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Loudness asymmetry ratings between accelerating and decelerating car sounds

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Loudness change has been studied for tones with linearly varying levels revealing an asymmetry depending on the direction of change (increasing vs. decreasing) and the range of levels (high vs. low). Different assumptions were proposed to explain this asymmetry in favour of linearly increasing sounds. Teghtsoonian et al. (2005) and, more recently, Susini et al. (2006) explain that loudness of an increasing sound is influenced by the end level. Neuhoff (1999) describes this result by a survival advantage for detecting an approaching sound source. Whatever the assumption is, the results show that loudness judgments for abstract sounds (1000-Hz tones) and synthetic vowel sounds were significantly higher for increasing ramps. Those results are compared here with continuous and global ratings obtained on everyday sounds such as accelerating and decelerating car sounds with a same duration (43 s), but with different temporal functions and range of levels. Global loudness judgments made after the end of the sound are significantly higher for accelerating than decelerating car sounds, but are judged on average similar using continuous judgments. In addition, an increase in the speed (acceleration) is evaluated primarily in terms of its level at the end. These results confirm the previous studies.