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Self-produced walking sounds change body-representation: An investigation on individual differences and potential positive impact on physical activity

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Abstract (300/300 words)

Auditory contributions to mental body-representations, and their impact on behaviour and bodily feelings, remain largely unexplored. Our studies have demonstrated changes in body-representation induced by sounds paired with bodily actions. We recently showed that the real-time alteration of sounds produced by people walking on a flat surface, so that sounds are consistent with those produced by a lighter vs. heavier body, can lead people to represent their bodies as thinner/lighter, feel happier and walk with more dynamic swings and shorter heel strikes. In the present study we investigated whether this sound-driven bodily illusion varies according to individual differences (body weight, gender, fitness, body perceptions/aspirations), and tested the potential of this illusion to facilitate more demanding physical activity. We asked participants to use a gym step (Experiment 1, N=37) or climb stairs (Experiment 2, N=22) under three real-time sound manipulations of the walking sounds differing in frequency spectra. We measured changes in body-representation with a body visualizer tool, by monitoring gait, and with a questionnaire on bodily feelings. We replicated previous results that participants represented their bodies as thinner in the high frequency "light" sound condition, with associated changes in gait (applied force, stance time, acceleration, cadence) and bodily feelings (feeling quicker, lighter, feminine, finding exercise easier). The effects of sound on visualized body size interacted with those of participant's actual body weight and aspirations to be more masculine, but not reported body fitness or gender. The effects of sound on gait and feelings of being quick, light and finding easy/tiring to exercise interacted with those of participant's actual weight and body fitness. We also showed that the effects do not hold once the altered sound feedback was removed. We discuss these results in terms of malleability of body-representations and highlight the potential opportunities for enhancing people's adherence to physical activity.