

# Peer learner networks impact study-abroad second language acquisition: Insights from mixed-methods SNA

Michał B. Paradowski  
Magdalena Jelińska  
Institute of Applied Linguistics

Karolina Czopek  
Institute of English Studies



Chih-Chun Chen  
Engineering Design Centre  
University of Cambridge



Jeremi K. Ochab  
Theory of Complex Systems Department  
Jagiellonian University



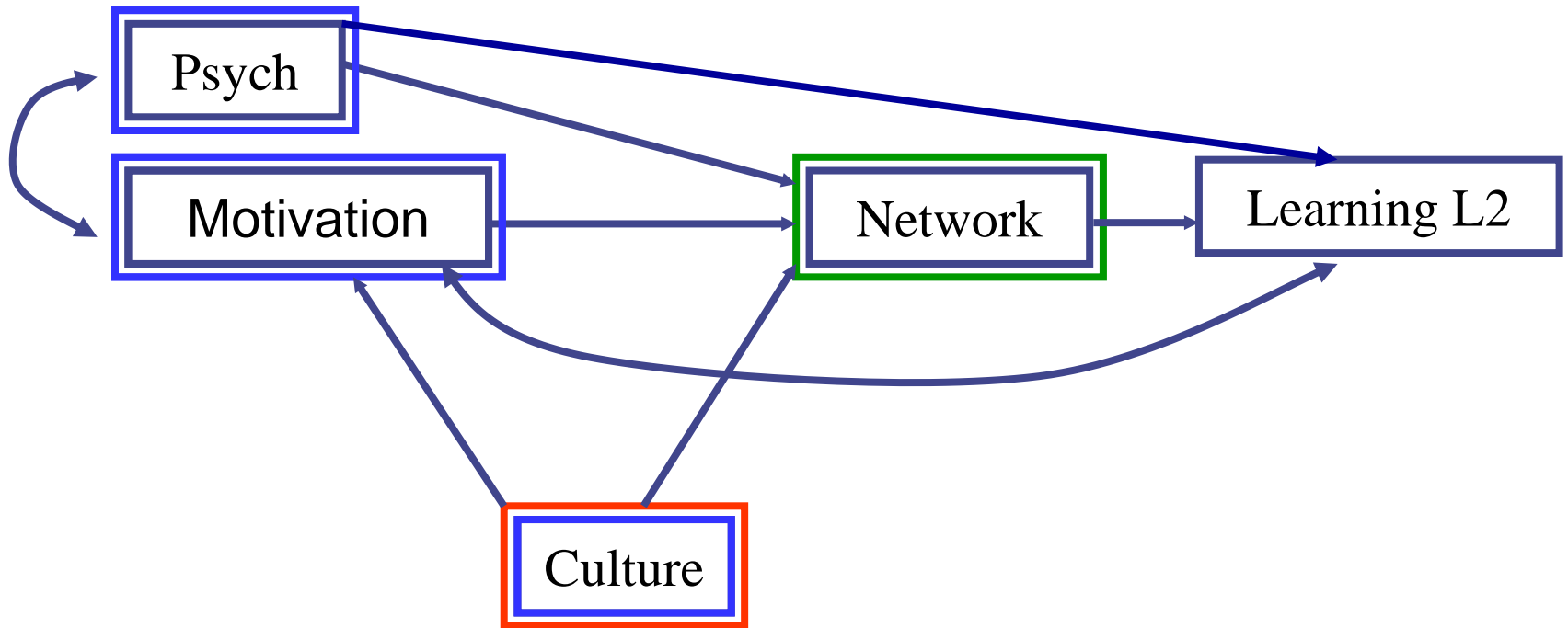
Agnieszka Cierpich  
Institute of Modern Languages  
Ignatianum Jesuit University in Kraków



Andrzej Jarynowski  
Institut für Veterinär-Epidemiologie und Biometrie  
Freie Universität Berlin



# Social Network Theory and Language Acquisition



# Peer interaction in education

Moreno (1934): first sociograms to study interpersonal relationships in a school context

A sociogram can be drawn on the basis of criteria such as social relations, channels of influence, lines of communication etc.

Coleman (1988, 1999): cultural capital as a network-based phenomenon

Teenage peer networks are a value in themselves, they do not have to be linked to striving for academic achievement

# Language acquisition and social network theory

Wei (1994): the make-up (in particular the ethnic composition) of an individual's social network has a far greater impact on their language selection than variables such as gender or age

Chambers (2009): social networks are active influencers of language development

Kurata (2010): informal social relations enabling social exposure to the TL – the chief agent in second language learning

Bardovi-Harlig & Bastos (2011): intensity of interaction has a significant effect on the recognition and production of conventional expressions

# Language acquisition and social network theory

residence and study abroad lead to significant gains in students' language proficiency (Opper, Teichler & Carlson 1990; Meara 1994; Lapkin, Hart & Swain 1995; Coleman 1998; Freed 1998; Huebner 1998; Ingraham & Peterson 2004; Isabelli-García 2006)

extensive variation both in the amount of contact students have with members of the local community and in their linguistic outcomes (Kinginger 2009)

- **so far, no rigorous quantitative data-driven analyses have been carried out at mesoscopic level**
- social network structure and peer interaction dynamics vs. SLA/TLA outcomes
- face-to-face and remote interactions
- horizontal vs. vertical learning
- the impact of COVID-19-induced remote learning

# Methodological tools

- i. **questionnaire measuring the influence of individual and group factors on language outcomes**
  - **communication in different contexts and languages**
  - **psychological variables**
- ii. PEERLANG ego-network questionnaire
- iii. **placement and final tests measuring participants' TL competence at the beginning and end of the course**
- iv. interviews with all the language instructors and volunteer students

# Studies in Warsaw, DE, Szczecin



**PEERLANG**

How Peer Interaction Mediates SLA  
(from a Social Network Perspective)



# Site selection and population

332 students from 41 countries (5 continents) taking part in an intensive Polish language course in Warsaw in 2017 & 2019

37 students in a 2020, 2021 online edition

13 teachers of Polish

**POLONICUM**  
*Centre of Polish Language and Culture  
for Foreigners*

23 first-year undergraduate Applied Linguistics students majoring in Japanese

17 first-year undergraduate Applied Linguistics students majoring in Swedish

2 teachers of Swedish

38 Erasmus students in Germany

> 500 Ukrainian refugees in Poland

# Site selection and population

53% female

Mean age: 27

Main L1s: German 15.4%,  
Chinese 10.2%, Russian 8.4%,  
English 6.6%, Georgian 3.9%

Motivation: studying in Poland  
31%, interests 18.1%, family  
reasons 13%, work 11.7%

80% female

Mean age: JA majors: 20;8  
SV majors: 20;2

L1s: Polish 92% (other:  
Ukrainian, French, Russian,  
Czech, English)

Motivation: interests 42%,  
available study minor 17%,  
TL culture 15%

# Interviews

Study Abroad context

At-Home context

9 interviews with course participants

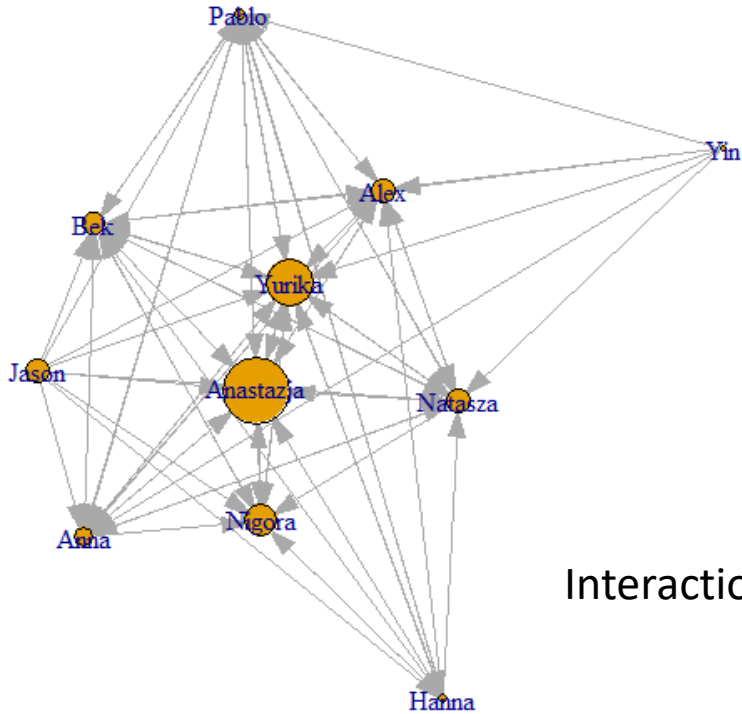
7 interviews with course participants

13 interviews with course teachers

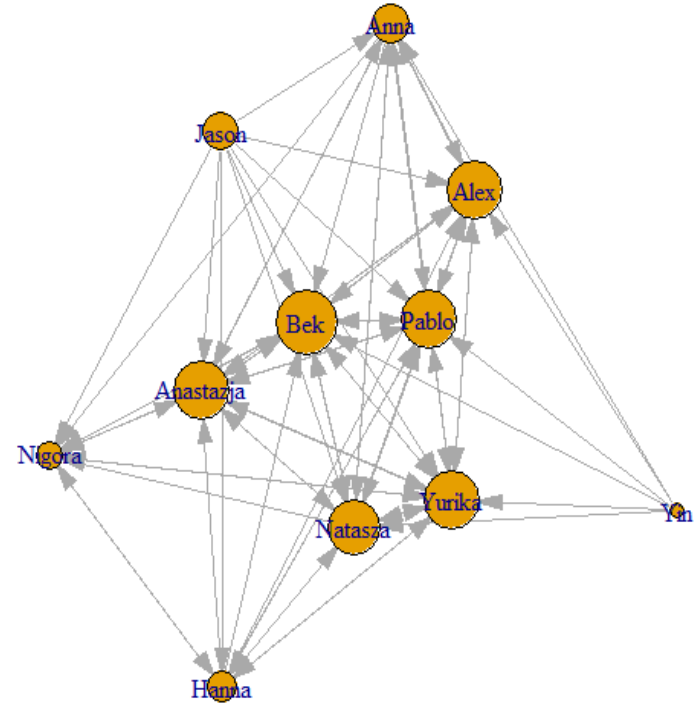
Focus group interview

2 interviews with course teachers

# Multilayer approach



Interactions in Polish

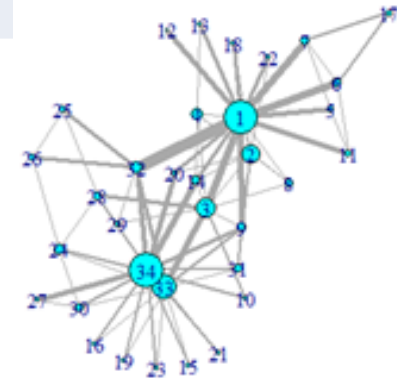
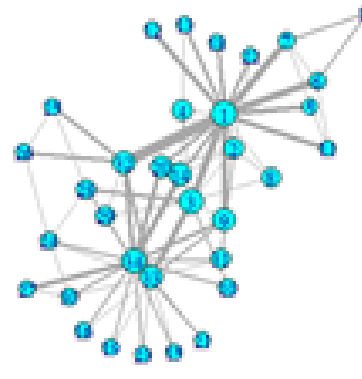
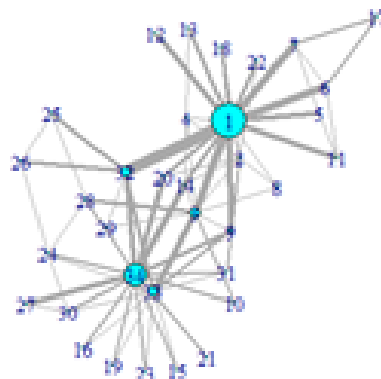
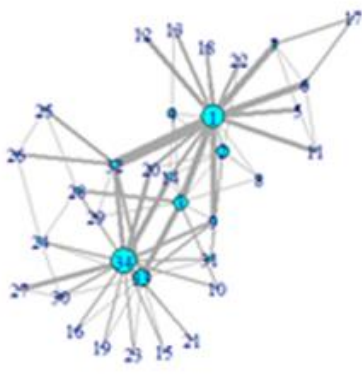


General interactions  
(regardless of the  
language)

\*all names are pseudonyms

# Selected centrality measures

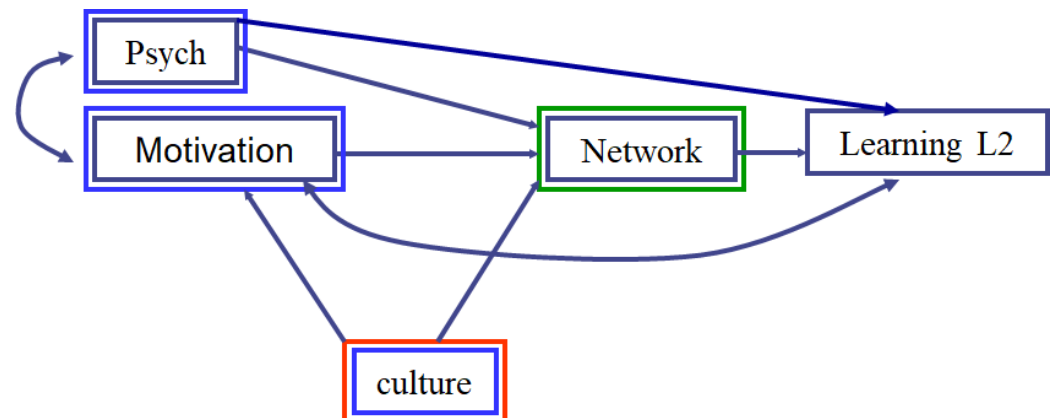
Degree	Betweenness	Closeness	PageRank
out: number of links to alters in: number of links from alters all: sum of out/in	number of times the node lies on the shortest path between the other nodes	inverse distance of the node to all the others	number of links to the node weighted by the attraction and centrality of the linkers

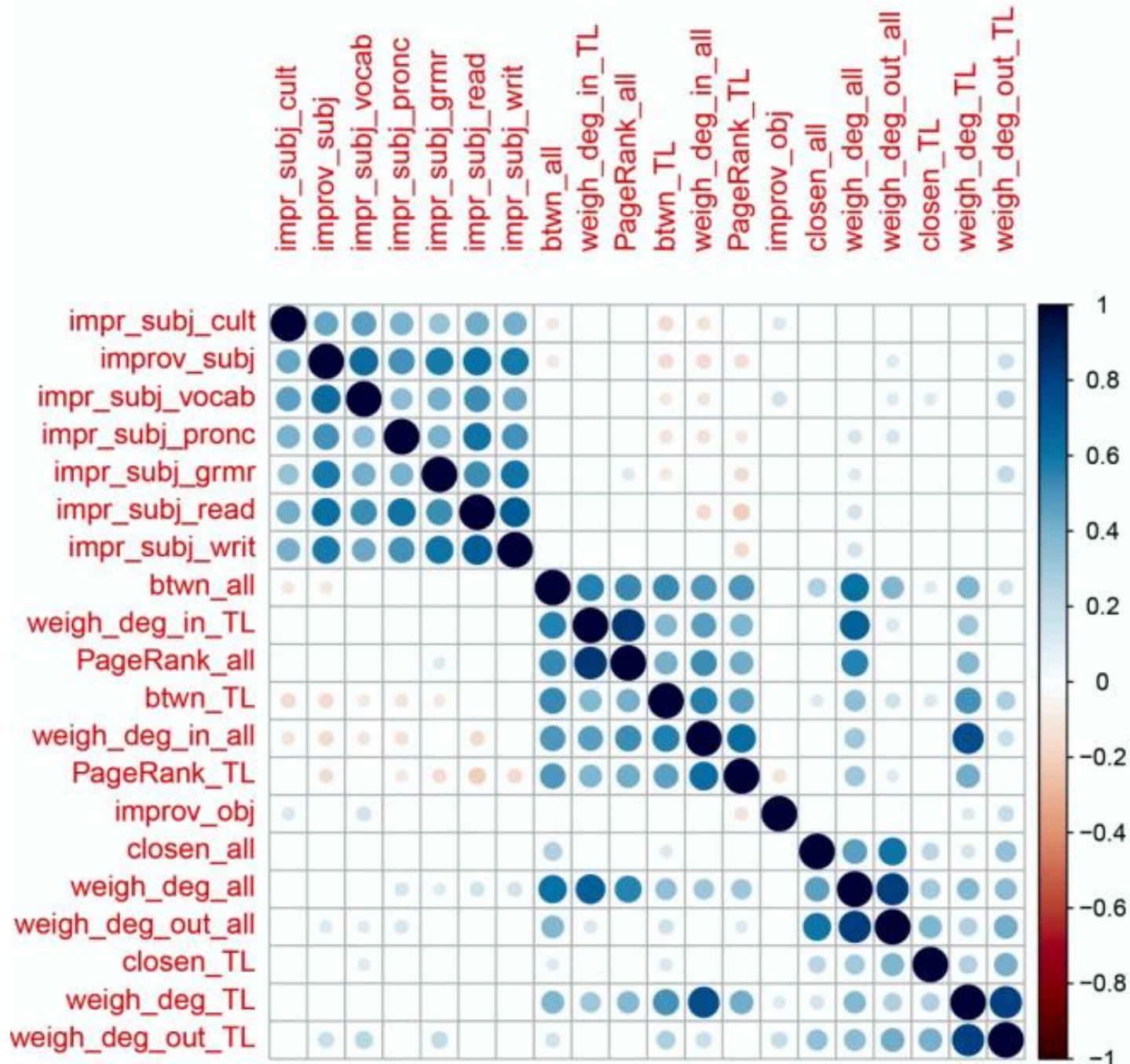


# Extended network variables and progress

Moderators of TL progress:

- intensity of communication with family in TL (0.026)
- intensity of communication with others (strangers) in TL (0.018)
- intensity of communication with family in non-TL (-0.043)
- intensity of communication with the teacher in non-TL (-0.036)
- intensity of communication with friends in L1 (-0.01)
- intensity of learning (0.003)
- course enjoyment (0.362)
- cumulative language competence (0.015)
- level of English (-0.126)
- texting (-0.030)





# Centrality measures vs. progress (multiple variable model)

Interpretation: For language acquisition via social interaction, the structural properties of the network matter more than processes such as information flow.

	Subjective Improvement (R <sup>2</sup> =0.18)		Objective improvement (R <sup>2</sup> =0.38)	
	Estimate	Pr(> t )	Estimate	Pr(> t )
Centrality				
Weighted in-degree ALL	-0.053	0.005	0.503	0.373
Weighted out-degree ALL	0.004	0.662	0.275	0.368
Weighed out-degree TL	-0.001	0.988	-0.135	0.534
Weighted in-degree TL	0.132	0.037	1.696	0.014



# Centrality measures vs. Progress (multiple variable model)

Correlation with subjective progress in <b>vocabulary</b>		
centrality measure	estimate	<i>p</i> -value
Out-degree	0.304	.0002
In-degree	0.263	.001
<b>Betweenness</b>	<b>-0.204</b>	<b>.01</b>

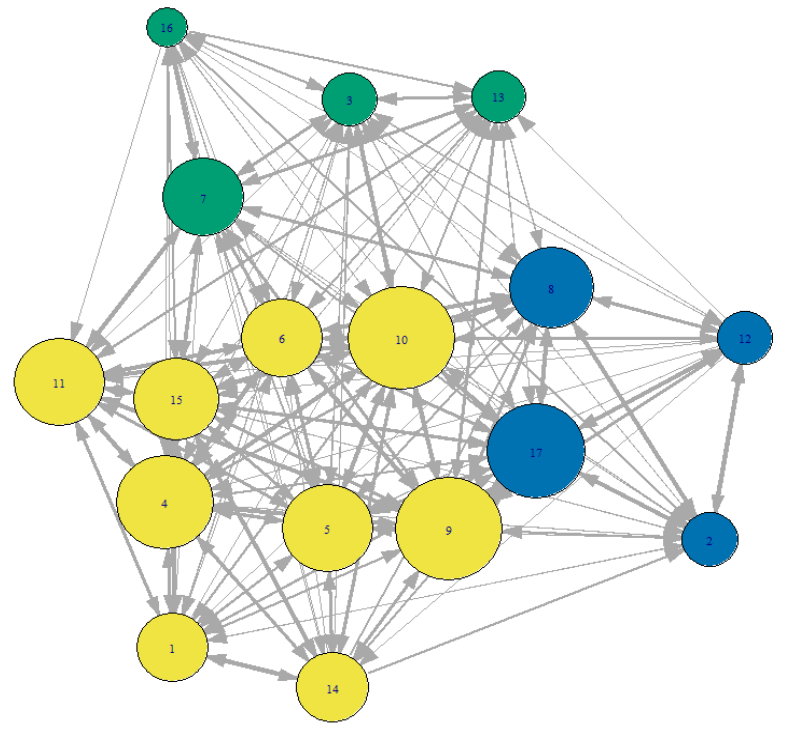
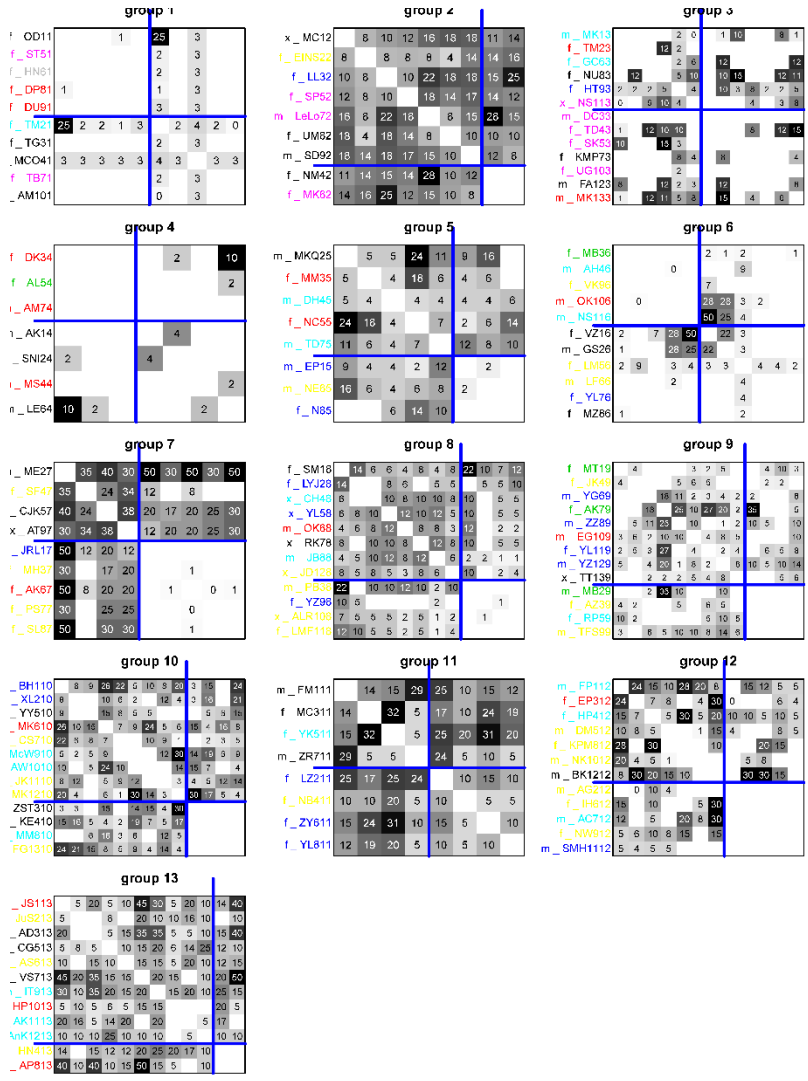
Correlation with subjective progress in <b>pronunciation</b>		
centrality measure	estimate	<i>p</i> -value
Out-degree	0.258	.001
<b>In-degree</b>	<b>-0.075</b>	<b>insign.</b>
<b>Betweenness</b>	<b>-0.242</b>	<b>.003</b>

# Homophily

nationality-based: “I guess it’s natural that you stick to your home country” [M, 25]

language-based: “We made our own little German-speaking corner” [F, 26]

# Blockmodels/Communities



# Improvement (Polonicum + pilot in DE)

- least improvement among participants with *more* incoming interactions
- improvement positively associated with competence in other
- clear *negative* relationship between performance and the number of interactions with participants with the same  $L_1$

# Network measures and improvement

Weighted outdegree centrality in the TL is also **negatively** influenced by the intensity of communication with the teacher in a (non-L1) non-target language

Competence in TL **positively** influences in/out degree centrality in the TL

Intensity of communication with other (random) people in TL **positively** correlates with in-degree centrality in TL

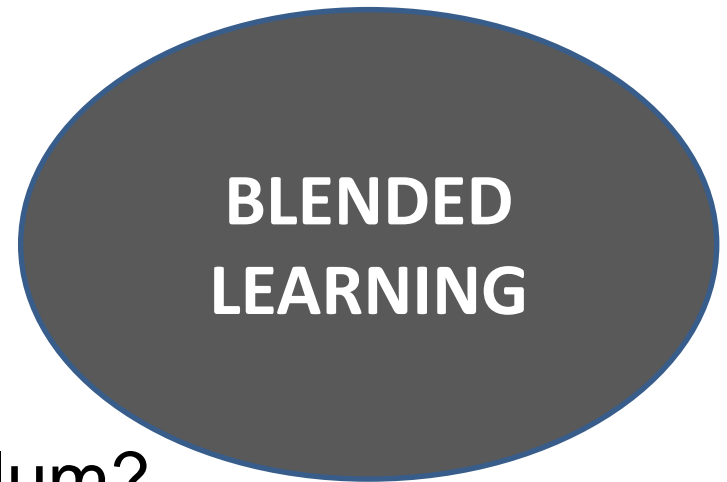
# Discussion

Importance of the proportion of outgoing to incoming TL interactions harks back Swain's (1985) Output Hypothesis and its later iterations

Incoming interaction scores are dependent on the reports of others  $\Rightarrow$  those receiving more *incoming* interactions are at the same time enabling **others** to have more *outgoing* interactions

# Why is online learning not conducive to some aspects of language progress?

- immersion?
- peer interaction?
- teaching focus / course curriculum?



# After the switch to remote instruction

Degree of motivation to learn the target language:

Instructional mode	N	Mean	Std. Deviation	Effect size	p-value
Face-to-face	268	4.37	.832	.114	<.001
Online	21	5.52	.873		

% of interactions with classmates in the context of overall communication:

Instructional mode	N	Mean	Std. Deviation	Effect size	p-value
Face-to-face	223	53.04	29.186	.097	<.001
Online	21	19.48	24.361		



# After the switch to remote instruction

% of voice chats in TL:

Instructional mode	N	Mean	Std. Deviation	Effect size	p-value
Face-to-face	240	9.16	19.081	.081	<.001
Online	21	32.38	39.485		

% of texting in TL:

Instructional mode	N	Mean	Std. Deviation	Effect size	p-value
Face-to-face	240	12.54	17.031	.049	<.001
Online	21	23.38	35.150		

Improvement in vocabulary:

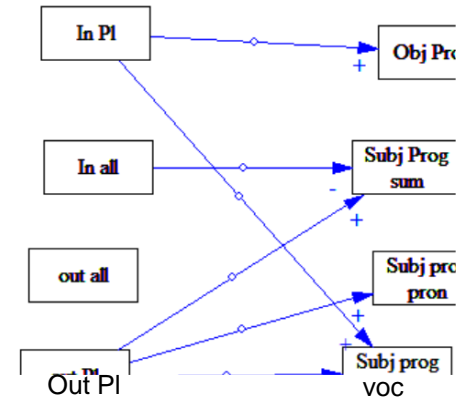
Instructional mode	N	Mean	Std. Deviation	Effect size	p-value
Face-to-face	263	3.56	1.113	.014	.049
Online	21	3.05	1.431		

# Ukrainian Refugees in Poland?

- immersion?
- peer interaction PL with UKR?
- Motivation?

# Conclusions

- Different centrality measures explain subjective/objective progress differently



- Incoming degree and Page Rank correlates negatively with progress (→ Coleman's theory and Swain's Output Hypothesis)
- Multilayer approach – general intensity of interaction vs. intensity of interaction in TL
- Coleman (support) Network vs Interacting (language producing) Network
- Part of progress explained by non-network variables: psychological profile, motivation and cultural immersion

# Conclusions and pedagogical implications

By identifying social behaviours which can positively or negatively impact learners' language attainment one can hope to accelerate students' progress by looking at ways to enhance and encourage the beneficial ones while containing and discouraging the detrimental ones.

Results may help teachers choose the optimal forms of in- and out-of-class activities (*cf.* e.g. Chi 2009), and help students themselves raise their awareness of both more and less straightforward relations between their interactions within a group and the effects of learning.

[a.jarynowski@uw.edu.pl](mailto:a.jarynowski@uw.edu.pl) (DFG 458528774)

## We are open to collaboration!

### References:

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