

## **Environmental differences contribute to divergence of dialect groups**

TERHI HONKOLA

terhi.honkola@utu.fi

*University of Tartu*

Human individuals that continuously interact with each other and share the same culture are likely to share the language as well. While some cultural features, e.g. subsistence strategy, are connected to fitness of the individuals (Currie & Mace 2014), some others, such as language, are not. Therefore, language can be seen as a neutral marker of the cultural history of human populations (Mace & Jordan 2011). Here we studied the divergence of dialect groups, which essentially reflects the divergence of the speaker populations. The inducers of linguistic divergence have usually been sought from sociocultural factors and from physical barriers to human migration like mountain ranges or sheer geographical distance (e.g. Paul 1886). However, one can also expect that individuals, who are culturally adapted to certain environmental conditions, may have more interaction with individuals who live in a similar kind of environment than with those who live in different kind of conditions, even though these areas would be geographically close. We studied this possibility together with the traditional explanations to explain the spatial pattern of Finnish dialects. We investigated whether geographical distance or differences in environmental and cultural conditions explain linguistic differences. We also studied the relative explanatory roles of these factors. We analyzed historical dialect data of Finnish language from the time before extensive urbanization together with historical and modern spatial data. We did this with multiple regression on distance matrices (MRM) and with variation partitioning. We found that environmental differences are important inducers of linguistic divergence. Their importance, especially when compared to the small role of geographical distance, was unexpected. In addition, we found the role of cultural differences to be notable. These findings suggest that cultural adaptation to the natural environment has had an impact on the separation of the speaker populations and on linguistic divergence.

### **References**

Currie TE, Mace R. Evolution of cultural traits occurs at similar relative rates in different world regions. *Proc R Soc Lond B Biol Sci.* 2014;281:20141622.

Mace R, Jordan FM. Macro-evolutionary studies of cultural diversity: a review of empirical studies of cultural transmission and cultural adaptation. *Philos Trans R Soc Lond B Biol Sci.* 2011;366:402-11.

Paul H. *Principien der Sprachgeschichte*. 2nd ed. Halle: Max Niemeyer; 1886.