Noname manuscript No.
(will be inserted by the editor)

Testing the cognitive foundations of Paleolithic social transmission

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Received: date / Accepted: date

Abstract Stone tools provide key evidence of human cognitive evolution but remain difficult to interpret. Toolmaking skill-learning, in particular, has been understudied even though: 1) the most salient cognitive demands of toolmaking should occur during learning, and 2) variation in learning aptitude would have provided the raw material for any past selection acting on tool making ability. Despite decades of research on stone toolmaking we still know little about the cognitive prerequisites of learning under different social transmission conditions that may have prevailed during the Paleolithic. This paper presents results from a pilot experimental study to trial new experimental methods for investigating the effect of learning conditions and individual differences on Oldowan flake-tool making skill acquisition. We trained 32 participants for 2 hours to make simple stone tools under two different instructional conditions (observation-only vs. direct-active teaching) employing appropriate raw materials and in-person interaction. Participant performance was evalu-

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ated through analysis of the stone artifacts produced and was compared both across experimental groups and with respect to individual participant differences in grip strength, motor accuracy, and cognitive function measured for the study. Our results show aptitude to be associated with fluid intelligence in a verbally instructed group and with tendency to use social information in an observation-only group. These results have implications for debates surrounding the cumulative nature of human culture and the role of evolved psychological mechanisms in "high fidelity" transmission of information, particularly through imitation and teaching.

Keywords key · dictionary · word ·

1 Introduction

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2 Section title

Text with citations by [2].

2.1 Subsection title

as required. Don't forget to give each section and subsection a unique label (see Sect. 2).

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