The impact of acoustic and non-acoustic factors on short-term aircraft noise annoyance ratings - Results of the COSMA field study at a major German Airport

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ABSTRACT

While there is a multitude of field studies that have investigated acoustic and non-acoustic predictors of long-term annoyance due to aircraft noise, short-term annoyance has seldom been studied in the field so far. Within the framework of the European project COSMA (Community Oriented Solutions to Minimise aircraft noise Annoyance), 55 residents near the airport Cologne/Bonn repeatedly rated their aircraft noise annoyance every hour over a period of four days while sound pressure levels were recorded continuously. The study aimed at identifying factors which influence reported short-term (one hour) annoyance in a home environment setting and to examine the relation between short-term and long-term annoyance (rated for the past 12 months). The impact of acoustic and non-acoustic factors on annoyance was analyzed via generalized estimation equations. Best model fit was attained for a model consisting of the acoustic parameters personal aircraft noise LAeq for one hour, number of flyovers above 65 dB(A) outdoors, and mean time distance between two flyovers as well as the non-acoustic factors time of day and type of activity carried out in the past hour. The correlation between the subject's average of all one-hour annoyance ratings and annoyance ratings for the past 12 months was moderate with a significant difference in the mean ratings. On the one hand, the results emphasize the importance of non-acoustic factors in addition to acoustic parameters for short-term aircraft noise annoyance. On the other hand, the results suggest that long-term annoyance cannot simply be equated with average annoyance for short periods.