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Behavioural and Event-Related Potential Responses to Lightness Contrast and Assimilation Naira Taroyan, Stephanie Acaster, Alessandro Soranzo and John Reidy

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Contrast and assimilation show that the colour of a surface depends on surrounding areas. In contrast, a surface is perceived lighter when next to a dark surface, and darker next to a light surface, vice-versa in assimilation. Previous event-related potential (ERP) research showed that the White effect associates with early ERP differences. In this study, participants viewed a grey target with black/ white inducers designed to elicit contrast/assimilation, respectively, and indicated whether the target was darker/lighter than an equiluminant comparison. Behavioural performance was more efficient to contrast stimuli with white inducers and to assimilation stimuli with black inducers. Brain activation, indicated by P1 amplitude, was larger to contrast stimuli with black inducers than those with white inducers. Differences in processing contrast/assimilation between stimuli with black and white inducers may reflect differences in the two phenomena.