Advice on giving a theory talk
Servedio Lab group
15 April 2013

1. Explaining how you set up the model

As much as possible, explain the meaning of your variables and parameters using pictures, diagrams, and graphs.

Explain how your model fits together conceptually, using biological rather than mathematical concepts.

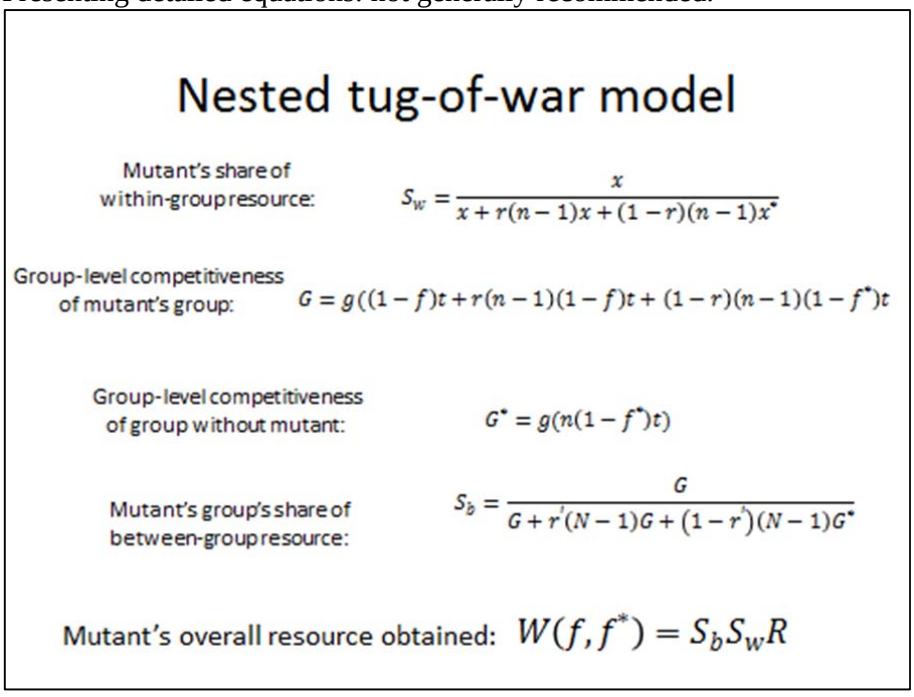
If you show an equation, use color codes so that your audience can easily determine the meaning of each component and how the model fits together.

Work your way through your explanation as you would with a graph ("On the y-axis is…", "On the x-axis is…"), keeping in mind that most people are a lot more familiar with graphs than with equations, so you will need to move slowly and be very clear.

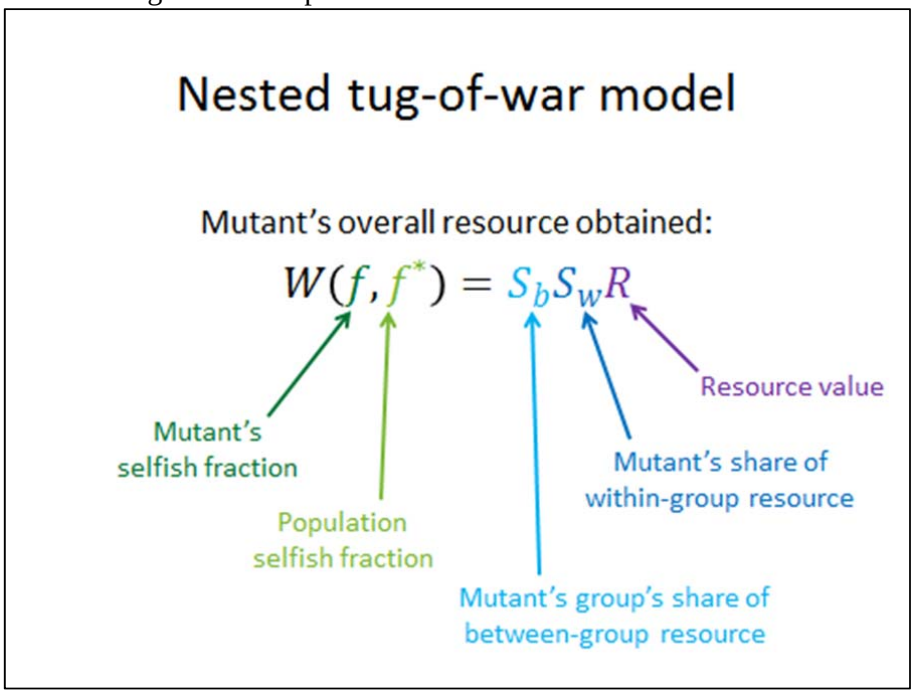
Even theory people are unlikely to understand your equations after looking at them for a few seconds unless they regularly work with extremely similar models; in most situations, it is probably best not to show your equations at all.

Examples:
(All examples are from Reeve HK, Hölldobler B. 2007. The emergence of a superorganism through intergroup competition. *PNAS* 104:9736-9740)

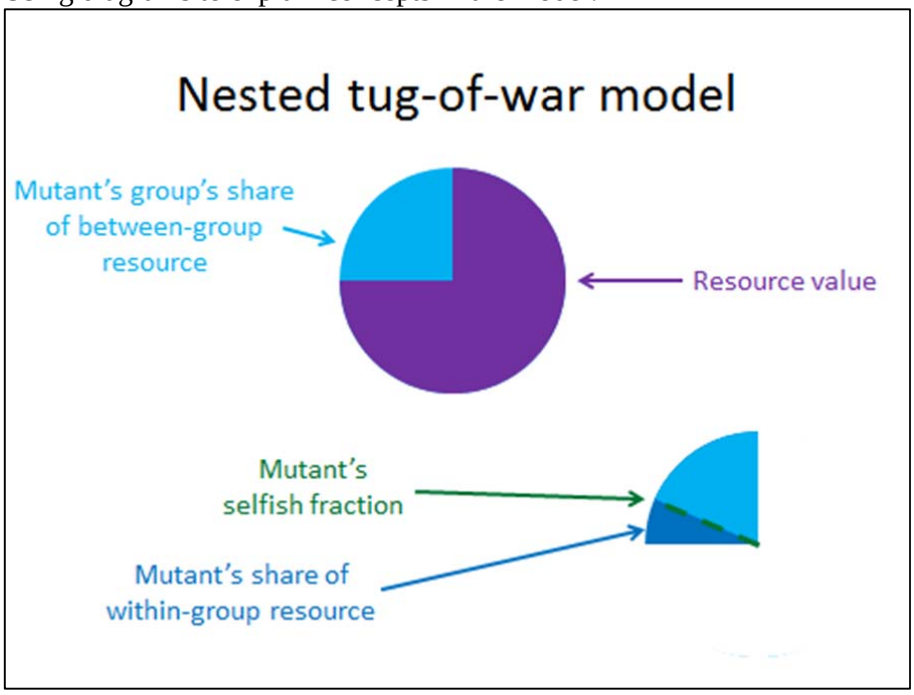
Presenting detailed equations: not generally recommended.



Color-coding model components:



Using diagrams to explain concepts in the model:



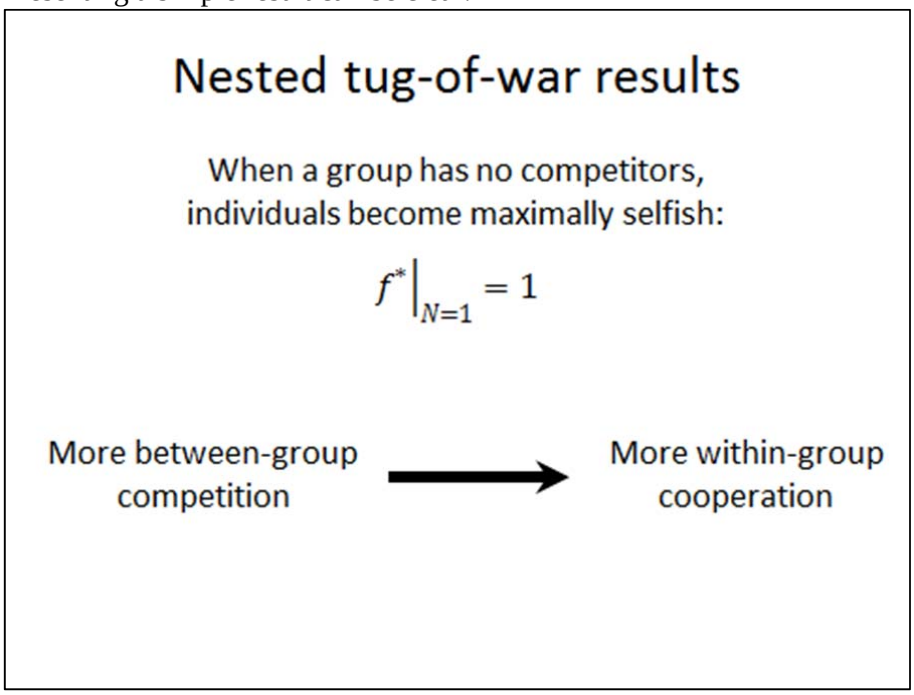
2. Presenting your results

If you have a solution that is very simple and easy to explain, showing it is fine, although there may still be more effective ways of communicating the result. Otherwise, only show an equation if you can use it to illustrate a result without getting bogged down in mathematical details.

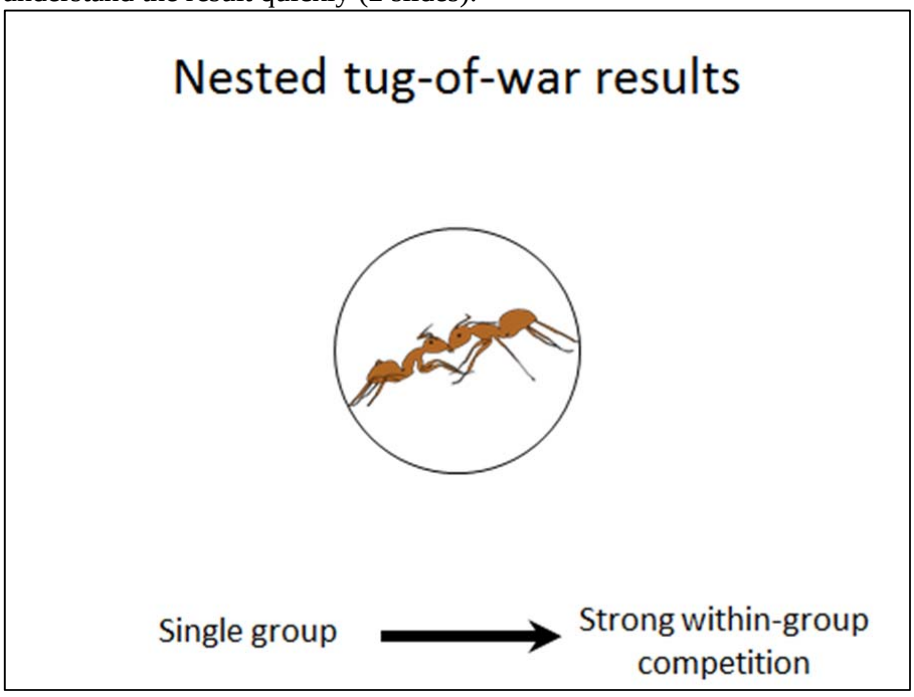
Explain why you got the result you got using biological concepts (pictures or cartoons are helpful here). Use this explanation to convince the audience that your result makes biological sense.

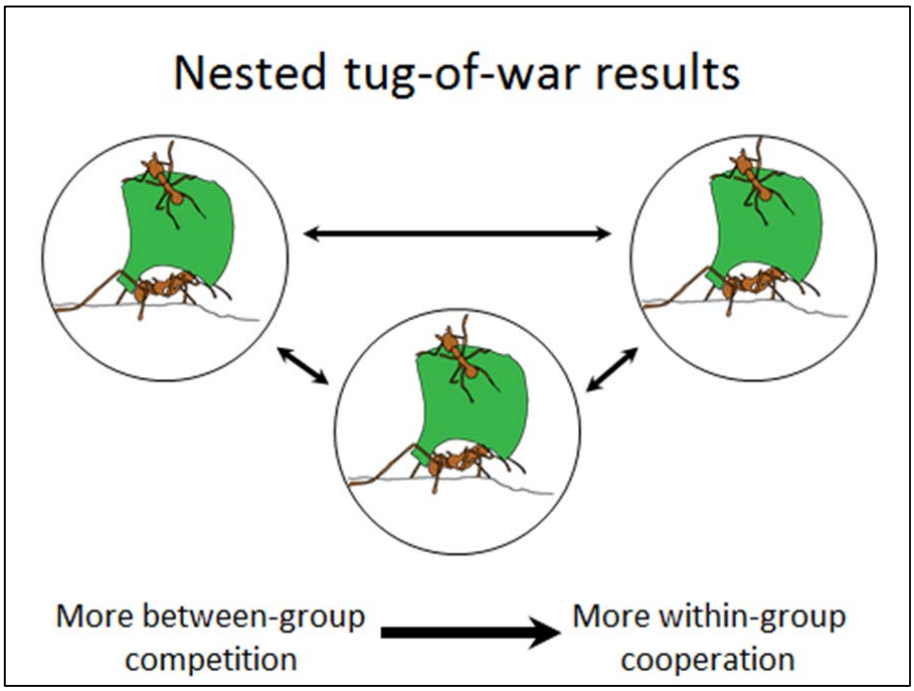
Examples:

Presenting a simple result can be clear:

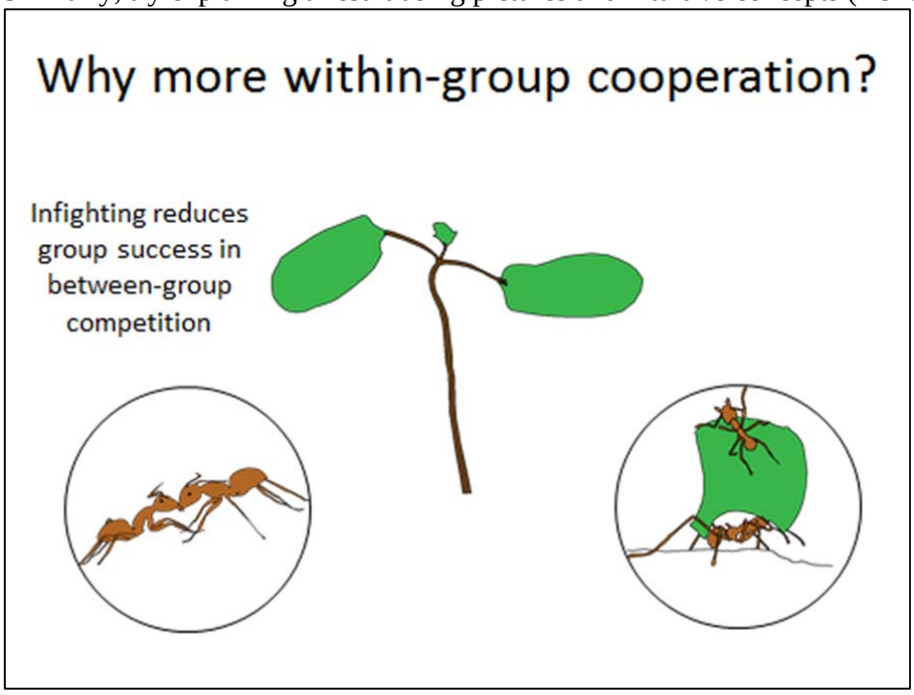


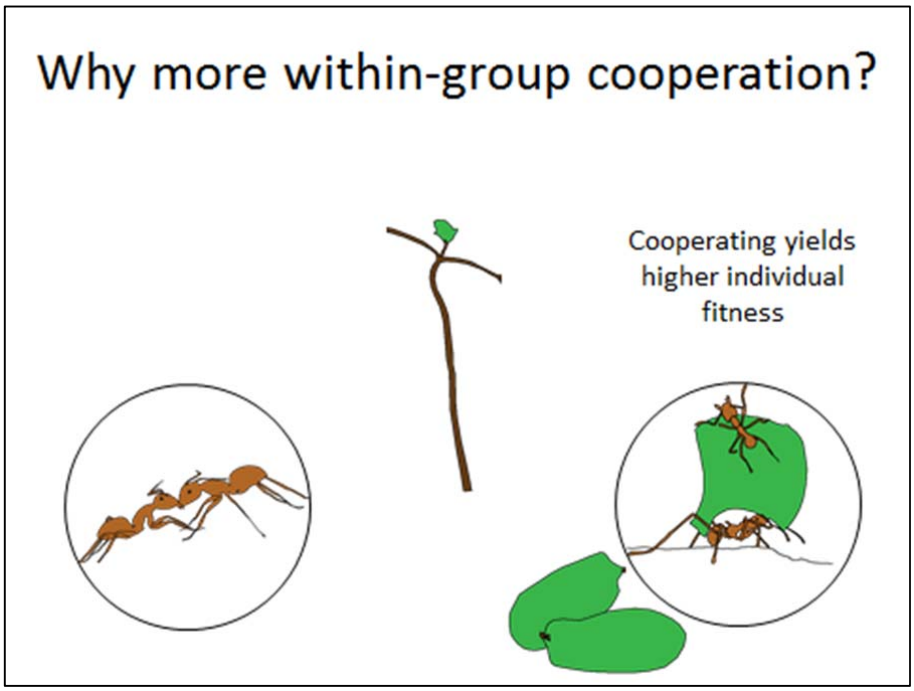
However, using diagrams to illustrate the conclusions may make it easier for your audience to understand the result quickly (2 slides).





Similarly, try explaining a result using pictures and intuitive concepts (2 slides):





3. Modifications for different audiences

Whether you are giving a talk to the general public, a general biology department, or an ecology and evolutionary biology department, use as few equations as possible.

When giving a conference talk, show no or very few equations: you will not have enough time to explain them, and your audience will already be mentally overloaded from seeing talk after talk all day.

When you are interviewing for a position specifically advertised as for a theoretician, it may be a good idea to include more equations that usual in order to demonstrate your technical knowledge.