The role of stimulus familiarity in non-linguistic sequence learning

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Abstract: Recent experiments suggest that the mechanisms employed in language learning are also involved in sequential learning of non-linguistic stimuli and are therefore domain-general. However, the non-linguistic materials typically used in these experiments (e.g. Kirkham, Slemmer & Johnson, 2002) do not adequately replicate the internal complexity of words in language. Furthermore, stimulus familiarity appears to play a crucial role (Saffran, 2007). We explore both factors, investigating the acquisition of non-adjacencies (ubiquitous in language) in non-linguistic sequences. Crucially, the black and white matrix patterns we use are orthographically matched with an artificial language, replicating the componential re-use of elements in language or speech (Sturm & Smith, 2009). Prior to the sequence learning experiment, participants were familiarized with individual patterns. The results show that although participants became familiarized with the patterns, they were unable to identify the grammar underlying sequences of those patterns. These findings allude to an important role of domain-specific expectations.