An experiment

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Talk 1 (Part I): Ellipsis and Response Systems: A Usage and Experimental-based approach
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Background

Experiment

    Methodology

    Results

        Overall

        Negation form effect

        With short-form negation (SFN)

        With long-form negation (LFN)

Background

Two types of answering system

- Polarity-based answering system: The polarity of the response particle is in accordance with the polarity of the (non)-elliptical answer sentence (i.e., yes-pos, no-neg)
- Truth-based answering system: The response particle confirms or contradicts the truth of the negative proposition evoked by the NPQ (i.e., yes-neg, no-pos)

Complexities: contextual bias

- Contextual bias seems to play a key role in answering NPQs.

- As for Korean, with a negative bias NPQ as in (1), its answers follow the truth-based answering system.

  (1) (Negative bias: seeing a friend's messy hair, and assuming she might have not washed her hair)

   Q: achim-ey meli kam-ci anh-ass-ni?
     morning hair wash-CONN NEG-PST-QUE
     'Didn't you wash your hair this morning?'

   A1: ung, (an kam-ass-e.)
     yes NEG wash-PST-DECL
     (int.) 'Yes, (I didn't wash my hair this morning.)'

   A2: ani, (kam-ass-e.)
     no wash-PST-DECL
     (int.) 'No, (I washed my hair this morning.)'

- In contrast, with a positive bias NPQ in (2), its answers override the language's truth-based answering system and follow the polarity-based answering system.

    (2)   (Positive bias: showing a single photo where Obama is with a friend who resembles him a lot)

        Q: i   salam Obama talm-ci   anh-ss-ni?
             this man   Obama resemble-CONN NEG-PST-QUE
             'Doesn't this man resemble Obama?'

        A1:   ung, (talm-ass-e.)
             yes resemble-PST-DECL
             'Yes, (he resembled Obama.)'

        A2:   ani, (an talm-ass-e.)
             no NEG resemble-PST-DECL
             'No, (he didn't resemble Obama.)'

Goal of this experiment

- Performed an experiment to investigate variations in the uses of response particles in Korean and to understand if contextual cues or other factors affect its truth-based answering system

- Two forms of negation in Korean: short form negation (SFN) and long form negation (LFN) (Hagstrom 2000; Kim 2000; Sells 2001; Sells & Kim 2006; Kim 2016)

  - (3) a. Short form negation (SFN):
    Mimi-nun an   phikonha-ta.
    Mimi-TOP NEG tired-DECL
    'Mimi is not tired.'
    b. Long form negation (LFN):
    Mimi-nun phikonha-ci anh-ta.
    Mimi-TOP tired-CONN   NEG-DECL
    'Mimi is not tired.'

- SFN: the negation marker *an* directly attached to the following main verb

- LFN: the combination of a *-ci*-marked main verb with the negative auxiliary verb *ahn-*

Korean NPQs with LFN

- Of these two forms, literature has noted that NPQs with LFN allow not only truth-based but also polarity-based answering systems (Chang 1975; Yang 1991; Wee 2019).

    (4) Q: Lina-ka   khwukhi-lul mek-ci   ahn-ass-ni? (LFN)
             Lina-NOM cookie-ACC   eat-CONN NEG-PST-QUE
             'Didn't Lina eat a cookie?'

    A1:   ung, (an mek-ess-e.)
          yes NEG eat-PST-DECL
          (int.) 'Yes, (she didn't eat it.)'

    A2:   ani, (mek-ess-e.)
          no   eat-PST-DECL
          (int.) 'No, (she ate it.)'

    B1:   ung, (mek-ess-e.)
          yes eat-PST-DECL
          (int.) 'Yes, (she ate it.)'

    B2:   ani, (an mek-ess-e.)
          no   NEG eat-PST-DECL
          (int.) 'No, (she didn't eat it.)'

Korean NPQs with SFN

- To some speakers, however, such variations appear not to be possible with SFN (Wee 2019).

  (5) Q: Lina-ka   khwukhi-lul an   mek-ess-ni? (SFN)
  Lina-NOM cookie-ACC   NEG eat-PST-QUE
  'Did Lina not eat a cookie?'

  A1: ung, (an mek-ess-e.)
  yes   NEG eat-PST-DECL
  (int.) 'Yes, (she didn't eat it.)'

  A2: ani, (mek-ess-e.)
  no   eat-PST-DECL
  (int.) 'No, (she ate it.)'

  B1: *ung, (mek-ess-e.)
  yes   eat-PST-DECL
  (int.) 'Yes, (she ate it.)'

  B2: *ani, (an mek-ess-e.)
  no   NEG eat-PST-DECL
  (int.) 'No, (she didn't eat it.)'

- The responses A1 and A2, following the truth-based system, are natural, but those B1 and B2, which follow the polarity-based answering system, are unnatural to many.

Korean NPQs with bias

- Little discussion about the effect of bias on the possible answer patterns for Korean NPQs; one exception is Koo (2001), which performed a small-size questionnaire-based survey using six dialogue exchanges with each one having eight questions for comprehension and selection for a more proper response

- Results: For each of the three biases, more than 90% of the 49 subjects followed the truth-based system.

Experiment

Participants and variables for test items

- Participants: thirty-two native speakers of Korean; all university students
- Four variables for the experimental materials
  1. Three bias context types: neutral, positive bias, and negative bias
  2. Two negation forms in Korean NPQs: SFN and LFN
  3. Two response particles: *ung* 'yes' and *ani* 'no'
  4. Two polarity values of the answer sentence: positive and negative

(6)   (Negative bias: seeing a dirty lab and asking if one cleaned the lab or not)

Q: ecey   chengsoha-ci ahn-ass-ni?
yesterday clean-CONN NEG-QUE
'Didn't you clean the lab yesterday?'

A1:   ung, ha-yess-e.   A2:   ung, ha-ci   ahn-ass-e.
yes, do-PST-DECL   yes, do-CONN NEG-PST-DECL
'Yes, I cleaned the lab.'   'Yes, I didn't clean the lab.'

A3:   ani, ha-yess-e.   A4:   ani, ha-ci   ahn-ass-e.
no, do-PST-DECL   no, do-CONN NEG-PST-DECL
'No, I cleaned the lab.'   'No, I didn't clean the lab.'

(7)   (Neutral: seeing a friend eating ramen from a distance and asking if it is hot or not)

Q: lamyen ttukep-ci ahn-ni?
ramen hot-CONN NEG-QUE
'Isn't the ramen hot?'

A1:   ung, ttuke-we.
yes, hot-DECL
'Yes, it is hot.'

A2:   ung, ttukep-ci ahn-a.
yes, hot-CONN NEG-DECL
'Yes, it isn't hot.'

A3:   ani, ttuke-we.
no, hot-DECL
'No, it is hot.'

A4:   ani, ttukep-ci ahn-a.
no, hot-CONN NEG-DECL
'No, it isn't hot.'

Materials: positive bias context

(8)   (Positive bias: seeing a friend eating hot-steaming ramen and asking if it is hot or not)

  Q: lamyen ttukep-ci ahn-ni?
       ramen hot-CONN NEG-QUE
       'Isn't the ramen hot?'

    A1: ung, ttuke-we.
         yes, hot-DECL
         'Yes, it is hot.'

    A2: ung, ttukep-ci ahn-a.
         yes, hot-CONN NEG-DECL
         'Yes, it isn't hot.'

    A3: ani, ttuke-we.
         no, hot-DECL
         'No, it is hot.'

    A4: ani, ttukep-ci ahn-a.
         no, hot-CONN NEG-DECL
         'No, it isn't hot.'

- Type 1: 16 sentences with a positive bias context and a neutral context
- Type 2: 16 sentences with a negative bias context and a neutral context

Table 1: Type 1 NPQ-answer pairs with a positive bias context and a neutral context

Cond.	Form	NPQ	Answer		
			RP	AS	Meaning
1		lamyen an ttukep-ni?	ung,	ttuke-we.	Yes, it is hot.
2	SFN	ramen NEG hot-QUE	ung,	an ttuke-we.	Yes, it isn't hot.
3		'Isn't the ramen hot?'	ani,	ttuke-we.	No, it is hot.
4			ani,	an ttuke-we.	No, it isn't hot.
5		lamyen ttukep-ci anh-ni?	ung,	ttuke-we.	Yes, it is hot.
2	LFN	ramen hot-CONN NEG-QUE	ung,	ttukep-ci ahn-a.	Yes, it isn't hot.
7		'Isn't the ramen hot?'	ani,	ttuke-we.	No, it is hot.
8			ani,	ttukep-ci anh-a.	No, it isn't hot.

Table 2: Type 2 NPQ-answer pairs with a negative bias context and a neutral context

Cond.	Form	NPQ	Answer		
			RP	AS	Meaning
1	SFN	ecey chengso an ha-yss-ni?	ung,	ha-yss-e.	Yes, I cleaned the lab.
2		yesterday clean NEG do-PST-QUE	ung,	an ha-yss-e.	Yes, I didn't clean the lab.
3		'Didn't you clean the lab yesterday?'	ani,	ha-yss-e.	No, I cleaned the lab.
4			ani,	an ha-yss-e.	No, I didn't clean the lab.
5	LFN	ecey chengsoha-ci ahn-ass-ni?	ung,	ha-yss-e.	Yes, I cleaned the lab.
6		yesterday clean-CONN NEG-PST-QUE	ung,	ha-ci an-ass-e.	Yes, I didn't clean the lab.
7		'Didn't you clean the lab yesterday?'	ani,	ha-yss-e.	No, I cleaned the lab.
8			ani,	ha-ci an-ass-e.	No, I didn't clean the lab.

- A total of 512 NPQ-answer pairs (128 pairs for positive bias contexts, 128 pairs for negative bias contexts, and 256 pairs for neutral contexts); distribution into eight experimental lists in a Latin-square design
- One list: 64 NPQ-answer pairs (i.e., 16 positive bias context pairs, 16 negative bias context pairs, and 32 neutral context pairs) composed of eight different conditions + additional 128 question-answer pairs (64 appropriate and 64 inappropriate pairs) as filler items
- Divided these 192 experimental items (64 target and 128 filler items) of one list into two sets and assigned the two sets to the subjects in a randomized order

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Procedure and analysis

- Platform: a Korean free online survey platform, the MOA form (https://ko.moaform.com)
- Participants were instructed to judge the acceptability on a 1 to 7 scale for the answer (B's utterance) following A's NPQ under each given particular bias context.
- Overall, linear mixed-effects regression + *t*-test for the simple main effect when there was an interaction effect between variables
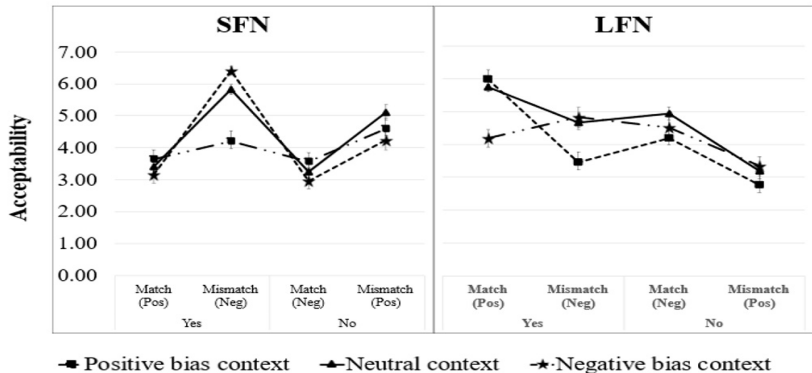
Figure 1: Mean acceptability ratings for two negation forms with three different bias

- SFN and LFN differ.
- In Yes-Neg answer patterns for SFN, the positive bias differs from the other two.
- In Yes-Neg answer patterns for LFN, the negative bias differs from the other. The bias follows the truth-based, rather than the polarity-based.
- Negation forms and bias affect answering patterns.

Negation form effects

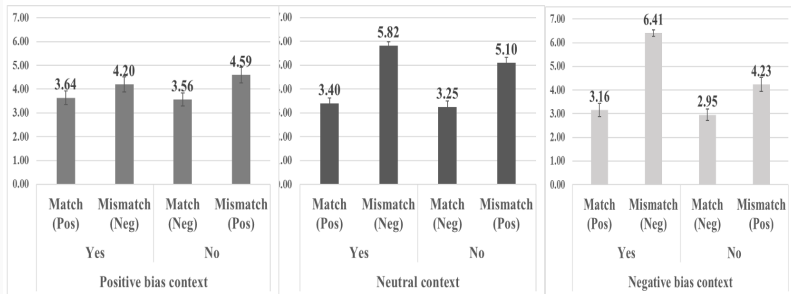- the mean acceptability ratings of the answer patterns for Korean NPQs with SFN and LFN in the neutral context.
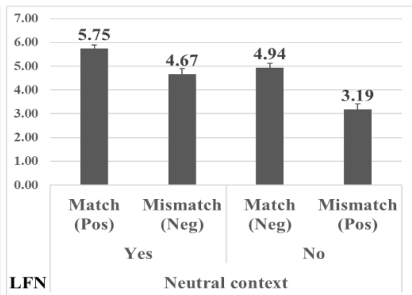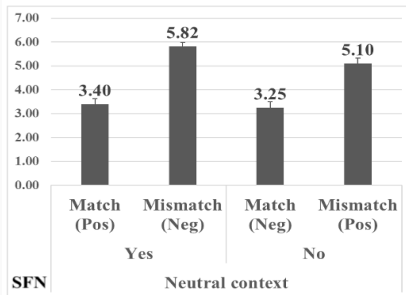
Implications

- In the neutral context, the answer patterns 'significantly' differ in SFN and LFN (Estimate = 2.137, Std. Error = 0.225, t-value = 9.488, $p < .001$).
- The acceptability rating of the polarity-mismatch answer patterns was higher than that of the polarity-match ones in SFN, but not in LFN.
- The acceptability rating of the polarity-match answer patterns was significantly higher for LFN-marked NPQs than for SFN-marked NPQs (Estimate = 2.004, Std. Error = 0.150, t-value = 13.408, $p < .001$).
- In neutral context, the truth-based answering system strategy is more favorably adopted in answering NPQs with SFN while the polarity-based answering system is used more preferably in answering NPQs with LFN.

- The mean acceptability ratings of the answer patterns for Korean NPQs marked with SFN and their standard error bars.
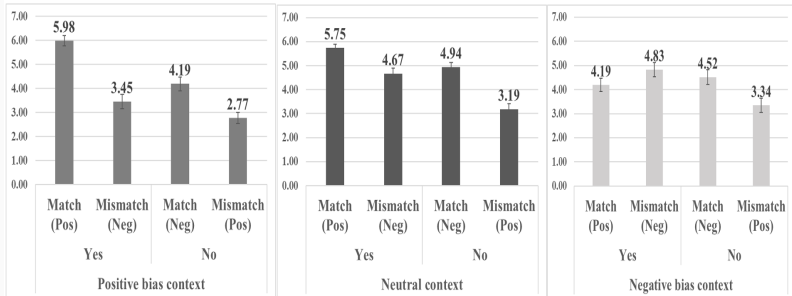
Interpretations and Implications

- In each bias context, the mean acceptability ratings of the polarity-mismatch answer patterns (Yes-Neg and No-Pos) were higher than those of the polarity-match answer patterns (Yes-Pos and No-Neg), respectively.

- The acceptability rating of the polarity-mismatch answer patterns was significantly lower in the positive bias context than in the neutral context (Estimate = -1.063, Std. Error = 0.216, t-value = -5.746, $p < .001$).

- This may be due to the contextually positive bias may intervene.

- Answering Korean NPQs with SFN follows the truth-based answering system across these three bias contexts.

- the mean acceptability ratings of the answer patterns for Korean NPQs marked with LFN and their standard error bars.

Figure 2: Mean acceptability ratings of the answer patterns for Korean NPQs with LFN along with standard error bars

Interpretations and implications

- The mean acceptability ratings exhibited similar behavior in the neutral and positive bias contexts. In these two contexts, the polarity-based answering system strategy was preferred over the truth-based answering system strategy.

- The mean acceptability rating patterns were quite different in the negative bias context, leading to perform a statistical analysis using LMER to identify interactions between bias contexts and matching conditions. The acceptability rating of the polarity-match answer patterns was higher than that of the polarity-mismatch answer patterns in these two contexts.

Interpretations and implications

- The acceptability rating of the polarity-mismatch answer patterns was lower in the positive bias context than in the neutral context. This then implies that the positive bias context somewhat affected the acceptability rating of the polarity-mismatch answer patterns.
- The results regarding the negative bias context were somewhat different. The answer patterns follow the truth-based one.
- The mean acceptability ratings of the answer patterns for Korean NPQs with LFN follow the polarity-based answering system and contextual bias plays some role in their mean acceptability ratings, in particula

Conclusion

- In this study, we investigated the effects of different negation forms and bias types in answering Korean NPQs from an experimental perspective.
- The results overall indicate that both negation forms and bias types play certain roles in the variations in the Korean answering system.