General Comments

Summary: You want to introduce your use of graphical models, explain how you fit it, and show a couple properties (robust to confidence and flexible to experimental assumptions.

I don't quite understand the purpose of the first section on two-dimensional cross-classification. Is this subsumed by your four dimensional model or is it interesting in its own right?

The model selection portions could be better off in the methodology section, indeed it looks like you already have a section there for it.

Also, I don't get a good sense of what the result is. You have your model in Figure 3 but there's no interpretation. What does this mean in real-world terms? Also, you mention at the start of 5.2 that you want to be able to include 4 pieces of information but then don't mention how your method can provide those pieces of information. This would be great at the end of 5.2. I think you want psychologists to read this and I assume they want a results section that they can more or less replicate for their own experiments, so perhaps model this on their papers (ie they summarized the ROC curve model in this way, see we can do the same with our model).

You also might want to add subsections. For example 5.3.1 Simulation study would be helpful. I also didn't understand the simulation study. Maybe you could frame it in terms of the real world?

Taking a page from Valerie, it would be nice if your headings had subjects and verbs: for instance, 5.3 should be Graphical Model is Robust to Expressed Confidence Level

Specific Comments

- Pg 13, first paragraph; you start with "First" and there are no seconds (reader expectations)

- Pg 13, first paragraph; section 3 was a while back, explain exactly what "all other variables" and 2x3 classification scheme mean. (reduce cognitive load)

- Pg 13, second paragraph; do we need to know that you use loglin? (unnecssary)

- Pg 13, second paragraph; do we need to see Table 4 and Table 5 when the only thing that matters is that we have a better goodness of fit? (graphs should do work)

- Pg 13; third paragraph; "This suggests that witness choice... which we would expect" the last part "which we would expect" doesn't seem necessary (extra verbage)

- Pg 13; third-fourth paragraph; I like that the end is we need more variables and the next paragraph talks about a new model with more variables, but you need to make the transition more explicit (transitions)

- Pg 13; list; you use 1,2,3,4 in the list but refer to them as abcd (consistent notation)

- Pg 14: Figure 3 is hard to read and probably doesn't print well (graphs advice)

- Pg 15: Table 3, is there a reason these are decimals? Also maybe some lines separating the totals (graphs advice)

- Pg 15; none of these Tables mean anything to me as standalones, maybe cut them or make the caption more descriptive? (graphs advice)

- Pg 16; Figure 4; caption doesn't tell me anything

- Pg 16; Figure 4; what are the colors, why are they lines variably thick? What is the dotted red line? Does the green and blue in the right plot have anything to do with the green and blue in the left plot? Do these figures need to be together? (graphs advice)

- Pg 18: Figure 6; This figure needs a lot more explaining (gaphs advice)