When Fair Isn't Fair: Sophisticated Time Inconsistency in Social Preferences

James Andreoni, UCSD

Deniz Aydin, Stanford

Blake Barton, Stanford

B. Douglas Bernheim, Stanford

Jeffrey Naecker, Wesleyan

January 4, 2016

Introduction

- Robust finding: *people are (to varying degrees) motivated by fairness*

- However, people do not necessarily agree on what is fair

- An important dimension of disagreement: *equal opportunity* (*ex ante fairness*) versus *equal outcomes* (*ex post fairness*)

- If the ex ante perspective is compelling ex ante and the ex post perspective is compelling ex post, a single individual may experience that conflict

- Thus concern for fairness can give rise to *time inconsistency*

- This inconsistency would have important practical implications (e.g., undermined social objectives, Coate 1995)

Paper's main lessons (based on experiments):

1. People tend to be ex ante fair when making decisions ex ante and ex post fair when making decisions ex post

2. This tendency is present within decision problems as events evolve, and gives rise to time inconsistency

3. Many time-inconsistent subjects prefer flexibility over commitment, despite self-awareness

4. Evidence points to a theory of *myopic fairness*

Organization

1. Introduction
2. Some brief comments on theory
3. Experimental design
4. Findings
5. Conclusions

Background - Theory

- *A classic result:* preferences for fairness lead to natural violations of the independence axiom
  - The independence axiom is often viewed as incompatible with an *ex ante preference for equality of opportunity* (Harsanyi, 1955, Diamond, 1967, Fudenberg and Levine, 2012)
  - Illustration: does fairness require splitting lottery tickets equally?

- *Another classic result:* assuming a consequentialist outlook, EU is time consistent, non-EU isn't
  - Markowitz 1959, Raiffa 1968, Machina 1989
  - Not surprising: intuitively connected to *independence axiom*

- Does that mean preferences for equality of opportunity are necessarily time-inconsistent?
  - Depends on whether we insist on consequentialism

- Wonderful example from Machina (1989):
  - Mom must give indivisible treat to either Abby or Ben
  - In violation of EU theory, she strictly prefers a coin flip over either sure outcome
  - Mom flips the coin; Abby wins
  - Ben: "You prefer flipping a coin to a sure outcome, so you should now flip it again"
  - Mom: "You had your chance!"
  - Mom cares about ex ante fairness, as well as about ex post (outcome) fairness, but her preferences are *resolute*, so she isn't time-inconsistent

    Theory is great, but how do people actually behave?

Organization

1. Introduction
2. Some brief comments on theory
3. Experimental design
4. Findings
5. Conclusions

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families
  - Allocation of 10 tickets (numbered 11-20) fixed in advance, & varies from task to task ("computer's tickets")

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families
  – Allocation of 10 tickets (numbered 11-20) fixed in advance, & varies from task to task ("computer's tickets")
  – Subject allocates remaining tickets (numbered 1-10)

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families

  – Allocation of 10 tickets (numbered 11-20) fixed in advance, & varies from task to task ("computer's tickets")

  – Subject allocates remaining tickets (numbered 1-10)

- One ticket selected at random – family "holding" the ticket receives the $10

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families
  – Allocation of 10 tickets (numbered 11-20) fixed in advance, & varies from task to task ("computer's tickets")
  – Subject allocates remaining tickets (numbered 1-10)

- One ticket selected at random – family "holding" the ticket receives the $10

- 4 versions of the task, differentiated by timing of decision and information

Basic Split-the-Tickets Task

- Each task involves two impoverished Kenyan families, designated Household A and Household B

- Outcome: one of the families receives $10 through GiveDirectly

- 20 lottery tickets allocated between the two families
  - Allocation of 10 tickets (numbered 11-20) fixed in advance, & varies from task to task ("computer's tickets")
  - Subject allocates remaining tickets (numbered 1-10)

- One ticket selected at random – family "holding" the ticket receives the $10

- 4 versions of the task, differentiated by timing of decision and information
  - In all cases, subject knows the computer's allocation

- *Ex ante decision tasks*

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex post decision tasks*

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex post decision tasks*
  - Subject learns computer's allocation

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex post decision tasks*
  - Subject learns computer's allocation
  - Subject told winning ticket has been drawn, and whether it was one of computer's or one of hers. Not told the winning ticket number.

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex post decision tasks*
  - Subject learns computer's allocation
  - Subject told winning ticket has been drawn, and whether it was one of computer's or one of hers. Not told the winning ticket number.
  - If relevant, subject allocates her tickets.

- *Ex ante decision tasks*
  - Subject allocates tickets immediately after learning computer's allocation.
  - Ticket selected at random & winner determined

- *Ex post decision tasks*
  - Subject learns computer's allocation
  - Subject told winning ticket has been drawn, and whether it was one of computer's or one of hers. Not told the winning ticket number.
  - If relevant, subject allocates her tickets.
  - Ticket selected at random & winner determined.

- *Ex ante decision tasks with surprise ex post revision*

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task

- *Ex ante decision tasks with surprise ex post revision*
    - Appends an ex post decision task to an ex ante task
    - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task
  - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation
  - She is not told in advance that she will have this opportunity

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task
  - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation
  - She is not told in advance that she will have this opportunity

- *Ex ante decision tasks with commitment*

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task
  - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation
  - She is not told in advance that she will have this opportunity

- *Ex ante decision tasks with commitment*
  - Just like surprise revision tasks, except:

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task
  - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation
  - She is not told in advance that she will have this opportunity

- *Ex ante decision tasks with commitment*
  - Just like surprise revision tasks, except:
  - She is told she will be asked to confirm or revise after learning if the winning ticket is one of hers

- *Ex ante decision tasks with surprise ex post revision*
  - Appends an ex post decision task to an ex ante task
  - After making ex ante choice, if subject learns that one of her tickets has been chosen, she is asked again to confirm or revise her allocation
  - She is not told in advance that she will have this opportunity

- *Ex ante decision tasks with commitment*
  - Just like surprise revision tasks, except:
  - She is told she will be asked to confirm or revise after learning if the winning ticket is one of hers
  - After making ex ante choice, she must choose between:

    "I definitely want the opportunity to revise"

    "I definitely do not want the opportunity to revise"

    "I do not care about having an opportunity to revise" (50-50)

- *Why would someone want to commit?*
  - Let's say computer's allocation is 10 – 0
  - To be fair ex ante, the individual chooses 0 – 10
  - However, he knows he will switch to 5 – 5 if one of his tickets is chosen
  - That means he knows household A actual has a 75% chance of winning, which is unfair ex ante

Treatments

- Each subject participates in 8 allocation tasks involving different households (one implemented)

Treatments

- Each subject participates in 8 allocation tasks involving different households (one implemented)

- Computer's allocation varies from round to round (so that ex ante fairness has a distinction "fingerprint")

Round	1	2	3	4	5	6	7	8
Household A	7	2	10	1	8	3	9	0
Household B	3	8	0	9	2	7	1	10

Treatments

- Each subject participates in 8 allocation tasks involving different households (one implemented)

- Computer's allocation varies from round to round (so that ex ante fairness has a distinction "fingerprint")

Round	1	2	3	4	5	6	7	8
Household A	7	2	10	1	8	3	9	0
Household B	3	8	0	9	2	7	1	10

- Five treatments, which differ according to the pattern of task types

Treatments

Treatment	Rounds 1&2	Rounds 3&4	Rounds 5-8	Number of subjects
4A_4A^R	Ex-ante	Ex-ante	Ex-ante w/surprise revision	71
4P_4A^R	Ex-post	Ex-post	Ex-ante w/surprise revision	72
2A2P_4A^R	Ex-ante	Ex-post	Ex-ante w/surprise revision	48
2P2A_4A^R	Ex-post	Ex-ante	Ex-ante w/surprise revision	48
4A^R_4A^C	Ex-ante w/surprise revision	Ex-ante w/surprise revision	Ex-ante w/commitment and anticipated revision	72

Basic Split-the-Prize Task

- Similar, except that the computer and the subject both pick allocations of the $10, and a coin flip determines which allocation is implemented

Basic Split-the-Prize Task

- Similar, except that the computer and the subject both pick allocations of the $10, and a coin flip determines which allocation is implemented
- Two versions, ex ante and ex post

Basic Split-the-Prize Task

- Similar, except that the computer and the subject both pick allocations of the $10, and a coin flip determines which allocation is implemented

- Two versions, ex ante and ex post

- Reason for examining both types of tasks: helps to distinguish between theories

Basic Split-the-Prize Task

- Similar, except that the computer and the subject both pick allocations of the $10, and a coin flip determines which allocation is implemented

- Two versions, ex ante and ex post

- Reason for examining both types of tasks: helps to distinguish between theories

- Results are qualitatively similar – won't discuss them today

Organization

1. Introduction
2. Theoretical and empirical background
3. Implications of specific theories
4. Experimental design
5. Findings
6. Conclusions

Question #1:

For a newly encountered collection of allocation problems, does the framing of initial decisions determine the initial perspective on fairness?

That is, when initial decisions are made ex ante, do they tend to be ex ante fair, and when they are made ex post, do they tend to be ex post fair?

Panel A: Distributions of initial choices for those performing initial tasks with ex ante framing

Panel B: Distributions of initial choices for those performing initial tasks with ex post framing

Ex ante (first four rounds of 4A_4A^R)

Ex post (first four rounds of 4P_4A^R)

Offset

No Offset

Frequency

Choice Category

Choice category

Excessive offsetting

Full offsetting

Partial offsetting

No offsetting

Reinforcing
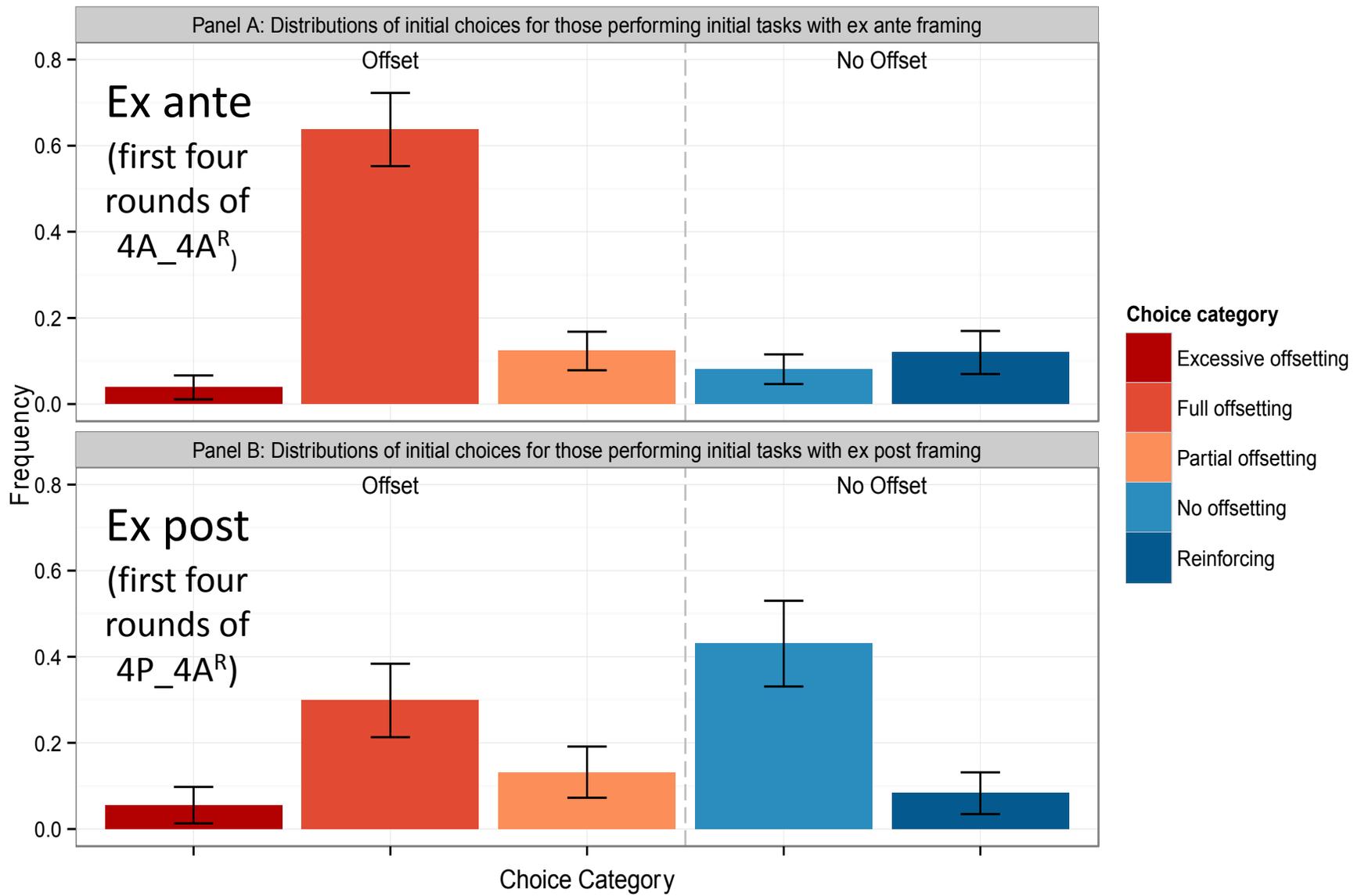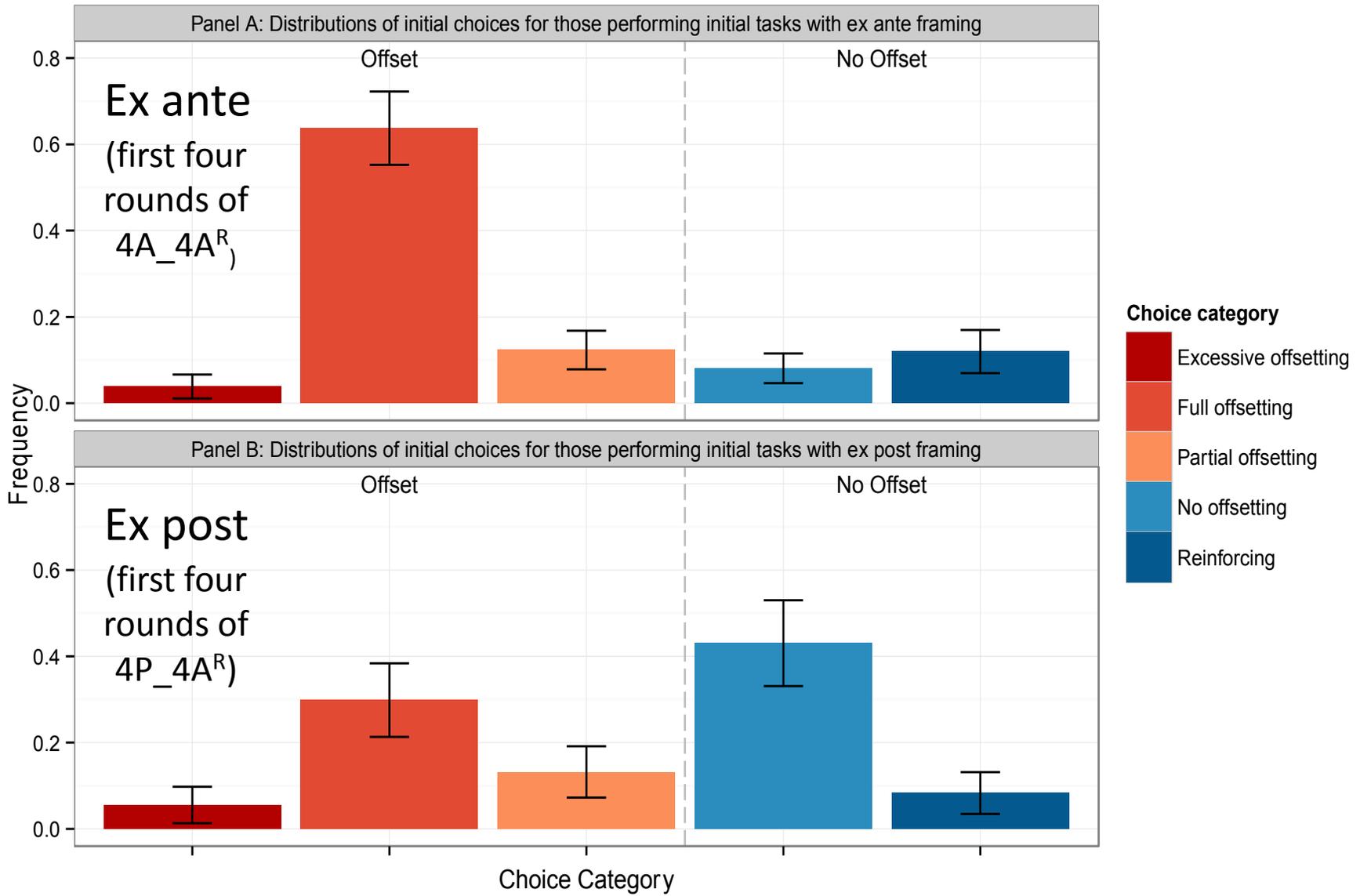
Note: preferences are strict

For a newly encountered collection of allocation problems, does the framing of initial decisions determine the initial perspective on fairness?

That is, when initial decisions are made ex ante, do they tend to be ex ante fair, and when they are made ex post, do they tend to be ex post fair?

Yes!

Question #2:

Does the framing of initial decisions establish a persistent perspective on fairness?

That is, does the subject become "resolute" *across* decision problems?

Rounds 1-2   Rounds 3-4   Rounds 5-8
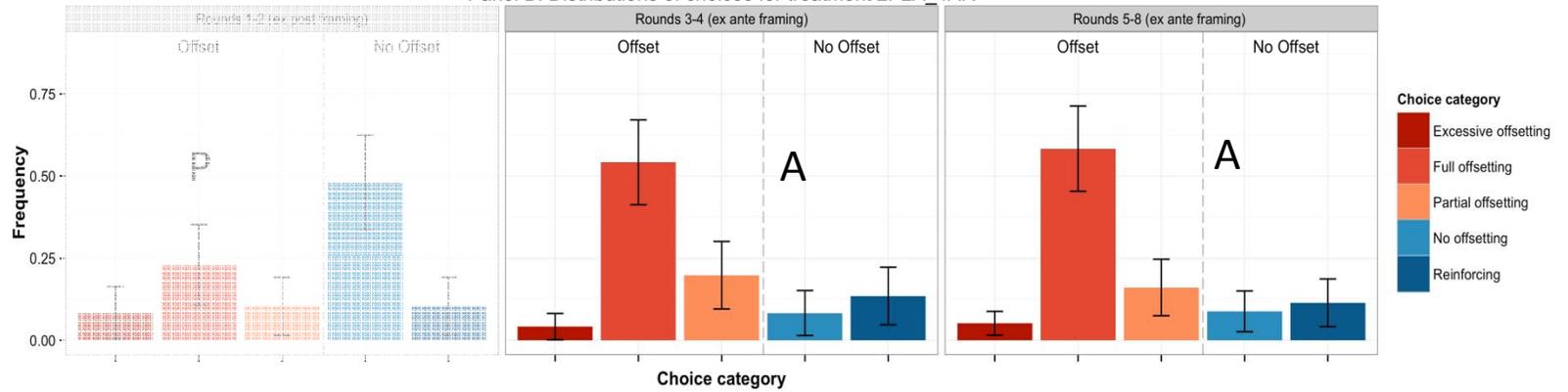
2A2P_4A^R

Panel A: Distributions of choices for treatment 2A2P_4AR

2P2A_4A^R

Panel B: Distributions of choices for treatment 2P2A_4AR

Rounds 1-2   Rounds 3-4   Rounds 5-8

2A2P_4A^R

Panel A: Distributions of choices for treatment 2A2P_4AR

2P2A_4A^R

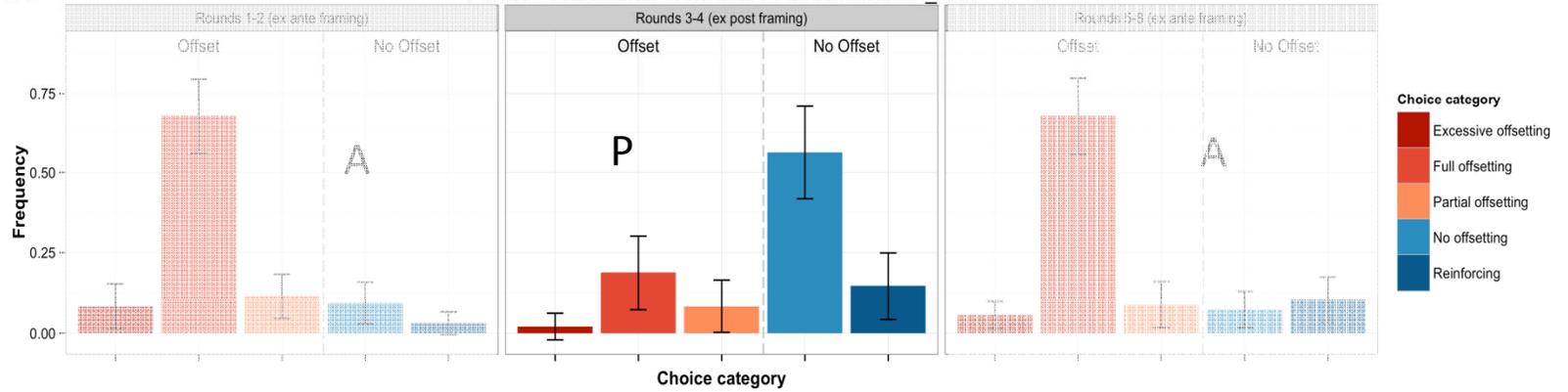Panel B: Distributions of choices for treatment 2P2A_4AR

Rounds 1-2   Rounds 3-4   Rounds 5-8
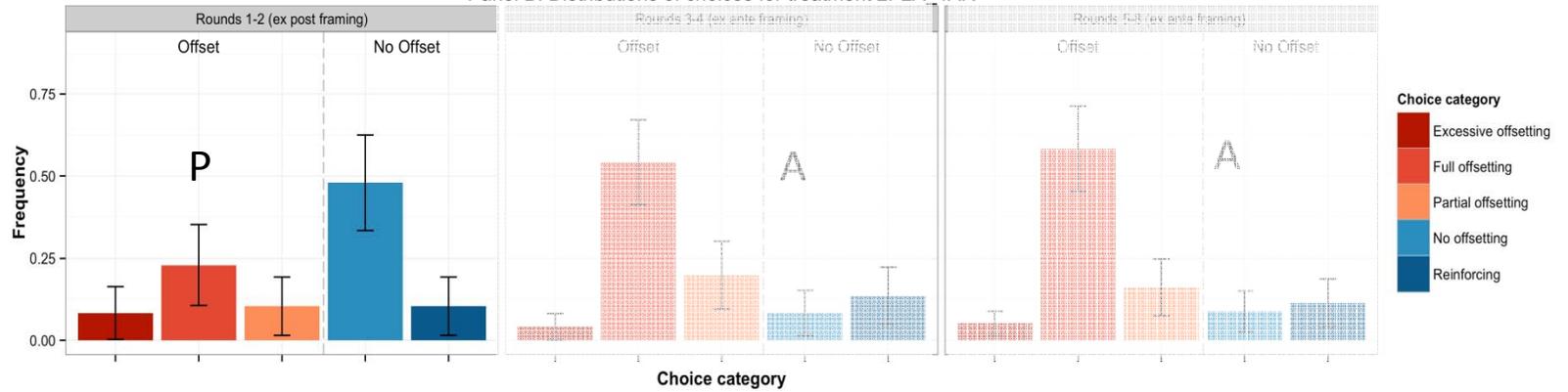
A

2A2P_4A^R

Panel A: Distributions of choices for treatment 2A2P_4AR

Rounds 1-2 (ex ante framing)   Rounds 3-4 (ex post framing)   Rounds 5-8 (ex ante framing)

Offset   No Offset   Offset   No Offset   Offset   No Offset

P   A

Frequency

Choice category

Choice category
- Excessive offsetting
- Full offsetting
- Partial offsetting
- No offsetting
- Reinforcing

B

2P2A_4A^R

Panel B: Distributions of choices for treatment 2P2A_4AR

Rounds 1-2 (ex post framing)   Rounds 3-4 (ex ante framing)   Rounds 5-8 (ex ante framing)

Offset   No Offset   Offset   No Offset   Offset   No Offset

P   A   A

Frequency

Choice category

Choice category
- Excessive offsetting
- Full offsetting
- Partial offsetting
- No offsetting
- Reinforcing

Does the framing of initial decisions establish a persistent perspective on fairness?

That is, does the subject become "resolute" *across* decision problems?
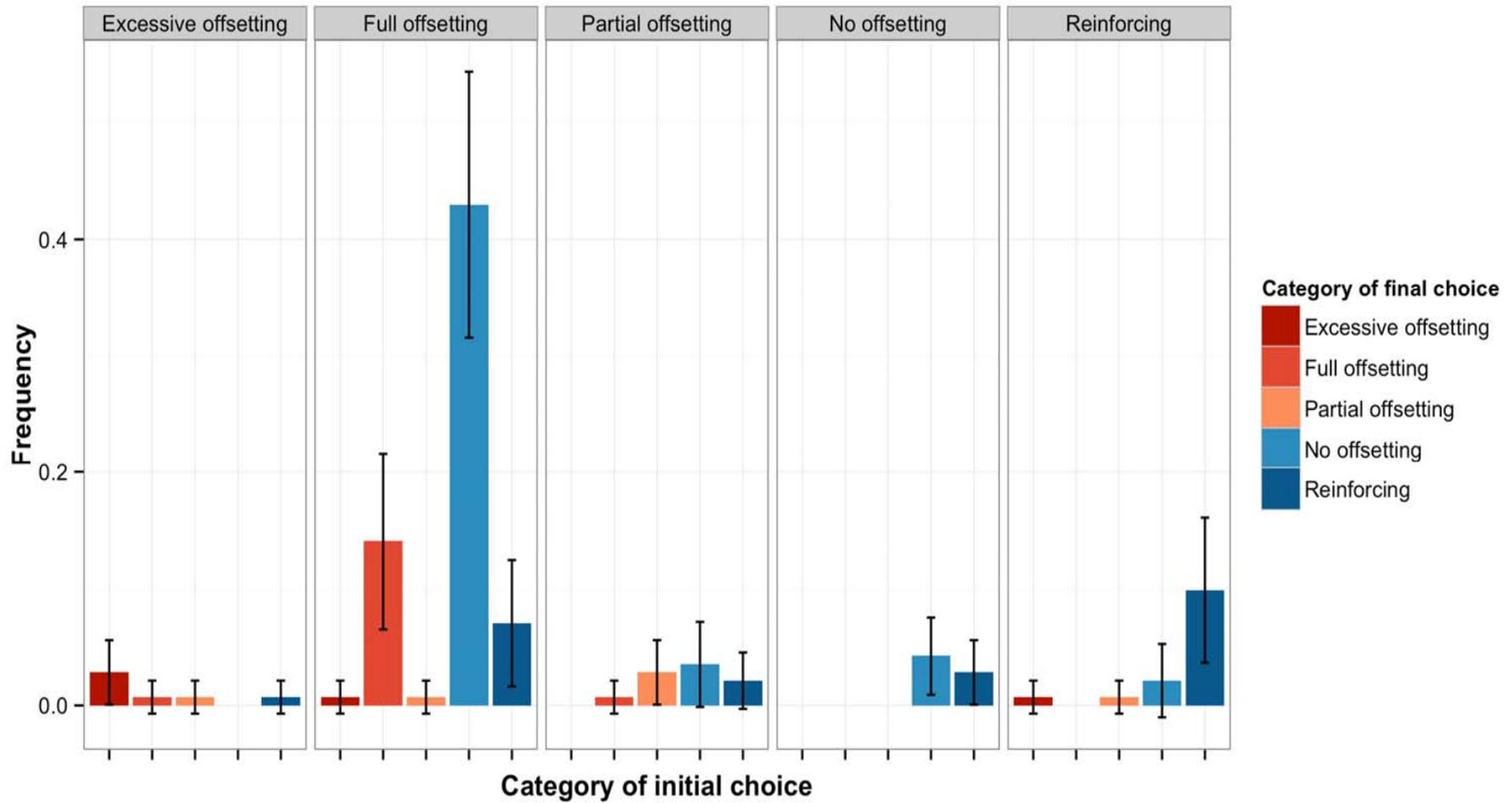
NO!

Question #3:

Does concern for fairness generate time-inconsistency?

That is, are subjects disinclined to be resolute within decision problems?

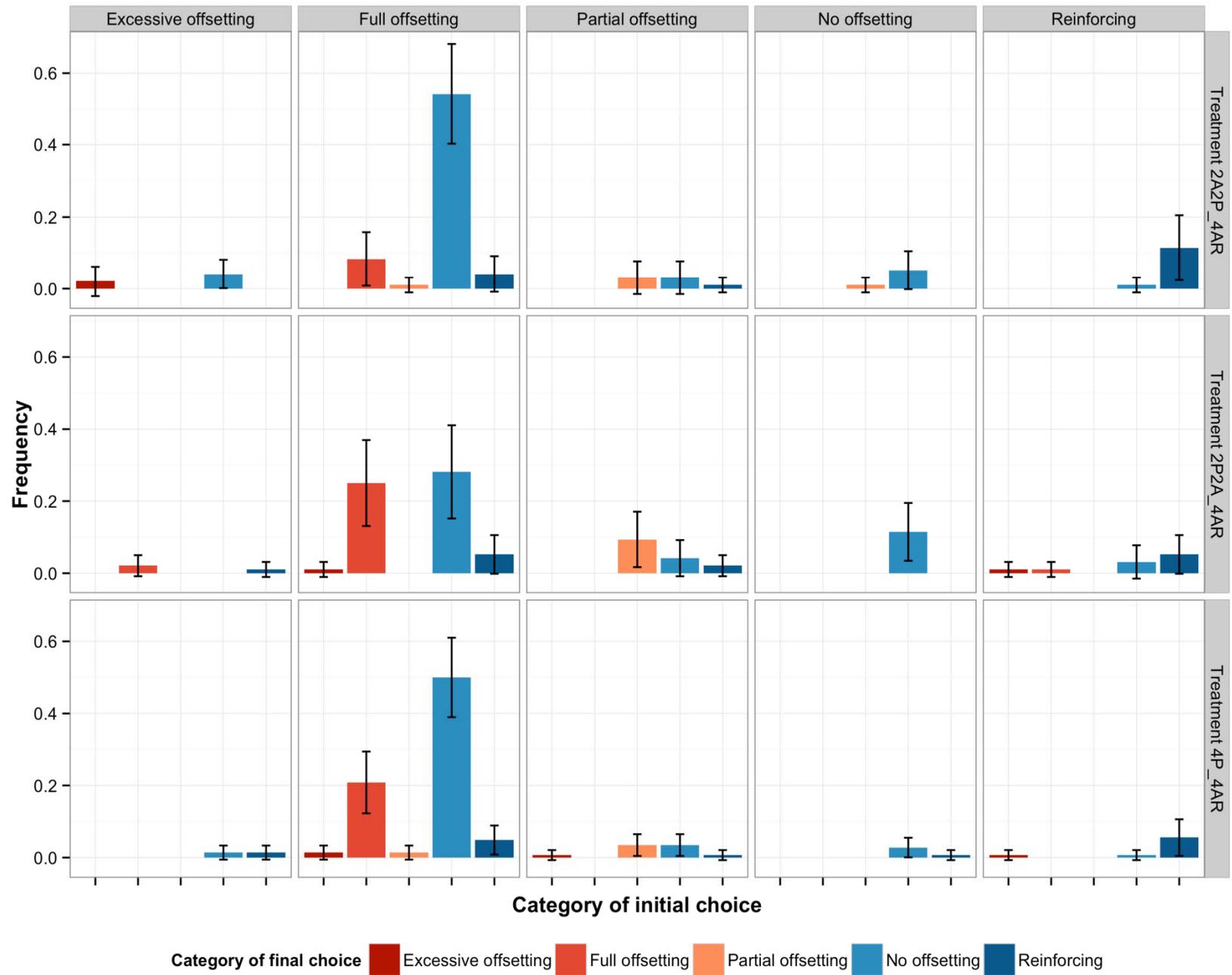Basic facts concerning revisions in the last 4 rounds of 4A_4A^R:

- 68.3% of choices were revised

- 71% of revisions were to 50-50 division of subject's tickets (ex post fair)

Joint distribution of initial and revised choices

Does concern for fairness generate time-inconsistency?

That is, are subjects disinclined to be resolute within decision problems?

YES!

(but note: roughly one in seven choices are resolute)

Question #4:

Does self-awareness ameliorate time-inconsistency?

That is, do people become resolute once they notice their inconsistency?

Does self-awareness ameliorate time-inconsistency?

That is, do people become resolute once they notice their inconsistency?

NO!

Question #5:

Does self-awareness of time-inconsistency regarding fairness create a preference for commitment?

Facts about commitments and revisions in the last 4 rounds of $4A^R\_4A^C$:

Facts about commitments and revisions in the last 4 rounds of $4A^R\_4A^C$:

- Breakdown of commitment choices:

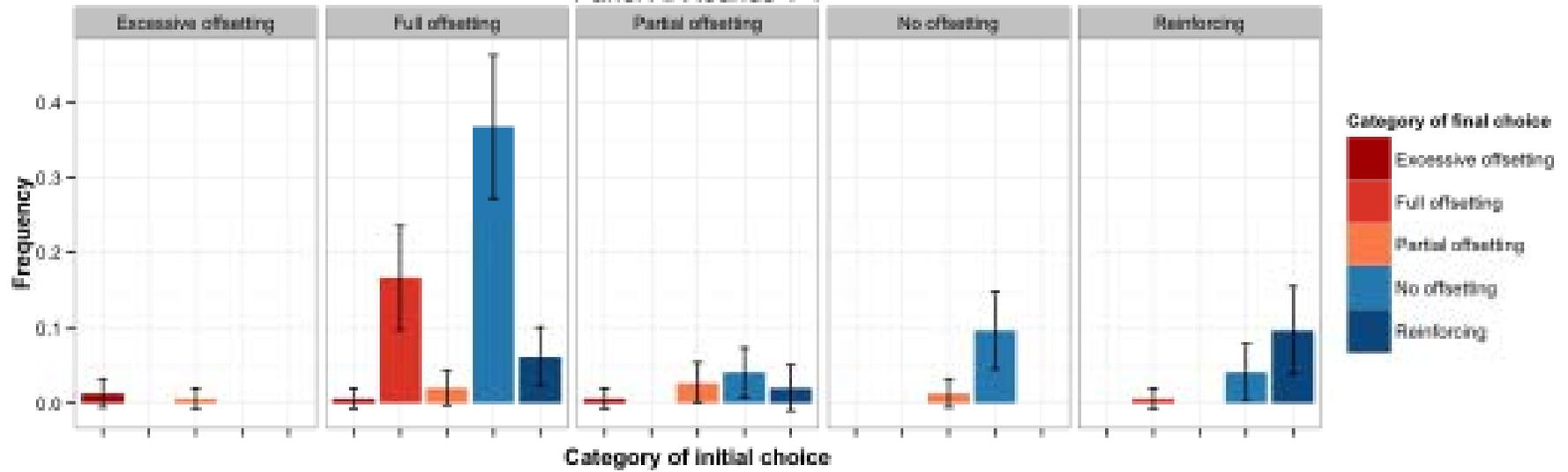 Preference for commitment: 40.6%

  Preference for flexibility: 30.2%
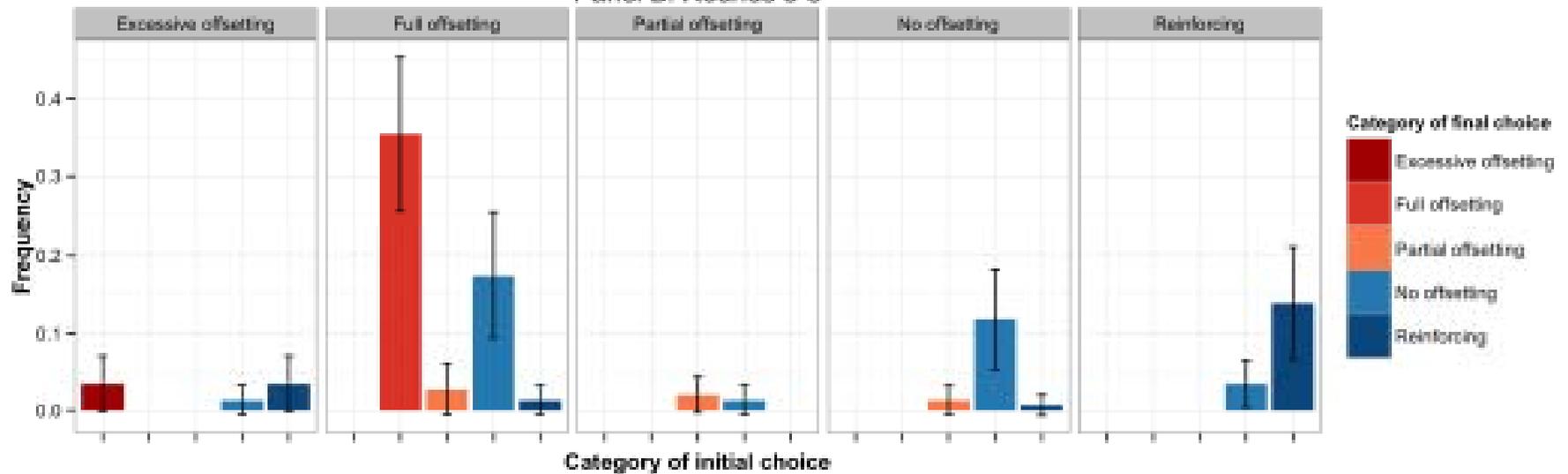
  Indifference: 29.2%

- Impact

  Only 36.8% of decisions were revised, compared with 65.3% in the first four rounds, and 68.3% in the last four rounds of $4A\_4A^R$

Panel A: Rounds 1-4

- One possibility: this pattern reflects a *demand for precommitment*

- One possibility: this pattern reflects a *demand for precommitment*

- Another possibility: this pattern reflects an *experimenter demand effect*
  - When faced with two consequential alternatives and an option to express indifference, subjects may feel they are expected to choose one of the former.
  - Because most ex ante choices are ex ante fair and most revisions are to ex post fairness, even random adoption of commitments would lead to higher frequency of ex ante fair allocations and lower frequency of ex post fair allocations among final choices

- One possibility: this pattern reflects a *demand for precommitment*

- Another possibility: this pattern reflects an *experimenter demand effect*
  - When faced with two consequential alternatives and an option to express indifference, subjects may feel they are expected to choose one of the former.
  - Because most ex ante choices are ex ante fair and most revisions are to ex post fairness, even random adoption of commitments would lead to higher frequency of ex ante fair allocations and lower frequency of ex post fair allocations among final choices

- Further analysis points to the second possibility, with an offsetting preference for flexibility among those with the inclination to switch

Issue #1: Which groups exhibit the greatest demand for commitment?

Issue #1: Which groups exhibit the greatest demand for commitment?

- If the primary purpose of commitments is to impede revisions, the demand for commitment should be higher among subjects who are more inclined to revise allocations when commitments are not allowed (during the first four rounds)

Issue #1: Which groups exhibit the greatest demand for commitment?

- If the primary purpose of commitments is to impede revisions, the demand for commitment should be higher among subjects who are more inclined to revise allocations when commitments are not allowed (during the first four rounds)

- In fact:
  - Among consistent non-switchers: opt for commitment 53% of the time, flexibility 22% of the time
  - Among consistent switchers: opt for commitment 28% of the time, flexibility 46% of the time

Issue #1: Which groups exhibit the greatest demand for commitment?

- If the primary purpose of commitments is to impede revisions, the demand for commitment should be higher among subjects who are more inclined to revise allocations when commitments are not allowed (during the first four rounds)
- In fact:
  – Among consistent non-switchers: opt for commitment 53% of the time, flexibility 22% of the time
  – Among consistent switchers: opt for commitment 28% of the time, flexibility 46% of the time

- Likewise, if the primary purpose of commitments is to impede revisions, the demand for commitment should be higher when subjects' initial choices entail a degree of ex ante fairness

Issue #1: Which groups exhibit the greatest demand for commitment?

- If the primary purpose of commitments is to impede revisions, the demand for commitment should be higher among subjects who are more inclined to revise allocations when commitments are not allowed (during the first four rounds)
- In fact:
  - Among consistent non-switchers: opt for commitment 53% of the time, flexibility 22% of the time
  - Among consistent switchers: opt for commitment 28% of the time, flexibility 46% of the time

- Likewise, if the primary purpose of commitments is to impede revisions, the demand for commitment should be higher when subjects' initial choices entail a degree of ex ante fairness
- In fact, the opposite is true

Issue #2: How do subjects exercise flexibility when they intentionally retain it?

Issue #2: How do subjects exercise flexibility when they intentionally retain it?

- If the primary purpose of commitments is to impede revisions, those who choose flexibility must be disproportionately time consistent, in which case their revision frequencies should be low

Issue #2: How do subjects exercise flexibility when they intentionally retain it?

- If the primary purpose of commitments is to impede revisions, those who choose flexibility must be disproportionately time consistent, in which case their revision frequencies should be low

- In fact:
  - The revision rate is exceptionally high for those who opt for flexibility (85.4%, versus 65.3% overall in the first four rounds)
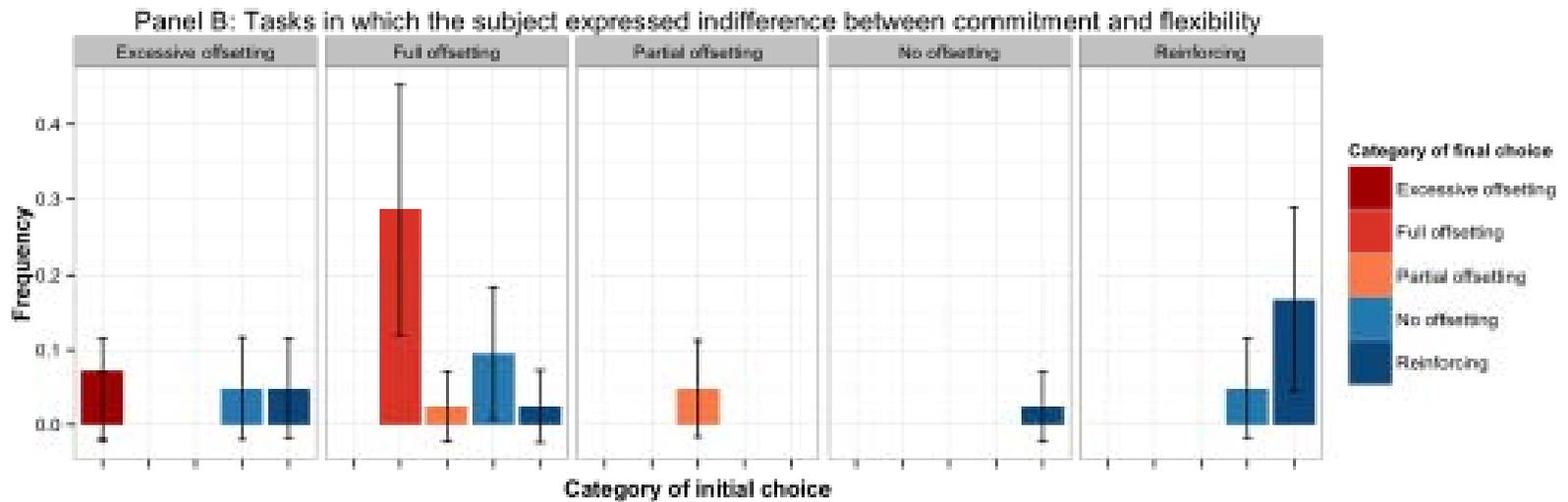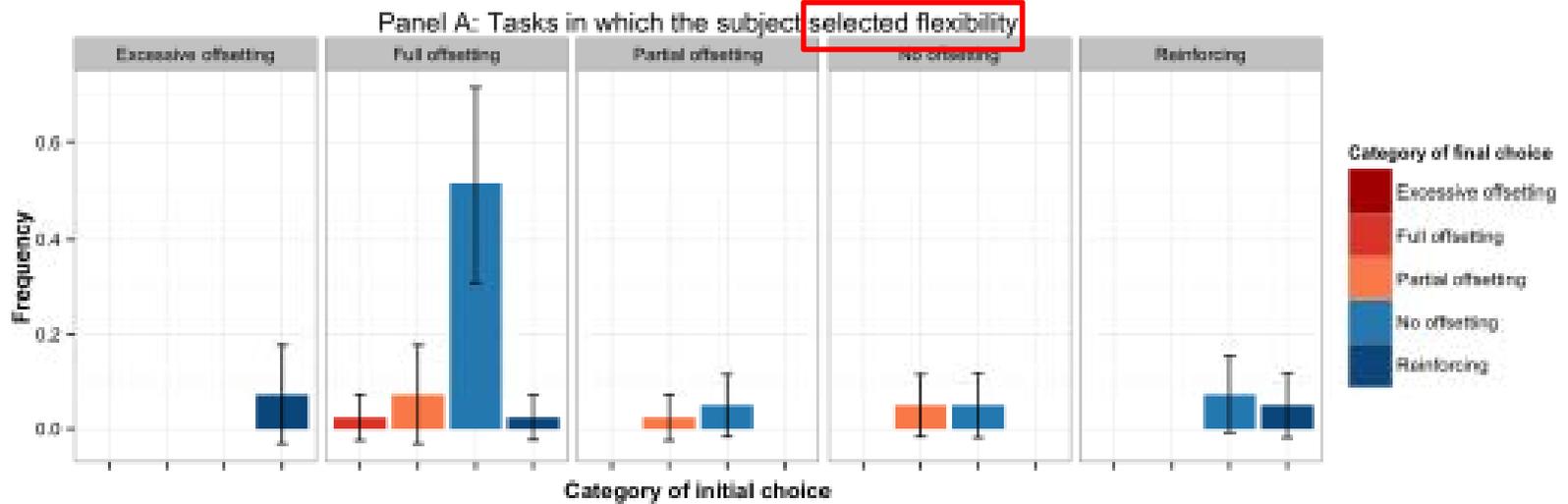
Issue #2: How do subjects exercise flexibility when they intentionally retain it?

- If the primary purpose of commitments is to impede revisions, those who choose flexibility must be disproportionately time consistent, in which case their revision frequencies should be low

- In fact:
  - The revision rate is exceptionally high for those who opt for flexibility (85.4%, versus 65.3% overall in the first four rounds)
  - Those who opt for flexibility are disproportionately inclined to migrate from ex ante fair to ex post fair allocations
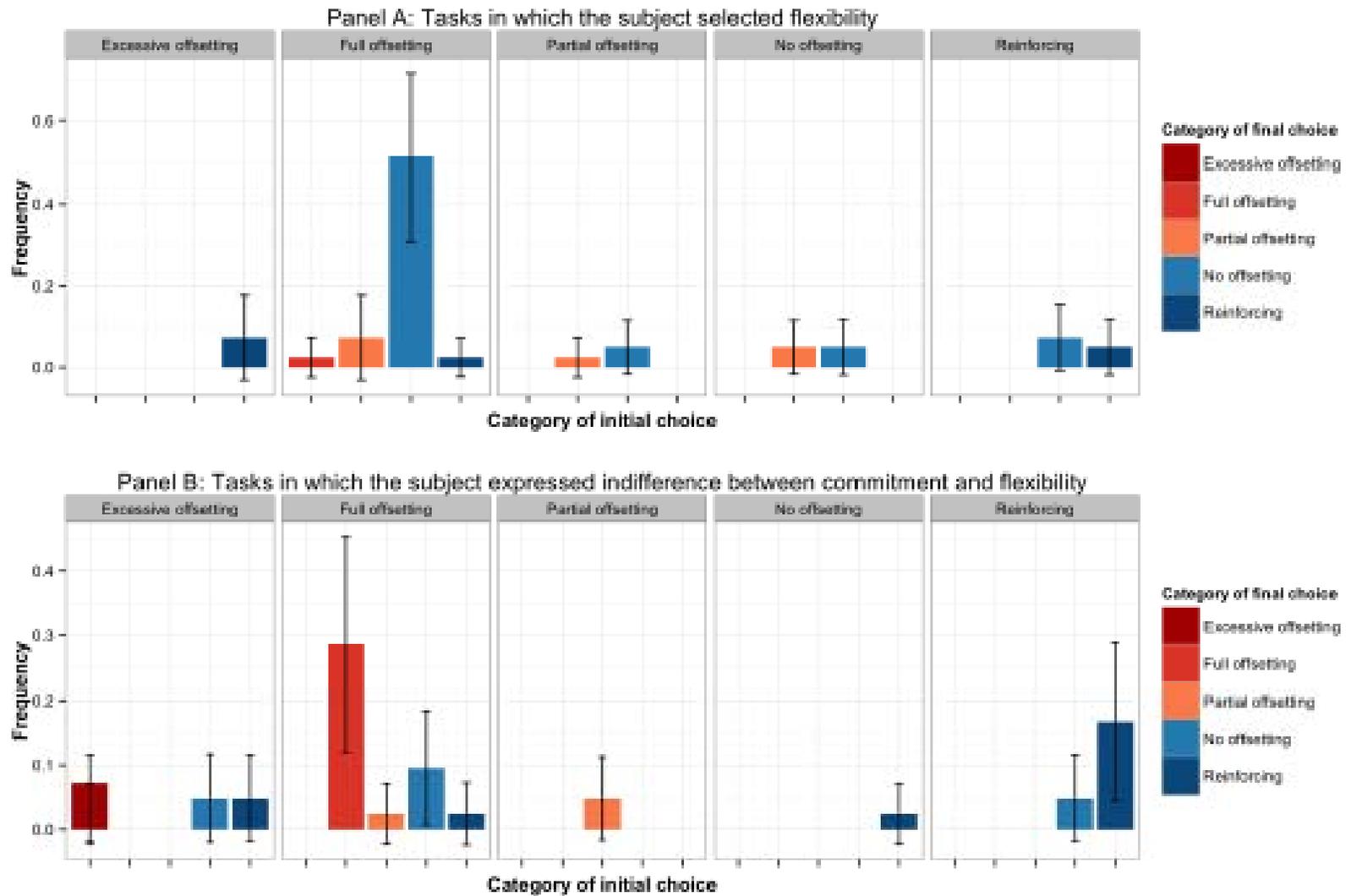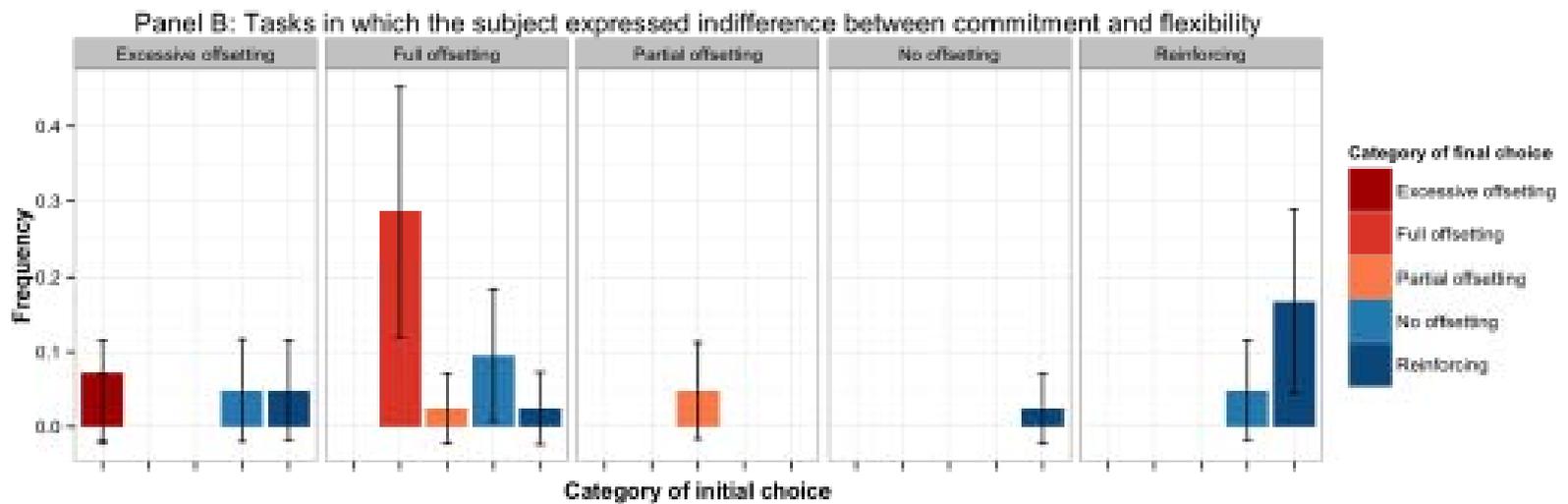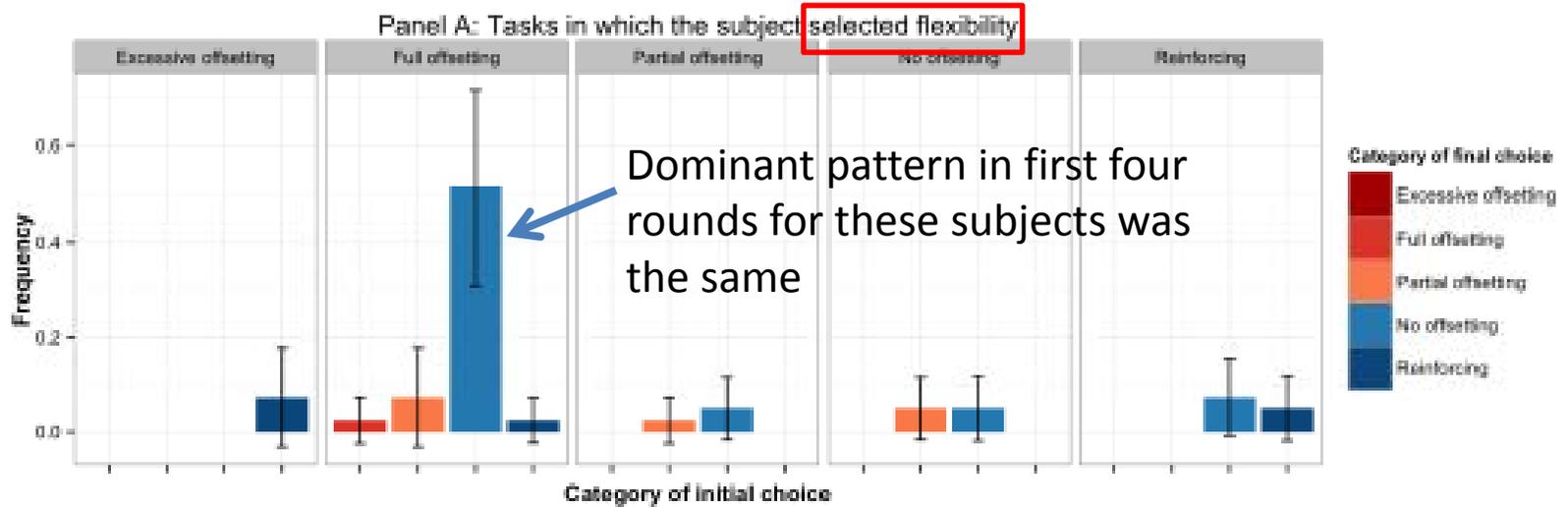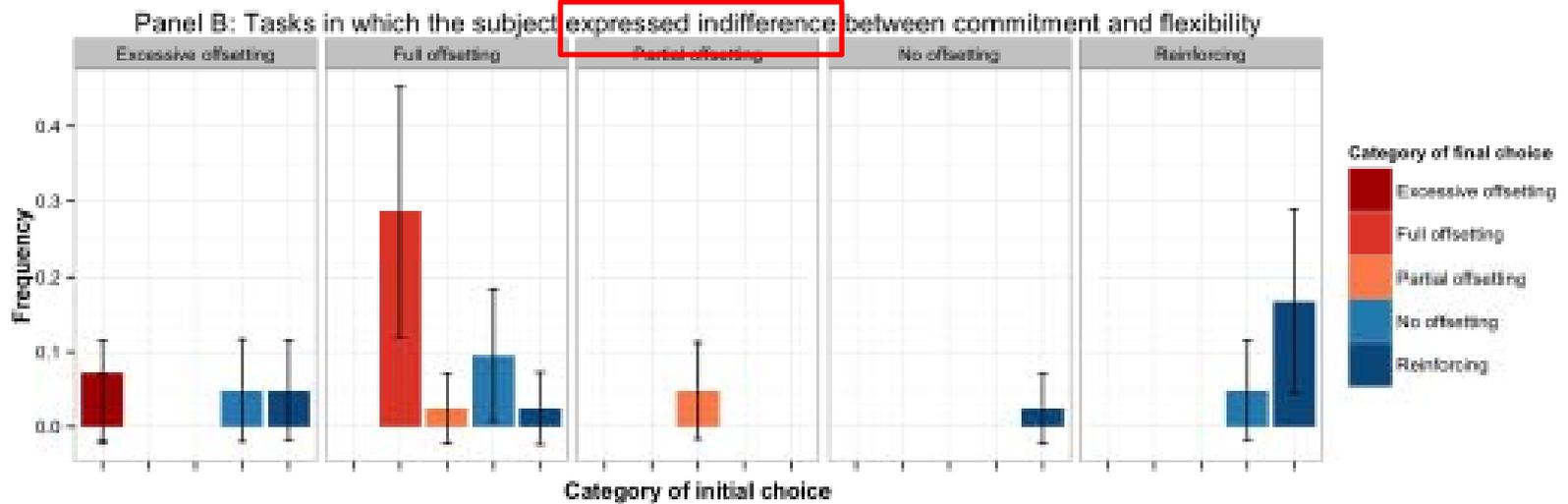
Joint distributions of original and revised choices *in uncommitted allocation tasks*

Joint distributions of original and revised choices *in uncommitted allocation tasks*

Panel A: Tasks in which the subject selected flexibility

Panel B: Tasks in which the subject expressed indifference between commitment and flexibility

Joint distributions of original and revised choices *in uncommitted allocation tasks*

Panel A: Tasks in which the subject selected flexibility

Dominant pattern in first four rounds for these subjects was the same

Panel B: Tasks in which the subject expressed indifference between commitment and flexibility

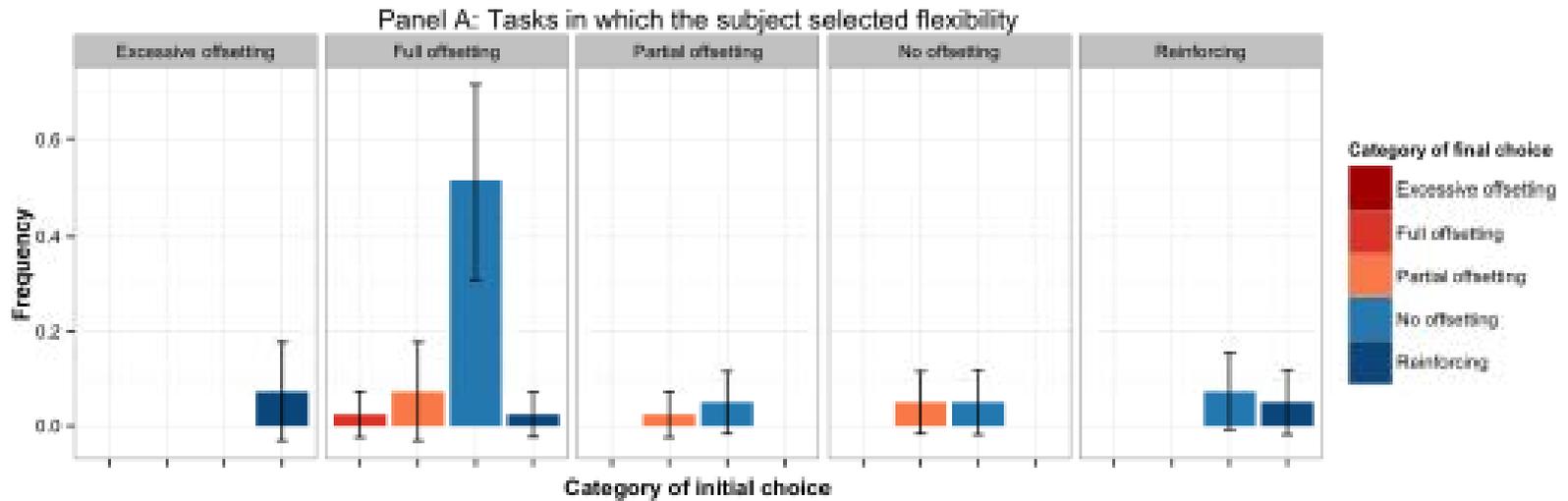# Joint distributions of original and revised choices *in uncommitted allocation tasks*

Panel A: Tasks in which the subject selected flexibility

Panel B: Tasks in which the subject expressed indifference between commitment and flexibility

Does self-awareness of time-inconsistency regarding fairness create a preference for commitment?

Maybe Yes for some, but many prefer the flexibility to switch

What theory best accounts for these patterns?

What theory best accounts for these patterns?

- *Myopic fairness:* when making a decision, people ask themselves if it would be fair if it were implemented. Fairness utility depends on the hypothesized result, not the rationally anticipated result.

What theory best accounts for these patterns?

- *Myopic fairness:* when making a decision, people ask themselves if it would be fair if it were implemented. Fairness utility depends on the hypothesized result, not the rationally anticipated result.
- Why?
    - This is an ethical problem
    - Ethics of each choice should be evaluated on the assumption that nothing happens subsequently to overturn it
    - Can't justify an unethical choice by saying it will set in motion a chain of events that will produce an ethical one
    - Must "own" every decision

What theory best accounts for these patterns?

- *Myopic fairness:* when making a decision, people ask themselves if it would be fair if it were implemented. Fairness utility depends on the hypothesized result, not the rationally anticipated result.
- Why?
  - This is an ethical problem
  - Ethics of each choice should be evaluated on the assumption that nothing happens subsequently to overturn it
  - Can't justify an unethical choice by saying it will set in motion a chain of events that will produce an ethical one
  - Must "own" every decision
- A myopically fair DM who values equality of opportunity will switch from the ex ante fair to the ex post fair allocation, and will also prefer flexibility to commitment

Organization

1. Introduction
2. Theoretical and empirical background
3. Implications of specific theories
4. Experimental design
5. Findings
6. Conclusions

So what have we learned?

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

2. The framing effects display almost no persistence across decision problems when the framing changes. People are not just adopting perspectives and sticking with them.

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

2. The framing effects display almost no persistence across decision problems when the framing changes. People are not just adopting perspectives and sticking with them.

3. Within decision problems, people are not resolute about their preference for fairness. As a result, they are time-inconsistent.

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

2. The framing effects display almost no persistence across decision problems when the framing changes. People are not just adopting perspectives and sticking with them.

3. Within decision problems, people are not resolute about their preference for fairness. As a result, they are time-inconsistent.

4. Self-awareness does not ameliorate this time-inconsistency.

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

2. The framing effects display almost no persistence across decision problems when the framing changes. People are not just adopting perspectives and sticking with them.

3. Within decision problems, people are not resolute about their preference for fairness. As a result, they are time-inconsistent.

4. Self-awareness does not ameliorate this time-inconsistency.

5. Nor does self-awareness create a general preference for commitment. For some who choose ex ante fair allocations in ex ante tasks, there appears to be a preference for flexibility.

So what have we learned?

1. Fairness judgments are very sensitive to ex post versus ex ante framing

2. The framing effects display almost no persistence across decision problems when the framing changes. People are not just adopting perspectives and sticking with them.

3. Within decision problems, people are not resolute about their preference for fairness. As a result, they are time-inconsistent.

4. Self-awareness does not ameliorate this time-inconsistency.

5. Nor does self-awareness create a general preference for commitment. For some who choose ex ante fair allocations in ex ante tasks, there appears to be a preference for flexibility.

_____

Suggests many people are myopically fair and consequentialist, some with probability weighting, some with non-separability across states. A small but significant number also resolutely prefers ex ante fairness.