

An Intersection of Language Acquisition and Cognitive Development. A Novel Framework.

The current submission introduces a novel framework aiming to explore a potential link between patterns of non-random variation in normal language acquisition and the development of abnormal cognitive phenotypes in humans. More precisely, the proposed framework unites the specific case of variation in normal language acquisition – the so-called referential (R) and expressive (E) styles - and abnormal cognitive phenotypes, namely autism (ASD) and schizophrenia (SZ).

The main thesis of this framework is that while the processes of abnormal cognitive development and normal language acquisition are commonly seen as discrete ones and unrelated, it is possible to approach them from a unified perspective. Such approach is focusing on the non-random patterns of variation in both linguistic and cognitive development with the assumption that the distribution of this variation is based on specific systems and processes that are involved in both cognitive and linguistic development and it is the functioning or malfunctioning of these systems that eventually produces the observed patterns of variation. In other words, the patterns of variation in ASD and SZ on the one hand and R and E styles on the other, are based on similar foundation.

The proposed approach is building on the previous work of scholars investigating ASD and SZ and R and E language acquisition styles (Crespi & Badcock, 2008; Dobrova, 2009; Bates et al., 1991). Three notions are mostly important for the proposed framework. First, both abnormal cognitive conditions and language acquisition styles can be seen as representing the opposite sides of the continuum. That is, SZ and ASD are the extreme points of the continuum of normal human cognition; and R and E styles are the opposite points of the continuum of normal language acquisition.

The second important point is that in both continuums, the opposite points' features (symptoms) are manifested in the opposite manner. For example, while enhanced systemizing and visual-spatial abilities characterize ASD, deficits in these domains are typical for SZ. Fast rate of vocabulary growth and clear articulation is typical for R children, while the opposite features are common for E children.

The third important point is that the features of both continuums are manifested in both cognitive and linguistic domains. That is, children exhibiting R or E language acquisition styles, also differ in some cognitive and social parameters and patients diagnosed with SZ or ASD often have deficits in the linguistic domain.

As a result, the proposed approach conceptualizes the described continuums as one unified continuum of human cognitive-linguistic development (SZ-E-R-ASD) with precise phenotypes representing its two specific trajectories (SZ-E and R-ASD respectively).

The talk will further discuss the precise links between SZ and E style and ASD and R style respectively with specific examples, as well as potential mechanisms explaining such connections. The proposed approach is especially beneficial for correct identification of developmental trajectories in norm and pathology, and most importantly, it has serious

implications for early prediction of these trajectories and defining populations at risk of developing various deficits (ex. dyslexia) early on.

References:

Bates, E., Bretherton, I., & Snyder, L. (1991). *From first words to grammar: Individual differences and dissociable mechanisms*. New York: Cambridge University Press.

Crespi, B. & Badcock, C. (2008). Psychosis and autism as diametrical disorders of the social brain. *Behavioral and Brain Sciences*, 31, 241-261.

Dobrova, G. R. (2009). On variability of language ontogenesis: Referential and expressive strategies of language acquisition. *Questions in Psycholinguistics*, 2009 (9).