

Supporting Information

Bird and Emery 10.1073/pnas.0901008106

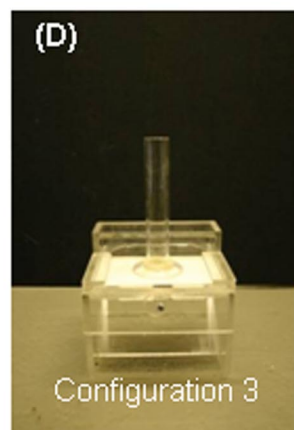
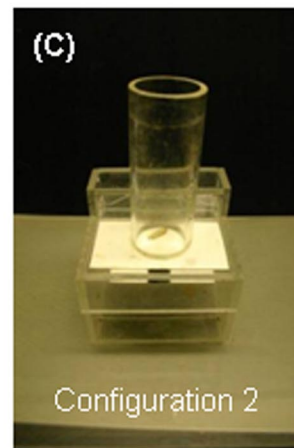
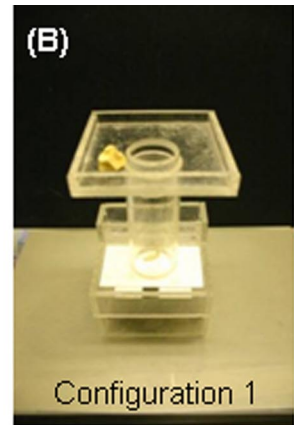
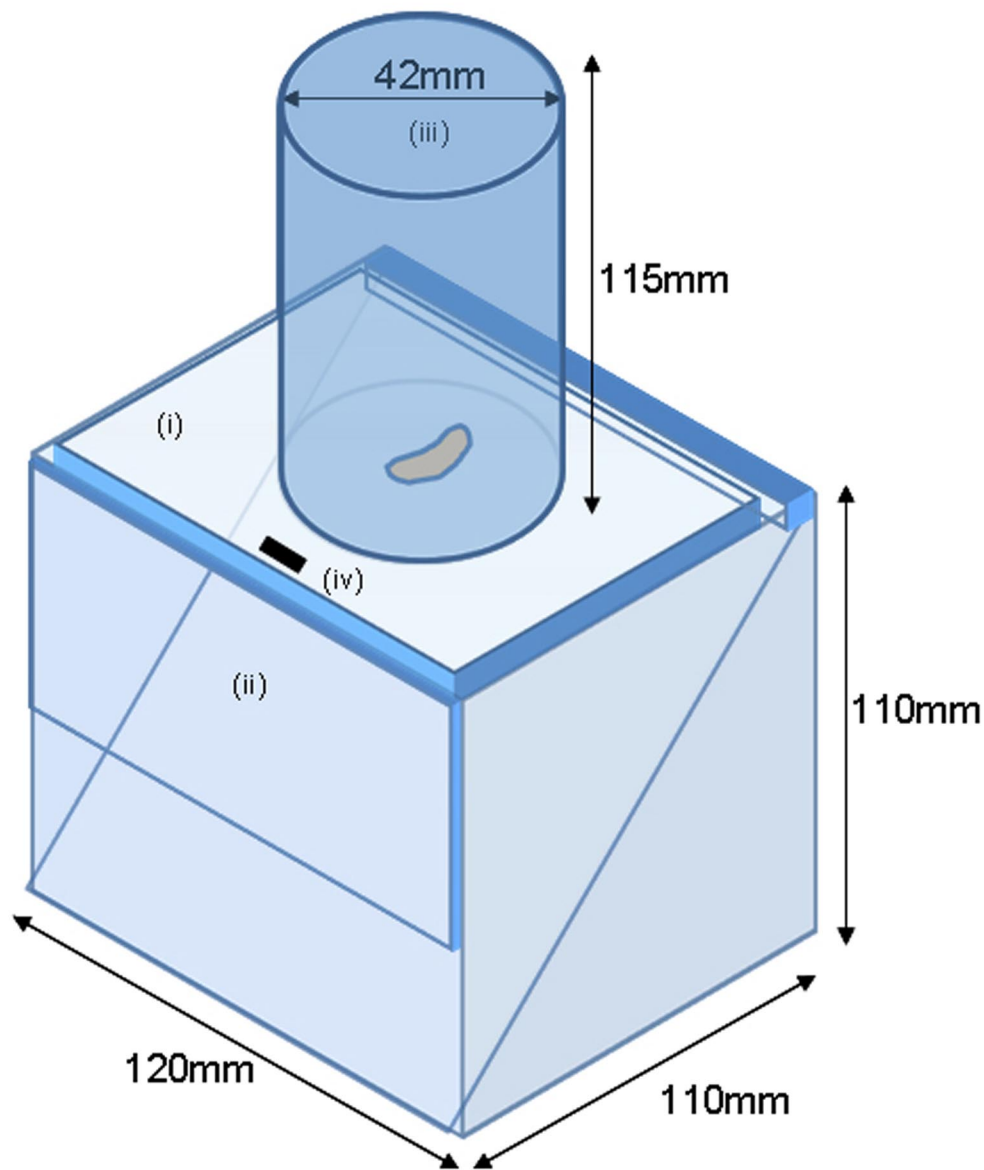


Fig. S1. (A) Diagram of apparatus. Supporting platform (i) made from white Perspex. All other sections (ii) made from clear Perspex. Tube (iii) interchangeable sizes, made from clear Perspex. Supporting mechanism (iv) consists of magnetic strip. (B) Configuration 1 shows photograph of apparatus with attached ledge. (C) Configuration 2 shows photograph of apparatus with large tube (42 mm). (D) Configuration 3 shows photograph of apparatus with small tube (16 mm diameter).

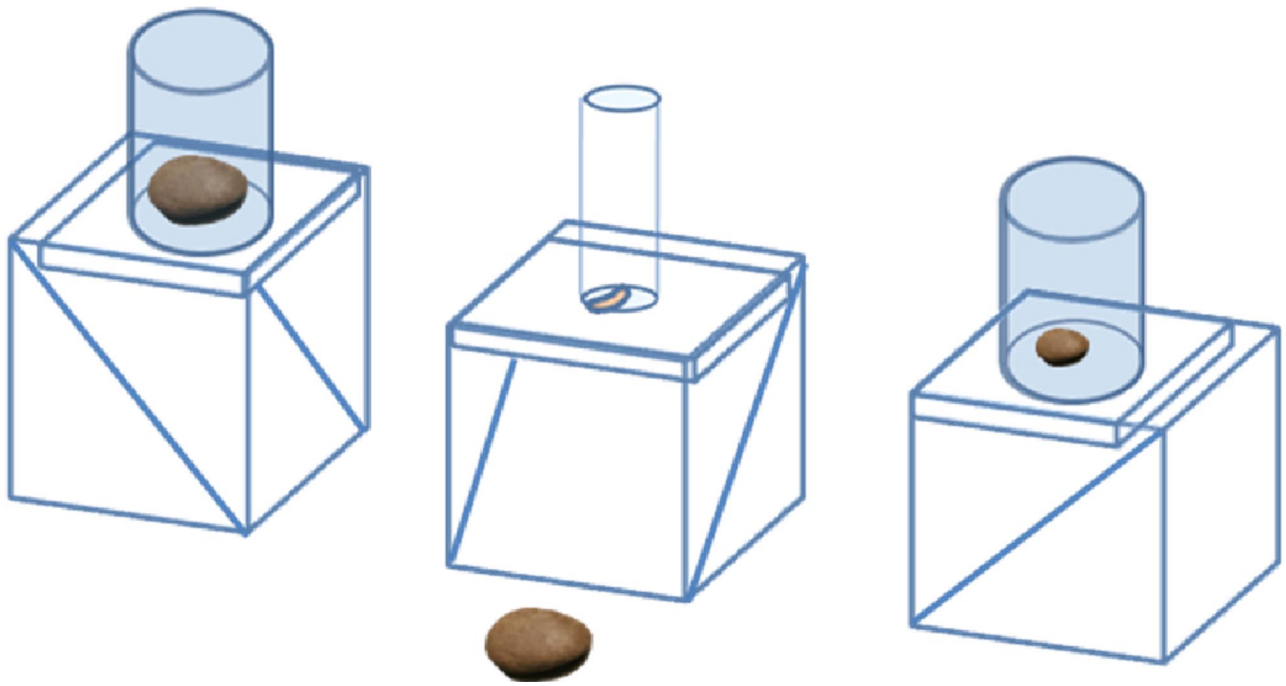


Fig. S7. Metatool task. Schematic of apparatus layout. Position of 2 choice stones pseudorandomized between 2 large stones.

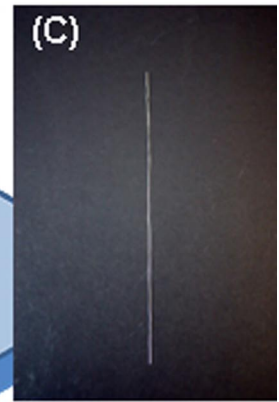
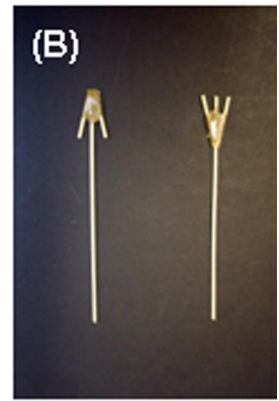
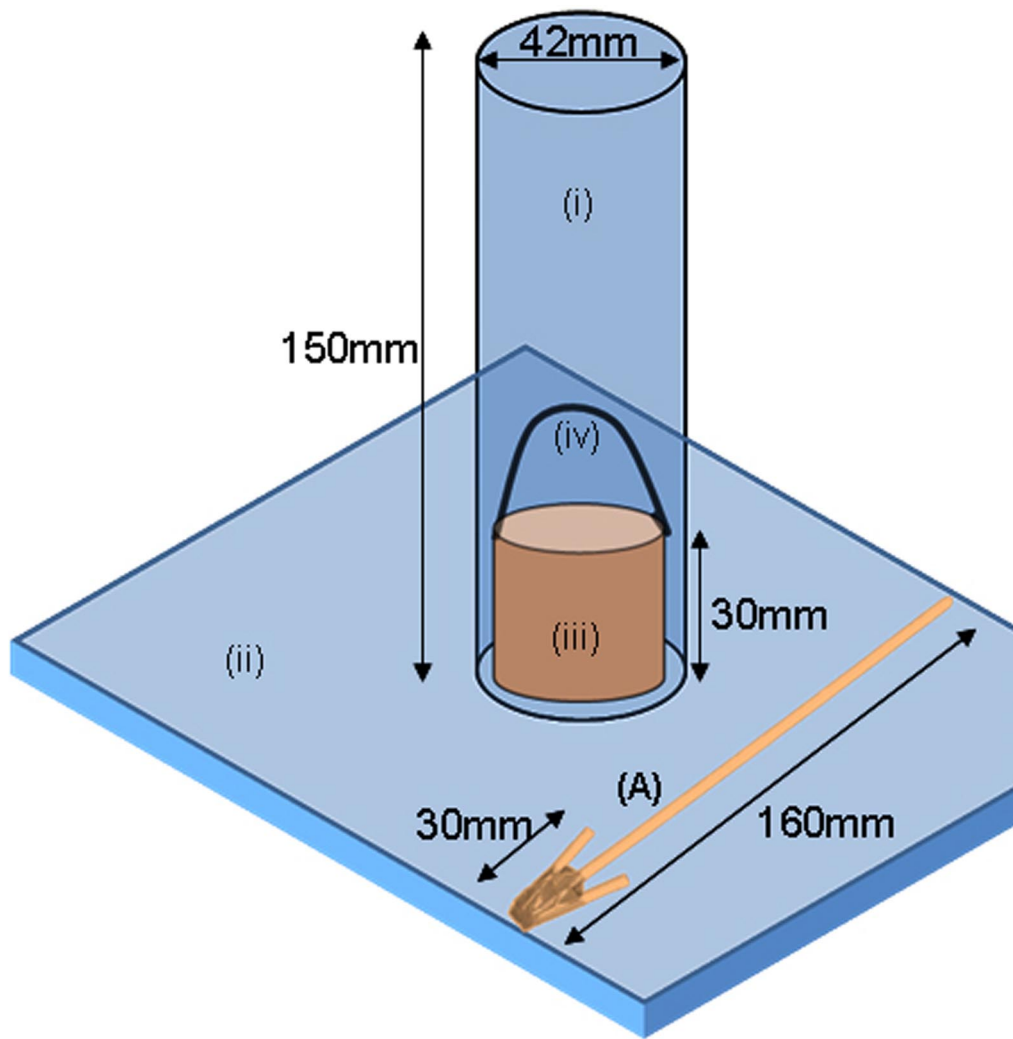


Fig. S9. (A) Diagram of hook apparatus. Sections (i) and (ii) made from clear Perspex. Bucket (iii) made from cardboard, bucket handle (iv) made from wire (experiments using stick hook) or cardboard (experiment using wire hook). (B) Photograph of hook choice presented in second hook experiment. Tool on left shows functional hook; tool on right shows nonfunctional hook. (C) Photograph of straight wire provided in wire bending experiment.



Movie S1. Initial stone dropping behavior in the aviary, Cook. The video shows the first occasion where the stone was placed at the base of the apparatus (following 5 successful times of nudging the stone from the apparatus ledge). Cook flies to the feeding platform, picks up the stone, drops it into the tube, and subsequently eats the worm.

[Movie S1](#)



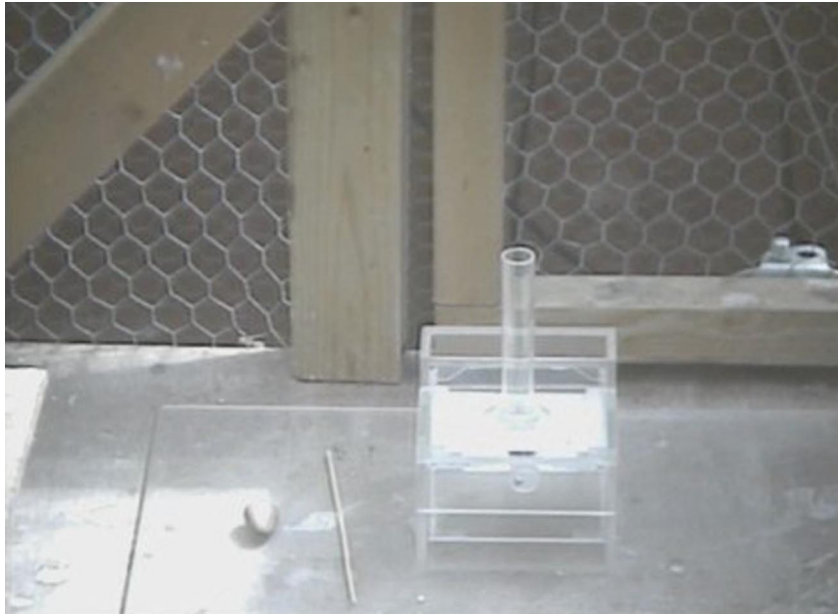
Movie S2. Choice of stone size, Connelly, first trials. The first part of video shows Connelly's initial preference for the large stones. The second part of the video shows Connelly's immediate transfer to choosing the small stone when the diameter of the tube is reduced.

[Movie S2](#)



Movie S4. Stick use, Monroe, second trial. The first part of the video shows Monroe using a thick, heavy stick. Monroe picks up the stick and drops it into the tube inserting the held end first. The second part of the video shows Monroe using a thin, light stick. Monroe inserts the stick, holds onto the top and pushes down to provide the necessary force to collapse the platform. Note, the birds are not tall enough to insert the stick using the method of inserting the nonheld end first.

[Movie S4](#)



Movie 55. Tool type choice, Connelly, first trials. The first part of the video shows combination 1, the choice of a functional stick and a nonfunctional stone. Connelly chooses the stick. The second part of the video shows combination 2, a nonfunctional stick and a functional stone. Connelly chooses the stone.

[Movie 55](#)



Movie S6. Metatool use, Cook, first trial. The video shows the experimenter setting up the apparatus by placing the 2 choice stones into the outer large diameter tubes (small stone placed in right hand tube, large stone placed in the left hand tube) and placing the worm into the central small diameter tube. Note that Cook watches closely the set-up process. A large stone is then placed in front of the small diameter tube. Cook uses the large stone to acquire the small stone, then uses the small stone to acquire the worm.

[Movie S6](#)



Movie S7. Stick modification, Monroe, trial 20. Monroe is given a stick requiring 3 modifications. Monroe initially makes 2 modifications to the stick outside the tube. She then inserts the stick and makes a further 3 modifications to refine the stick, before pushing the successfully modified stick down and collapsing the platform.

[Movie S7](#)



Movie 58. Hook use, Monroe, second trial. The video shows Monroe using a premade hook tool to lift the bucket from a clear Perspex tube.

[Movie 58](#)



Movie S9. Hook manufacture, Cook, first trial. The video shows Cook inserting a straight piece of wire into the tube, bending the wire over the side of the tube to form a hook and refining the hook before flipping the tool around, hooking the wire onto the bucket handle and lifting the bucket out of the tube.

[Movie S9](#)