The acquisition of Quantifier Dialects by children
David E. Iannucci
University of Utah

Guy Carden (1970, 1973) has argued the existence of so-called quantifier dialects, based on different interpretations of sentences like: "All the kids aren't asleep". The Neg-V dialect interpretation is that not a single kid is asleep; i.e., the scope of negation is the Verb (=Predicate) '(be) asleep': [all the kids] [NEG be asleep]. The Neg-Q dialect interpretation is that some are asleep but some are not; i.e., the scope of negation is the quantifier 'all': [NEG all the kids] [be asleep]. Wm. Labov (1972:193-199) has countered that quantifier dialects are merely artifacts of the fragile nature and manipulability of linguistic intuitions--even to the extent of being mere "artifacts of a [linguistic] theoretical position" (199). Both Carden and Labov have somewhat obscured the issues by not taking serious account of the characteristic intonation patterns associated with this type of syntactic structure. Carden (1973:178) makes brief vague reference to "stress and intonation patterns known to enforce one reading or the other", but the matter is very remote from his basic arguments. Despite their different conclusions, both Labov's and Carden's arguments hinge on variability in the hearer's interpretations of such sentences; however, my own observations of normal speech usage and comprehension surveys with numerous people indicate that if intonation is carefully controlled for in natural ways, that variability can be virtually eradicated. What I find is that there is one particular intonation pattern which is characteristic of this type of syntactic construction and, further, unambiguously yields Neg-Q interpretations in adults. That intonation involves high-rising pitch on the quantifier (which is normally stressed), then falling to level, often rising slightly at sentence end; e.g.:

1) All the kids aren't asleep.

There are, of course, variations on this basic pattern, but the defining variable seems to be the high pitch rise (and concomitant vowel lengthening) on the stressed quantifier (wherever it occurs). Out of context, one can utter these sentences with intonations that are ambiguous, but this is extremely rare in normal speech. One can also utter them with unambiguous Neg-V intonation (and stress)--usually a very deliberate monotone, enhanced greatly by a pause after the NP--but this is also quite rare in normal speech settings. In fact, if we want to get across the Neg-V alternative of the above, we are far more likely to say something like: "None of the kids are asleep". Carden himself observes (1973:175, and 179 fn. 4) that the overall responses of his informants did tend to favor the Neg-Q readings, in a variety of ways, and my guess is that this phenomenon

occurring in an experimental setting may well be caused by the
fact that these sentences in normal speech settings are over-
whelmingly Neg-Q in their interpretation.

It is interesting to note that, whereas superficial negation
of the Verb, of the type dealt with here, is at least potentially
ambiguous, superficial negation of the quantifier itself is cate-
gorically interpreted as semantically Neg-Q (e.g., "Not all the
dogs bite."). The strength of the bond between superficial quant-
ifier negation and Neg-Q meaning is even reflected in quantifier
floating. Consider the following sentences, where (3) and (4)
represent different degrees of quantifier floating from the more
basic structure in (2):

(2) All the dogs don't bite.
(3) The dogs all don't bite.
(4) The dogs don't all bite.

The characteristic Neg-Q intonation is compatible with all three
of the above (be sure to keep the quantifier stressed and move
the pitch-rise point with the floating quantifier). If, however,
we try to impose Neg-V intonation on these sentences, we discover
that it is compatible with (2) and (3) but not (4). I suggest
that the above-mentioned bond between superficial quantifier neg-
ation and Neg-Q meaning may well be in a sense 'extended' to the
accidental surface proximity (...'nt all...) of the negative ele-
ment and the quantifier, caused by quantifier floating in (4).
In any case, superficial negation of quantifiers (proximity of
NEG to the quantifier) seems to provide none of the problems of
superficial negation of verbal constituents.

With all of the above in mind, now consider what the child
faces in the acquisition of quantifier negation as it occurs in
the kind of sentences under consideration here. If I am correct,
when he hears such sentences in his environment, their meanings
are overwhelmingly Neg-Q and they are almost always accompanied
by some variant of the intonation pattern I have suggested to be
characteristic of the construction type. The clear marking of
the Neg-Q interpretation by intonation, further, is no trivial
matter with regard to consideration of child language acquisition,
since we know that children normally latch onto intonation at the
very earliest stages of grammatical development. The question
now is: how do children handle these quantifier sentences?

My initial observations of how very young children handle
these sentences indicated that they were interpreting them quite
differently from adults. I have now systematically observed the
linguistic development of one child in this regard over a period
of 2 2/3 years--from age 3 yrs. 4 mo. to age 6. After the first
year of observation, I added several other (roughly) same-aged
children (none of their ages differed by more than 8 months),
thus observing the additional children over a period of 1 2/3
yrs. The children were checked at four-month intervals to deter-
mine the nature and progress of their acquisition of the given

syntactic structure. Although a total of six children were in-
volved, only four were observed at each test interval, due to my
changing accessibility to particular children.

The procedure was essentially as follows. The child would
hear a sentence of the type under discussion as he was shown two
pictures--one that clearly represented a Neg-Q interpretation of
the sentence and one that was clearly Neg-V. His task was to
choose the picture that best fit what the sentence was about. For
example:
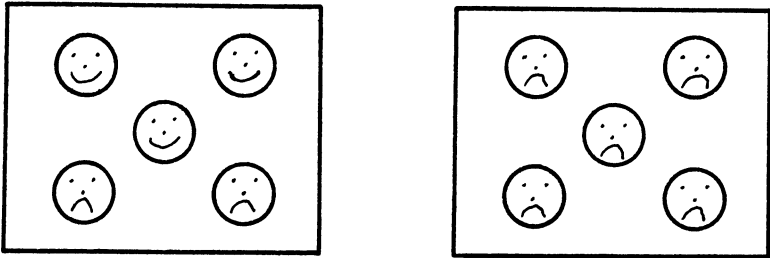
("All the faces aren't happy")

The children heard the target sentences with Neg-Q intonation
about 75% of the time (frequently very exaggerated). Very delib-
erate Neg-V intonation was also used to try to manipulate res-
ponses, about 25% of the time. After the child made his choice,
he was asked to explain why he did so and sometimes even to ex-
plain what the target sentence meant. The pictures and sentences
were, of course, geared to the interest and level of children at
these ages, e.g.: "All the dishes aren't broken", "All the kids
aren't running", "All the doors aren't open", "All the monsters
aren't mean", "All the clocks aren't round","All the dogs don't
bite", "All the monkeys aren't in the cage", and the like.

The results are best reported not in terms of statistical
numbers derived from the children's performance on the comprehen-
sion tests, since test success was always interpreted in terms of
their subsequent explanations of why they chose a particular pic-
ture and (occasionally) what the sentence meant. The possibility
of merely tabulating numerical indices of comprehension here is
sabotaged by a variety of strategies sometimes taken by the
children, which tended to defeat the purpose of the tests--varying
from attention span problems to the "am-I-getting-this-right?"
syndrome to behavior not unrelated to the "pop-go-weasel" pheno-
menon reported by Brown and Bellugi (1964:135). The post test-
item interview procedure was so revealing that I think it justi-
fies the somewhat impressionistic nature of the interpretation of
results.

At the earlier stages--three to (esp. early) four years old--
the children, unlike Labov's and Carden's adults, were simply un-
manipulable in their interpretations of the sentences--no matter

what the intonation. Further, unlike the adult model character-
ized above, they were categorical adherents to Neg-V interpreta-
tion (even in the presence of exaggerated Neg-Q intonation).
Their own explanations of the choice of pictures were typically
paraphrases or brief (invented) narratives describing what was
going on in the pictures--both of which were quite revealing as
to how they had comprehended the target sentence. As a typical
example, the child hears: "All the doors aren't open" with heavy
Neg-Q intonation. He sees two pictures--one with three doors
open and two closed (Neg-Q), and the other with no doors open
(Neg-V). He picks the Neg-V alternative and is asked why he did
so. His response: "Because you just said that the doors were all
closed". The paraphrase, switching from 'not open' to 'closed',
thus removing even the potential for syntactic ambiguity, seems
to nicely indicate the clarity of the child's Neg-V interpreta-
tion (and such unambiguous paraphrases are fairly frequent in the
data). Another child in the same setting, after the same choice,
began to construct a little story explaining how the doors all got
closed, and at one point even incorporated the original test sen-
tence into his categorically Neg-V narrative. Still another child
was confronted with one picture containing two instances of a
child shaking hands with and smiling at a little boy, plus a third
child punching the same little boy, with a scowl on his face. The
other picture had all three children scowling and punching the
little boy. The target sentence was: "All the kids don't like
JJ". I just happened to use the name JJ because the child I was
testing has a friend with that name. Upon hearing the sentence,
she promptly ignored the pictures and blurted out: "That's not
true--I like JJ". To which I responded: "I didn't say you don't
like him; I only said: 'All the kids don't like him' (heavy Neg-Q
intonation)". To which she responded: "I don't want to play this
game--you won't tell the truth".

   As the children progressed beyond four years of age, cracks
began to appear in their dogged adherence to Neg-V interpretation.
The more they picked up on the possibility of Neg-Q interpreta-
tion, the more confusing the tests became. Two children, at
approx. five years old, were quite confused by the tests but
could give perfect (Neg-Q) explanations of the sentences in isola-
tion (Q: "What does it mean to say 'All of the clocks aren't
round'?"; A: "Some of them are round, and the rest are square".)
By the age of six or so, all but one of the children had made con-
siderable progress toward the adult model, especially with regard
to the disambiguating effect of intonation. The question now
remains: why do children at early stages adhere so strongly to
Neg-V interpretations, in the face of contradictory data in their
adult models?

   The answer lies in what Slobin (1973) has called universal
operating principles--strategies that children seem to use in con-
fronting the task of first language learning. In discussing the
tendency of children to preserve underlying structure by doing
such things as avoiding interruption and rearrangement of

linguistic units (199), he seems to have his finger on a principle of broader generality than is implied by the organization of the essay. That principle could be stated as follows: KEEP THE GAP BETWEEN SURFACE AND UNDERLYING STRUCTURES AS NARROW AS POSSIBLE. Put another way: INTERPRET SURFACE STRUCTURES AS IF THEY WERE ONLY MINIMALLY REMOTE FROM UNDERLYING STRUCTURES. Unfortunately, the syntax of natural languages doesn't always cooperate with children's acquisition strategies, and the strategy just cited is certainly no exception. For example, tough movement in English creates a rather radical gap between surface and underlying structures and ought thus to be tough for young children to handle (e.g., [for Sm to see John] is easy → John is easy [to see]). Carol Chomsky (1969) and Richard Cromer (1970) have demonstrated that this is precisely the case and that children typically misinterpret such sentences until 7-8 years old. For example, a sentence like "This doll is easy to see" was often misinterpreted by the children in their studies as if it were "It's easy for this doll to see", thus confusing underlying subject/object relations. My own informal observations indicate that tough movement sentences also cause confusion regarding adjective attribution; e.g., "This game is hard to lose" is interpreted by 3-4 year olds as if the game were hard (games that are hard to lose, of course, are easy games). Slobin (1973:199) explains Chomsky's and Cromer's results by a principle involving the interpretation of deviant word-order as if it were standard—a principle apparently independent of the one causing the avoidance of interruption and rearrangement.

The more general operating principle I have suggested above also explains the child's early Neg-V responses to our quantifier sentences. These sentences superficially negate a verbal element, even though the semantic scope of negation is normally the quantifier (which can be quite sequentially remote from its negator). The adult can attach a Neg-V interpretation, given the proper intonation, but he rarely does. The young child insists on a better surface-to-underlying 'match' and rules out the Neg-Q interpretation in favor of Neg-V, regardless of the normally disambiguating intonation, thus keeping the aforementioned syntactic gap more narrow. But only temporarily so, since any uncooperative syntactic rules of his language must ultimately wear down acquisition strategies as the child's speech approaches the adult's; and he ultimately learns, in this case, that the surface negation of the Verb really has the quantifier in its scope.

We might conclude then that children at these early acquisition stages may well be the only true representatives of a quantifier dialect and, further, they are natural representatives of the one type to which they adhere, given the existence of acquisition strategies of the type discussed here.

References

Brown, Roger and Ursula Bellugi. 1964. Three processes in the child's acquisition of syntax. Harvard Educational Review 34.133-151.

Carden, Guy. 1970. A note on conflicting idiolects. Linguistic Inquiry 1.3.281-290.

_____. 1973. Disambiguation, favored readings, and variable rules. New ways of analyzing variation in English, ed. by C.N. Bailey and R.W. Shuy, 171-182. Washington, D.C.: Georgetown University Press.

Chomsky, Carol. 1969. The acquisition of syntax in children from 5 to 10. Cambridge: M.I.T. Press.

Cromer, Richard. 1970. Children are nice to understand: surface structure clues for the recovery of a deep structure. Brit. Jour. Psychol. 61.3.397-408.

Labov, Wm. 1972. Sociolinguistic Patterns. Philadelphia: U. Penn.

Slobin, Dan. 1973. Cognitive prerequisites for the development of grammar. Studies of child language development, ed. by C.A. Ferguson and D. Slobin, 175-208. New York: Holt.