

Wh-island effects and d-linking effects in wh-in situ questions

Zheng Shen and Beth Chan
National University of Singapore

Wh-island effects have been analyzed using featural Relativized Minimality (fRM) (Rizzi 2001; Starke 2001). One important piece of evidence comes from the amelioration effect of d-linked wh-elements (the d-linking effect). This paper uses experimental data from Colloquial Singapore English (Singlish) to show that wh-island effects in wh-in situ questions are not sensitive to d-linking. We argue that instead of fRM, the minimality condition on binding (Li 1992) derives wh-islands in wh-in situ questions.

Wh-island in wh-fronting questions Wh-island refers to the constraint where a wh-dependency cannot cross an embedded question, shown in (1) in English. The fRM analysis argues that a dependency between C and *what* (in its base-generated position) is blocked by an intervening *who* because the feature on C that triggers the movement ([+Q]) overlaps with that of the intervening *who*.

It has been observed that d-linked wh-elements (e.g. *which book*) partially ameliorate wh-island violations shown in (2). This partial amelioration effect follows from fRM: the triggering features on C ([+Q,+N]) include that on the intervening *who* ([+Q]), thus the dependency between $C_{[+Q,+N]}$ and $which\ book_{[+Q,+N]}$ can be established across $who_{[+Q]}$ with a reduced penalty. This d-linking effect has been experimentally verified by Villata et al. (2016); Villata & Sprouse (2023) among others.

Wh-island in wh-in situ questions The status of wh-islands in wh-in situ questions has been under debate. The effect in Mandarin Chinese is claimed to be absent by some (Huang 1982), but present by others (Yang et al. 2021). We conducted two parallel experiments on wh-fronting questions in English and wh-in situ questions in Singlish on wh-islands. Both acceptability experiments include three factors: construction (island (*whether*) vs. noisland (*that*)), dependency type (short vs. move/situ), wh type (bare vs. d-linked). The 2*2*2 design yields 8 conditions in (3) in English and (4) in Singlish.

Condition means of the zscore judgments from 41 English speakers and 40 Singlish speakers are in Fig. 1 and Fig. 2. In English, sentences with d-linked wh-elements show a smaller island effect, whereas in Singlish, two wh-types show similar effect size. Statistical analyses reveal a significant three way interaction in English ($p=.0089$), indicating that the sizes of wh-island effects differ between the wh-types (replicating Villata & Sprouse 2023). In Singlish, no such interaction is found ($p=.35$). The presence of wh-island effects and the absence of d-linking effects in wh-in situ questions, which argues against the covert movement analysis to wh-in situ as it predicts the d-linking effects (Chen 2022).

Proposal: We argue that the full paradigm lends support to the non-movement unselective binding analysis for wh-in situ questions where the question operator at Spec,CP binds the wh-elements in situ as a variable, and no movement occurs as shown in (5) (Tsai 1994 among others). Furthermore, we argue that the wh-island effects observed in wh-in situ questions result from a minimality condition on variable binding proposed by Li (1992), instead of fRM.

Based on data from the wh-indefinite reading in Mandarin Chinese, another operator-variable binding operation, Li proposes the condition in (6). The condition in (6) (hereinafter Min_{Li}) accounts for the wh-island effect in wh-in situ questions under the unselective binding analysis. Using (7) in Singlish as an example, the matrix Q operator OP_i cannot bind the in situ $what_i$ as the Q operator at the edge of the embedded question (OP_j) intervenes between the two.

One important difference between Min_{Li} in (6) and fRM is that the intervening operator in Min_{Li} does not have to match the feature of the higher operator to block it from binding the variable. This is supported by wh-indefinites in Mandarin which results from an existential operator binding the wh-element. Crucially, as observed by Li (1992), this binding relation is also blocked by the intervening question operation as shown in (8), even when $OP_{[+Q]}$ does not share features with OP_{ext} . In (8), OP_{ext} cannot bind either wh-element. Only the multiple question reading is available, as OP_{ext} is optional.

Given this property of Min_{Li} and assuming that Min_{Li} holds for wh-in situ questions in general, the wh-island effect and the absence of d-linking effects in Singlish is expected. In (9), the intervening $OP_{[+Q]}$ blocks the higher $OP_{[+Q,+N]}$ from binding $which\ event_{[+Q,+N]}$ even when the features of the higher OP do not completely overlap with the intervening OP.

- (1) *What_i did Mary wonder [**who** bought t_i]? *C_{[+Q]i} who_{[+Q]j} what_{[+Q]i}
- (2) ?Which book_i did Mary wonder [**who** bought t_i]? ?C_{[+Q,+N]i} who_{[+Q]j} which book_{[+Q,+N]i}
- (3) English wh-fronting questions with bare wh/d-linked wh
- Who/Which director said that Liam organised the event? (nol island-short)
 - What/Which event did the director say that Liam organised? (nol island-move)
 - Who/Which director wondered whether Liam organised the event? (island-short)
 - What/Which event did the director wonder whether Liam organised? (island-move)
- (4) Singlish wh-in situ questions with bare wh/d-linked wh
- Who/Which director say that Sean organise the event ah? (nol island-short)
 - The director say that Sean organise what/which event ah? (nol island-situ)
 - Who/Which director want to know whether Sean organise the event ah? (island-short)
 - The director want to know whether Sean organise what/which event ah? (island-situ)

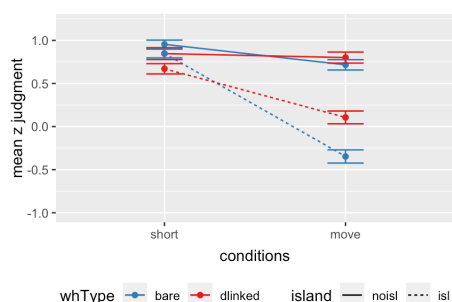


Figure 1: condition means for English, n = 41

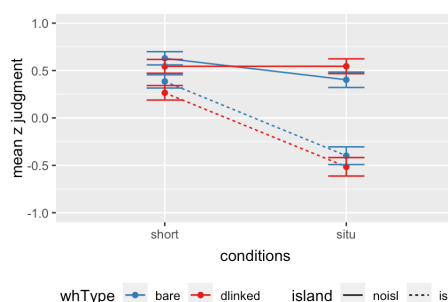


Figure 2: condition means for Singlish, n = 40

- (5) unselective binding: OP_{[+Q]i} Sean organize what_i?
- (6) Min_{Li}: Operator A cannot bind variable B across an intervening operator C. *OPA_i...OPC...VariableB_i
- (7) OP_i the director want to know OP_j whether Sean organise what_i ah?
- (8) Ta yiwei OP_{ext} wo xiangzhidao OP_[+Q] shei xihuan shenme *OP_{ext}...OP_[+Q]...Variable
 he think OP_{ext} I wonder OP_[+Q] who like what
 *OP_{ext} binds 'who': #'He thinks that I wonder what someone likes.'
 *OP_{ext} binds 'what': #'He thinks that I wonder who likes something.'
 OP_[+Q] binds both 'who' and 'what': 'He thinks that I wonder who likes what'. (ex. 32 in Li 1992)
- (9) OP_[+Q,+N] the director want to know OP_[+Q] whether Sean organise which event_[+Q,+N] ah?

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