Focus Facilitation and Non-Associative Sets
Mary Byram Washburn (byram@usc.edu), Elsi Kaiser, Maria Luisa Zubizarreta, University of Southern California

1. Introduction
The current study is a lexical decision task designed to investigate whether the focus alternative set is cognitively real. We found that participants were faster to identify targets when the prime was contrastively focused, indicating the presence of an alternative set, and that this effect held for prime-target pairs that were related only by the previous context, indicating that the alternative set is built from context.

2. Background
Meaning of Focus involves Alternative Sets

1) John loves Jane
   $\exists x. \text{John loves } x \land x \in C \land C = \{\text{Jane}, \text{Sue}, \text{Kim}, \ldots\}$


Question: Is the set of alternatives cognitively real?

Experimental Evidence for a Set of Alternatives

Kim et al 2010: Eyetracking

Participants heard:
2) Mark has some candy and some apples.
   Jill (only/also) has some [apples].

Result: Participants look at target (ex: apples) faster when it ‘s focused by ‘only’ or ‘also.’

Braun and Tagliapietra 2009: Dutch cross modal lexical decision

Participants heard: Flamingo with a neutral or contrastive accent
Participants saw: pelican (alternative associate) OR pink (non-alternative associate)

Result: Participants recognized the alternative associate target (ex: pelican) as a word faster when the prime (ex: flamingo) was said with a contrastive accent, but they didn’t recognize the non-alternative associate (ex: pink) faster.

Norris et al 2006: same result for alternative associate pairs

Summary: There is evidence, though limited, for the set of alternatives. All previous studies used already associated prime-target pairs

3. Current Study: Aims

1) Provide additional evidence for the focus set of alternatives.
2) Show that non-associated words can be included in the set of alternatives. (aka: Show that the set of alternatives can be created from context)

4. Current Study: Materials and Procedure

Participants (n=42) read, one at a time, 4 sentences:
(a) Christina wants to buy a lock, nails, and a bolt. [create a new ‘ad-hoc’ set]
(b) She needs these to fix her front entrance.
(c) Two days ago, she went to a store that didn’t have a wide selection.
(d) At the store, she was able to buy [PRIME WORD HERE]

Focused, associated w/ target word: only a bolt
Unfocused, associated w/ target word: a bolt
Focused, unassociated w/ target word: only nails
Unfocused, unassociated w/ target word: nails
Focused, unrelated to target word: only a lamp
Unfocused unrelated to target word: a lamp

Then, participants read the target word: “lock”

Task: Lexical decision

5. Current Study: Results and Discussion

Affect of Focusing on Reaction Time (milliseconds)

Effect of Focus
Target recognized faster when prime is focused.
=> Evidence for set of alternatives, even w/ written materials (silent prosody, Fodor 2002).

(\(F_1=6.62, p<0.05; F_2=4.53, p<0.05\))

Reaction Time (ms) for All Conditions

Unassociated primes result in faster target RTs when prime is focused => signals that prime is activating target, due to shared membership in ‘ad-hoc’ set created in narrative

\(t_1=-3.2, p_{.05} = .076; t_2=-2.2, p_{.05} = .187\)

Focused unassociated primes cause faster target RTs than focused unrelated primes

\(t_1=-2.1, p_{.05} = .05; t_2=-1.35, p_{.05} = .187\)

Standard priming effect: Associated faster than unrelated

6. Conclusion

Alternative sets are cognitively real and generated as a result of contrast, not prosody. Alternative sets are built from context, allowing members that are not semantic associates.