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The role of a building's thermal properties on pupils' thermal comfort in junior school classrooms as determined in field studies

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ABSTRACT

Recent thermal comfort research in a light-weight junior school building showed that children were more sensitive to higher temperatures than adults and subsequently that current thermal comfort standards were not appropriate for the assessment of their thermal environment. This paper presents a comparison of these survey results to those from a survey conducted in a medium-weight school building, in order to evaluate the role of the construction type on the results. Both surveys followed the same methodology, including thermal comfort questionnaires and measurements of indoor environmental variables. A total of 2990 responses were gathered. The buildings had an average difference in air temperature of 2.7°C during occupied hours in the period of investigation (June and July 2012), with the medium-weight building being cooler than the light-weight building. However, the different construction type and the cooler overall thermal environment in the medium-weight school building had little impact on the pupils' overall thermal sensitivity. The comparison showed a general agreement on the pupils' warm thermal sensation trends, interpersonal variation and undeveloped adaptive behaviour. The results further support the finding that current thermal comfort criteria lead to an underestimation of pupils' thermal sensation during summer.

Keywords: School children, Thermal comfort, Thermal adaptation, Climate, School buildings, Thermal mass.

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