

1 We thank the reviewers for their overall positive and encouraging feedback.

2 Responding to the main comments raised by the reviewers:

3 • Regarding the simplified nature of the target class of tree-structured Boolean circuits: our main goal in the
4 paper was to suggest a crisp property of “natural” distributions that turns them “easy” to learn. We chose
5 the class of tree-structured Boolean circuits since this family is rich enough to reveal interesting properties
6 about learnability using gradient-based algorithms, yet is simple enough to give thorough theoretical analysis.
7 Showing that the local correlation property plays a role in learning broader families of functions is an exciting
8 topic for future research.

9 • On the assumption of known tree structure: we believe that in the context of learning neural networks, knowing
10 the structure of the tree is a realistic assumptions. Neural networks in practice are often designed to have
11 a structure that reflects the prior knowledge of the problem (for example, convolutional networks, LSTMs,
12 transformers etc.).

13 • Regarding read-once formulas: we will add a comparison to the literature of learning read-once formulas.
14 However, we note that our focus is not on PAC learnability of read-once formulas in general, but rather on
15 understanding distributional properties that allow gradient-based algorithms to converge to an optimal solution.

16 • Regarding the analysis of layerwise training algorithm: we believe that similar results may be shown for
17 end-to-end optimization, at the expense of making the theoretical analysis much more complicated. End-to-end
18 gradient-descent is notoriously hard to analyze in the case of deep networks, due to the highly non-convex
19 nature of the optimization. We chose the less popular layerwise optimization to achieve a simpler theoretical
20 analysis, and yet show guarantees that reflect the behavior of gradient-descent in practice.

21 We will correct the final version of the paper according to additional comments and suggestions raised by the reviewers.