

Semantic Roles Underlying the Action-State Distinction Theory of Implicit Causality*



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Background

[Implicit Causality]

Some verbs show preference to the NP1 (first noun phrase) or NP2 (second noun phrase) as the cause of events. Consider the following sentence to compete.

"Ken blamed/apologized John because he ..."

The verb "blame" prefers to NP2, whereas "apologize" prefers to NP1.

[Revised Action-State Distinction]

Rudolph and Försterling (1997) explained the direction of the bias in the view of semantic roles assigned to each noun phrase.

- **Action Verbs:** Voluntary and observable.
 - **Agent-Patient (AP) Verbs:** NP1 perform the action. (e.g., betray, expiate, tangle) <NP1-bias>
 - **Agent-Evocator (AE) Verbs:** NP2 evocates the action. (e.g., compliment, remonstrate) <NP2-bias>
- **State Verbs:** Involuntary and unobservable.
 - **Stimulus-Experiencer (SE) Verbs:** NP2 experiences the state. (e.g., irritate, surprise, banter) <NP1-bias>
 - **Experiencer-Stimulus (ES) Verbs:** NP1 experiences the state. (e.g., believe, wonder, fear) <NP2-bias>

[The Purpose of This Study]

We examined the effect of focus on NP2 with four types of implicit causality verbs. It was expected that action verbs have potential ambiguity for the assignment of semantic roles.

Method

Participants: 74 Japanese undergraduates.

Design: 2(Focus: NP2-focused vs. Control) × 2(Verb Type: Action vs. State) × 2(Direction of Bias: NP1-bias vs. NP2-bias) within participants.

Material: Sentence-pairs were created for six verbs for each category. In the NP2-focused condition, the first sentences refers to NP2 in the second sentences. In the control condition, the first sentences did not refer explicitly to entities in the second sentences.

Procedure: The participants rated each person in the sentences for their causal weight for the event description.

<EXAMPLE>

1a) **John** received unreleased stock information. (NP2-focused)

1b) Unreleased stock information was spread. (Control)

2) Ken betrayed **John**.

After reading 1a)-2) or 1b)-2) sequence,

"How likely do you think the fact that Ken betrayed John was caused by ..."

Ken: Not likely 1 2 3 4 5 6 7 8 9 Very likely

John: Not likely 1 2 3 4 5 6 7 8 9 Very likely

Results and Discussion

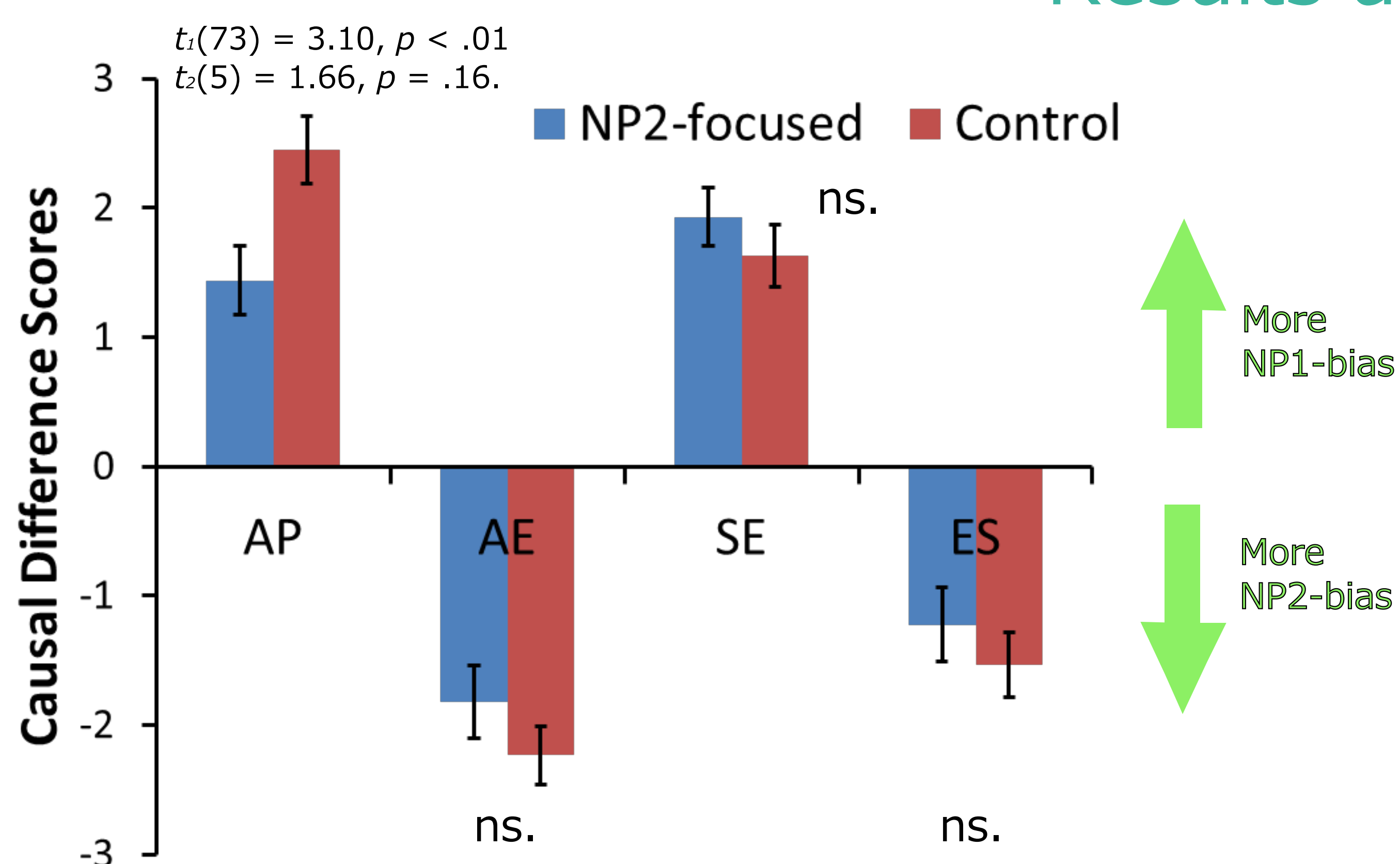


Figure 1. Mean causal difference scores for each type of sentences.

The causal difference scores were calculated by subtracting the rating for NP2 from that for NP1. The positive scores indicated that NP1-bias was stronger than NP2-bias, whereas the negative scores suggested vice versa.

The Focus × Verb type × Direction of bias interaction was suggested by subject analysis, $F_1(1, 73) = 4.15, p < .05$; $F_2(1, 20) = 1.74, p = .20$.

[Main Findings]

Only the implicit causality bias by AP verbs were possible to be sensitive to focusing NP2.

The three way interaction was significant only at subject analysis in this study. However, experiments by sentence completion also suggested the presence of the interaction (Iseki & Kusumi, 2010, November).

[Importance of Semantic Roles]

The specific effects of NP2-focus for AP verbs suggested that the view based on semantic roles is valid. Theories lacking semantic roles did not explain that action verbs have ambiguity for assignment of roles and thus only AP verbs were affected by NP2-focusing.

[Theoretical Implications]

Prior study by Fukumura and van Gompel (2010) found that the implicit causality did not influence the focus state of referents, though they used only state verbs. We added a new feature to their findings: State verbs does not relate to focus, whereas action verbs does to focus. This formulation suggested the directions of future research that investigate the potential different mechanisms for action and state verbs. This line of research might resolve the discussion about focus and implicit causality.

References

- Rudolph, U., & Försterling, F. (1997). The psychological causality implicit in verbs: A review. *Psychological Bulletin*, 121, 192-218.
- Fukumura, K., & van Gompel, R. P.G. (2010). Choosing anaphoric expressions: Do people take into account likelihood of reference? *Journal of Memory and Language*, 62, 52-66.

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Abstract

We examined the effect of focus on NP2 in sentences with the four types of implicit causality verbs. In the revised action-state distinction, action verbs have some ambiguity in the assignment of semantic roles, because two roles (patient or evocator) can be assigned to NP2. On the other hand, state verbs exhibited less ambiguity because the word order and the role of an interacting partner uniquely determine the role of another interactant. Thus, if the NP2 in sentences with causality verbs were focused, the role assignment would be changed more frequently for action verbs than for state verbs. Specifically, AP verbs would be more frequently interpreted as AE verbs. AE verbs should not be influenced as much by focusing NP2, because the roles of NP2 have already been received as an evocator in AE verbs. Causal rating data supported these speculations.

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