

DEFINITELY INDEFINITES? USING ACOUSTICS AS A DIAGNOSTIC IN ST'ÁT'IMCETS

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1. INTRODUCTION

In St'át'imcets (Lillooet Salish) questions such as “Swat ku ats'xentáli ku swat?” are apparently ambiguous between a multiple WH reading (“Who saw whom?”) and an indefinite object reading (“Who saw someone”)[1]. Given that WH phrases are freely construed as indefinites in non-question contexts, the question arises as to whether the final 'swat' above is ambiguous between a WH phrase and an indefinite object, or whether it is unambiguously indefinite. A similar ambiguity occurs in embedded questions such as “I don't know who saw someone” and “I don't know who saw whom”.

This experiment tests the hypothesis that St'át'imcets speakers, like speakers of German [2], will use prosody to distinguish between the WH and indefinite readings of the WH phrases above. If WH phrases in multiple WH questions are ambiguous between two readings, we predict there will be an acoustic distinction between the WH reading and the indefinite reading. If they are unambiguously indefinites, we predict no acoustic distinctions.

2. METHOD

2.1 Participants

Participants were 3 fluent St'át'imcets speakers: AP: female, 64 yrs, Northern dialect; CA: (brother of AP), male, 67 yrs Northern dialect; HD: male, 70yrs, Southern dialect.

2.2 Stimuli

Tokens were 3 sentences with 2 WH phrases per sentence: a control with an indefinite object only reading (1), a matrix WH question (2), and an embedded WH question (3).

(1) Cw7aodz t'u7 ku swat ku tsew'entáli ku swat.

'Nobody kicked anybody.'

(2) Swat ku tsew'entáli ku swat?

'Who kicked someone/who?'

(3) Cw7aodz kwenz zwáten lhswátas ku tsew'entáli ku swat.

'I don't know who kicked someone/who.'

2.3 Experiment procedure

Speakers were shown 4 different scenarios using 4 transitive verbs. Each scenario had 5 subscenes and was repeated twice. Each subscene contained one character who always asked “Who xed someone?” and one who always asked “Who xed who?”. Each scene had 5 indefinite questions, 3 multiple WH questions, 2 control answers, 2 indefinite answers (embedded questions), and 2 WH answers (embedded questions). 2 filler answers per subsection were also elicited. In total, each speaker recorded 128 tokens (64 matrix questions, 32 embedded questions, 16 control (32 for HD) and 16 fillers). AP and CA were recorded together, while HD and LT were

recorded separately. Speakers took turns asking and answering questions. All speakers were recorded in a private home using a Marantz PMD660 solid-state recorder. CA, HD and LT were recorded using a SHURE headworn condenser WH30XLR microphone and AP using a SHURE dynamic LOZSM63LB microphone.

2.4 Acoustical analysis procedure

Measurements were done in PRAAT [3]. Final WH words were marked and measurements for maximum F0, pitch peak alignment, duration and mean intensity were measured for each glide+vowel sequence.

3. RESULTS

Results were analysed in SPSS through a series of independent sample t-tests with a conservative significant p value of $p=.000$ and a marginal $p\leq.01$ [4]. Tokens were excluded due to misspeak, deletion of target and mis-measurement.

Table 1. Mean values for embedded questions

		AP	CA	HD
Control	N	10	11	30
	F0	193.7	150.65	136.21
	dur	203.77	168.93	195.89
	peak%	56	0	0
	intens	73.22	75.98	75.57
WH	N	17	12	15
	f0	208.87	145.51	138.97
	dur	192.65	176.31	197.56
	peak%	83	0	3
	intens	71.58	75.29	74.72
Indefinite	N	16	17	12
	F0	209.36	144.54	136.86
	dur	201.69	170.28	194.1
	peak%	81	0	0
	intens	71.61	74.89	74.24
WH-Indef	F0	NS	NS	NS
	dur	NS	NS	NS
	peak%	NS	NS	NS
	intens	NS	NS	NS
	Control-WH	F0	NS	NS
dur		NS	NS	NS
peak%		NS	NS	NS
intens		NS	NS	NS
Control-Indef		F0	NS	NS
	dur	NS	NS	NS
	peak%	NS	NS	NS
	intens	NS	NS	p=.01

Table 1 shows that no speaker made a distinction between indefinites and WH phrases in embedded questions. Speakers also make no distinction between the control and WH phrase, and only 1 speaker makes a marginal distinction in intensity between the control and the indefinite. The control N was particularly low for AP and CA because their dialect permits a construction that omits the WH phrase.

Table 2. Mean values for matrix questions

		AP	CA	HD
Control	N	10	11	30
	F0	193.7	150.65	136.21
	dur	203.77	168.93	195.89
	peak%	56	0	0
	intens	73.22	75.98	75.57
WH	N	17	24	15
	f0	257.32	147.23	155.47
	dur	191.79	195.14	194.46
	peak%	92	34	33
	intens	76.83	75.61	86.79
Indefinite	N	34	43	16
	F0	169.68	143.16	151.41
	dur	215.08	185.79	195.86
	peak%	15	21	13
	intens	72.82	75.91	87.17
WH-Indef	F0	p=.00	NS	NS
	dur	p=.00	NS	NS
	peak%	p=.00	NS	p=.003
	intens	p=.00	NS	NS
Control-WH	F0	p=.00	NS	p=.00
	dur	NS	p=.003	NS
	peak%	p=.005	p=.001	p=.00
	intens	p=.00	NS	p=.00
Control-Indef	F0	p=.01	p=.002	p=.00
	dur	NS	p=.01	NS
	peak%	p=.002	p=.001	p=.003
	intens	NS	NS	p=.00

Table 2 shows that results for matrix questions are considerably different than for embedded questions. Two speakers make a distinction between WH phrases and indefinites: AP makes a distinction in every cue, and HD makes one in peak percent. All speakers make a distinction between the control and matrix question WH and indefinites in peak percent, and all but CA in pitch as well. Duration was a strong cue only for CA, while HD had strong intensity differences.

4. DISCUSSION

Our results support the hypothesis that St'at'imcets WH-phrases are unambiguously indefinites. Speakers did not distinguish between them in embedded questions, and the differences found in matrix questions can be seen as a factor of methodological/metalinguistic complications. AP and HD both found the task challenging, in that they were aware that the St'at'imcets translation of both English questions was

the same. AP, in particular, made a conscious effort to distinguish the St'at'imcets questions using an English style raised pitch contour, which was quite distinct from CA's pronunciation. Both AP and HD seemed less aware of this distinction in the embedded questions, as reflected in their results.

The differences between the control and matrix WH and indefinites can be explained by an intonational difference between questions and declaratives. In St'at'imcets matrix questions, initial WH words and non-WH words differ precisely in peak percentage [5]. St'at'imcets yes/no questions are also produced at a significantly higher register than declaratives [6]. It appears that matrix WH questions in St'at'imcets, unlike in English [7], are produced with different intonation than declaratives.

If WH phrases in St'at'imcets are indefinites, as shown by these results, this raises the question of why they are subject to superiority effects, like other WH phrases [7]. Research including more speakers and a more opaque methodology is needed to confirm these results.

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