The Development of Numeracy: Fingers Count!

Marcie Penner-Wilger
Franklin & Marshall College

Lisa Fast
Carleton University

Jo-Anne LeFevre
Carleton University

Brenda L. Smith-Chant
Trent University

Sheri-Lynn Skwarchuk
University of Winnipeg

Deepthi Kamawar
Carleton University

Jeffrey Bisanz
University of Alberta

Abstract: Butterworth (1999) proposed that three component abilities support the development of numeracy: subitizing, finger gnosis, and finger agility. We assessed these abilities in children in Grade 1 (N = 144) and followed them to Grade 2 (n = 102). In Grade 1, subitizing and finger gnosis were related to children's number system knowledge and all three component abilities were related to calculation skill. Using cluster analysis, we identified three groups of children based on skill profiles across subitizing, finger gnosis, and finger tapping. One group had strong subitizing, finger gnosis and finger agility – they also had good numeracy performance both concurrently in Grade 1 and longitudinally in Grade 2. Two other groups both performed worse than the highly-skilled group on numeracy measures in Grade 1 and Grade 2; these two less-skilled groups showed strikingly different patterns of performance on number comparison, a task designed to assess the representation of number.