Influence of arousing and relaxing auditory stimuli on experimentally induced cold pressor pain.

Karolina Karpińska, Krzysztof Basiński (opiekun)
Gdański Uniwersytet Medyczny

Background

Studies has shown that listening to music can reduce pain (Garza-Villarreal et al., 2014a; Garza-Villarreal, Pando, Parsons, & Vuust, 2017; Guétin et al., 2012). There are several mechanism behind the analgesic effect of music. This study focuses on the role of a musical attribute in music-induced analgesia. Roy et al., 2008 showed that pleasant music reduces unpleasantness and intensity of pain. The aim of this study was to determine the influence of level of arousal, induced by music, on the perception of pain.

Hypotheses

→ Relaxing sounds will decrease the perception of pain, in comparison to the control condition.

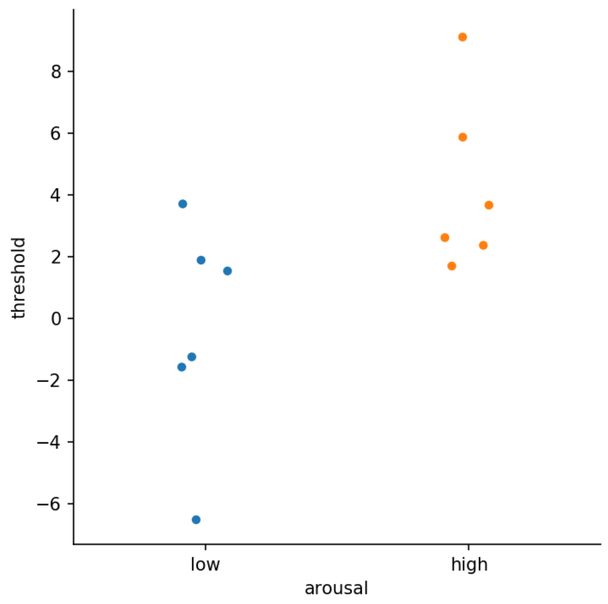
→ Inter-individual differences in arousability will influence the perception of pain.

→ Participants with higher level of arousability will feel the pain as more unpleasant.

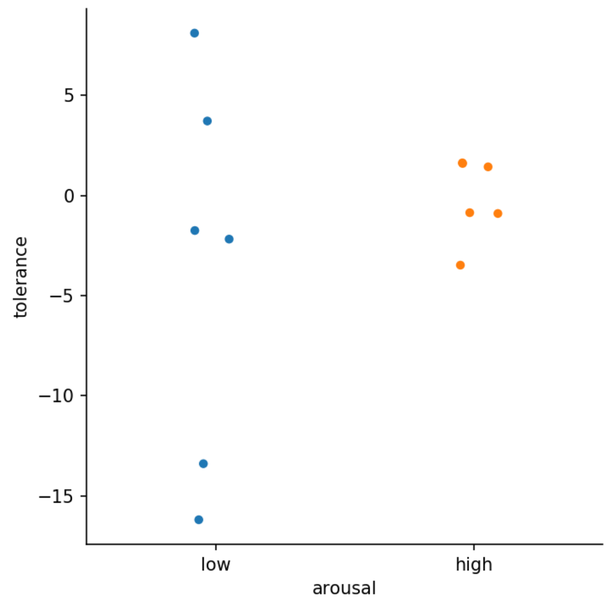
Participants

Twelve volunteers (8 women and 4 men), aged 21-25 [M_{age} = 22,3 years, SD = 0,98], took part in this experiment

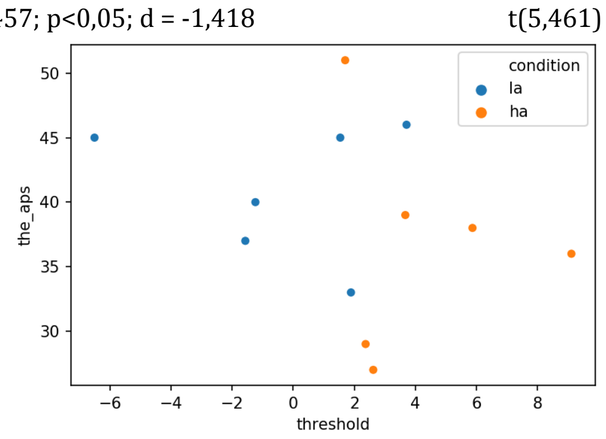
Results



t(9,417) = -2,457; p<0,05; d = -1,418



t(5,461) = -0,888; p>0,05; d = -0,513

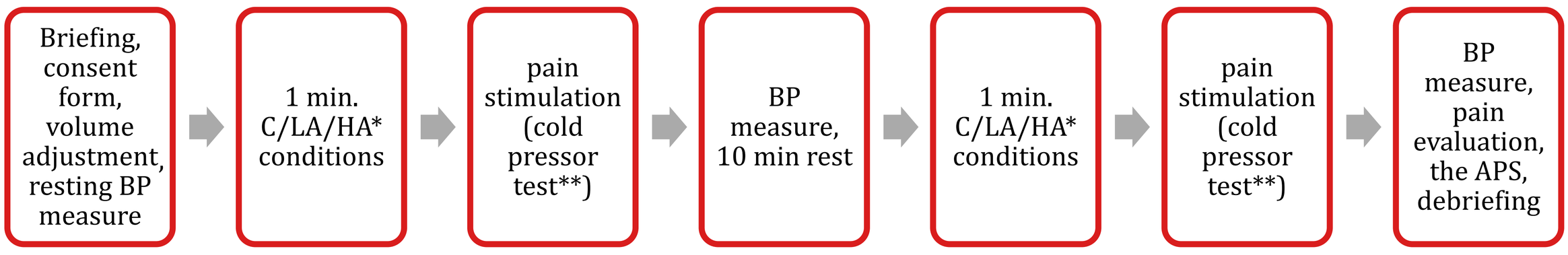


r = -0,253; p>0,05

Conclusions

- Highly arousing sounds decreased the pain threshold in comparison with the control condition.
- No significant effect of arousing or relaxing sounds on pain tolerance.
- No significant effect of arousing or relaxing sounds on subjective pain ratings (intensity, controllability, unpleasantness).
- Inter-individual differences in arousability did not influence pain thresholds.
- Further research is needed to examine a possible interaction between inter-individual differences in arousability and unpleasantness of pain.

Procedure



*C – control (brown noise); LA – low arousal; HA – high arousal
**water temperature = 3°C

Bibliography

> Basinski, K., Zdun-Ryzewska, A., & Majkowicz, M. (2018). The role of musical attributes in music-induced analgesia: A preliminary brief report. *Frontiers in Psychology*, *9*(SEP), 1–5. https://doi.org/10.3389/fpsyg.2018.01761

> Bushnell, M. C., Čeko, M., & Low, L. A. (2013). Cognitive and emotional control of pain and its disruption in chronic pain. *Nature Reviews Neuroscience*, *14*(7), 502–511. https://doi.org/10.1038/nrn3516

> Garza-Villarreal, E. A., Wilson, A. D., Vase, L., Brattico, E., Barrios, F. A., Jensen, T. S., … Vuust, P. (2014). Music reduces pain and increases functional mobility in fibromyalgia. *Frontiers in Psychology*, *5*, 90. https://doi.org/10.3389/fpsyg.2014.00090

> Roy, M., Peretz, I., & Rainville, P. (2008). Emotional valence contributes to music-induced analgesia. *Pain*, *134*(1–2), 140–147. https://doi.org/10.1016/j.pain.2007.04.003