

# In Your Own Words: Using Full Sentences as Feedback

#### The Problem: Understanding Complex Settings

Modern software is complex. Dialogs often exhibit this complexity in the overuse of widgets. Widgets can be interdependent: the settings of some widgets may affect the states of others. While users can understand widget-level settings, understanding the overall configuration of complex dialogs can be difficult and error prone.

### The Approach: Full Sentence Feedback

The states of all widgets on a dialog can be sent through a grammar, which generates an easily readable sentence. The sentence summarizes the overall configuration of the dialog, and uses color to distinguish changes from the previous configuration sentence. This highlevel feedback helps users understand and feel confident in their settings.

## The Experiment: Scheduling Alerts

Twenty participants - 10 experts and 10 novices - used one of the two interfaces below to perform 30 progressively difficult alert scheduling tasks. The tasks were the same for all subjects. Half the participants used the interface on the left: no full sentence feedback. The other half used the same interface augmented with full sentence feedback, on the right. Measurements were taken for correctness, speed, and confidence.

| Edit Alert - Task #17   |
|---|
| Time and Date   |
| Time 1:00 PM  Date 04/22/2002  More Times >>  |
| Repeat within a day   |
| Every 2 🔹 hours 💌 until 7:00 PM 🐳   |
| <ul> <li>Repeat beyond a day</li> <li>C Daily</li> <li>C Monthly</li> <li>Weekly</li> <li>C Yearly</li> </ul> |
| 🗆 Su 🗹 M 🔽 Tu 🔽 W 🔽 Th 🔽 F 🗖 Sa   |
| Every 1 🐳 weeks   |
|   |
|   |
|   |

Condition 1: Interface without full sentence feedback

|           | 17                  |                              |            |                                  |                             | ×         |
|-----------|---------------------|------------------------------|------------|----------------------------------|-----------------------------|-----------|
|           |                     |                              |            | ld numbered l<br>et such an al   |                             | n 1:00    |
|           | Start to b<br>Done. | egin making<br>Start         | the settir | ngs. When yo<br>Done             | u are finis                 | shed,     |
|           |                     | Task                         | (pr        | ompt                             |                             |           |
|           |                     |                              | •          | •                                |                             |           |
|           |                     |                              | <u> </u>   |                                  |                             |           |
| How sure  | e are you t         |                              |            | rect settings (                  |                             | sk?       |
| How sure  | e are you t<br>C    |                              |            |                                  |                             | sk?       |
| C<br>Very | C<br>Fairly         | hat you mad                  | e the cor  | rect settings I                  | for this ta                 | -         |
| C<br>Very | C<br>Fairly         | hat you mad<br>O<br>Somewhat | e the cor  | rect settings I<br>C<br>Somewhat | for this ta:<br>O<br>Fairly | O<br>Very |

Confidence post-task measure

**Test Yourself!** For each of these interfaces, try to discern the overall configuration without full sentence feedback. Then, uncover the same interface with feedback, and check your answer. Jacob O. Wobbrock <jrock@cs.cmu.edu> Human Computer Interaction Institute Carnegie Mellon University



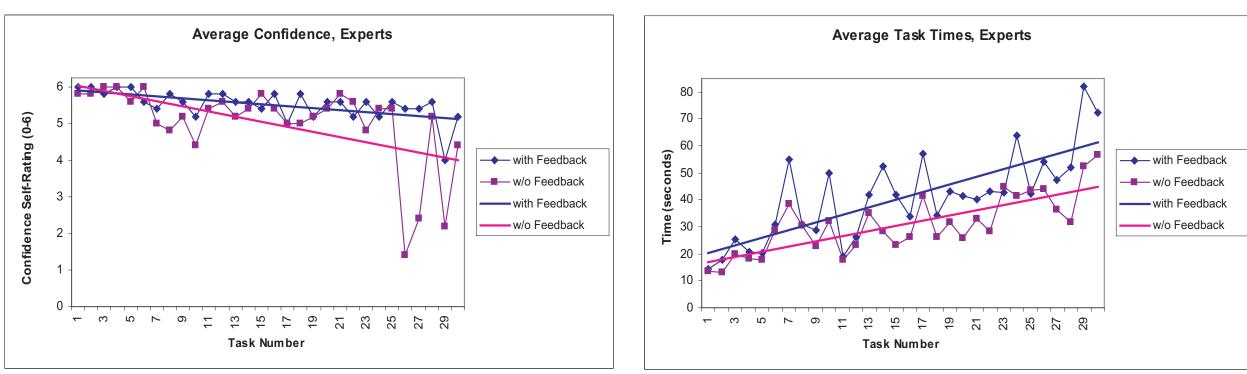
| Time       1:00 PM       Date       04/22/200         More Times >>       More Times >>       04/22/200         Image: Repeat within a day       Image: Repeat within a day         Every       2       Image: hours Image: Repeat within a day | )2 🔽 |
|---|------|
|   |      |
| Every 2 🕂 hours 💌 until 7:00 PM   |      |
|   | *    |
| ✓ Repeat beyond a day ○ Daily ○ Weekly  | -    |
| ⊂ Su IZ M IZ TU IZ W IZ TH IZ F<br>Every 1 📑 weeks  | r Sa |
| This alert will occur every other hour from 1:00<br>pm every week on Mon, Tue, Wed, Thu, and<br>beginning Monday, April 22, 2002  |      |

Condition 2: Interface with full sentence feedback

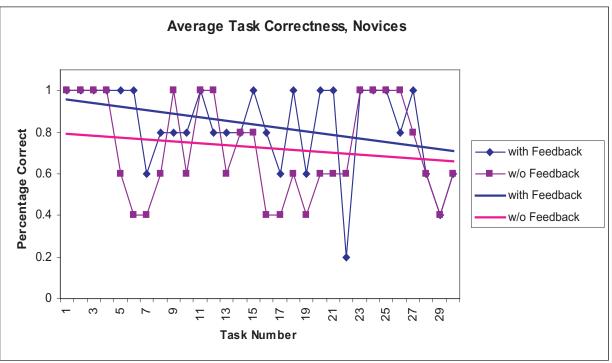
#### **Experiment Results**

When compared to experts without feedback, experts with feedback:

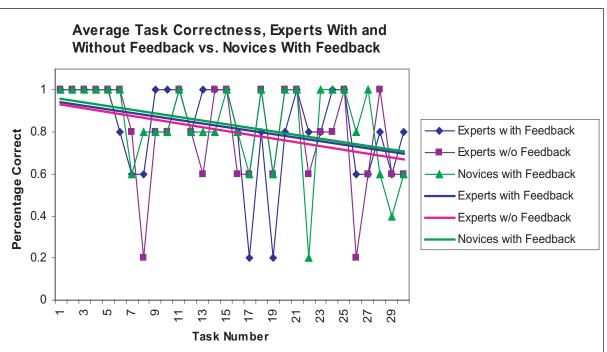
- were more confident
- were slower in completing tasks When compared to novices without feedback, novices with feedback:
- Spent less time viewing task prompts
- O were more often correct
- were faster in completing tasks
- When compared to novices, experts were [expertise validation]:
  - O more often correct when neither had feedback
- indistinguishable in correctness when both had feedback
- faster in task completion in both conditions



Experts with feedback were more confident than experts without it, 5.53 vs. 5.02 on a scale 0-6, t(8) = -2.47, p < .05.



Novices with feedback were more often correct than novices without it. 83.3% vs. 72.7%. These averages fell just shy of desired significance.

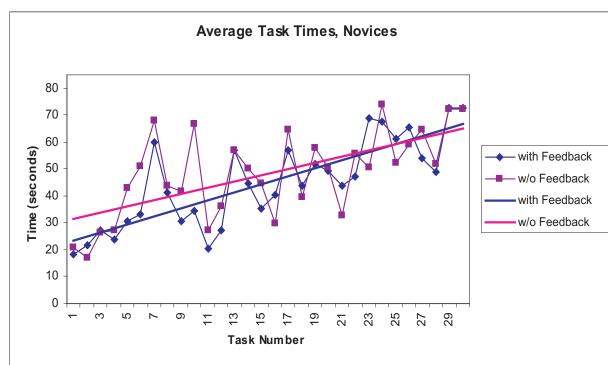


With feedback, novices were made indistinguishable from experts in task correctness. Note the contrast to the previous graph.

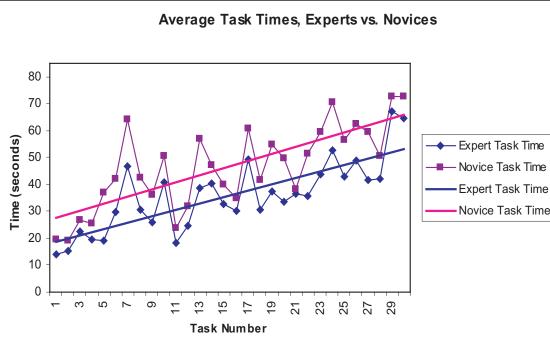
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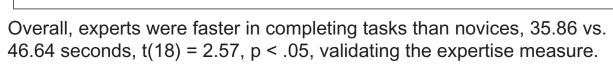
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| ay C Daily C Monthly<br>@Weekly C Yearly                             |
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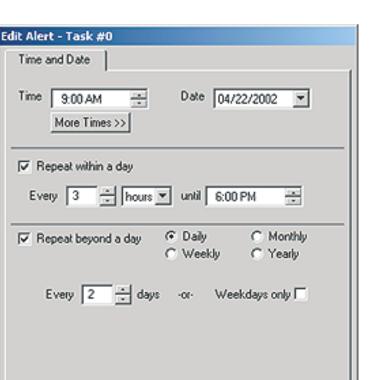
Experts with feedback were slower in completing tasks than experts without it, 40.85 vs. 30.87 seconds, t(8) = -2.77, p < .05.

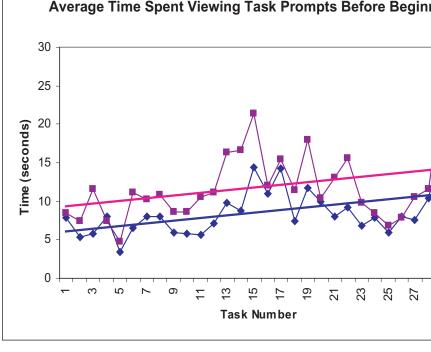


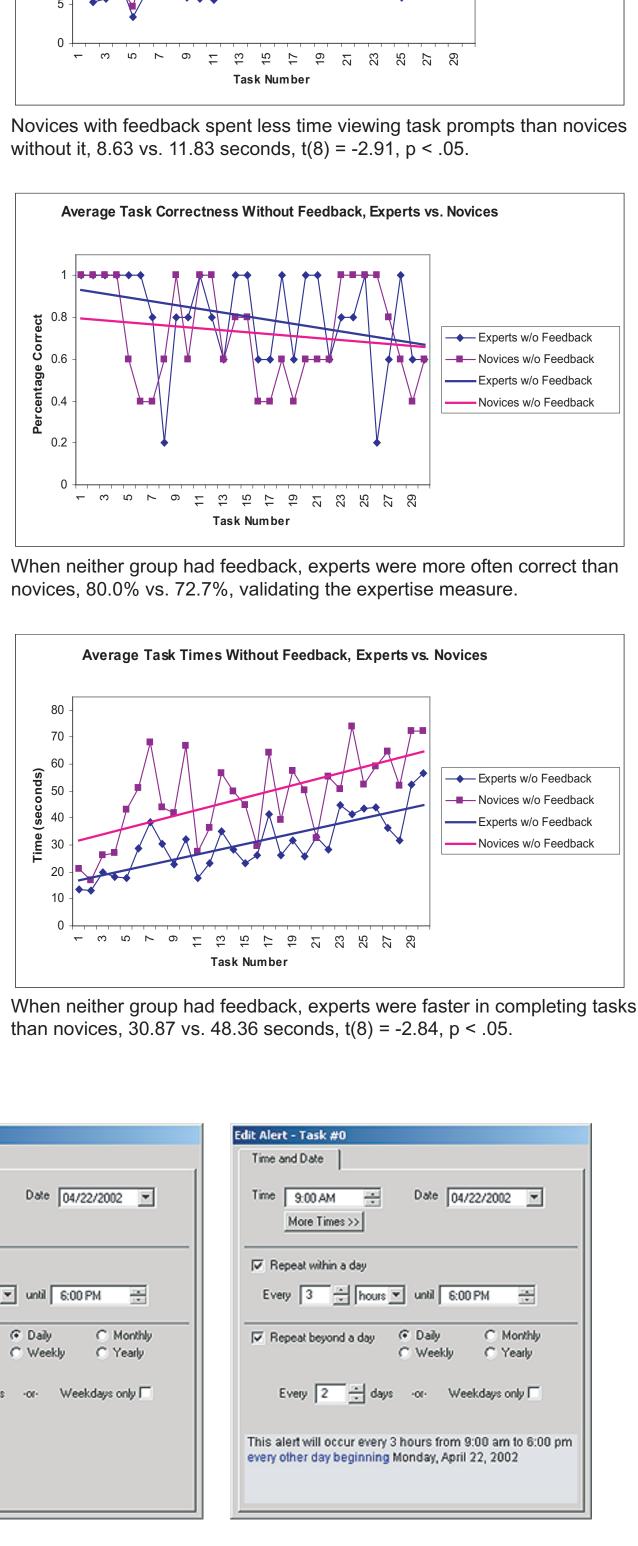
Novices with feedback did not exhibit the slow-down that experts did; in fact, on average they sped up 4.2 seconds with feedback.

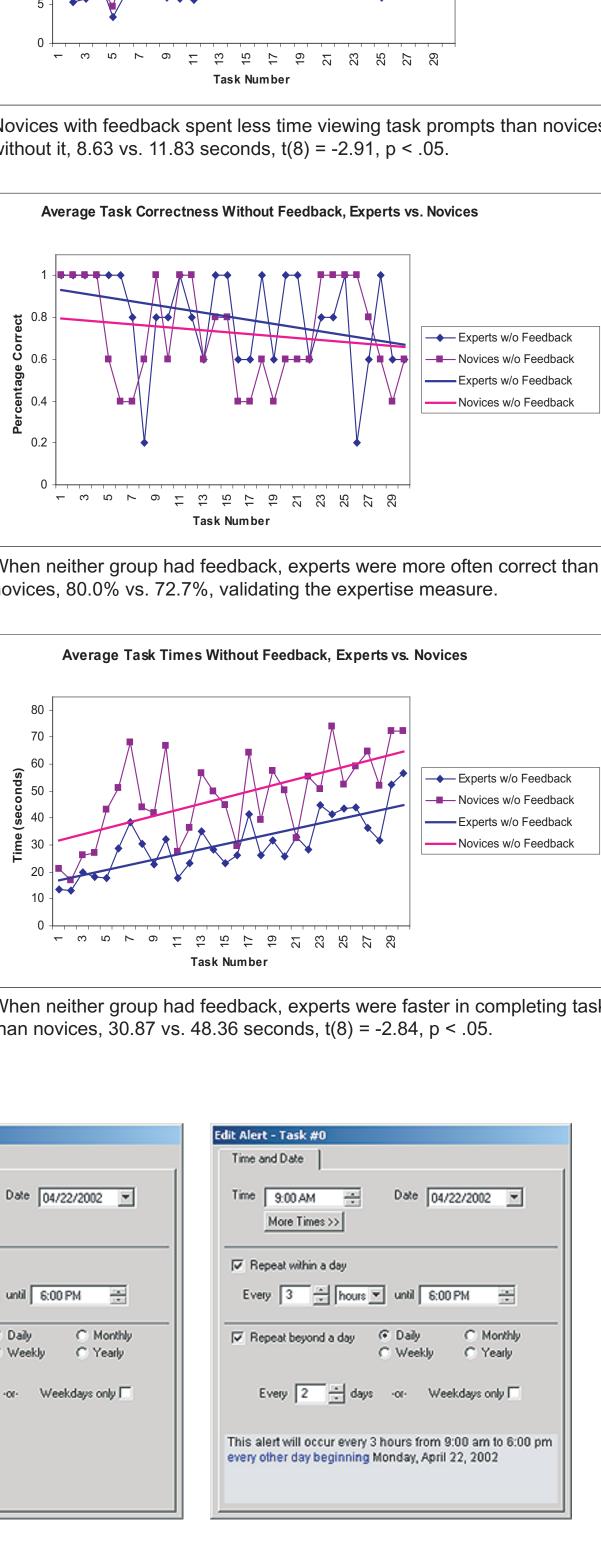


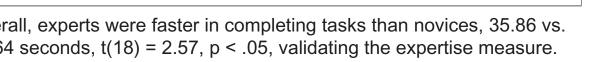


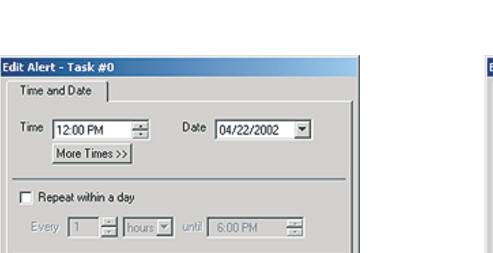












C Monthly

C Yearly

C Daily

Every 2 + weeks

This alert will occur at 12:00 pm every other week on Mon,

Thu, and Fri beginning Monday, April 22, 2002

Weekly

Repeat beyond a day



Carnegie Mellon Universit



w/o Feedback

with Feedback

w/o Feedbac