

## Hot Hands and Cool Machines: Perceived Intentionality in the Prediction of Streaks

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**Abstract:** People can appear inconsistent in their intuitions about the sequence of repeated events. Sometimes people believe in the “hot hand” – that a recent run of hits will continue. At other times, however, people believe in the “gambler’s fallacy” – that a recent run of hits will end. These contradictory intuitions can be reconciled by considering the perceived intentionality of the streak’s agent. The hot hand should emerge in contexts involving intentional agents where events are perceived to be dependent on one another; in these contexts, streaks indicate intentional actions that should continue. The gambler’s fallacy should emerge in contexts involving unintentional agents where events are perceived to be independent of one another; in these contexts, streaks represent random accidents that will be unlikely to continue.

**Study 1:** Participants imagine watching baseball’s annual Home Run Derby

- Generate a prediction (“hit” or “miss”) for a sequence of 50 swings with 40% hit rate
  - Intentional Condition (Man): Predict for baseball player Barry Bonds
  - Unintentional Condition (Machine): Predict for a machine designed to mimic the swing of an actual pro baseball player
- Perceived likelihood that a “streak” will continue is higher for a man than a machine

Conditional probability of a hit following...	Man	Machine	
<b>1 hit</b>	.42	.21	$p < .001$
<b>2 hits</b>	.33	.14	$p < .001$
<b>3 hits</b>	.13	.00	$p < .02$

**Study 2:** Participants watch an interactive display of a series of free throw shots in basketball

- Asked to predict outcome of next shot after 1) a “streak” of three hits in a row and 2) an alternating sequence with no streak
  - Intentional Condition (Man): Predict for NBA basketball player Paul Pierce
  - Unintentional Condition (Machine): Predict for a machine designed to mimic the shot of an actual pro basketball player
- Predicted percentage of hits is higher for the man than machine, *but only following the streak of hits and not the random sequence*

Percentage of hits	Man	Machine	
<b>Following streak</b>	75%	55%	$p < .05$
<b>Following random sequence</b>	81%	80%	<i>ns</i>

**Conclusions:**

- Predictions about the continuation of a streak depend on perceptions of the agent’s intentions
- People are more likely to believe that a streak will continue if they think it was produced by an intentional, agent opposed to unintentional, agent
- Seemingly inconsistent outcomes can be reconciled by considering the situational context of judgment

**Future Directions:**

- Manipulate perceived intentionality of a single agent performing a task
- Manipulate focus on specific mechanisms (low construal) or intentions (high construal) of the agent performing a task
- Prime participants with agency