Cognitive building blocks of cooperation

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The problem of altruistic cooperation
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Reciprocity: taking turns cooperating  (Trivers 1971)

Tit-for-tat (TFT): start by cooperating then copy partner’s last choice  (Axelrod & Hamilton 1981)
Research question

What cognitive building blocks are needed to implement cooperative strategies?

- Individual recognition
- Inhibitory control
- Quantification
- Patience
- Memory
Which would you prefer?

$100 today
Or
$105 in one week
Discounted reciprocity: methods

<table>
<thead>
<tr>
<th>Player choice</th>
<th>Partner choice</th>
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High vs. low patience

Stephens et al., 2002, Science
Discounted reciprocity: results

Blue jays cooperated more with high patience (Stephens et al., 2002)

More patient humans are more cooperative (Harris & Madden. 2002; Yi et al., 2007)
Our memory does not work like computer memory
Our memory works more like internet search engine
Forgotten reciprocity: methods
Forgotten reciprocity: results

(Stevens et al., 2011, Frontiers in Psychology)
We ignore cognition at our peril
Animal model provide insights into cognitive building blocks

Animal models force us to reconsider assumptions about cognitive mechanisms
Underlying human social interactions