Subordination Index

Introduction

This guide contains the scoring rules for the Subordination Index (SI), and directions for using SALT to enter SI codes into a transcript and to generate the SI reports.

SI definition: SI is a measure of syntactic complexity which produces a ratio of the total number of clauses to the total number of C-units (or modified C-units for samples of bilingual Spanish/English speakers). A clause, whether it is main or subordinate, is a statement containing both a subject and a predicate. Grammatically, a subject is a noun phrase and a predicate is a verb phrase. Main clauses can stand by themselves. Subordinate clauses depend on the main clause to make sense; they are embedded within an utterance as noun, adjective, or adverbial clauses. The SI analysis counts clauses.

This measure has been used in research studies since Walter Loban first created it to document complex sentence development (Loban, 1963). The attraction of this measure is the straight forward definitions of complex syntax with a scoring system that can be completed efficiently. It still requires hand coding in that these syntactic features cannot be identified accurately using lexical lists. An added feature is that it can be used with languages other than English. Our research on Spanish-English bilingual children used the SI to quantify complex syntax across the two languages. We found that a transcript can be coded in less than 10 minutes, with most time spent on the few unique utterances. Loban demonstrated that the SI captured advancing syntactic gains from kindergarten through grade 12.

SI codes: Language samples, which have been transcribed and segmented into C-units (or modified C-units), are coded at the end of each utterance using the codes [SI-0], [SI-1], [SI-2], etc. which means subordination index – 0 clauses, 1 clause, 2 clauses, and so on, within the utterance. The code, [SI-X], should be inserted at the end of utterances which are excluded from the SI analysis set (see Scoring Rules).

SI composite score: The SI composite score is calculated by dividing the total number of clauses by the total number of utterances.

SALT reference databases: The following SALT reference databases have been coded for SI: Play, Conversation, Narrative SSS, Narrative Story Retell, Expository, Persuasion, Bilingual Spanish/English Story Retell, Bilingual Spanish/English Unique Story, and Monolingual Spanish Narrative Story Retell. Samples you code may be compared to age or grade-matched samples selected from these databases.

Disclaimer: There is variation in the literature on how to count clauses, especially for some of the special cases. The SALT reference databases were coded for SI following the rules in this document. If you intend to compare your sample with samples selected from these databases, you should code your sample following the same rules.

Scoring Rules

In the examples, color coding is used to indicate the subjects and verbs in the clauses which are given SI credit.

1. Utterances that are incomplete, unintelligible, are nonverbal, or are marked with [EU] are excluded from the SI analysis set. Titles and <u>true</u> fragments, e.g., "The end", "and the dog", are not C-units and are also excluded from the SI analysis set. These excluded utterances are coded for SI using [SI-X] and are not included in the SI composite score.

    Examples of utterances not included in SI:
    C Then he [SI-X]>
    C He went XX yesterday [SI-X].

Examples of colloquialisms which are also not included in SI:
    C You there frog [SI-X]?
    C Frog, you in there [SI-X]?
    C ¿Rana ahí [SI-X]?

These utterances are acceptable in conversation. Therefore, they are excluded from the SI analysis set so that the speaker is not penalized for not including a verb.

When an elliptical response to a question is <u>not</u> a clause, it is excluded from the SI analysis set. With elliptical responses, the missing term(s) are understood from the context. *"... they are answers to questions that lack only the repetition of the question elements to satisfy the criterion of independent predication"* (Loban, 1963).

Examples of elliptical response to a question:
    E Why did you do that?
    C Because [SI-X].
    E ¿Por qué hiciste eso?
    C Porque sí [SI-X].

When an ellipsis has clausal structure and the subject can implied, it is scored and included in SI.

Example of elliptical response with clausal structure:
    E How do you win?
    C Score the most point/s [SI-1].   *The subject "you" was implied and scored for SI as though the subject was stated.*

The following types of ellipses are given credit for verb use.
    E You should turn in your assignment.
    C I will [SI-1].

    E Did your friend come to the party?
    C He did [SI-1].

2. Ignore parenthetical remarks. Utterances which consist entirely of parenthetical remarks are excluded from the SI analysis set.

Examples:
    C The girl ((I forgot her name)) got lost [SI-1].

    C Then the ((what is that animal called)) <> ((oh yeah)) gopher bit him on the nose [SI-1].
    E <Gopher>.

Example where the child does not repeat the subject supplied by the examiner:
    C Then the ((what is that animal called)) <> bit him on the nose [SI-1].
    E <Gopher>.
In this example, the child is given credit for the subject supplied by the examiner. Repeating the subject is optional in this context.

Examples of utterances consisting entirely of parenthetical remarks:
    C ((I skip/ed a page)) [SI-X].
    C (((Um) where was I)) [SI-X]?

3. Clauses with *omitted subjects are included in the SI analysis and receive a score of SI-0.

Example of omitted subject:
    C *He got on the rock [SI-0].

Example of complex subordination with subject omission:
    C And then *he grab/ed some branch/s so he would/n't fall [SI-1].
In this example the <u>first</u> clause receives SI-0 score due to subject omission.

Spanish note: Spanish is a pronoun-drop language (Bedore, 1999) and, as such, omission of nouns and personal pronouns is ubiquitous and grammatical. Therefore, these subjects are not considered to be omitted. Example:
    C Y luego agarró unas rama/s para que no se cayera [SI-2].

4. Clauses with missing subjects due to pronoun errors are included in the SI analysis and receive a score of SI-0.

Examples:
    C There[EW:they] see the frog/s [SI-0].
    C Ahí[EW:ellos] ven a las rana/s [SI-0].
In these examples the pronoun is a demonstrative pronoun instead of a personal pronoun (i.e. she, you, his) and therefore the clause receives a zero score.

5. Commands with implied subjects are included in the SI analysis and scored as though the subject was stated.

Examples where the subject "you" is implied (not obligatory):
    C Give it to me [SI-1].
    C Look at this [SI-1].

6. If an utterances contains a list of verbs, only score the verbs with stated subjects.

Examples:
    C I walk/ed to the store, got some candy, and went home [SI-1].
    C I walk/ed to the store because I want/ed some candy, and then went home [SI-2].
    C He got on the rock and fell off the rock [SI-1].

Spanish – modified C-units.
    Because of the pronoun-drop nature of Spanish, English and Spanish samples from bilingual speakers are segmented using modified C-units. Utterances containing successions of verbs without subjects are segmented and a fragment code, [F], is placed at the end of each utterance lacking a stated subject as a result of this segmentation. For these transcripts, subjects can be *implied* for fragments due to segmentation and receive SI scores.

Examples:
    C He got on the rock [SI-1].
    C and fell off the rock [F] [SI-1].

    C Se subió a la piedra [SI-1].
    C y cayó de la piedra [F] [SI-1].

Special case: If there is a fragment due to segmentation but the preceding utterance has an omitted subject, then you cannot imply the subject for the fragment.

Examples:
C Then *he ran [SI-0].
C and look/ed [F] [SI-0].

Because Spanish is a pronoun-drop language, this special case does not apply to Spanish samples.
Examples:
C Luego corrió [SI-1].
C y miró [F] [SI-1].

7. Clauses with *omitted copula (main verb) are included in the SI analysis and receive a score of SI-0.

Examples of omitted main verb/copula:
C (And the) and the frog *went through the big (ah) pond [SI-0].
C (y la) y la rana *nadó por el estanque (eh) grande [SI-0].

Examples of omitted verb in the second clause:
C And he start/ed yelling, "Froggy, Froggy of[EW:are] you there" [SI-1]?
C Y empezó a gritar, "¿Rana, Rana fuera[EW:estás] ahí [SI-1]?
In these examples the speaker did not state a verb in the second clause; thus that clause receives a score of zero.

8. Utterances containing omitted auxiliary verbs, bound morphemes, functor words, direct objects, and articles are included in the SI analysis (coded for SI). This includes verbs which are not conjugated correctly.

Examples of omitted auxiliary:
C He *is go/ing [SI-1].
C When they *were sleep/ing the frog got out [SI-2].
C Él *estaba yendo [SI-1].
C Cuando ellos *estaban durmiendo la rana se salió [SI-2].

Example of an omitted bound morpheme:
C The boy was fall/*ing off the rock [SI-1].

Example of an omitted article:
C He see/3s *an owl [SI-1].
C La rana se estaba cayendo de *la piedra [SI-1].

Examples of an omitted direct object:
C He was pour/ing coffee into the *cup [SI-1].
C Él estaba sirviendo café en la *taza [SI-1].

9. The subordinate clause within an utterance containing an omitted obligatory subordinating conjunction will not receive credit. Examples:
C There was a boy *who had a dog [SI-1].
C And the boy did/n't see *that the frog went out [SI-1].
C Había un niño *que tenía un perro [SI-1].
C Y el niño no vio *que la rana se salió [SI-1].

10. When an incorrect subordinating conjunction is used, the subordinate clause will not receive credit. Example:
    C The deer was run/ing what[EW:so] he could throw the little boy in the water [SI-1].
    If the word in error is a different subordinating conjunction, albeit the wrong one, the second clause may get credit. Use judgment. For example, bilingual (Spanish/English) children sometimes use the word "for" as a subordinating conjunction because the Spanish word "para," which means "for" in English, can be used as a subordinating conjunction in Spanish. In this case the subordinate clause should be given SI credit.
    C The deer was run/ing for[EW:so] he could throw the little boy in the water [SI-2].

11. If a subordinating conjunction is not obligatory to the coherence of the utterance, the subordinate clause should still receive a score for SI. Examples:
    C I know I want to go [SI-2].
    C I think I hear something [SI-2].
    The subordinating conjunction "that" can be implied in these utterances.

12. Dialogue is coded for SI. Consider the introducer, e.g., *he said*, as the main clause and what is in the quotes as the second clause. The direct quotation must have a subject and predicate in order to be considered a clause and get an SI count. Examples:
    C And he *was say/ing, "Frog, where are you" [SI-2]?
    C Y él *estaba diciendo, "¿Rana, dónde estás" [SI-2]?

    C The boy said, "Shh" [SI-1].
    C El niño dijo, "Shh" [SI-1].

    Examples of commands in which the subject *you/tú* can be implied:
    C The boy said, "Go away" [SI-2].
    C El niño dijo, "Vete" [SI-2].

13. Semantics should be ignored when scoring SI. If the wrong content word is used by the speaker, but is grammatically acceptable, score SI accordingly. Examples:
    C The boy ran[EW:fell] off the rock [SI-1].
    C El niño se corrió[EW:cayó] de la piedra [SI-1].

14. Utterances with imitated words (coded with [I] in the examples) are included in the SI and are scored as though the imitated word originated from the speaker. Examples:
    C The <> gopher[I] came out of the hole [SI-1].
    E <Gopher>.

    C El <> topo[I] salió del hoyo [SI-1].
    E <topo>.

    Note In the following example, the child is given credit for the subject supplied by the examiner. Repeating the subject is optional in this context.
    C The <> came out of the hole [SI-1].
    E <Gopher>.

15. Counting Infinitives: there is variability in the literature on whether or not to count infinitives. Samples in the SALT databases do not count infinitives as clauses. Examples:
    C The boy told the dog *to be quiet* [SI-1].
    C The dog want/ed *to run away* [SI-1].
    C We allowed the dog *to run loose* [SI-1].
    C We let the dog *run loose* [SI-1].
    C El niño se fue *a comprar* un perro [SI-1].
    C El perro se quería *escapar* [SI-1].

16. The utterances containing code switches will be reviewed for SI. If the majority of the utterance (at least 50%) is in the target language (English or Spanish), code for SI.

Examples of code switching and SI coding with English as the target language:
    C The rana[CS] jump/ed off the boat [SI-1].
    C El[CS] niño[CS] buscó[CS] en[CS] the hole [SI-X].   *only 2 of the 6 words are in English, so not coded for SI*
Examples of code switching and SI coding with Spanish as the target language:
    C La frog[CS] saltó del bote [SI-1].
    C The[CS] boy[CS] look/ed[CS] in[CS] el hoyo [SI-X]. *only 2 of the 6 words are in Spanish, so not coded for SI*

If the utterance has enough of the target language to score for SI but the speaker produces a partial verb in the non-target language then credit will be given for SI. Examples:

    C The boy busc|buscar[CS] in the hole [SI-1].   *(target language: English)*
    C El niño sear|search[CS] en el hoyo [SI-1].   *(target language: Spanish)*

Tricky Scoring Examples

The following table contains examples of utterances which may be tricky to score. Each utterance is scored and a rationale is provided. Color coding is used to show the subjects and verbs counted for SI.

Transcript Quote	Rationale
And she get/3s all the toy/s she want/3s [SI-2]. When he was hold/ing an umbrella, he just knew he was/n't Fluffy [SI-3].	Implied subordinating conjunctions (Rule 11). Notice that in these examples the subordinating conjunction "that" can be implied.
Sit down and get to work [SI-1]. "Wait," said Dr_DeSoto [SI-2]! The boy said to the dog, "Be quiet" [SI-2].	Commands with implied "you" (Rule 5); in dialogue (Rule 12). First example includes lists of verbs (Rule 6) where the implied "you" only applies to the first verb in the list.
When it began to rain (he he um) he said, "My hat will shrink if the rain get/3s on it" [SI-4].	Includes dialogue (Rule 12).
(Um) many player/s obviously would stretch before the game so that they would/n't (um like you know) cramp up as many people in athletics do [SI-3]. So it usually take/3s longer also because the clock stop/3s when the ball is run out of bounds [SI-3].	Each clause contains a qualifying subject and verb.
I will allow you to pick the first one [SI-1]. I will let you pick the first one [SI-1].	Infinitives are not given SI credit (Rule 15).
C And each creature also has its own special ability/s that can either destroy a creature when it come/3s in to play, or destroy a creature when it come/3s out of play, or let an opponent draw a card, or let you draw a card [SI-4].	Lists of verbs are not given SI credit unless the subject is stated, i.e., "ability/s can destroy … or destroy … or let … or let" (Rule 6). Infinitives are not given SI credit, i.e., "opponent draw" and "you draw" (Rule 15).
The higher your individual score, the more point/s get added to your team/z score [SI-1].	The first clause does not contain a verb phrase.

Using SALT to enter SI scores

The **Edit menu → Insert SI Codes** utility may be used to insert the appropriate SI code at the end of each qualifying utterance in your transcript. Each utterance is highlighted and you are prompted to select the appropriate SI code from a list.

Analyzing the SI scores

- The **Analyze menu → Subordination Index** report lists the count of each SI code along with the composite SI score.

- The **Database menu → Subordination Index** report lists the count of each SI code along with the composite SI score. Scores are listed for your transcript and for the selected database samples.

References

Bedore, L.M. (1999). The acquisition of Spanish. In O. L. Taylor & L. B. Leonard (Eds.), *Language acquisition across North America: Cross-cultural competence and cross-linguistic perspectives* (157-208). San Diego, CA: Singular Publishing Group, Inc.

Loban, W. (1963). *The Language of Elementary School Children.* Urbana, IL: National Council of Teachers of English.

Acknowledgement

Resources

For SI training materials, including practice transcripts, visit the SALT web site.
- Select "Training → Self-paced Online Courses". From the course directory, select the course labeled "SI - Subordination Index".
- Select "Training → You Tube Videos". From the list of videos, select "Inserting Subordination Index codes".