



## Does facial attractiveness influence perception of epilepsy diagnosis? An insight into stigma in epilepsy



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### ABSTRACT

**Background:** Using a group of young healthy individuals and patients with multiple sclerosis (pMS), we aimed to investigate whether the physical attractiveness judgment affects perception of epilepsy. We tested hypothesis that subjects, in the absence of relevant clues, would catch upon the facial attractiveness when asked to speculate which person suffers epilepsy and select less attractive choices.

**Method:** Two photo-arrays (7 photos for each gender) selected from the Chicago Face Database (180 neutral faces of Caucasian volunteers with unknown medical status) were shown to study participants. Photos were evenly distributed along a continuum of attractiveness that was estimated by independent raters in prestudy stage. In each photo-array, three photos had rating 1–3 (unattractive), one photo had rating 4 (neutral), and three photos had rating 5–7 (attractive). High-quality printed photo-arrays were presented to test subjects, and they were asked to select one person from each photo-array “who has epilepsy”. Finally, all subjects were asked to complete questionnaire of self-esteem and 19-item Scale of stereotypes toward people with epilepsy.

**Results:** In total, 71 students of psychology, anthropology, or andragogy (mean age:  $21.6 \pm 1.7$  years; female: 85.9%) and 70 pMS (mean age:  $37.9 \pm 8$  years; female: 71.4%) were tested. Majority of students or pMS had no previous personal experience with individuals with epilepsy (63.4%; 47.1%,  $p = 0.052$ ). Male photo was selected as epileptic in the following proportions: students – 84.5% unattractive, 8.5% neutral, and 7% attractive; pMS – 62.9% unattractive, 8.6% neutral, and 28.6% attractive ( $p = 0.003$ ). Female photo was selected as epileptic in the following proportions: students – 38% unattractive, 52.1% neutral, and 9.9% attractive; pMS – 32.9% unattractive, 34.3% neutral, and 32.9% attractive (0.003). Both groups showed very low potential for stigmatization: significantly lower in pMS in 10 items. Patients with multiple sclerosis showed significantly higher self-esteem than students ( $p = 0.007$ ).

**Conclusion:** Facial attractiveness influences the perception of diagnosis of epilepsy. Both students and pMS were less willing to attribute epilepsy to attractive person of both genders.

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### 1. Introduction

Humans broadly agree on what faces are attractive, both within and across cultures [1]. It was established that people respond intuitively to attractive faces so rapidly that reasoning minds may not have time to influence the reaction, and that intuitions about attraction and trust are among those to be formed the fastest [2]. Studies consistently

demonstrate that attractive faces kindle the brain dopamine-driven reward network, with a key module of this system being orbitofrontal cortex [1,3].

It has been determined in psychology that persons infer social traits simply by seeing someone's face (i.e., attractiveness halo effect) – allured features are associated with being trustworthy, and facial esthetic characteristics may in some extent affect perceptions tied to life success and personality [4,5]. Therefore, human preference for attractive faces develops into “beauty is good” stereotype, which can lead to all sorts of social benefits for more attractive individuals. Oppose to that, it was shown in early study that persons without experience in the area of neurological

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disorders quite likely attributed epilepsy to unattractive individuals [6]. This finding was not affected by subjects' personal characteristics associated with human tolerance such as empathy or self-esteem. However, it seems that this is not just a bias that affects lay persons. Research suggests that “beautiful is good” stereotype exists among health professionals in their first impressions of patients [7].

Social stigma is a major issue for patients with epilepsy [8]. We aimed to investigate interpersonal stigma by testing hypothesis that individuals, in the absence of relevant clues, would catch upon the facial attractiveness when asked to speculate which person suffers epilepsy and select less attractive choices. In addition, considering the nature of “difference” as experienced by people with chronic medical condition and unknown mechanisms of translation of that “difference” to stigma [9], we investigated patients with other neurological conditions (multiple sclerosis – MS) to further delineate internalized stigma. Multiple sclerosis is a chronic, immune-mediated neurologic disorder with relatively low prevalence. In most patients, symptoms eventually become apparent and can be severe and debilitating during the course of disease. Therefore, many individuals with MS are concerned that they will be the target of social stigma because of their illness. Since MS symptoms in the early stages of the relapsing–remitting MS may not be visible to others, people may anticipate stigma and try to conceal the disease [10].

## 2. Method

### 2.1. Photo-array construction

The photos of the neutral expression of 78 Caucasian female faces ( $26.32 \pm 3.12$  years old) and 82 Caucasian male faces ( $26.08 \pm 4.49$  years old) from the Chicago Face Database (CFD) [11] with unknown medical status constituted the pool from which photos would be selected for the photo-array. Chicago Face Database is consisted of

the photos of volunteers (between the ages 18 and 35 years) taken in high color resolution, at a fixed distance from digital camera in controlled lighting conditions. Images were equated for color temperature and placed on white background. For the purpose of this study, we used extensive norming data available for each individual model in the CFD (norming data sheet). These data include both subjective ratings by independent judges (attractiveness) as well as objective measure (number of physical facial features).

In order to avoid regional and cross-cultural differences, we asked 25 medical students Year 4 of Curriculum of the Medical School in Belgrade (13 males and 12 females, between ages 23 and 25 years) to serve as independent raters in the photo-array construction (otherwise unconnected with the study). Using the Thurstone model of equal appearing intervals, medical students rated all photos on a 1–7 Likert scale (1 = Not at all, 7 = Extremely) in terms of attractiveness. Our mean attractiveness score correlated highly with subjective rating of attractiveness given in the norming data sheet provided by the CFD which we used for external validation ( $r = 0.835$ ;  $p < 0.001$ ).

The mean attractiveness score and standard deviation were calculated for each photo and used as a basis for selecting target persons for the female and the male photo-array construction. The photos with smallest standard deviation were given selection priority. In the female photo-array, no standard deviation exceeded 1.42, and in the male photo-array, no standard deviation exceeded 1.25. After receiving a detailed description of the study, participants gave their informed consent. The study was approved by Ethical Committee of the Clinical Center of Serbia. Finally, we end-up with two photo-arrays for each gender consisting of 7 photos (Attractiveness rating 1–7). Female photo-array had the following scores (our mean scores/CFD mean score): 1.4/1.61; 1.8/2.73; 2.28/3.36; 2.56/3.62; 3.24/3.88; 4.08/4.68; and 4.44/5.08. Male photo-array had the following scores (our mean scores/CFD mean score): 1.68/2.03; 1.88/2.36; 2/2.76; 2.28/2.96; 3/3.51; 4/3.84;

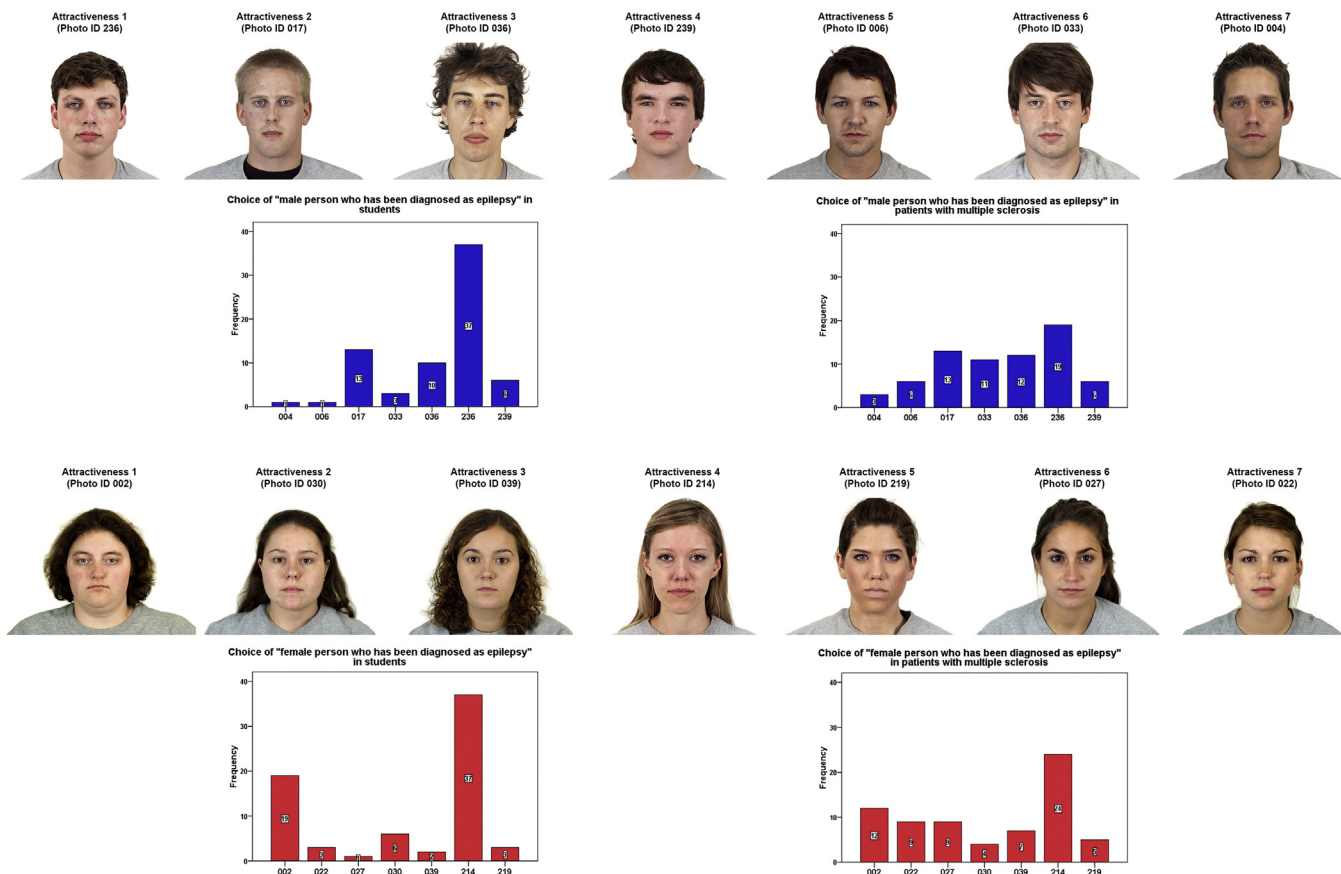


Fig. 1. Choices of male or female person “who has been diagnosed as person with epilepsy” in the groups of students and patients with multiple sclerosis.

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