in-degree, this suggests that for language acquisition, the structural properties of the network matter more than processes such as information flow.

Computational and anthropological Social Network Analysis provides fresh insights into the link between social relations and language acquisition, demonstrating how social network configuration

and peer interaction dynamics during the learning process are stronger predictors of L3 performance than individual factors, and offers a novel methodology for investigating the phenomena.