Predicting outcomes following a sequence of binary events: A belief-updating account of the hot hand belief and gambler's fallacy

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Flash Talk: Cognition and Choices
The Society for Judgment and Decision Making Annual Meeting
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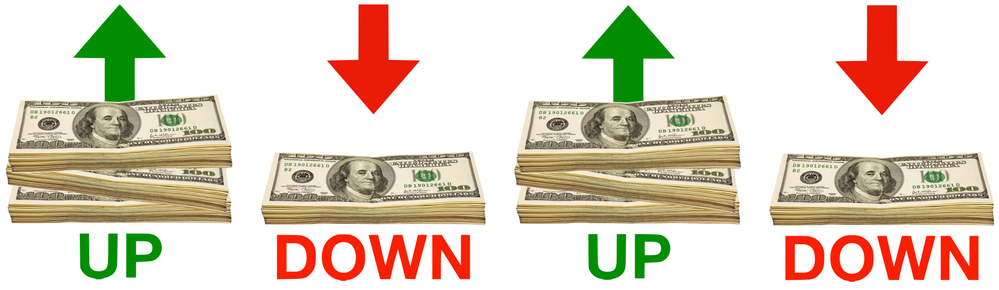

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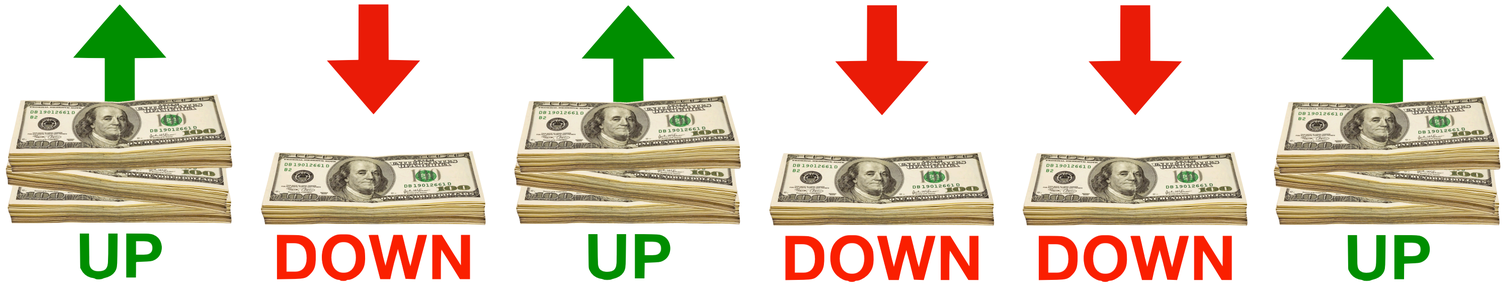

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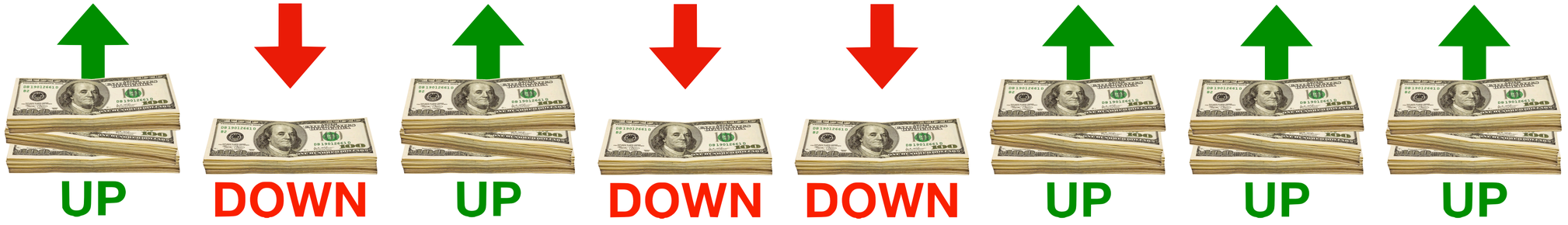

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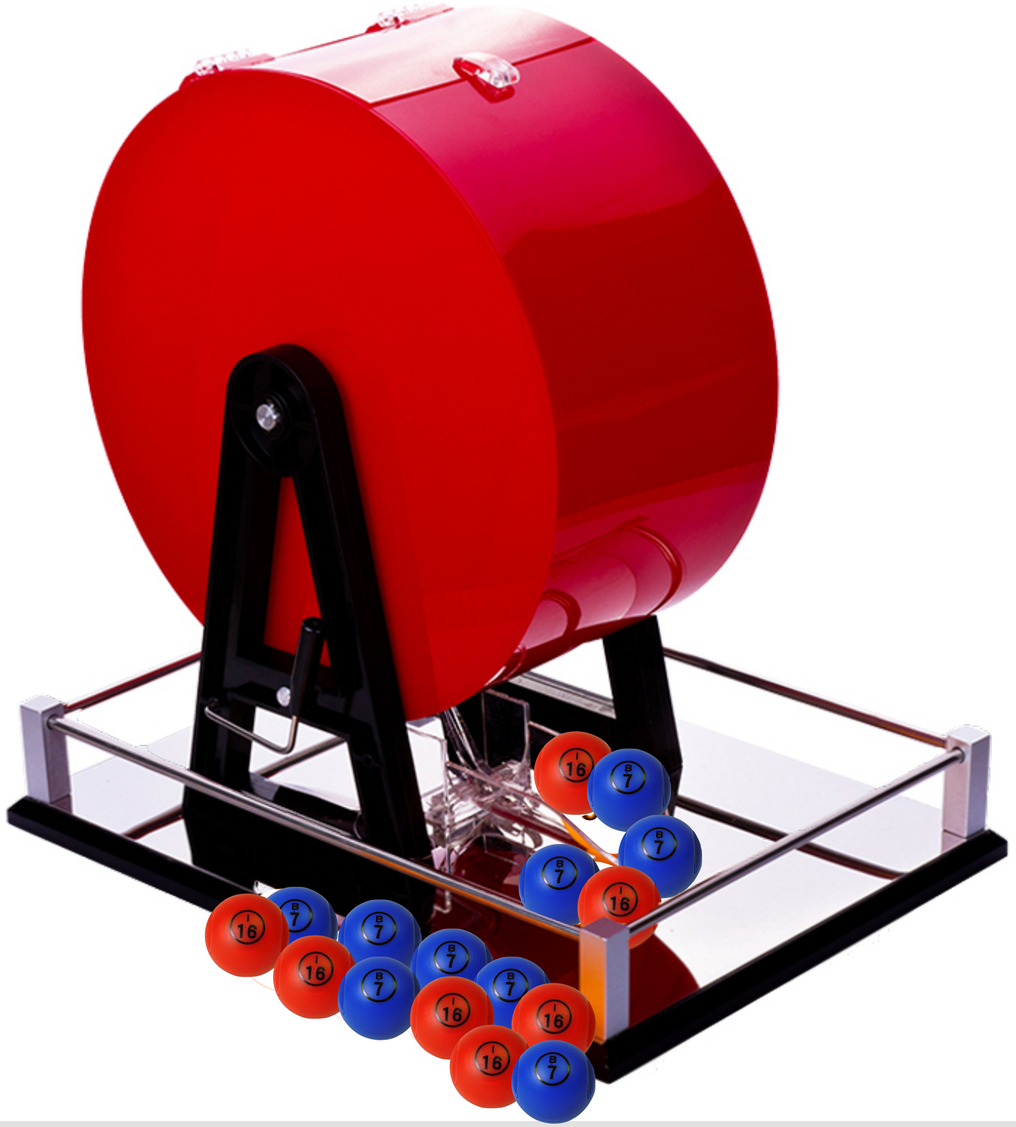

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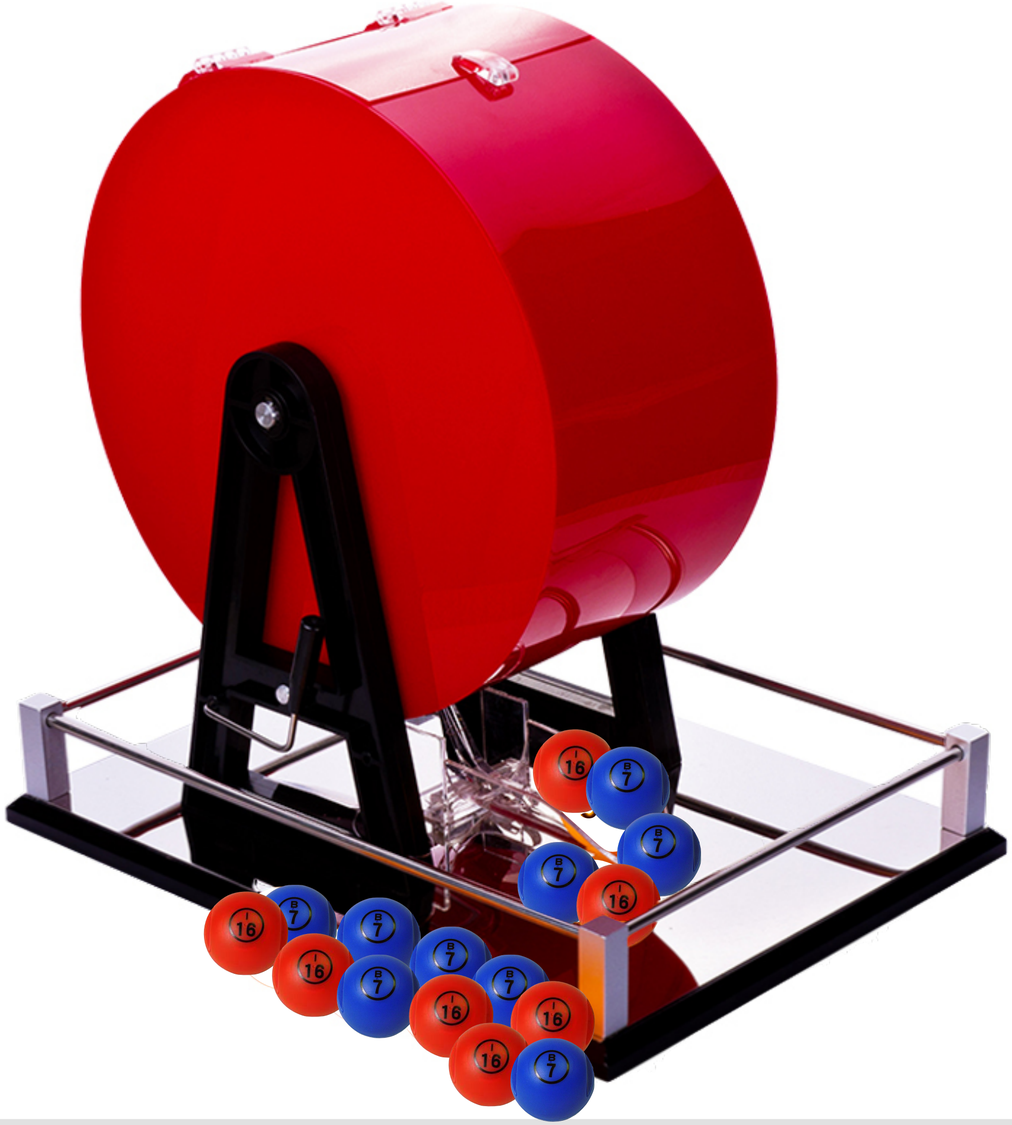
50 + 50



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RED

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RED BLUE

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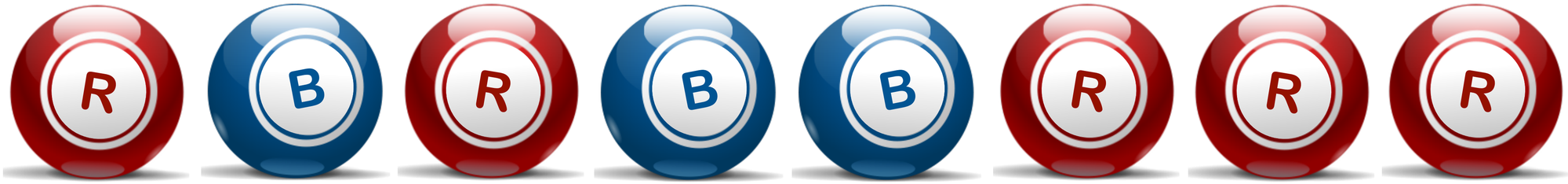

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What’s the difference?

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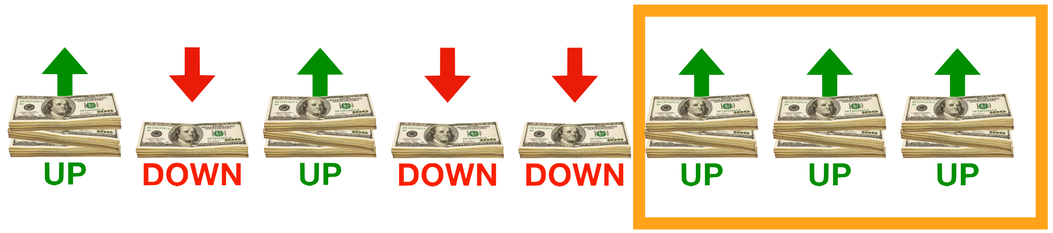

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What's the difference?

Prob(R) < 50%

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What's the difference?

Prob(R) < 50%

RED

Prob( ) > 50%

UP

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What's the difference?

X 50

X 50

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What's the difference?

X 50

X 50

UP

???

DOWN

???

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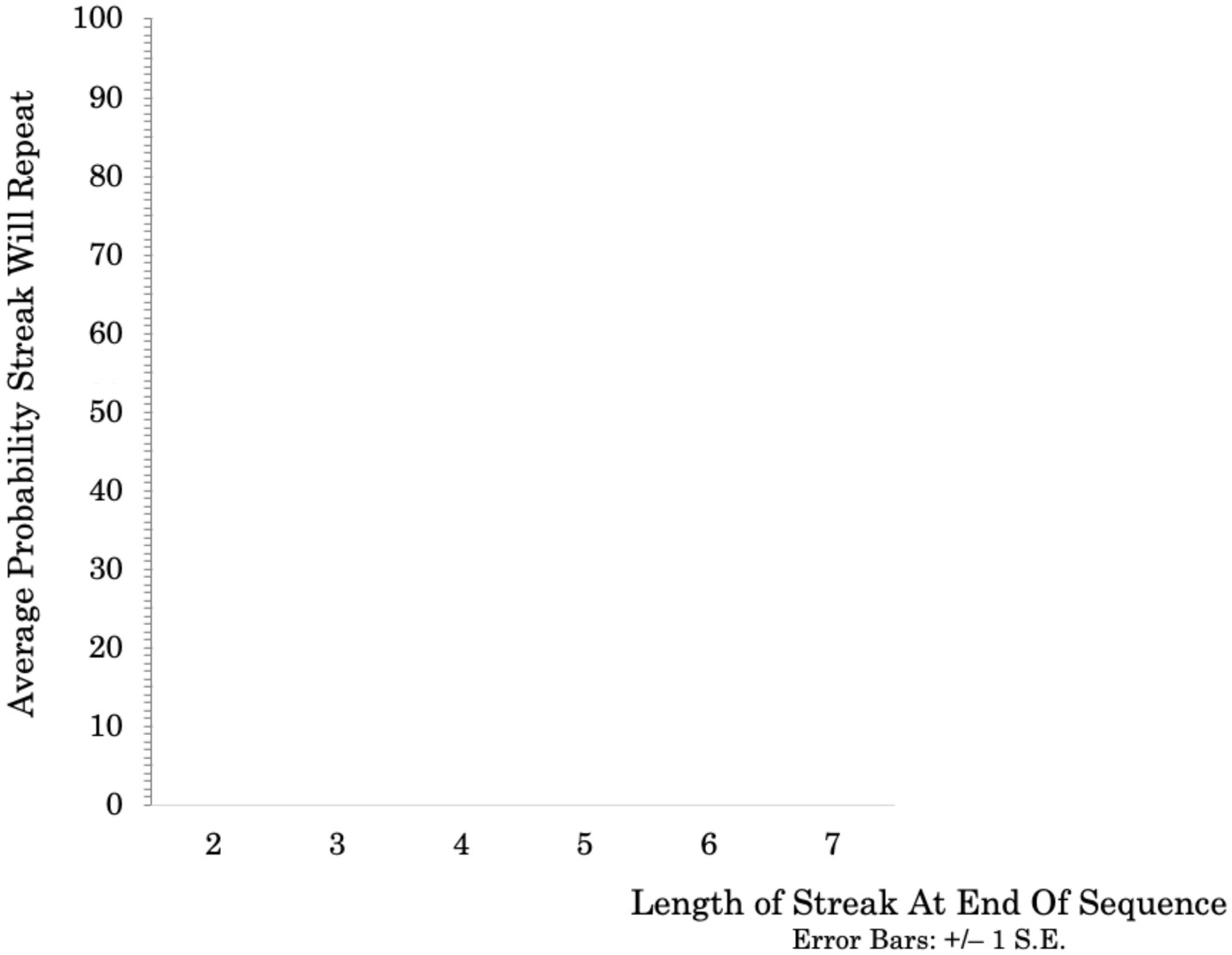
Results: Unknown Rate vs. Fixed 50% Rate



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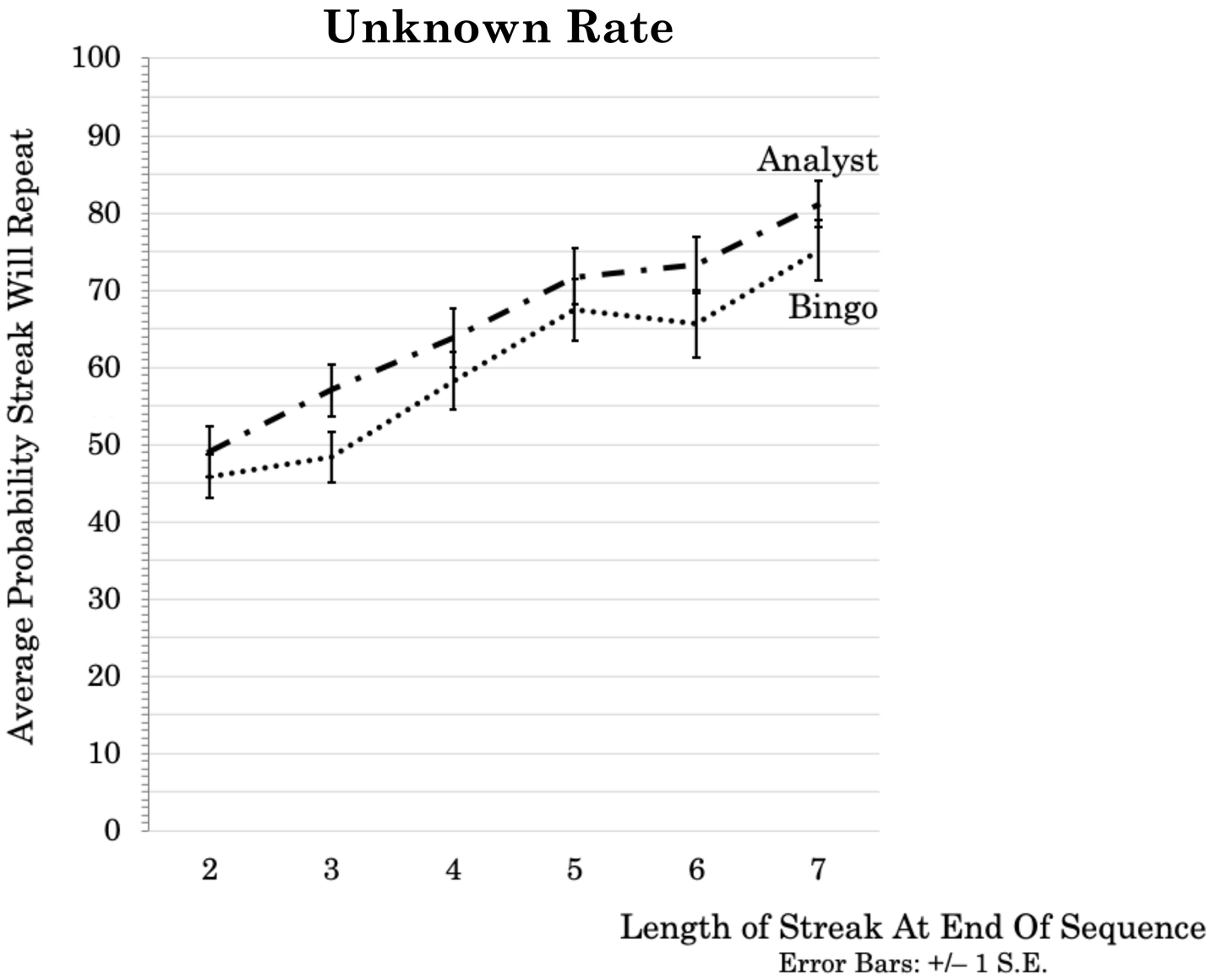
Results: Unknown Rate vs. Fixed 50% Rate

Average Probability Participants Assigned to Repetition of Streak by Terminal Streak Length



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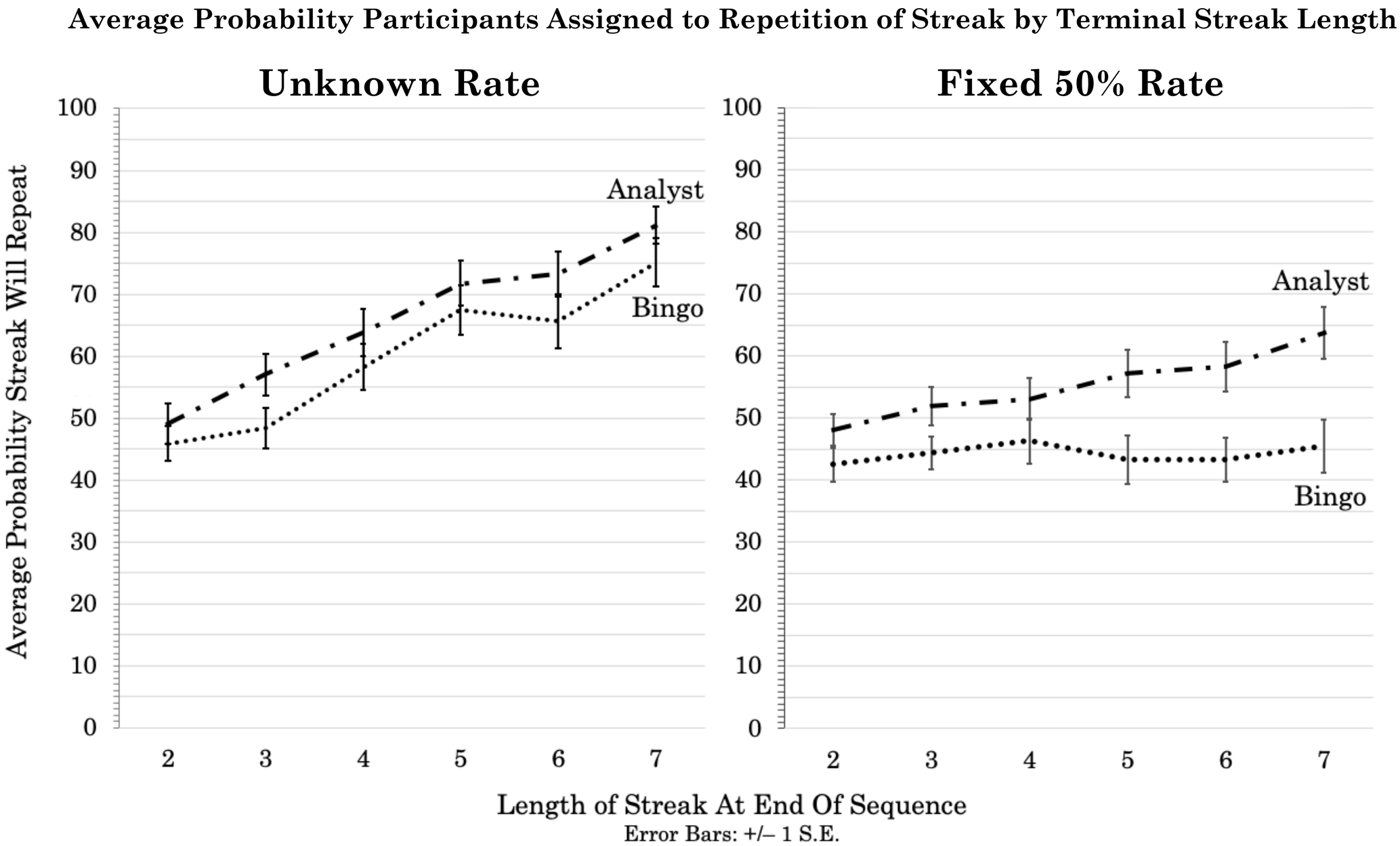
Results: Unknown Rate vs. Fixed 50% Rate



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Key Takeaways

Uncertainty about the generator's base rate **is the key driver** of hot hand and gambler's fallacy patterns in predictions about sequences of binary events.

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1. When the base rate is ambiguous, description of the generator doesn't matter. People update their expectations based on the outcomes they observe.

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1. When the base rate is ambiguous, description of the generator doesn't matter. People update their expectations based on the outcomes they observe.

2. When the base rate is fixed at 50%, the description of the generator matters. People conservatively update their expectations for an intentional actor, but exhibit a negative recency bias for a random mechanical device.

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Uncertainty about the generator's base rate **is the key driver** of hot hand and gambler's fallacy patterns in predictions about sequences of binary events.

1. When the base rate is ambiguous, description of the generator doesn't matter. People update their expectations based on the outcomes they observe.

2. When the base rate is fixed at 50%, the description of the generator matters. People conservatively update their expectations for an intentional actor, but exhibit a negative recency bias for a random mechanical device.

   Surprising: negative recency bias did not increase with streak length.

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That's all Folks!