

Секция «Психофизиология: на пути к междисциплинарному синтезу»

The development of holistic face processing from childhood to young adulthood

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I will present one specific aspect of my dissertation devoted to study the development of face cognition in childhood and adolescence (supervisors: Prof. Dr. Sommer, W., Prof. Dr. Hildebrandt, A.). This project builds upon previous studies conducted by my supervisors and Prof. Dr. Oliver Wilhelm (Ulm University) in which they investigated the specificity of face cognition, age differences in face cognition and the influence of social activities on social cognition process (e.g., Hildebrandt et al., 2011; Sommer et al., 2013; Wilhelm et al., 2010).

Face perception has been defined as the ability to perceive the face as a gestalt, along with all of its parts and the relations between them (Tanaka & Farah, 1993; Tanaka & Gordon, 2011; Wilhelm et al., 2010). This face specific strategy has been called *holistic processing*. A prominent paradigm for measuring holistic face processing is the *Composite Task* (Young et al., 1987). The classic *Composite Effect* reflects difficulties in recognizing a face half when it is aligned with the other half of a different face, as compared with a condition in which face halves are misaligned (Young et al., 1987). This effect demonstrates how through the tendency to holistic processing the two face halves are bound so that a mental representation of a novel face will be created. Thereby it is difficult to recognize the face identity in the one half even when instructed to ignore the other half belonging to a different identity.

In my presentation I will focus on a controversy in the literature related to the early or rather late maturity of holistic processing during childhood and adolescence (Crookes & McKone, 2009 vs. Carey & Diamond, 1977). The other important focus of my presentation will be on individual differences in holistic processing covering the age range of 6 and 25 years.

Research methods and materials. The collected data stem from 430 children, adolescents, and young adults between 6 and 25 years (50% females). **The face cognition experiments** were completely computerized. We used color photos (200*300 pixel) of male and female children, adolescents, and young adults between 4 and 18 years displaying neutral facial expressions. Photos were taken from our own database. **The procedure** started with collecting general demographic data and information about interpersonal and media-based social activities. Furthermore we assessed working memory, fluid and crystallized intelligence, and face recognition abilities. The composite task was a slightly modified version of the full design composite paradigm (Meinhardt-Injac et al., 2014).

Results and Discussion. By using generalized linear mixed effects models, preliminary results showed a substantial holistic effect across the whole age range, measured as the difference in performance accuracy between congruent and incongruent conditions of the composite task. This finding is in line with reports showing composite effects already in 6 year olds (McKone et al, 2012). Moreover, the holistic effect significantly varied across persons. Individual differences in the holistic effect cannot be explained by variations in working memory performance, showing specificity of the holistic face processing as compared with more basic cognition. Considering the whole age range the holistic effect is related with face recognition abilities. Further, there is a positive main effect of age showing better holistic face processing in older children. Results will be discussed in terms of developmental theories of face processing.

Источники и литература

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