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Attentional Engagement for Movie

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Abstract : The research on attentional engagement (AE) in movies using physiological signals is rare and controversial. Therefore, whether physiological responses can be applied to evaluate AE in actual movies is unclear. To clarify this, we measured electrocardiogram and electroencephalogram (EEG) of 16 Japanese university students as they watched the American movie Iron Man. After the viewing, we evaluated the subjective AE and affection levels for 11 film content segments in Iron Man. Based on self-reports for AE, we selected two film content segments as stimuli: Film Content 9 describing Tony Stark (the main character) flying through the night sky (with the highest AE score) and Film Content 1, describing Tony Stark and his colleagues telling indecent jokes (with the lowest score). We divided these two content segments into two time intervals, respectively. Results indicated that the Film Content by Interval interaction for HR was significant, at $F(1, 11)=35.64$, $p<.001$, $\eta 2=.76$; while HR in Film Content 1 decreased, that of in Film Content 9 increased. In Film Content 9, the main effects of the Interval for respiratory sinus arrhythmia (RSA) ($F(1, 11)=5.91$, $p<.05$, $\eta 2=.35$) and for the attention index of EEG ($F(1, 11)=5.23$, $p<.05$, $\eta 2=.37$) were significant. The increase in the RSA was significant ($p<.05$) as well, whereas that of the EEG attention index was nearly significant ($p=.069$). In conclusion, while RSA increases, HR decreases when people direct their attention toward normal films. However, while paying attention to a film evoking excitement, HR as well as RSA can increase.

Keywords : attentional engagement, electroencephalogram, movie, respiratory sinus arrhythmia
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