A Test of the Preparatory Valence of Counterfactual Thinking

Bogani, A.[1], Tentori, K.[1], Ferrante, D.[2], Pighin, S.[1]

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Counterfactual thinking

Mental simulation of how past events could have been different

Why do people produce counterfactuals (CFTs)?

Functional Theory (FT) [1]

CFTs produced mainly to prepare us for the future

How?
Two ways

Content neutral
Thinking that things could have been better have motivational effect over future performances

Content specific
Action considered in CFTs implemented during future performances

CFTs about personally implementable actions (**controllable CFTs**) considered more preparatory than ones about elements outside our control (**uncontrollable CFTs**)

FT makes three main predictions (see below)

FT's predictions questioned in recent years

However, tasks used in studies questioning FT might have been inadequate to test preparatory function

Aim of present study
Further explore FT's predictions using new task to assess preparatory valence of CFTs

New task
Target-shooting video game (12 shots, 30 sec per shot)
+
CFT production
After game, complete "My score would have been higher, if only…"

FT's prediction 1
After negative events, people produce more controllable than uncontrollable CFTs

But, variability in type of CFTs produced by participants [e.g., 2-5]

Unclear factors driving observed variability

Aim of Exp 1-2
Test two possible factors

FT's prediction 2
Producing CFTs fosters performance improvement by content-neutral effect

FT's prediction 3
Implementation of behaviour imagined in controllable CFTs (content-specific effect)

But, mixed evidence about both predictions [e.g., 6-7]

Aim of Exp 3
Further test predictions 2-3

Exp 1
Task difficulty
Higher task difficulty
→ More uncontrollable CFTs

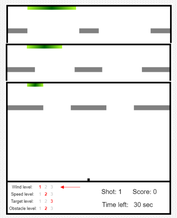
Exp 2
Feedback
Receiving negative feedback
→ More uncontrollable CFTs

Exp 3 – Prediction 2
Producing (vs not) CFTs about performance in first game lead to higher scores in second game

Exp 3 – Prediction 3
CFTs about not rushing shots (63% of controllable CFTs in Exp 1-2) lead to increased shooting time in second game

METHODS

Easy (*n* = 87)
Intermediate (*n* = 100)
Difficult (*n* = 95)



Three difficulty conditions:
Task difficulty manipulated through game variables (e.g., size of the obstacles)

METHODS

Two feedback conditions:
Manipulated whether participants received feedback informing them they had performed worse than other players

Feedback Absent (*n = 175*)
Feedback Present (*n = 217*)

METHODS

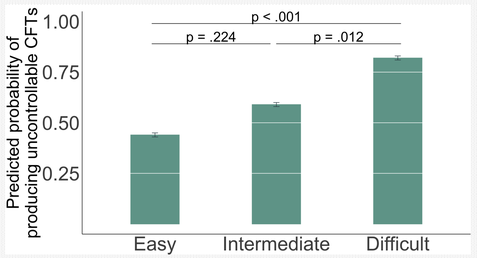
Two counterfactual conditions:
Manipulated whether participants had to produce a CFT between the games

Participants **played** the game **twice**

No CFT (*n = 168*)
CFT
- *Controllable (n = 133)*
- *Uncontrollable (n = 192)*

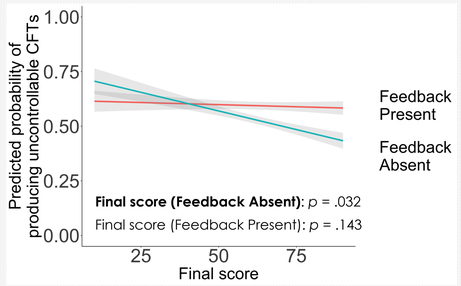
To test prediction 3, measured **time taken to fire each shot** by participants in game 1 and 2

RESULTS



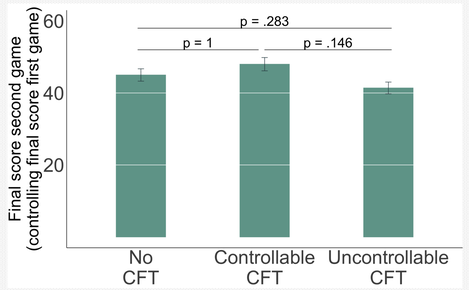
Task difficulty affects type of CFTs produced
+
More uncontrollable CFTs after poor performance

RESULTS



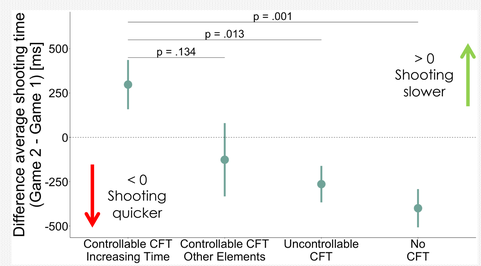
Negative feedback affects type of CFTs produced, when performance was good

RESULTS



Simply producing CFTs does not result in higher performance improvement

RESULTS



Participants producing CFT about not rushing their shots were the only group increasing shooting time in second game

Take-home message

Dominant view holds that CFTs have a preparatory function, but this hypothesis is unable to account for number of empirical results and needs to be revised

QR code poster

QR code game

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References

[1] Roese, Epstude (2017). The functional theory of counterfactual thinking: New evidence, new challenges, new insights.

[2] Girotto et al. (2007). Postdecisional counterfactual thinking by actors and readers.

[3] Hammell & Chan (2016). Improving physical task performance with counterfactual and prefactual thinking.

[4] Myers et al. (2014). The role of thought-content and mood in the preparative benefits of upward counterfactual thinking.

[5] Petrocelli et al. (2012). "If only I could stop generating counterfactual thoughts": When counterfactual thinking interferes with academic performance.

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(Roese&Epstude, 2017)

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But, variability in type of CFTs produced by participants
(e.g. Pighin et al., 2021; Stragà&Ferrante, 2014)

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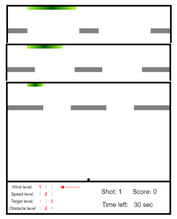

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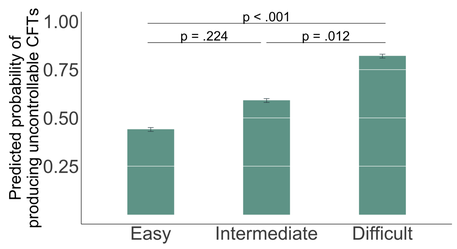

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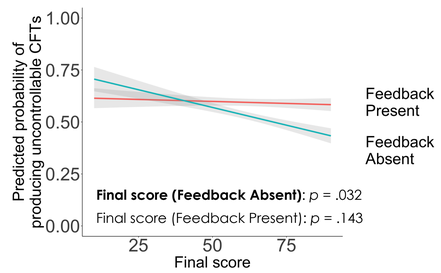

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METHODS

Play the game twice, manipulated whether or not participants produce CFTs + measured time taken to shoot