Monetary Interventions in Crowdsourcing Task Switching

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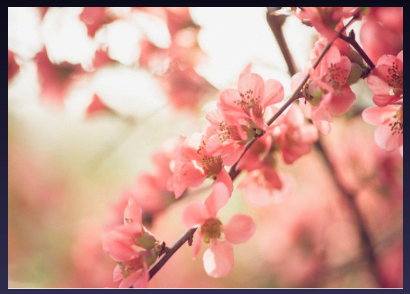
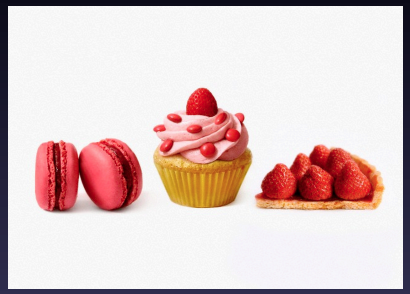
Task Switches Initiated by Requesters

- Context Switch



Spring

Spring



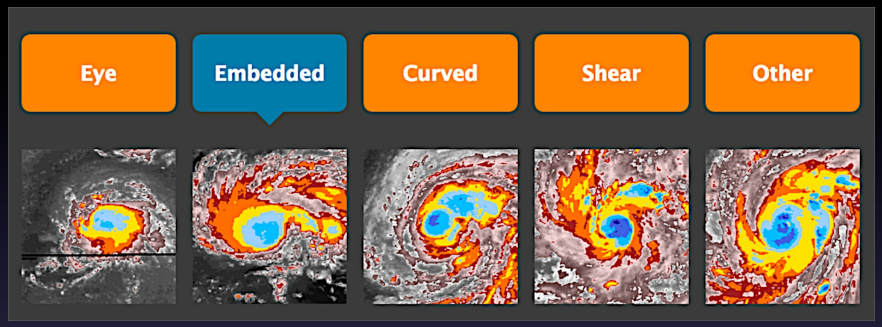
Spring

Tree

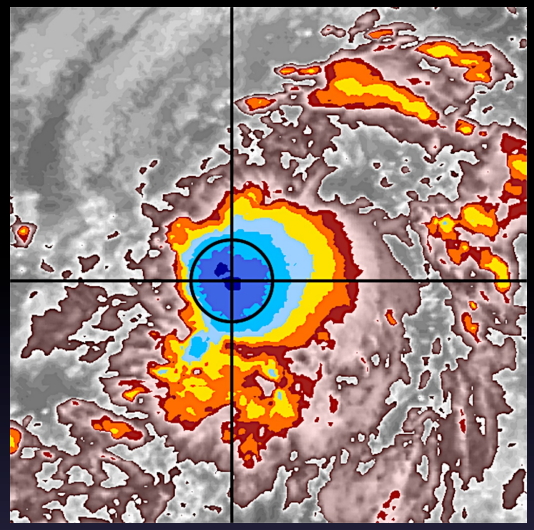
Is the keyword correct for this image?

Task Switches Initiated by Requesters

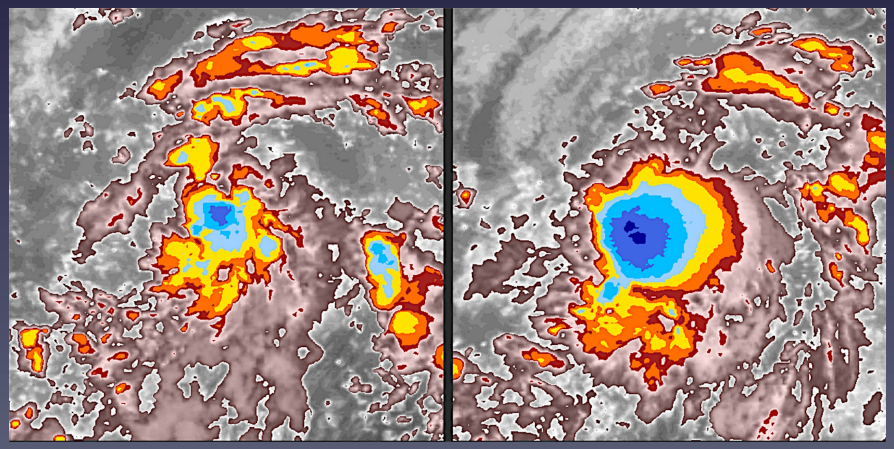
- Workflow design



Classification



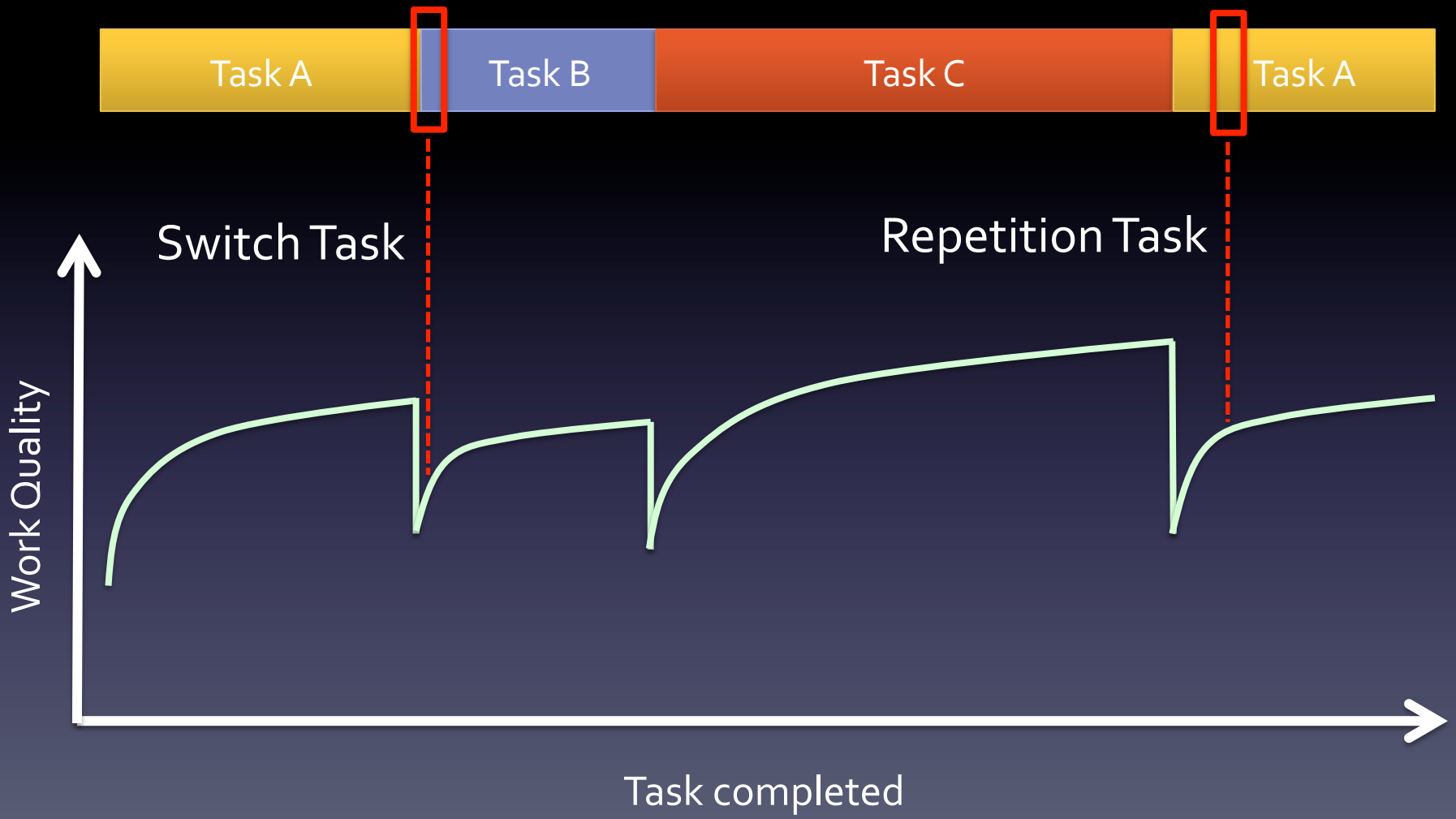
Annotation



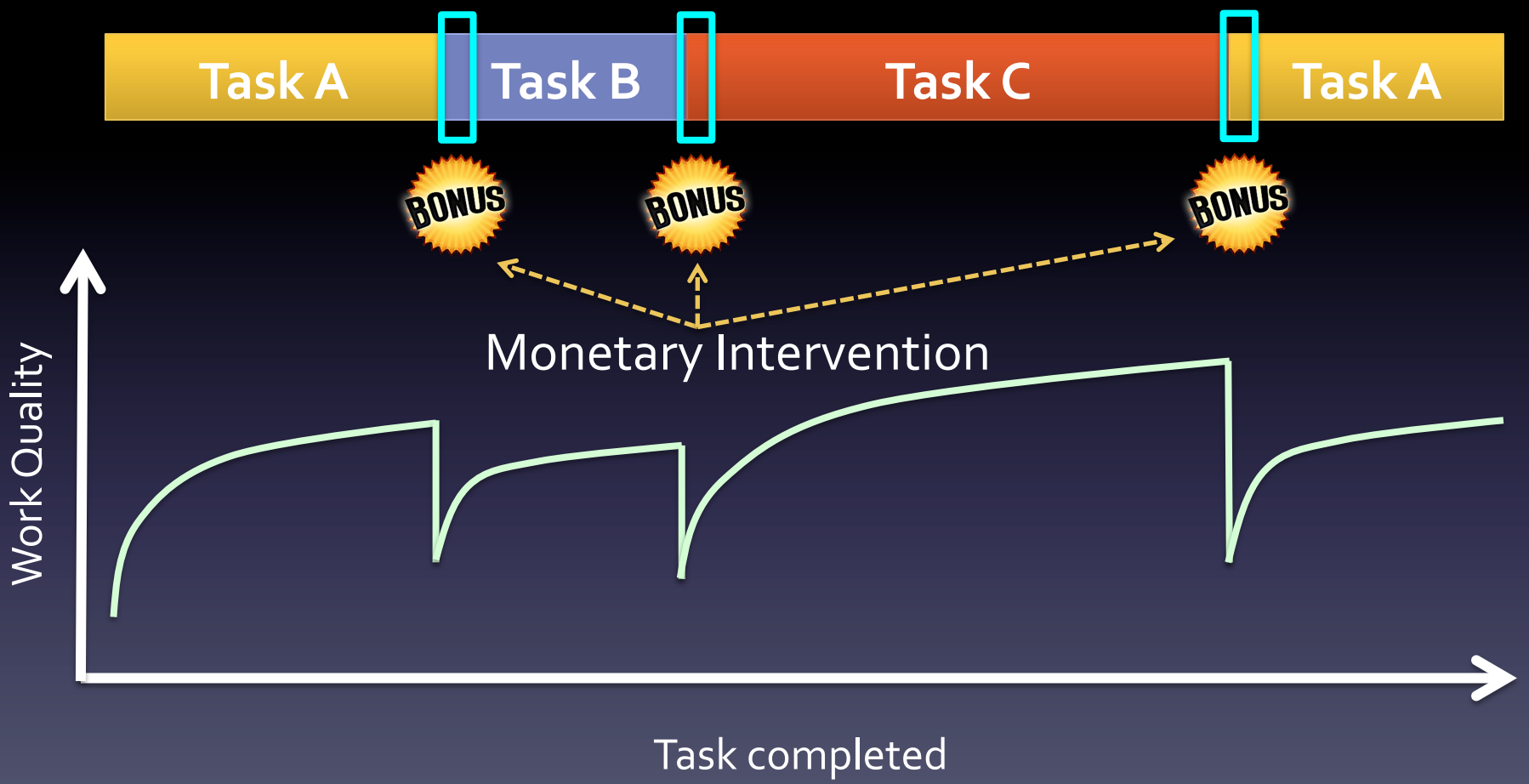
Comparison

Zooniverse: Cyclone Center

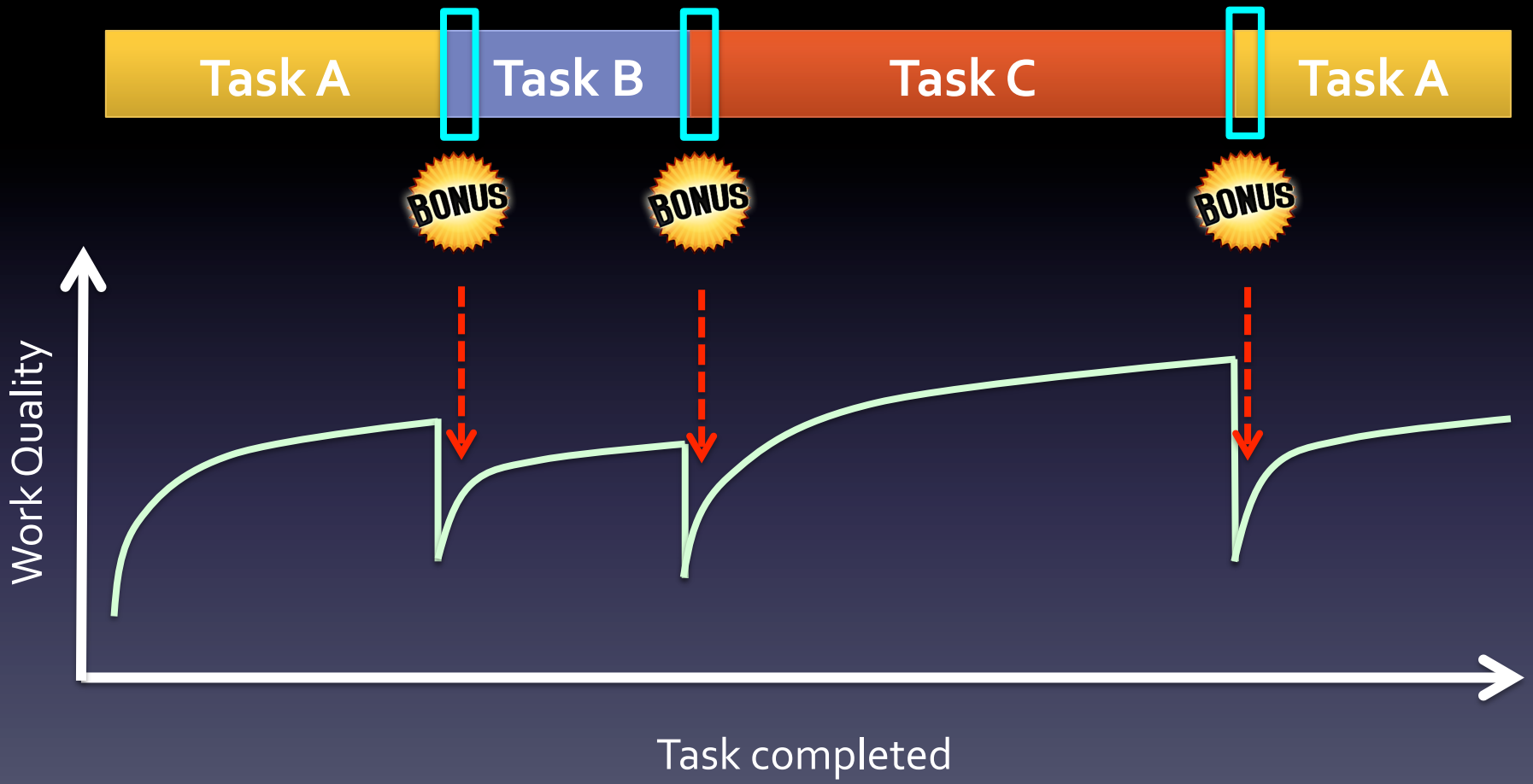
Varying Quality in Task Sequences



Influencing Quality with Financial Incentives

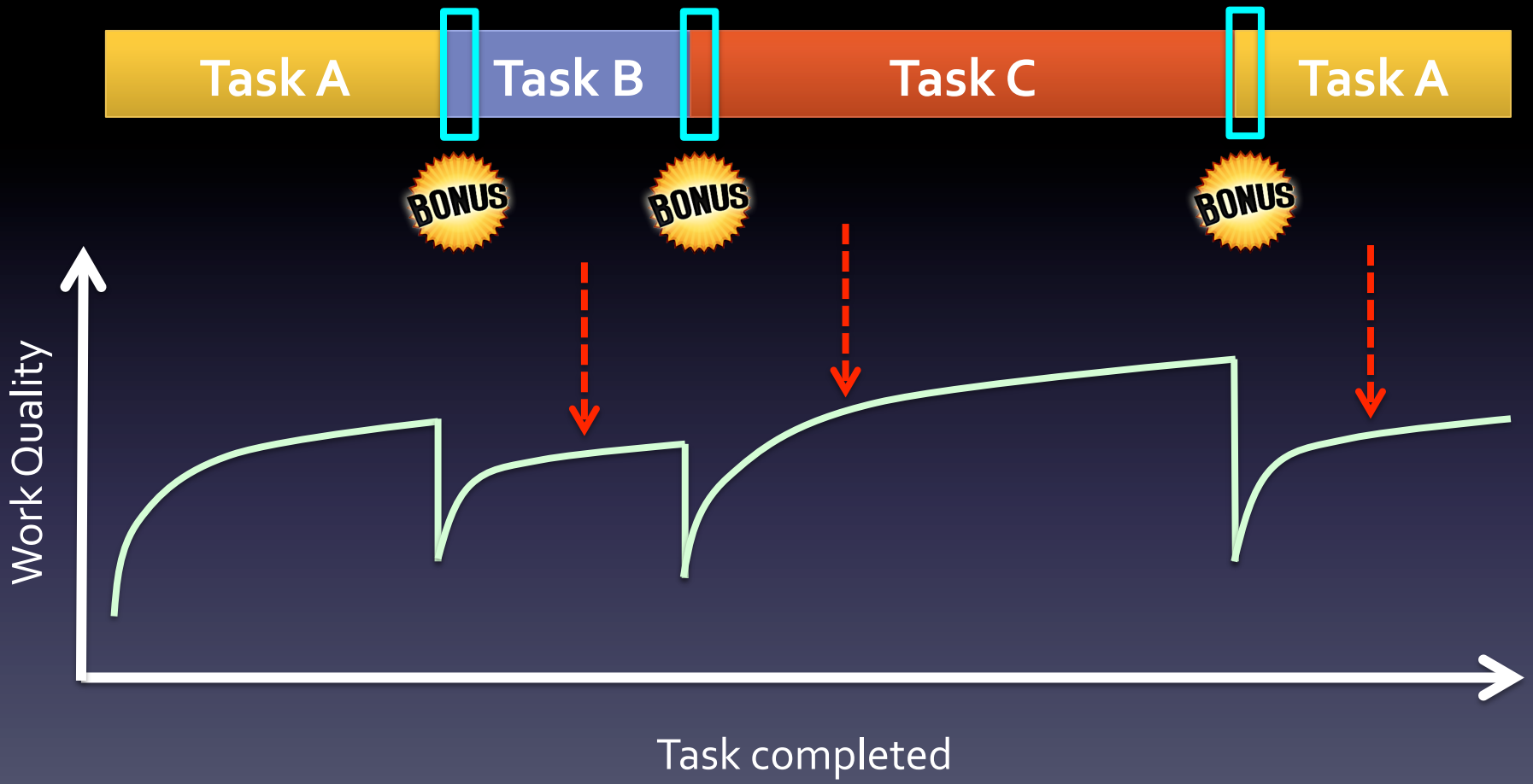


Influencing Quality with Financial Incentives



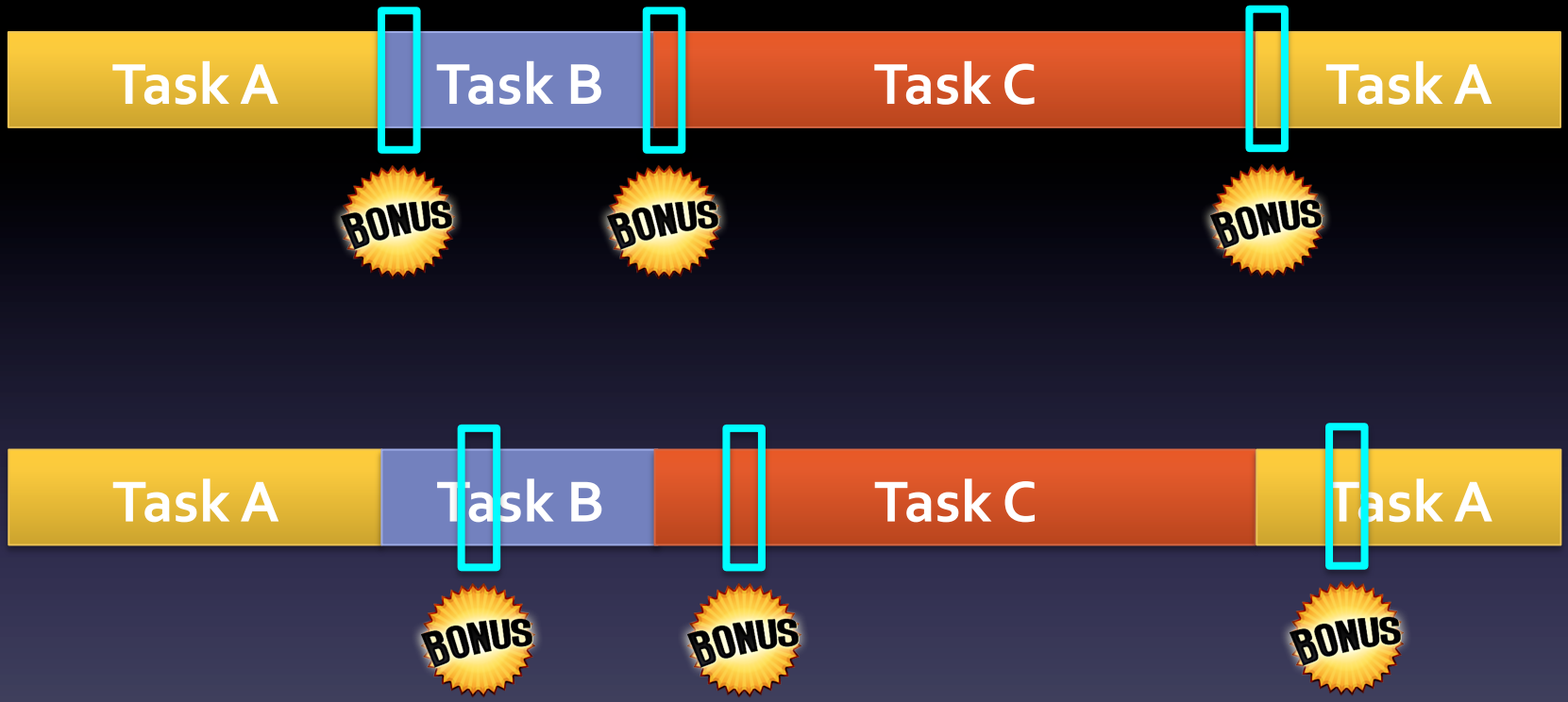
1. How do monetary interventions affect work quality in intervened tasks?

Influencing Quality with Financial Incentives



2. How do monetary interventions affect work quality in non-intervened tasks?

Influencing Quality with Financial Incentives



3. Where to place monetary interventions: Switch tasks or repetition tasks?

Influencing Quality with Financial Incentives

4. When are monetary interventions more effective: Tasks switch more often or less often?

Experimental Design

2 types of tasks

Color naming

Yellow

Green

Word reading

Yellow

Yellow

Commonly used by psychologists in studying task switching

96 tasks in a sequence

Experimental Design

5 task sequences

48 × 2

24 × 4

16 × 6

8 × 12

4 × 24

×

3 intervention treatments

No Bonus

Switch Bonus

Repetition Bonus

15 experimental conditions

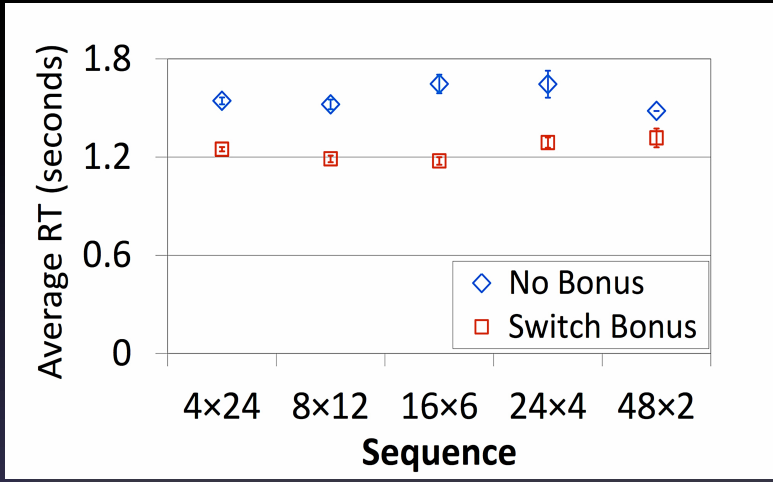
1268 unique MTurk workers

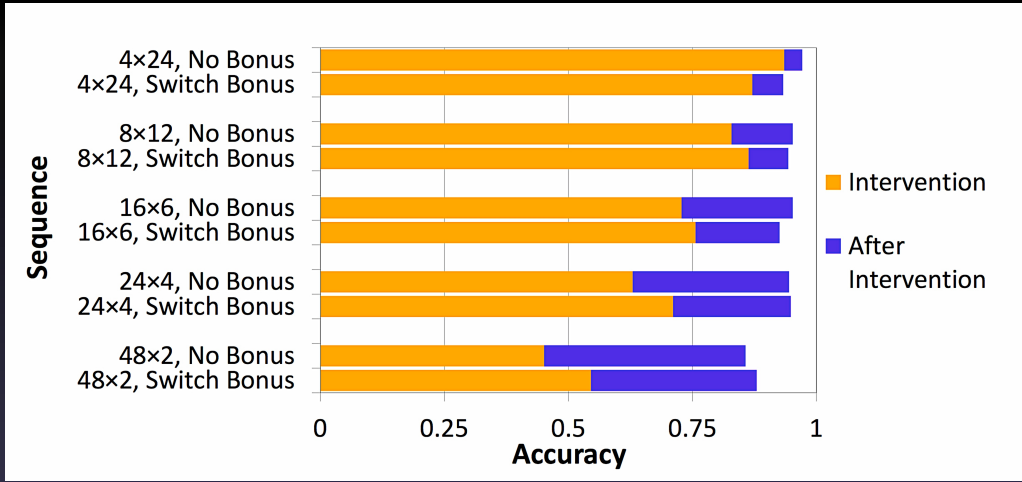
Experimental Design

- Two quality metrics:
  - Reaction time
  - Accuracy
  - Innately compete with each other
- Performance-contingent bonuses
  - Receive bonus in a task if the answer is correct

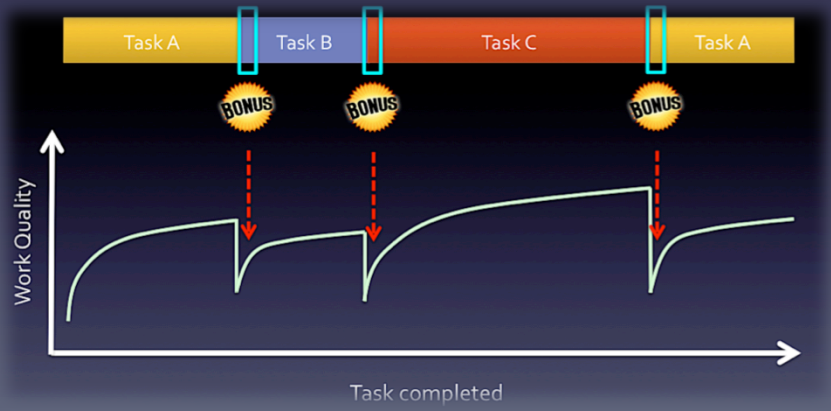
    and the reaction time is less than 1 second

Effects on Intervened Tasks: Switch Bonus

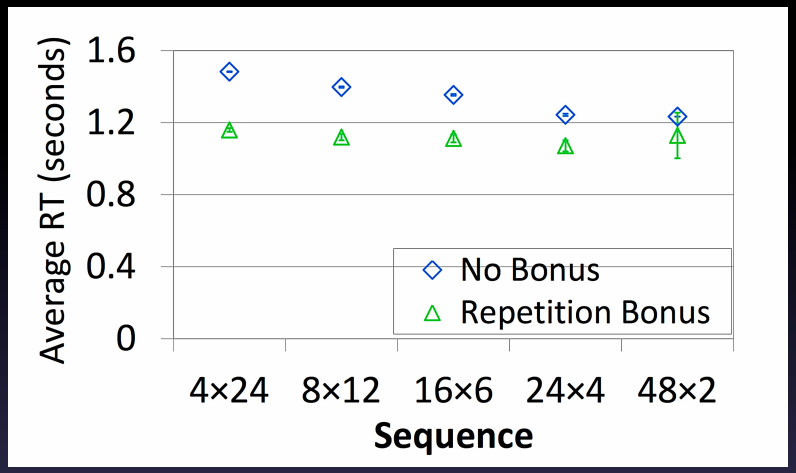


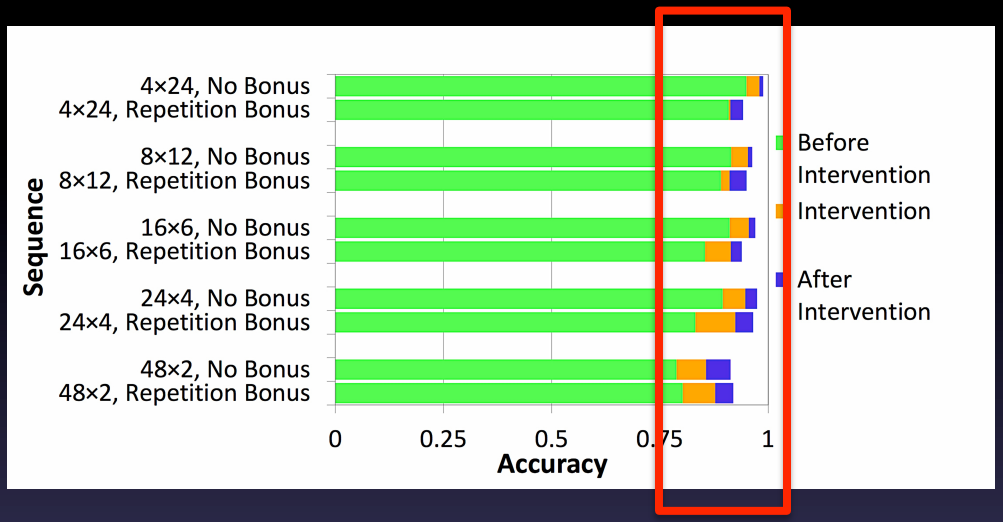


Performance is improved in both reaction time and accuracy in intervened tasks in Switch Bonus treatment!

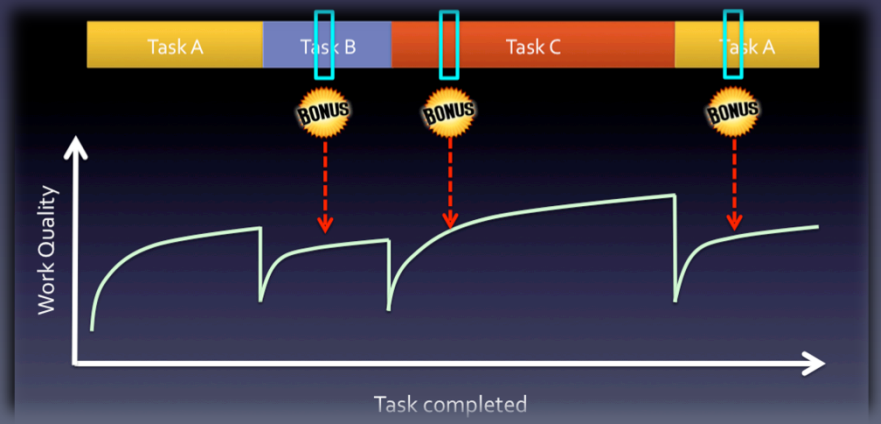


Effects on Intervened Tasks: Repetition Bonus



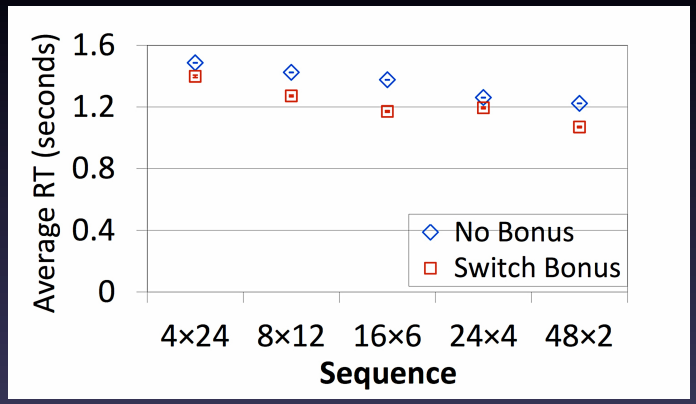


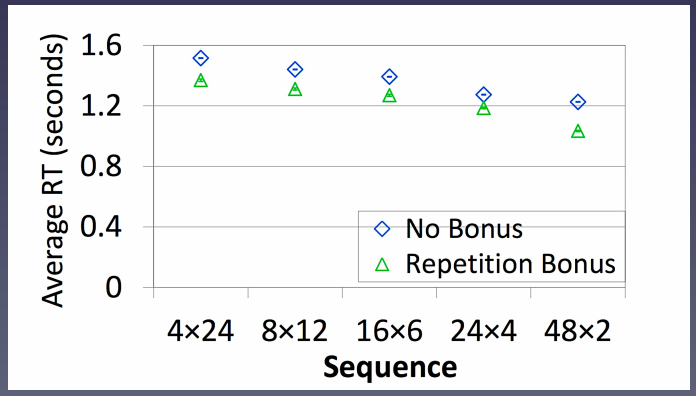
Workers decrease reaction time and improves accuracy faster in intervened tasks in Repetition Bonus treatment!

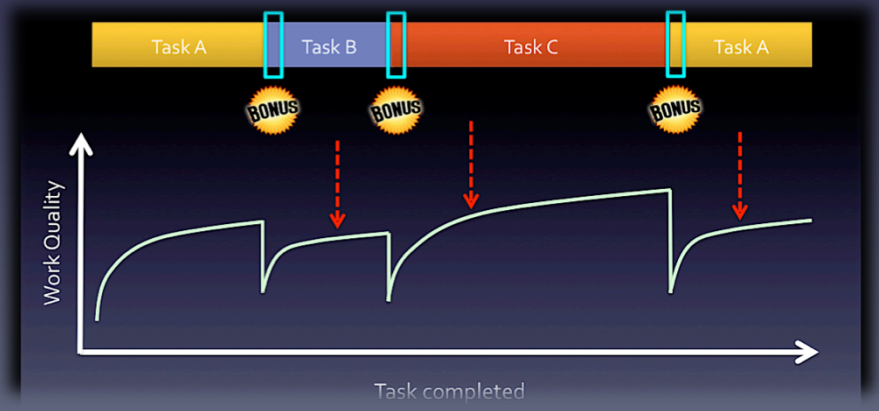


Effects on Non-Intervened Tasks

- Reaction time in non-intervened tasks is also significantly shortened!



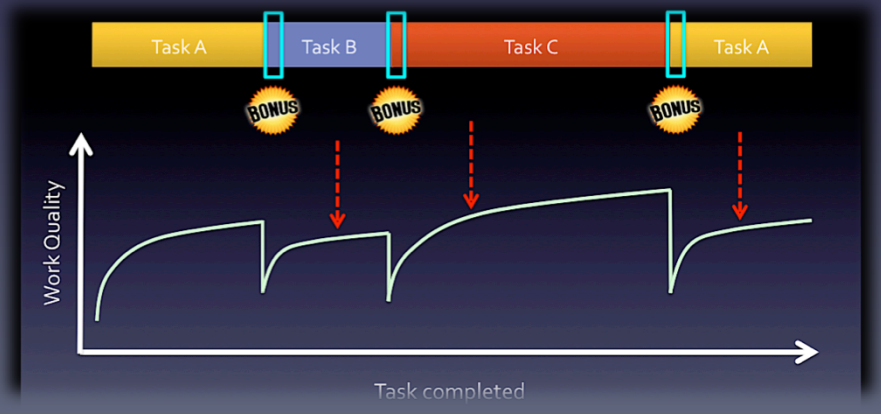




Effects on Non-Intervened Tasks

- Reaction time in non-intervened tasks is also significantly shortened!
- However, accuracy in non-intervened tasks is significantly decreased
  - Decreased by 0.74% (Switch Bonus) and 2.03% (Repetition Bonus)

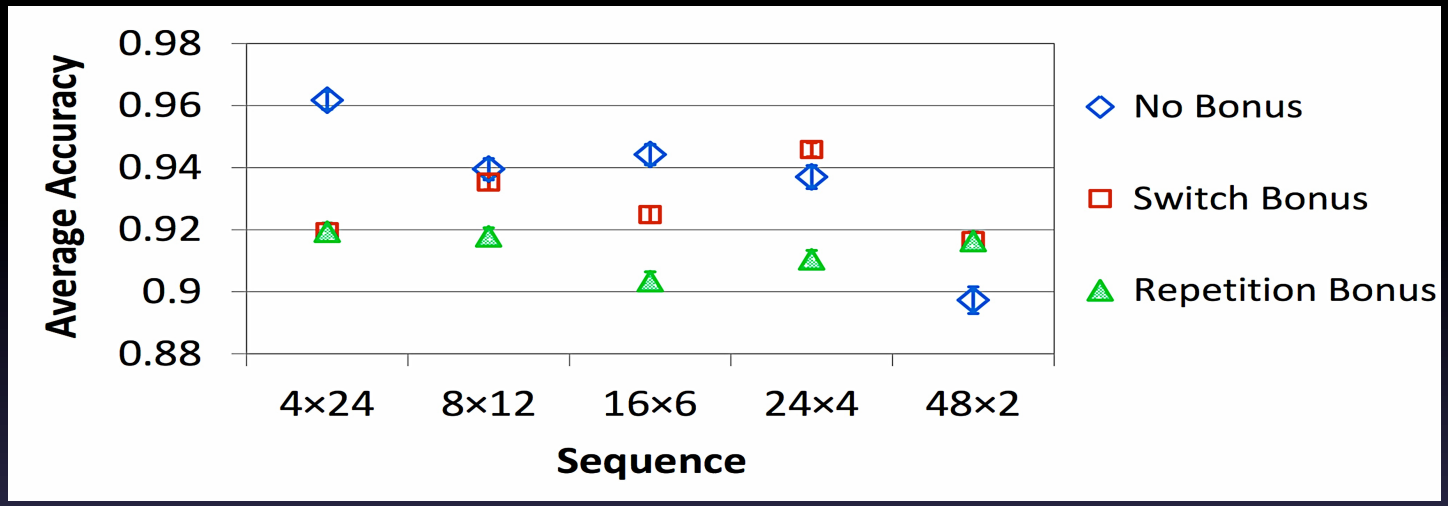
The competing nature of reaction time and accuracy dominates in non-intervened tasks!



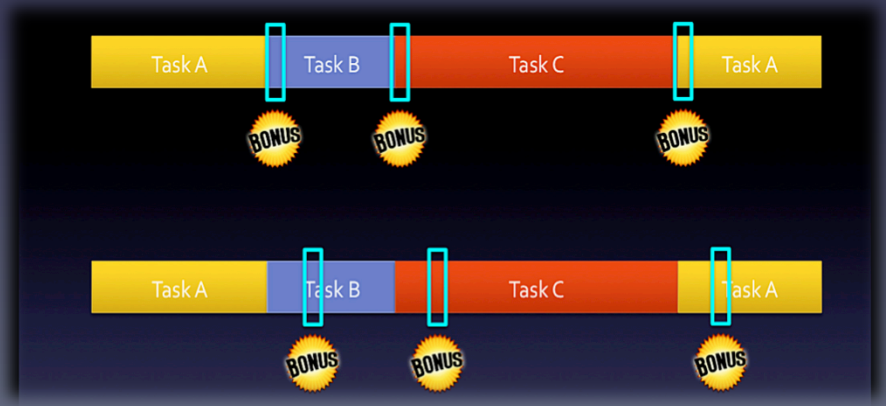
Implicit Goals and Extrinsic Incentives

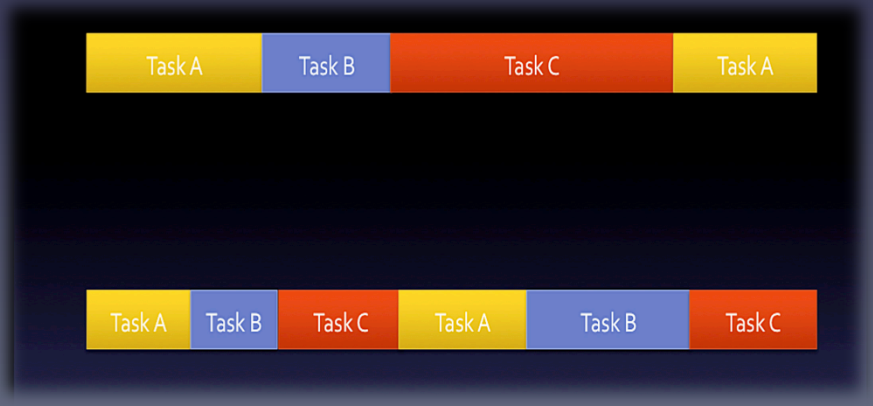
- Workers implicitly set performance goals for themselves with the presence of (performance-contingent) monetary interventions
- In non-intervened tasks, the competing nature between reaction time and accuracy dominates
- In intervened tasks, workers are further motivated by the monetary incentives to even overcome the RT-accuracy tradeoff

More Effective Interventions

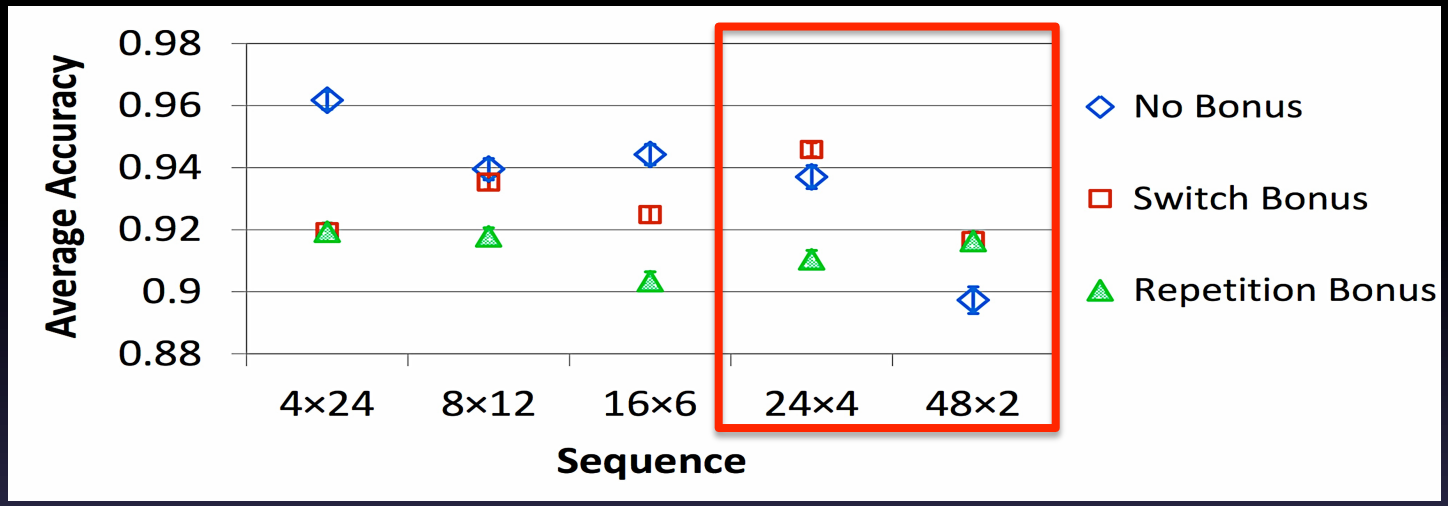


Placing monetary interventions at switch tasks is more effective!

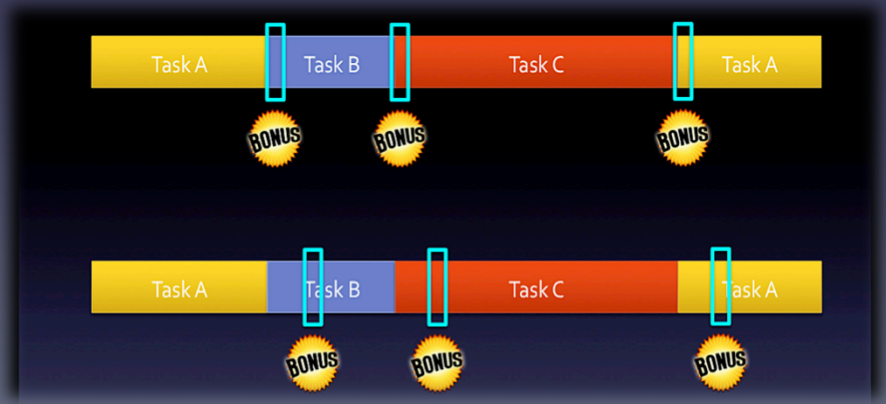


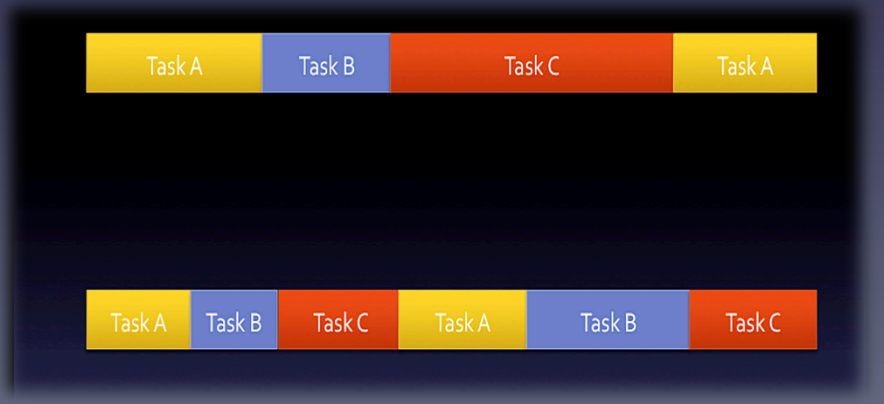


More Effective Interventions



Placing monetary interventions in sequences where tasks switch less often is more effective!





Summary

- Monetary interventions can be used to influence work quality in a task switching setting
- Yet…they are most effective when being placed at switch tasks of sequences with low task switching frequencies

Thank you!