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**Rhythm in number: exploring the affective, social and mathematical dimensions of using TouchCounts.**

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Summary: In this paper, we investigate the mathematical, social and affective nature of children's engagement with *TouchCounts*, a multitouch application for counting and doing arithmetic. In order to study these dimensions of engagement in a way that recognizes their fundamental intertwinement, we use rhythm as a primary unit of analysis. Drawing on over 8 hours of research sessions with children aged 6, 7 and 8 years old, we show how various rhythms emerged from their interactions and how these rhythms changed over time – moving from the particular to the more general. We also show how important rhythm is to children's carrying of activity, which relates to aspects of interest and motivation.

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*Keywords:* number sense; touch screen; early learning; engagement; rhythm; affect

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