

Redundancy across connectives

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Asymmetries in Presupposition Projection and the Nature of Meaning



Redundancy across Connectives*

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Abstract. We present three experiments investigating redundancy across connectives. Specifically, we examine: (i) *Hurford disjunctions*—disjunctions where one disjunct entails the other (Hurford 1974); (ii) *Hurford conditionals*—conditionals corresponding to Hurford disjunctions (Mandelkern & Romoli 2018); and (iii) the corresponding conjunctions in which one conjunct entails the other. Our study addresses three questions about redundancy. First, does order matter? For example, are $p^+ \vee p$ and $p \vee p^+$ judged as equally infelicitous? Second, does polarity matter? For example, are $p^+ \vee p$ and $\neg p \vee \neg p^+$ judged equally unacceptable? Third, does the choice of connective affect the strength of oddness judgments arising from redundancy? Finally, we consider the broader implications of our findings and how they might be explained within existing theoretical frameworks.

Keywords: Hurford disjunction, Hurford conditional, local contexts, triviality, simplification, redundancy, super-redundancy, communicative principles

The focus of today

- A certain type of **oddness** connected to **redundant** information.

The focus of today

(1) #John lives in Paris and he lives in France.

The focus of today

- (1) #John lives in Paris **and** he lives in France.
- (2) #Either John lives in France **or** he lives in Paris.

The focus of today

- (1) #John lives in Paris **and** he lives in France.
- (2) #Either John lives in France **or** he lives in Paris.
- (3) #**If** John doesn't live in Paris, he lives in France

(4) #Either John lives in Paris or he lives in France.

¹Hurford 1978, Marty and Romoli 2022 among many others

(5) #If John doesn't live in Paris, he lives in France.

²Mandelkern and Romoli 2018

Hurford conjunction?

(6) #John lives in Paris and he lives in France.

Two main approaches

- Two approaches

Two main approaches

- Two approaches
- Three predictions

Two main approaches

- Two approaches
- Three predictions
 - Order effects

Two main approaches

- Two approaches
- Three predictions
 - Order effects
 - The role of negation

Two main approaches

- Two approaches
- Three predictions
 - Order effects
 - The role of negation
 - The role of connective type

- Three experiments

- Three experiments
- Challenging all three predictions

- Background

- Background
 - The two approaches

- Background
 - The two approaches
 - The common predictions

- Background
 - The two approaches
 - The common predictions
- Two of the three experiments

- Background
 - The two approaches
 - The common predictions
- Two of the three experiments
- Results and discussion

- Background
 - The two approaches
 - The common predictions
- Two of the three experiments
- Results and discussion
- Extension and directions

Background

- A sentence must convey information that is not already part of the common ground

³Stalnaker 1978

- A sentence must convey information that is not already part of the common ground

(7) **Global informativity:**

A sentence S is infelicitous in a context C if $C \cap \llbracket S \rrbracket = C$

³Stalnaker 1978

- A sentence must convey information that is not already part of the common ground

(7) **Global informativity:**

A sentence S is infelicitous in a context C if $C \cap \llbracket S \rrbracket = C$

- It refers to S as a whole, no role for its parts.

³Stalnaker 1978

(8) **Context:** *It is not known where John lives.*

Global Informativity is not enough

- (8) **Context:** *It is not known where John lives.*
- a. #**John lives in Paris** and he lives in France.

- (8) **Context:** *It is not known where John lives.*
- a. #John lives in Paris and he lives in France.
 - b. John lives in Paris.

Global Informativity is not enough

(8) **Context:** *It is not known where John lives.*

a. #John lives in Paris and he lives in France.

b. John lives in Paris.

- Same information conveyed globally so **global informativity** cannot distinguish between them

(9) **Context:** *It is not known where John lives.*

Same for disjunctions

- (9) **Context:** *It is not known where John lives.*
- a. #Either John lives in France or **he lives in Paris**.

- (9) **Context:** *It is not known where John lives.*
- a. #Either John lives in France or **he lives in Paris**.
 - b. John lives in France.
- Again same information conveyed globally

- Intuitively in both cases the violation is **more local**

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- Two approaches to **local informativity violations**

Background

Two approaches

- Simplification

- Simplification
- Local context

The Simplification approach

- A sentence is odd when it is equivalent to one of its parts

The Simplification approach

- A sentence is odd when it is equivalent to one of its parts
 - D is **redundant** in S if for some S' which is exactly like S except that D is deleted, $\llbracket S \rrbracket =_c \llbracket S' \rrbracket$

The Simplification approach

- A sentence is odd when it is equivalent to one of its parts
 - D is **redundant** in S if for some S' which is exactly like S except that D is deleted, $\llbracket S \rrbracket =_c \llbracket S' \rrbracket$
 - A sentence S is odd if it has any **redundant** part

The Simplification approach

(10) a. #John lives in Paris and he lives in France.

The Simplification approach

- (10) a. #John lives in Paris and he lives in France.
b. John lives in Paris.

The Simplification approach

- (10) a. #John lives in Paris and he lives in France.
b. John lives in Paris.
- (11) a. #John lives in France or he lives in Paris.

The Simplification approach

- (10) a. #John lives in Paris and he lives in France.
b. John lives in Paris.
- (11) a. #John lives in France or he lives in Paris.
b. John lives in France.

The Local context approach

- A sentence is odd when it has a part which is entailed by, or inconsistent with, its **local context**.

The Local context approach

- A sentence is odd when it has a part which is entailed by, or inconsistent with, its **local context**.
 - the local context for q in $p \wedge q$, in context C , is $C \cap p$
 - the local context for q in $p \vee q$ in C is $C \cap \bar{p}$.

The Local context approach

(12) #John lives in Paris and he lives in France.

The Local context approach

(12) #John lives in Paris and he lives in France.

- The local context of he lives in France includes the information that John lives in Paris. $C \cap p$

The Local context approach

(12) #John lives in Paris and he lives in France.

- The local context of he lives in France includes the information that John lives in Paris. $C \cap p$

(13) #John lives in France or he lives in Paris.

The Local context approach

(12) #John lives in Paris and he lives in France.

- The local context of he lives in France includes the information that John lives in Paris. $C \cap p$

(13) #John lives in France or he lives in Paris.

- The local context of he lives in Paris includes the information that John doesn't live in France $C \cap \bar{p}$

- Both approaches can account for the basic cases above

- Both approaches can account for the basic cases above
- Three common predictions

Background

Predictions

Three predictions

- Order

Three predictions

- Order
- Negation

Three predictions

- Order
- Negation
- Connective type

- (14) a. #John lives in France or he lives in Paris.

⁴Schlenker 2009, Katzir and Singh 2013

- (14) a. #John lives in France or he lives in Paris.
b. #John lives in Paris or he lives in France.

⁴Schlenker 2009, Katzir and Singh 2013

Order: data and question⁴

- (14) a. #John lives in France or he lives in Paris.
b. #John lives in Paris or he lives in France.
- (15) a. #John lives in Paris and he lives in France.

⁴Schlenker 2009, Katzir and Singh 2013

Order: data and question⁴

- (14) a. #John lives in France or he lives in Paris.
b. #John lives in Paris or he lives in France.
- (15) a. #John lives in Paris and he lives in France.
b. ? John lives in France and he lives in Paris.

⁴Schlenker 2009, Katzir and Singh 2013

Order: data and question⁴

- (14) a. #John lives in France or he lives in Paris.
b. #John lives in Paris or he lives in France.
- (15) a. #John lives in Paris and he lives in France.
b. John lives in France and he lives in Paris.

Q1 effect of order: Does order impact judgments about oddness?

⁴Schlenker 2009, Katzir and Singh 2013

- Both theories have a symmetric version predicting no order effects

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 - The local context approach has a version where the local contexts are the same for the first and second conjunct/disjunct

Order: prediction

- Both theories have a symmetric version predicting no order effects
 - The simplification approach as formulated above is symmetric
 - The local context approach has a version where the local contexts are the same for the first and second conjunct/disjunct
- Both theories can be made asymmetric predicting **uniform order effects across the board**

- Both approaches either predict:
 - No order effects for either disjunction or conjunction

Order: prediction

- Both approaches either predict:
 - No order effects for either disjunction or conjunction
 - Order effects for both disjunction and conjunction

- (16) a. #John lives in France or **he lives in Paris**.
b. #**John lives in Paris** or he lives in France.
- (17) a. #**John lives in Paris** and he lives in France.
b. John lives in France and **he lives in Paris**.

- (18) a. #John lives in France or he lives in Paris.

⁵Kaloimoros 2023, Mandelkern and Romoli 2018

- (18) a. #John lives in France or he lives in Paris.
b. John doesn't live in Paris or he doesn't live in France.

Q2 effect of negation: Does it matter whether negation is present in some constituent for the purposes of computing redundancy?

⁵Kaloimoros 2023, Mandelkern and Romoli 2018

- All that matters is (contextual) entailment relations, so as it stands negation should not matter for either approach

Connective type: data and question

- (19) a. #John lives in Paris and he lives in France.
b. #John lives in France or he lives in Paris.
- **Q3:** **Connective type:** Does it matter whether the main connective is a conjunction or a disjunction?

- Neither approach predicts any effects of connective type

Q1 effect of order: Does order impact judgments about oddness?

- Q1** *effect of order*: Does order impact judgments about oddness?
- Q2** *effect of negation*: Other things being equal, does it matter whether negation is present in some constituent for the purposes of computing redundancy?

In sum: questions

- Q1** **effect of order:** Does order impact judgments about oddness?
- Q2** **effect of negation:** Other things being equal, does it matter whether negation is present in some constituent for the purposes of computing redundancy?
- Q3** **Connective type:** Does it matter whether the main connective is a conjunction or a disjunction?

The Experiments

- Three experiments addressing these questions

- Three experiments addressing these questions
- Disjunction, conjunction, and conditional in turn

The study

- Three experiments addressing these questions
- Disjunction, conjunction, and conditional in turn
- Focusing on disjunction and conjunction today

The Experiments

Experiment 1: Disjunction

Q1 effect of order: Does order impact judgments about oddness?

- Q1** *effect of order*: Does order impact judgments about oddness?
- Q2** *effect of negation*: Other things being equal, does it matter whether negation is present in some constituent for the purposes of computing redundancy?

- Q1** *effect of order*: Does order impact judgments about oddness?
- Q2** *effect of negation*: Other things being equal, does it matter whether negation is present in some constituent for the purposes of computing redundancy?

- We focused on disjunction

- We focused on disjunction
 - Whether it involved redundancy

- We focused on disjunction
 - Whether it involved redundancy
 - The order between the disjuncts

- We focused on disjunction
 - Whether it involved redundancy
 - The order between the disjuncts
 - Whether it contained negation

- Positive and negative Hurford disjunctions
- Positive and negative simple disjunction baselines
- Both appeared in either order

- (20) **CONTEXT:** John and his family want to visit Asia. They have various destinations in mind, but the most prominent ones are cities in Japan, especially Tokyo. Recently, John and his family returned from their Asia trip, so I thought:

- (20) CONTEXT: John and his family want to visit Asia. They have various destinations in mind, but the most prominent ones are cities in Japan, especially Tokyo. Recently, John and his family returned from their Asia trip, so I thought:
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- (20) CONTEXT: John and his family want to visit Asia. They have various destinations in mind, but the most prominent ones are cities in Japan, especially Tokyo. Recently, John and his family returned from their Asia trip, so I thought:
- Either **John's family visited Tokyo** or they visited Japan.
 - Either John's family visited Japan or **they visited Tokyo**.

Material: negative Hurford disjunction

- (21) a. Either **John's family didn't visit Japan** or they didn't visit Tokyo.
b. Either John's family didn't visit Tokyo or **they didn't visit Japan**.

Material: positive and negative baselines

- (22)
- a. Either John's family visited Tokyo or they visited China.
 - b. Either John's family visited China or they visited Tokyo.

Material: positive and negative baselines

- (22) a. Either John's family visited Tokyo or they visited China.
b. Either John's family visited China or they visited Tokyo.
- (23) a. Either John's family didn't visit China or they didn't visit Tokyo.
b. Either John's family didn't visit Tokyo or they didn't visit China.

Material: positive and negative baselines

- (22) a. Either **John's family visited Tokyo** or they visited China.
b. Either John's family visited China or **they visited Tokyo**.
- (23) a. Either John's family didn't visit China or they didn't visit Tokyo.
b. Either John's family didn't visit Tokyo or they didn't visit China.

- 24 targets and baselines

Material: positive and negative baselines

- (22) a. Either **John's family visited Tokyo** or they visited China.
b. Either John's family visited China or **they visited Tokyo**.
- (23) a. Either John's family didn't visit China or they didn't visit Tokyo.
b. Either John's family didn't visit Tokyo or they didn't visit China.

- 24 targets and baselines
- 24 fillers

Participants and procedure

- 199 participants from UPenn's Psychology subject pool
- class credit for their participation
- Naturalness rating on a 7-point scale (1 = least natural, 7 = most natural)

Questions again

- Does redundancy matter?

Questions again

- Does redundancy matter?
 - Does order matter?

- Does redundancy matter?
 - Does order matter?
 - Does polarity matter?

- Main effect of redundancy

- Main effect of redundancy
 - Interaction between redundancy and order

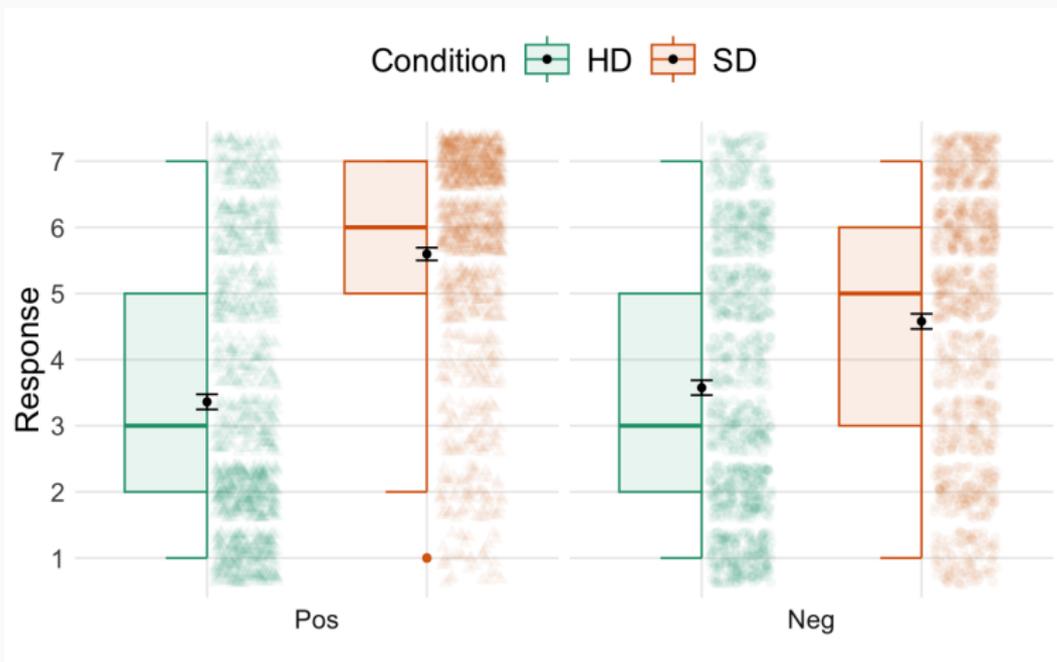
How we tested them

- Main effect of redundancy
 - Interaction between redundancy and order
 - Interaction between redundancy and polarity

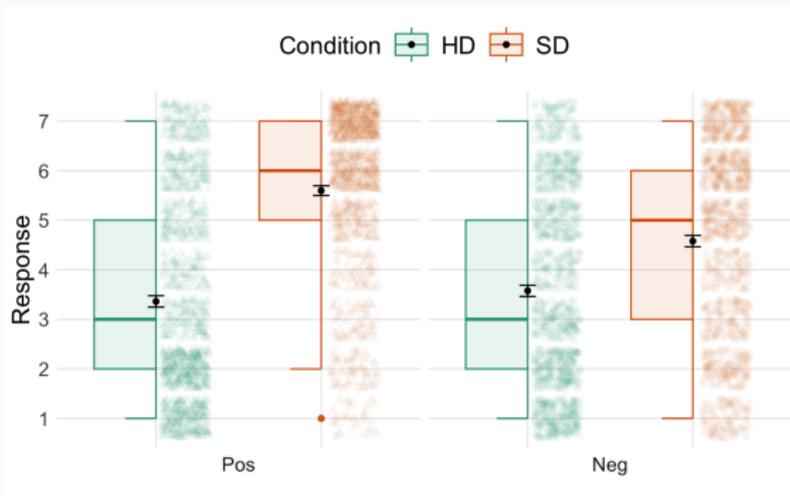
- Ordinal mixed-effects regressions.⁶

⁶The relevant predictors in the models were always sum-coded. We always included random intercepts for *participant* and *item* in our models

Results: redundancy and polarity

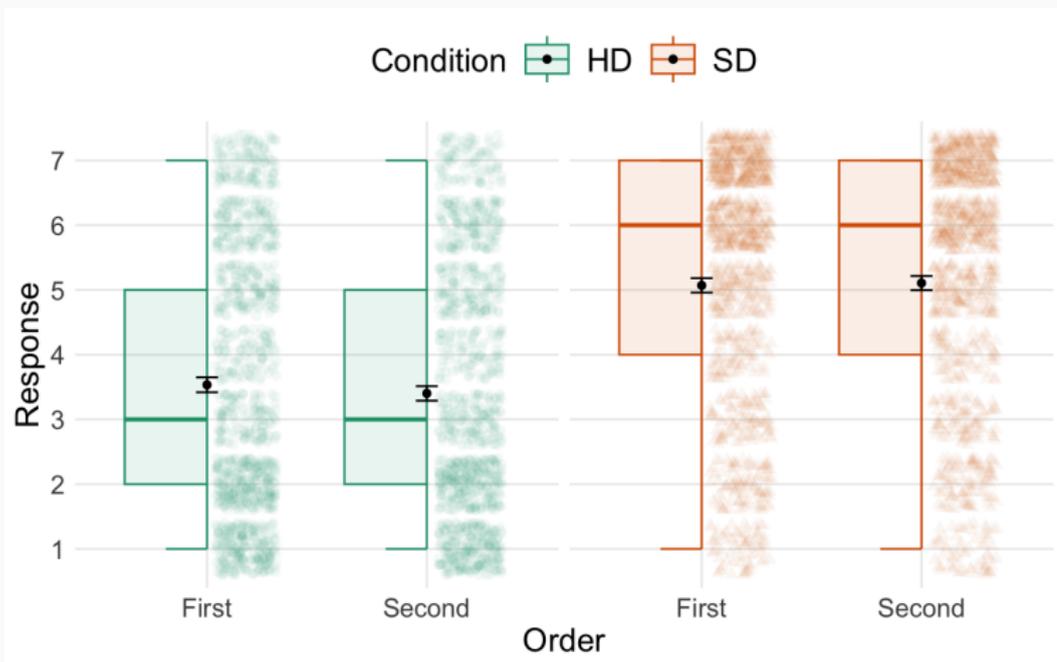


Results: redundancy and polarity

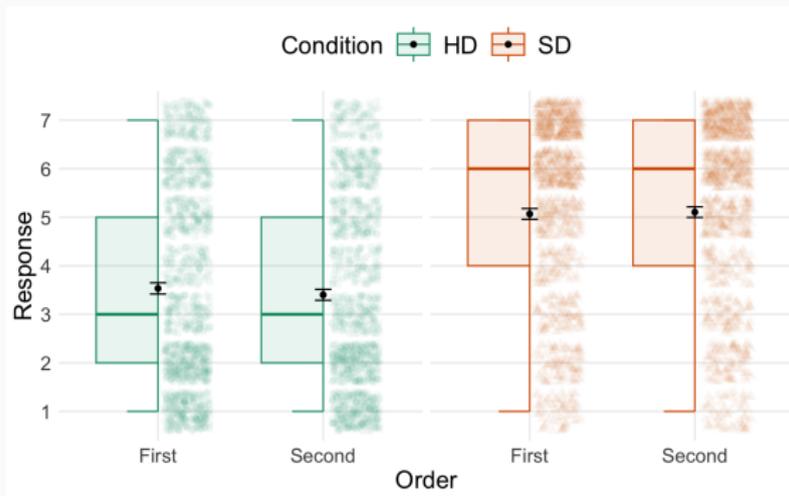


- Main effect of redundancy ($\beta = -0.97, p < .001$)
- Main effect of polarity ($\beta = -0.23, p < .001$)
- Interaction between them ($\beta = 0.37, p < .001$)

Results: redundancy and order



Results: redundancy and order



- No interaction ($\beta = -0.04$, $p = 0.12$)

- Hurford disjunctions are less felicitous than their simple counterparts

- Hurford disjunctions are less felicitous than their simple counterparts
- Polarity modulate these judgments

- Hurford disjunctions are less felicitous than their simple counterparts
- Polarity modulate these judgments
- Order does not

- Does redundancy matter? yes

Questions again

- Does redundancy matter? yes
 - Does order matter? no

Questions again

- Does redundancy matter? yes
 - Does order matter? no
 - Does polarity matter? yes

The Experiments

Experiment 2

Q1 **effect of order:** Does order impact judgments about oddness?

Q3 **Connective type:** Does it matter whether the main connective is a conjunction or a disjunction?

- We focused on conjunction

- We focused on conjunction
 - Whether it involved redundancy

- We focused on conjunction
 - Whether it involved redundancy
 - The order between the conjuncts

- We focused on conjunction
 - Whether it involved redundancy
 - The order between the conjuncts
- Comparison with disjunction from Exp.1 for connective type

- Positive Hurford conjunctions

- Positive Hurford conjunctions
- Positive simple conjunction baselines

- Positive Hurford conjunctions
- Positive simple conjunction baselines
- Both appeared in either order

(24) *Hurford Conjunction and baselines (HC)*

CONTEXT: John and his family want to visit Asia. They have various destinations in mind, but the most prominent ones are cities in Japan, especially Tokyo. Recently, John and his family returned from their Asia trip, and had various souvenirs that I suspect they got in Tokyo (although I'm not entirely sure). So, I thought:

(24) *Hurford Conjunction and baselines* (HC)

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- a. John's family visited Tokyo and they visited Japan.

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- a. John's family visited Tokyo and they visited Japan.
- b. John's family visited Japan and they visited Tokyo.

Material: Hurford conjunction

(24) *Hurford Conjunction and baselines (HC)*

CONTEXT: John and his family want to visit Asia. They have various destinations in mind, but the most prominent ones are cities in Japan, especially Tokyo. Recently, John and his family returned from their Asia trip, and had various souvenirs that I suspect they got in Tokyo (although I'm not entirely sure). So, I thought:

- a. John's family visited Tokyo and they visited Japan.
- b. John's family visited Japan and they visited Tokyo.

- (25)
- a. John's family visited Tokyo and they visited China.
 - b. John's family visited China and they visited Tokyo.

- Same design as Exp.1 except the polarity manipulation
- 24 targets and baselines
- 24 fillers

Participants and procedure

- 201 participants from UPenn's Psychology subject pool
- class credit for their participation
- Naturalness rating on a 7-point scale (1 = least natural, 7 = most natural)

Questions again

- Does order matter?

Questions again

- Does order matter?
- Does connective matter?

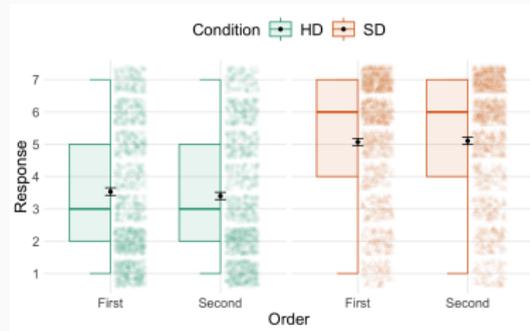
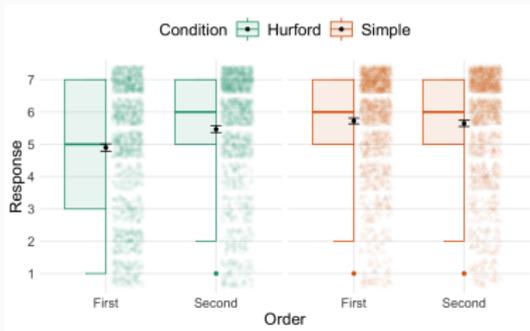
How we tested them

- Interaction between redundancy, connective, and order

How we tested them

- Interaction between redundancy, connective, and order
- Interaction between redundancy and connective

Results: redundancy, connective, and order

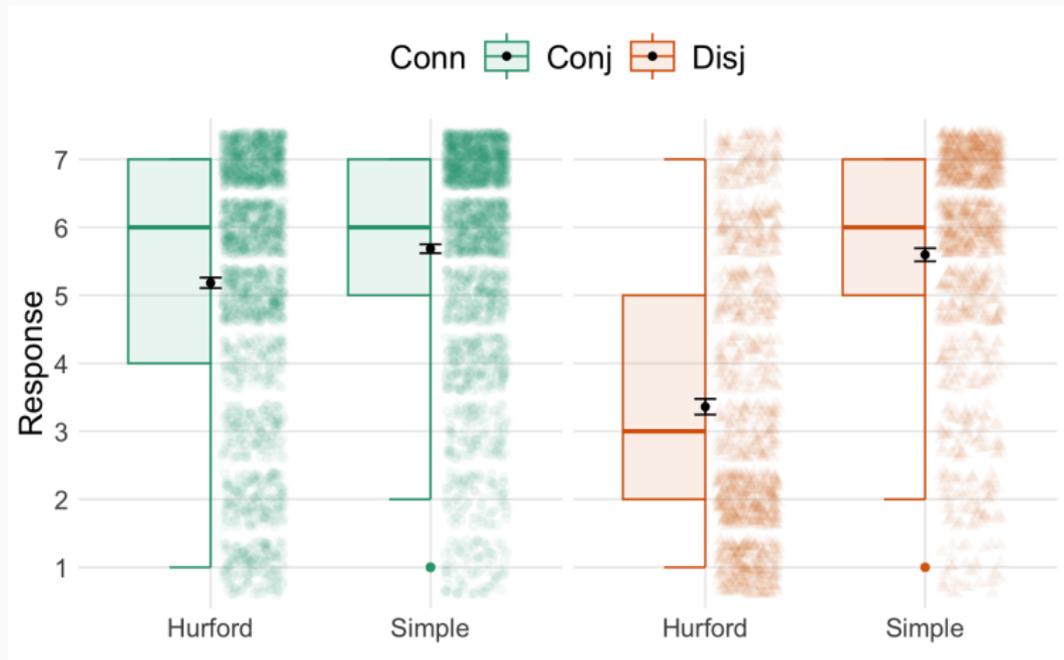


Results: redundancy, connective and order

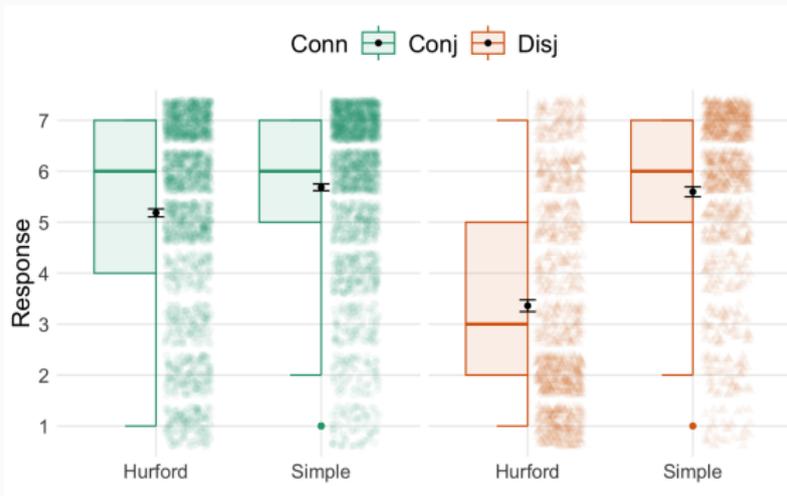


- Three-way interaction ($\beta = -0.06, p < .05$)

Results: redundancy and connective

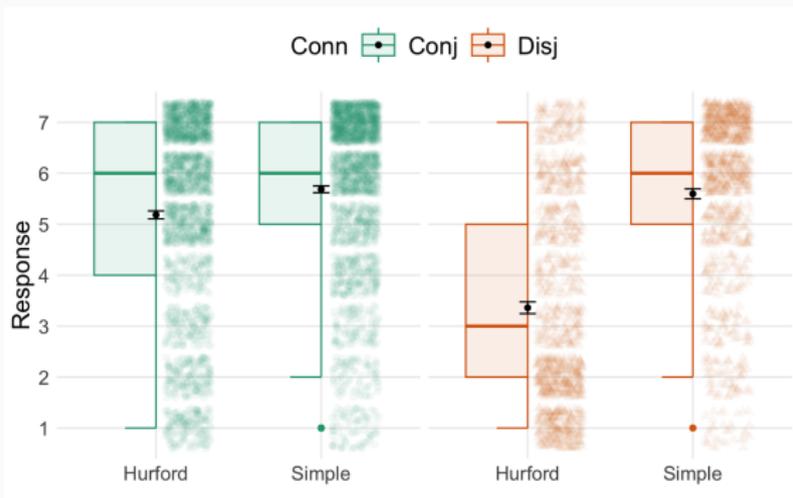


Results: redundancy and connective



- positive disjunctions and conjunctions in the 'bad' order

Results: redundancy and connective



- positive disjunctions and conjunctions in the 'bad' order
- interaction between redundancy and connective ($\beta = -1.76, p < .001$)

- Hurford conjunctions are less felicitous than their counterparts

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- Order does modulate the judgments this time

- Hurford conjunctions are less felicitous than their counterparts
- Order does modulate the judgments this time
- Redundancy has a stronger effect on disjunction than conjunction

Questions again

- Does order matter? yes
- Does connective matter? yes

General discussion

General discussion

Summary of findings

- Order matters for some but not all the connectives

- Order matters for some but not all the connectives
 - Conjunctions show asymmetry
 - Disjunctions do not

- Negation played a role

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 - Negative Hurford disjunctions were rated better than positive ones

- Redundancy leads to infelicity for all connective types.

- Redundancy leads to infelicity for all connective types.
 - Redundant conjunctions were better than the corresponding disjunctions

- Differential effects of order across connectives

- Differential effects of order across connectives
- Polarity sensitivity of redundancy judgments

- Differential effects of order across connectives
- Polarity sensitivity of redundancy judgments
- Differential strength of redundancy effects across connectives.

The challenge

- Predicted uniform effect of order
- No effect of polarity
- No effect of connective type.

- Hurford disjunctions and conjunctions are degraded relative to non-redundant baselines.
- How to build on the basic theories to capture the contrasts observed

General discussion

Two directions

- An additional notion of redundancy

- An additional notion of redundancy
- Connection to presuppositions

- the notion of a redundant constituent

⁷Kalomoiros 2023

Super-redundancy⁷

- the notion of a redundant constituent
- A constituent is **super-redundant** if it is redundant, and also any attempt to strengthen the constituent still results in redundancy.

⁷Kalomoiros 2023

- the notion of a redundant constituent
- A constituent is **super-redundant** if it is redundant, and also any attempt to strengthen the constituent still results in redundancy.
 - a constituent E is redundant in S if the result of deleting E is contextually equivalent to S .
 - A constituent E of S is super-redundant iff for all atomic constituents E' of E , and for all D : $E[E'|E' \wedge D]$ is redundant in S , where $E[E'|E' \wedge D]$ is identical to E except that the atomic constituent E' has been replaced with $(E' \wedge D)$.

⁷Kalomoiros 2023

- A sentence which contains a constituent which is redundant is odd.

⁸Kalomoiros 2023

Super-redundancy⁸

- A sentence which contains a constituent which is redundant is odd.
- A sentence which contains a constituent which is also super-redundant is odder still.

⁸Kalomoiros 2023

Back to polarity

- Positive Hurford disjunctions are **super-redundant** while negative ones are only **redundant**.

Back to polarity

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- (26) a. Either John's family visited Japan or **they visited Tokyo**.
b. = John's family visited Japan.

Back to polarity

- Positive Hurford disjunctions are **super-redundant** while negative ones are only **redundant**.

(26) a. Either John's family visited Japan or **they visited Tokyo**.
b. = John's family visited Japan.

(27) a. Either John's family didn't visit Tokyo or **they didn't visit Japan**.
b. = John's family didn't visit Tokyo

Back to polarity

- Positive Hurford disjunctions are **super-redundant** while negative ones are only **redundant**.

(26) a. Either John's family visited Japan or they visited Tokyo.
b. = John's family visited Japan.

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b. = John's family didn't visit Tokyo

(28) a. Either John's family visited Japan or they visited Tokyo and Kyoto.
b. = John's family visited Japan.

Back to polarity

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- (26) a. Either John's family visited Japan or they visited Tokyo.
b. = John's family visited Japan.
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b. = John's family didn't visit Tokyo
- (28) a. Either John's family visited Japan or they visited Tokyo and Kyoto.
b. = John's family visited Japan.
- (29) a. Either John's family didn't visit Tokyo or they didn't visit Japan and China.
b. \neq John's family didn't visit Tokyo

- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

Back to connective type

- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

(30) Either John's family visited Japan or **they visited Tokyo**.

Back to connective type

- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

(30) Either John's family visited Japan or **they visited Tokyo**.

(31) a. **John's family visited Tokyo** and they visited Japan.

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- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

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- (31) a. **John's family visited Tokyo** and they visited Japan.
b. = **John's family visited Tokyo**

Back to connective type

- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

(30) Either John's family visited Japan or **they visited Tokyo**.

(31) a. **John's family visited Tokyo** and they visited Japan.

b. = **John's family visited Tokyo**

(32) a. **John's family visited Tokyo** and they visited Japan and China.

Back to connective type

- Positive Hurford disjunctions are **super-redundant** while positive Hurford conjunctions are only **redundant**

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(31) a. **John's family visited Tokyo** and they visited Japan.
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(32) a. **John's family visited Tokyo** and they visited Japan and China.
b. \neq **John's family visited Tokyo**

- Integrating the notion of super-redundancy

- Integrating the notion of super-redundancy
 - Polarity

- Integrating the notion of super-redundancy
 - Polarity
 - Positive Hurford disjunctions are super-redundant hence worse than their only-redundant negative counterpart

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 - Positive Hurford disjunctions are super-redundant hence worse than their only-redundant negative counterpart
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 - Positive Hurford disjunctions are super-redundant hence worse than their only-redundant conjunctions counterparts

- Differential order effects remain unaccounted for

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- A parallel picture of order effects has emerged with presuppositions.

- (33) a. John used to do Jivamukti yoga and he stopped doing yoga.

⁹Kalomoiros and Schwarz 2024, Mandelkern et al 2018, Kalomoiros et al 2024

- (33) a. John used to do Jivamukti yoga and he stopped doing yoga.
b. John stopped doing yoga and he used to do Jivamukti yoga.

⁹Kalomoiros and Schwarz 2024, Mandelkern et al 2018, Kalomoiros et al 2024

Connection to presuppositions⁹

- (33) a. John used to do Jivamukti yoga and he stopped doing yoga.
b. John stopped doing yoga and he used to do Jivamukti yoga.
- (34) a. Either John never did yoga or he stopped doing yoga.
b. Either John stopped doing yoga or he never did yoga.

⁹Kalomoiros and Schwarz 2024, Mandelkern et al 2018, Kalomoiros et al 2024

- Connection to presuppositions

¹⁰Kalomoiros 2023 and George 2008

¹¹Kalomoiros and Schwarz 2024, Mandelkern et al 2018, Kalomoiros et al 2024

- Connection to presuppositions
 - presupposition as information that has to be redundant

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- Connection to presuppositions
 - presupposition as information that has to be redundant
- Existing theories of presupposition also predict uniform order effects but two exceptions¹⁰

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- Connection to presuppositions
 - presupposition as information that has to be redundant
- Existing theories of presupposition also predict uniform order effects but two exceptions¹⁰
- A theory of redundancy based on those theories would capture the differential order effects

¹⁰Kalomoiros 2023 and George 2008

¹¹Kalomoiros and Schwarz 2024, Mandelkern et al 2018, Kalomoiros et al 2024

- Integrating a notion of super-redundancy

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- A tighter connection to presuppositions

Conclusions

- Hurford phenomena a rich landscape to understand felicity judgments

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- Careful experimental investigation to unveil the subtle aspects of such landscape

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- Careful experimental investigation to unveil the subtle aspects of such landscape
- How different parts of meaning behave with respect to contextual information

Thanks!

Conclusions

Experiment 3

- Q1** **effect of order:** When one 'junct entails the other, does the order impact judgments about oddness?
- Q3** **Connective type:** Does it matter whether the main connective is a conjunction, a disjunction or a conditional?

- We focused on conditionals
 - Whether it involved redundancy
 - The order between the antecedent and consequent
 - Whether negation appeared in the antecedent or the consequent
- Comparison with disjunction from Exp.1

- Positive and negative antecedent Hurford conditionals
- Positive and negative simple conditional baselines
- Both appeared in either order

Material: Positive and Negative Hurford conditionals

- (35) a. If John's family visited Japan, they didn't visit Tokyo.
(FIRST)
- b. John's family didn't visit Tokyo, if they visited Japan.
(SECOND)
- (36) a. If John's family didn't visit Tokyo, they visited Japan.
(FIRST)
- b. John's family visited Japan, if they didn't visit Tokyo.
(SECOND)

- Same design as Exp.1

Participants and procedure

- xx participants from our university's Psychology subject pool
- class credit for their participation
- Naturalness rating on a 7-point scale (1 = least natural, 7 = most natural)

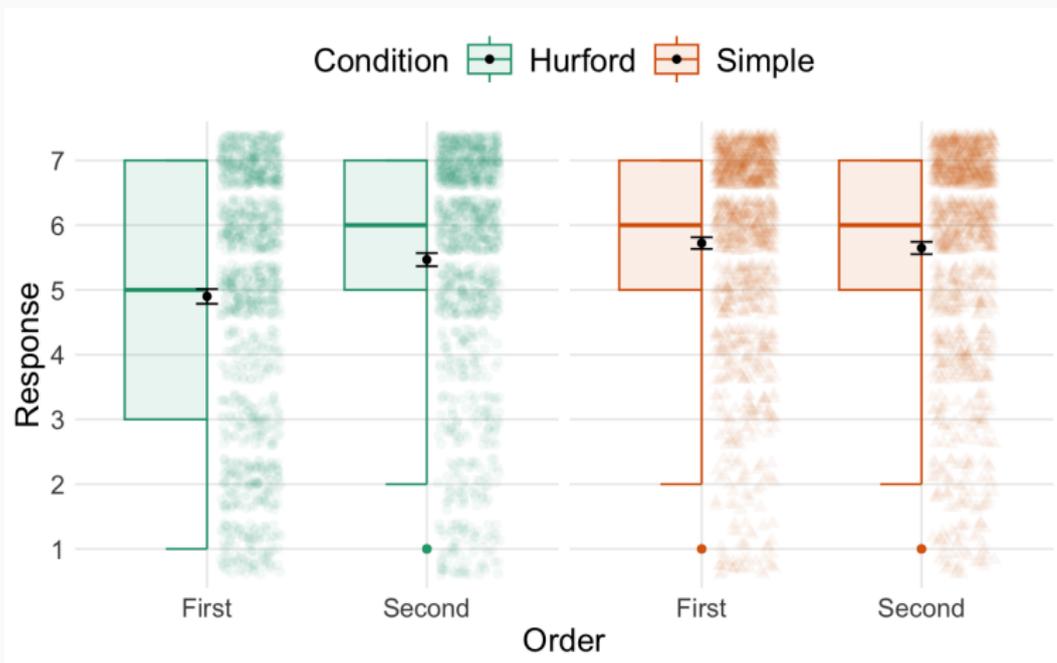
Questions again

- Does order matter?
- Does polarity matter?

Questions again

- Main effect of redundancy
- Interaction between redundancy and polarity
- No Interaction between polarity and order

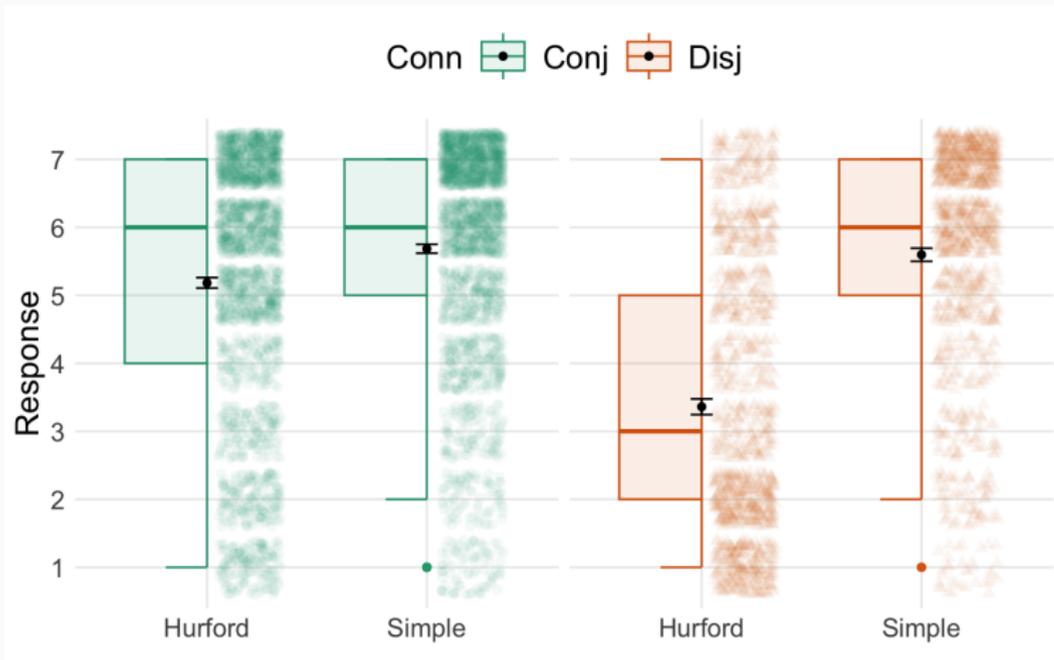
Results



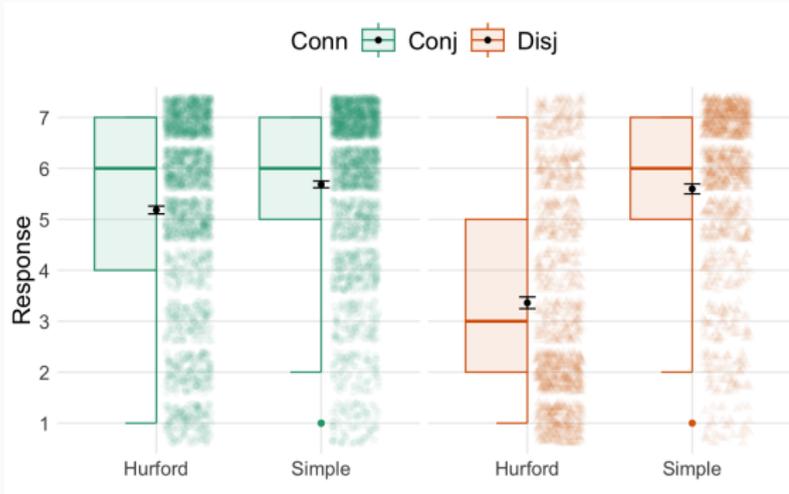
Results



Results



Results



- Hurford conditionals are degraded, but negative antecedents ones are more
- Polarity matters
- Order does not

Questions again

- Does polarity matter? Yes for conditionals as well
- Does order matter? Not for conditionals