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Oral counting sequences: a theoretical discussion and analysis through the lens of representational redescription.

Summary: Empirical research has documented how children's early counting develops into an increasingly abstract process, and initial counting procedures are reified as children develop and use more sophisticated counting. In this development, the learning of different oral counting sequences that allow children to count in steps bigger than one is seen as an essential skill that supports children's mental calculation strategies. This paper proposes that the reification or refinement of the counting process that results to increased-in-sophistication use of counting is underlaid by the process of knowledge explicitation that the model of representational redescription postulates. The paper uses a case study to provide insight into the pathway that a 6-year-old child followed from learning how to verbally count in twos and tens to being able to use this knowledge for calculation purposes. The proposal is that knowledge of oral sequences is redescribed in more explicit and accessible formats before children are able to connect their knowledge of the verbal counting with the goal of using the sequence for calculation. The discussion presented here queries the notion of spontaneity as an inherent element of the theory and discusses the role that social interaction may play in supporting knowledge redescription. If it is the case that children's knowledge of oral counting sequences is redescribed into increasingly explicit formats before it can be applied for calculation, then children need to be provided early in their education with structured activities that trigger knowledge redescription and support the necessary connections between counting, number structure and calculation.