

Empathy refers to the ability to understand others feelings (cognitive empathy) and reflect their internal states and emotions (emotional empathy). Thus, imagining or observing another person in a specific emotional state automatically activates a representation of that state in the observer, along with associated autonomic and somatic reactions. This effect is called the *empathic reaction* and is connected with the current research on *empathy for pain*. However, feeling empathy is not static but a more malleable feeling than previously thought. Previous studies have shown that facial physical attractiveness significantly affects both emotional empathy and cognitive empathy. Lack of empathic reaction is observed only to physically attractive people.

This project aims to apply the adaptation and priming procedures to modify the Attractiveness Bias in Empathy and understand, distinguish, and compare these two procedures. The project poses three research questions. The first problem is whether the adaptation and priming procedures will affect the empathic reaction toward physically attractive people? Faster and more efficient processing of attractive facial features, it is useful to use procedures changing the perception of faces by activating or altering mental representations. Both priming and adaptation alter face perception, and this includes both faster and more precise face reactions (priming) and reduced neural activity after repeated stimulus exposure, and concomitant increased sensitivity to environmental changes (adaptation).

The second research problem posed by this project is which procedure, adaptation, or priming will produce a stronger effect on empathic reaction? Both adaptation and priming appear to be significantly different from each other and even produce opposite effects. Priming typically leads to improved face identification, whereas correct face identification becomes more difficult due to adaptation. Research also suggests that priming has an advantage to adaptation, especially when it comes to feature transfer. It is possible that priming will affect the amplitude of different ERP. To verify this, both studies will be conducted using an electroencephalograph (EEG), in which the empathic reaction will be measured by event-related potentials (ERPs). According to the pilot study results and the literature, the adaptation procedure should induce weaker effects observed in the amplitude difference of individual ERP components and affect the amplitude of components such as N170, N2 and P3. In priming, stronger effects are expected to involve the amplitude waveforms of the ERP components P2/N2.

The third research problem is to reverse the empathic reaction effect obtained in previous studies only for physically unattractive individuals using the priming procedure. This problem addresses the more specific research question described above. Namely, since priming is predicted to produce a stronger effect on the empathic reaction, it is also possible that an increase in empathic reaction will occur only for physically attractive versus unattractive individuals. Rather, in studies involving frequent exposure, the observed increase in the empathic reaction was independent of physical facial features. However, perceptual priming allows for an increased ability to identify or recall stimuli (Graf et al., 1984). Therefore, it is predicted that the amplitude of the N2 component will reverse in favour of physically attractive individuals in the procedure of priming attractive faces.