I like the abstract! I think you have the main points covered and it reads well.

Error Driven Learning or EDL is a theory where the main goal when learning something is to minimise the uncertainty about upcoming states in the world. One of the most known formalisations of this theory is the Rescorla-Wagner model (1972). This model states that if there is a certain cue present and a certain outcome is present as well, then the connection between the two is strengthened. If the cue is present, but the outcome is not, then the connection is weakened. Because the informativeness of a certain cue is important, Rescorla and Wagner decided that if no cue was present, then this cue is not informative about any outcome and therefore any connections should not be changed.

This latter point has been a point of contingency with other researchers that find that a non-present cue can be informative in it's own right. One of the main formalisations of this theory is given by Van Hamme and Wasserman (1994). While they agree with the Rescorla-Wagner model on what needs to happen when cues are present, they suggest an addition for when cues are not present. They suggest that a cue not being present should be encoded negatively. If a cue is not present but an outcome is then the connection should weaken, while neither a cue nor outcome being present should strengthen the connection between these two.

Because of limited space, I would try to cut down on this section to allow more space for results and discussion.

Van Hamme and Wasserman tested their model in this same 1994 paper, where they asked participants how likely they thought an allergic reaction would occur based on certain types of food eaten. There were three types of food, but in each trial only two types of food were shown together with the outcome (an allergic reaction or not). The participants then had to rate on a scale from 0 to 8 for *all three foods* how likely they could cause an allergic reaction (0-very unlikely, 8-very likely). Van Hamme and Wasserman found when there is no cue present but an outcome is then the ratings decreased, while if there was no cue and no outcome, the ratings increased, which is in line with their theory.

However we propose that EDL is an implicit process that can be hindered by explicit inference, and Van Hamme and Wasserman explicitly asked their participants for ratings. Therefore their results might be explained by participants using task stategies over EDL.

To test if we find learning in the absence of cues we will create computational simulations of both the Rescorla-Wagner model and the Van Hamme Wasserman model. In recreating the experiment described in the paper by Van Hamme and Wasserman we do not see any significant differences in the performances of these two models. To test further on human participants as well, we will adjust their original experiment in three ways. The first is to change the stimuli, as food could give people certain preconceived notions about what will lead to an allergic reaction. The second way will be to alter both the stimuli (which will be the same as in the first change) and the speed at which participants have to react. We expect that by manipulating this speed, we will find a difference in what participants learn in the slower condition (room for explicit inference) and the faster condition (forced implicit learning)

Actually you have already run the simulations and have results from them. And these are important results - remember this is a well cited paper that has been quite influential in error-driven learning. Your simulations show that the experiment doesn't actually test the question they wanted to test.

should be Rescorla and Wagner I believe

References

Van Hamme, L. J., & Wasserman, E. A. (1994). Cue competition in causality judgments: The role of nonpresentation of compound stimulus elements. *Learning and motivation*, *25*(2), 127–151.

Wagner, A., & Rescorla, R. (1972). A theory of pavlovian conditioning: Variations in the effectiveness of reinforcement and nonreinforcement. *Classical conditioning ii*, *64*, 99.