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Form and function in Irish child directed speech[1]*

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Abstract

In the present study we analyse a sample of Irish Child Directed Speech in terms of item-based constructions and the communicative intents which they express. The study is based on the speech of an Irish native speaker engaged in daily activities with her son (aged 1;9). The findings of the analyses indicate the high degree of lexical specificity attested in the sample; in total 35 item-based frames account for just under 70% of analysed utterances. In most cases there was a one-to-one relationship between item-based frame and communicative intent. However, of particular interest was the clustering of structurally related frames around specific functions. We propose that this relationship highlights the role of communicative intent in the organisation of structural linguistic knowledge.

1. Introduction

The linguistic input available to nascent language learners plays a central role in all theories of language development. Generative theories are in part based on the assumption that the input is degenerate and impoverished with regard to

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structure. Consequently, they claim that, in order for children to acquire their target language, a degree of structural linguistic knowledge must be pregiven, for example in the form of a Universal Grammar (UG). In this approach the child uses the input language as a database for lexical items and also as a trigger for a range of settings within UG. An alternative view maintains that the input is well suited to the process of language development and consequently challenges one of the main tenets of generative theory. Over the years a number of empirically-based studies of Child Directed Speech (CDS) have high- lighted its unique features. These include exaggerated intonation, restricted lexical diversity, shorter sentence structure, and a focus on the 'here and now', (see Gallaway and Richards 1994; Snow and Ferguson 1977). Researchers working within social-interactionist approaches to language development suggest that, given the specific characteristics of CDS, children may well be able to learn the ambient language without recourse to innate, structural knowledge of language.

Using this suggestion as a working hypothesis, usage-based theories of language development have emerged, claiming that children can and do learn their target language from exposure to, and engagement with, the ambient language. Within this approach it is claimed that young children extract, store and process lexically based constructions from the ambient language and use these to structure their linguistic representations (Dąbrowska and Lieven 2005; Pine and Martindale 1996; Pine and Lieven 1997; Theakston et al. 2002; Tomasello 1992; Tomasello 2003). Usage-based accounts of language development commonly reflect the general assumptions of Cognitive Grammar, specifically the assumption that linguistic knowledge is represented as a structured inventory of form-function constructions (e.g., Langacker 1987, 1991; Croft 2001). The constructions can be stored at varying levels of schematicity dependent, for example, on frequency of use (Bybee and Scheibman 1999).

For such an approach to be viable the input must contain high frequency item-based frames which the child is then able to extract. Cameron-Faulkner

et al. (2003) present evidence of the high frequency of item-based frames in a sample of English Child Directed Speech consisting of approximately 17,000 utterances. In the analysis 52 item-based frames were identified and these accounted for just over half of the input sample. Similar findings are presented cross-linguistically in Stoll et al. (2009), where a high degree of lexical specificity was also found in German, Russian, and an additional English sample of Child Directed Speech. The frequency of item-based frames in the input is also captured by Weisleder and Waxman (2010) in their analysis of Spanish and English Child Directed Speech.

The findings of Cameron-Faulkner et al. (2003) and Stoll et al. (2009) also highlighted the relatively low number of constructions which adhered to the full canonical word order of the target language in question. Cameron-Faulkner et al. (2003) found that only a quarter of utterances in the English CDS sample contained full subject-predicate structures in which the verbal slot contained a lexical verb (as opposed to a copula for example). Similarly, Stoll et al. (2009) comment on the high degree of lexical specificity attested in the Russian CDS sample, despite its classification as a free word order language. Although Russian permits a range of word order patterns, the language typically heard by young children may not reflect this variability and instead presents the young Russian language learner with a high level of structural predictability in the ambient language. Again, the word order classification of the language is not well supported in the linguistic input. Therefore it could be argued that abstract word order classifications are of limited value when analysing CDS in certain languages, and that item-based descriptions provide a more accurate and meaningful level of analysis when considering the type of language addressed to young children.

1.1. *Integrating a functional dimension in the analysis of CDS*

While the previously mentioned studies provide fine-grained structural analyses of Child Directed Speech, the notion of function is absent. Although linguistic expressions are viewed as form-meaning pairings within the Cognitive

Linguistic tradition, most research on grammatical development still tends to focus on form at the expense of meaning and function. This is potentially problematic since over the years a number of researchers have highlighted the role of function in language development (e.g., Bates 1976; Bloom 1970; Bruner 1974, 1975; Budwig 1995; Dore 1975; Halliday 1975; Ninio 1992; Ninio and Bruner 1978; Ninio and Snow 1988; Snow 1979). There is evidence that child directed speech contains a higher degree of regularity between form and function than attested in other registers (e.g., Bruner 1975; Ferrier 1978; Shatz 1978a, 1978b, 1979). For example, Bruner (1975) highlights the predictable nature of caregiver-child interaction in everyday situations, referring to events such as meal times, nappy changing, and simple games as "formats". The for- mats are associated with specific communicative structures, and thus present the child with a restricted set of structures used in a routinised event which may facilitate mapping between form and function. Shatz (1979) also suggests that maternal input to young children contains a high degree of form-function transparency, in that many pragmatic functions expressed to children (e.g., re- quests for action and information) have a prototypical sentence frame which differ for each function. Ninio and Bruner (1978) and Ninio (1992) also suggest that the speech addressed to young children contains a high degree of form-function specificity.

There is also evidence that children's acquisition of structure reflects the frequency of form-function mappings attested in the input. Ninio (1992) re- ports on the use of single word utterances in a sample of twenty four Hebrew-speaking children (aged 1;6) and their mothers. The findings of the study pro- vides evidence of a high correlation between single word utterances used by Hebrew speaking children and their mothers; over 90% of the children's one word utterances mirrored form-function patterns attested in the input sample.

In summary, functionally oriented studies of language development and Child Directed speech highlight the potential value of incorporating a functional dimension to the fine-grained analyses of CDS, and it is with this

in mind that we investigate here the relationship between item-based frames and communicative intent in a sample of Irish Child Directed Speech.

1.2. *Irish*

Our motivation for focusing on Irish is twofold. Firstly, to date there are no studies of Irish Child Directed speech (though a number of studies have been conducted on the development of Irish as first and second language). Secondly, Irish exhibits VSO word order, one of the lesser studied word order combinations within child language development. Irish is regarded as a strong VSO language (Hickey 1990; McCloskey 1983; Stenson 1981). Thus, the unmarked word order is typically VSOX as shown in (1):

(1) *Bhris mé an cupán inné.*
Broke I the cup yesterday
'I broke the cup yesterday'

Aspect is marked through the use of the past/present habitual tense or by a construction involving the substantive verb *bí* (to be)[2][1] and a verbal noun/-adjective preceded by the associated particle. Therefore while the verb-initial ordering of the construction is maintained, subsequent verbal information is also positioned after the subject (2 and 3):

(2) *Tá sé briste agam.*
Be it break-V_{adj} at-me
'I've broken it'

(3) *Tá mé ag ól tae.*
Be I PT-drink-VNoun tea.
'I'm drinking tea'

While Irish is considered to be a strong VSO language, it is noteworthy that Greene (1966) also characterised it as a 'noun centred' language with a range of high frequency noun-based idiomatic constructions used to express con-cents that in other language would be expressed by verbs. In light of these considerations, it is of interest to explore in greater depth the nature of

[2] Irish has two words for the English 'be'; the copula *is* and the substantive verb *bí*. While the copula is typically used in the expression of inherent qualities, the substantive verb is used to express more temporal qualities (see Stenson 1981: 94).

Irish input to children. Given the challenge to word order categorisation presented by previous item-based studies of CDS (i.e., Cameron-Faulkner et al. 2003; Stoll et al. 2009) the extent to which Irish CDS reflects its categorisation as a strict VSO language remains to be seen. Hickey's (1990) study of children's word order development in Irish also looked at the input to the three participants, and noted that, in fact, 11% of the input was subject-initial, due to the omission of the auxiliary verb in constructions such as (2) and (3) above. This finding regarding the input showed remarkable regularity across the three children despite the differences in their ages (1;4 –2;1, 1;10 –2;6 and 2;4 –3;0), and indicates that even in a strongly VSO language, input provides a certain amount of divergence from the canonical word order.

A number of claims have also been made over the years regarding the extent to which VSO languages go against the 'natural order' of cognitive experience. Some researchers have suggested that agent-action or subject-verb ordering is somehow the most 'natural' manner in which to structure propositional information (Bruner 1975; Jesperson 1922; McNeill 1975; Osgood and Tanz 1977). Given this claim, languages such as Irish, which position the verb before the subject could be considered to be potentially problematic to language learners. Although a number of researchers have highlighted the extremely anglocentric nature of such comments (Aksu-Koç and Slobin 1985; Hickey 1990; Weist 1986), there is still an underlying assumption that VSO word order goes against some kind of cognitive norm. For example, Owens (1991) comments on the presence of utterances in Irish which follow the 'basic psychological order concept Agent-Action-Object' (1991: 86). In doing so, Owens indirectly claims that the remaining Irish constructions go against some form of natural order, thus supporting the 'naturalness' argument proposed by Bruner and others.

Hickey (1990) addresses the 'naturalness argument' directly by analysing the early multiword constructions of three native Irish-speaking children, each of whom produced a number of subject-initial utterances in their speech. How- ever, Hickey notes that the subject-initial utterances result

from the omission of the substantive verb *bí* in constructions such as (2) and (3), as opposed to being the consequence of incorrect word ordering of main verbs and subjects. Hickey supports this claim by showing that in cases where the children produced utterances with lexical verbs, the ordering of the verb and subject was always correct, and secondly that the children never produced utterances in which the substantive verb *bí* occurred after the subject. Thus, the findings seem to reflect an item-based level of linguistic knowledge in which the presence or absence of a verb in initial position is related to the specific construction in question, as opposed to reflecting an overarching adherence to abstract VSO word order. Hickey's findings regarding word order development in the first language acquisition of Irish are supported by the small number of other studies of Irish L1 acquisition (Ní Shúilleabháin 1985) and by studies of L2 acquisition of Irish (Henry and Tangney 1999; Owens 1991).

In the present paper we bring together insights from functional and usage- based accounts of language development in order to present a form-function analysis of Irish Child Directed Speech. We suggest that Irish CDS will contain a large degree of highly frequent item-based frames, as attested in other samples of Child Directed Speech, but also predict that the frames with similar structural characteristics will cluster together in the expression of specific communicative intents.

2. Methodology

The data for the present study are taken from a study of Irish language development in which the language of one Irish-speaking child (Eoin) and his mother was recorded longitudinally over a period of twelve months.

2.1. *Participants*

Eoin and his family live in an Irish-speaking area on the west coast of Ireland. At the time of the study, Eoin was the younger of two children and aged 1;5 at the onset of recording. Eoin's mother was a native speaker of Irish and his

father had native-like proficiency. Irish was the language of the home and consequently Eoin's first language. His extended family living in the neighbourhood, who were occasionally Eoin's carers, were also native speakers of Irish.

2.2. *Data collection and transcription*

The mother was equipped with a DV-recorder incorporating a wide-angled lens and asked to conduct one hour of recording per week over the period of a year. The hour of recording could consist of one session or multiple sessions depending on the situation (i.e., time limitations, the activity, or mood of the child). This approach to data collection was adopted in order to elicit the most representative and natural sample of interaction as opposed to set hour-long sessions in the presence of a research assistant.

All recordings were subsequently transcribed into CHAT format (Mac-Whinney and Snow 1990) by trained transcribers and then coded for pragmatic function using the Inventory of Communicative Acts-Abridged (INCA-A) (Ninio et al. 1994). The data were coded by the first author and a trained re- search assistant. Reliability checks were conducted by both authors on 10% of the data resulting in Cohen's kappa values of .79 for interchange codes and .82 for speech act coding. All codes were checked by the authors and any discrepancies in coding were resolved.

2.3. *Data sample*

The present study aimed to sample input to Eoin intensively at one time period, and is based on the speech of Eoin's mother during three recordings at a time when Eoin was aged 1;09. The sample represents an approximate half way point in the corpus as a whole. Self-repetitions, partially unintelligible utterances, and imitations were excluded from the analysis. In total 1601 maternal utterances were analysed. This figure is comparable to the amount of data analysed for each of the mothers in Cameron-Faulkner et al. (2003) where the number of utterances analysed from each mother ranged from 1,007–1,753.

2.4. *Structural analyses*

Two structural analyses were conducted on the data. Firstly we analysed the data in terms of structure, both at the global construction level and also at the item-based level. The global construction types used in the present study are based on the English CDS analysis described in Cameron-Faulkner et al. (2003), with some language-motivated adjustments. In the English CDS study six utterance level categories were used (i.e., Single word/multiword Fragments, Imperatives, Copulas, Subject-predicate, Complex, and WH/Yes-no Questions). The following modifications were made for Irish. The *Imperative* category was removed, since the use of this term within a structural analysis is questionable as it categorises not only form but also function. Consequently, all utterances without subjects were categorised as *Fragments*. The term *Full* was used in place of *Subject-predicate* firstly due to the VSO word order of Irish and also the debatable status of the term *predicate* in Irish (discussed by Stenson 1981). Finally the terms *Polar question* and *Product question* are used in the place of *Yes-no* and *WH-question*, since the latter terms can only be used appropriately in the description of English questions.

The second level of structural analysis was conducted at the lexical level and involved the identification of item-based frames. This analysis was restricted to multi-word, non-interrogative categories only, since the emphasis of the cur- rent study is on word order patterns which could conceivably express a range of functions. Single-word utterances were therefore excluded as they do not exhibit structural features; question forms were excluded, since by definition their form and function have an obvious and transparent relationship.

The method of analysis used in the study is based on Cameron-Faulkner et al. (2003), but again, with some modifications specific to Irish (see section 2.3). Additionally, the analysis was extended across the whole utterance as op- posed to being limited to the first one to three elements, as in Cameron-Faulkner et al. (2003). Many researchers over the years have pointed out that children pay attention to the end of utterances, as this

position is more salient for a number of reasons (Peters 1983; Slobin 1973). Work on information structure also highlights the fact that new information is placed after given information and thus, typically appears towards the end of an utterance. Consequently we were interested in ascertaining the degree of lexical specificity across the utterance as a whole.

2.5. *Identification of item-based frames*

The frame analysis was conducted from left to right. Any instance of a lexical item occurring with a frequency of four or more was categorised as a lexical slot and triggered the initial stage of frame identification. Two types of frames were counted within the sample: fully lexicalized frames, and semi-productive frames. Fully lexicalised frames, as the name suggests, consisted of four or more utterances with exactly the same lexical items in the same order. Semi-productive frames consisted of at least one lexical slot and at least one abstract slot occurring in an identical position within all associated utterances. For the purposes of the current analysis, the abstract slots were categorised according to the standard grammatical relations of SUBJ(Subject), O(bject), and I(ndirect) O(bject) (Comrie 1989). Abstract slots containing verbal elements were categorised as either V(erb) or V(erbal Noun) (see Stenson 1981 for a detailed analysis of the verbal elements in Irish). All other elements are captured under the general category X (see Stenson 1981: 40). The identification of semi- productive frames is shown in the worked example[3] below:

(4) a. *Tá an seilide go deas.*
be the snail PT nice
'The snail is nice.'

b. *Tá an teachín go deas.*
be the house-small PT nice

[3] All examples are taken from the current data set of CDS in which the age of the addressed child is 1;9.

'The small house is nice.'

c. *Tá an teidí go deas.*
be the teddy PT nice
'The teddy is nice.'

d. *Tá an traein go deas.*
be the train PT nice
'The train is nice.'

---> **Tá an** subj **go deas**.

Optional slots (displayed in parentheses) were also employed in the descriptions of frames for lexical items or word order slots which occurred with some but not all utterances grouped within a frame.

(5) a. *An bealach eile.*
The way other
'The other way.'

b. *Ceann eile.*
one other
'Another one.'

c. *Ciorcal eile.*
circle other
'Another circle.'

d. *Daoine eile.*
people other
'Other people'

---> **(an)** subj **eile.**

Finally, in some cases groups of longer utterances, whose initial components were categorised as instances of an item-based frame, contained a large amount of variability to the right of the lexical slots. In these cases, the level of similarity between the utterances deteriorated over the length. In such cases, the initial elements of the frame were recorded but the remaining elements of the utterances, though analysed in the initial phase of the process, were not incorporated into the frame; the elements are represented in the current analysis by three dots (. . .). For example, in (6) the four utterances are grouped according to a number of shared slots. However, there is a degree of variability towards the ends of the utterance, none of which meets the 4+

criterion necessary for frame identification.

(6) a. *Tá tú ag caint le Séan.*
be you PT talk-VN with Séan
'You are talking to Séan.'

b. *Tá mé ag dul amach anois.*
be I PT go-VN out now
'I'm going out now.'

c. *Tá Síle ag iarraidh dul ag dathú freisin.*
be Síle PT want-VN go-VN PT colour-VN as well
'Síle wants to do colouring as well.'

d. *Tá mé ag teacht.*
be I PT come-VN
'I'm coming.'

-->**Tá** subj **ag** VerbalNouN(. . .)

Following the item-based analysis we identified the types of communicative intents expressed by the item-based frames in order to investigate the relationship between structure and communicative intent within the sample. In the next section we discuss the coding procedure employed in the present study.

2.6. *Functional analysis: Coding using INCA-A*

Over the years, a number of function-based coding taxonomies have been proposed (for a detailed discussion see Ninio et al. 1994). The taxonomies have varied in the level of granularity, the theoretical underpinnings, and the populations for which the taxonomies are suitable. In the present study we employed the Inventory of Communicative Acts-Abridged (INCA-A) taxonomy (Ninio et al. 1994) and this decision was based on three factors. Firstly, the taxonomy has been used successfully in a range of cross-linguistic child development studies (Ninio 1992, 2001; Snow et al. 1996) and is incorporated into the CHILDES system (see, for example, the New England corpus). In order to gain a clearer understanding of the notion of communicative intent and its role in language development, the use of a standardised system is crucial.

Secondly, INCA-A codes on two levels, the speech act level (e.g.,

request, prohibit) and the interchange level (e.g., discussion of joint focus, negotiation of communicative intent). The dual coding reflects the multiple levels of analysis involved in the interpretation of communicative intent (Ninio et al. 1994), and thus affords a more accurate representation of the data.

Finally, the system codes at the level of granularity required for studies investigating the relationship between form and function. While some taxonomies consist of a relatively small number of categories, the INCA-A system provides 23 interchange codes and 67 speech act codes. Although the system affords a high level of differentiation within categories, it is also possible to conflate certain codes, depending upon the focus of the study at hand. For ex- ample, in the present study, the seven speech act codes used in the expression of marking were conflated to one code.

One potential issue relating to the INCA-A taxonomy is the apparent hierarchical relationship of some codes. For example, while some speech act codes are very specific (e.g., WD, warn of danger), others have a more general function (e.g., RP — request, propose, suggest action for hearer). In order to avoid any confusion over the assignment of codes, we consistently chose the most specific code available for each utterance. Thus, while an utterance such as 'Watch what you're doing' in the context of carrying a hot bowl of soup over a toy-strewn floor could be viewed as an RP (request/propose/suggest action for hearer), in such a case we would have opted for the more specific code of WD (warn of danger).

3. Results

3.1. *Analysis one: Global construction analysis*

The results of the global construction analysis are displayed in Table 1.

Table 1. *Proportional Frequency of Global Construction Categories in Sample*

Global Construction Type	Example	% Frequency of Sample[3]
Single word	*gorm* blue.	.08 (126)
Fragment	*An leon.* The lion	.15 (245)
Copula	*Ní hea.* NEG-COP PRO 'No.'	.07 (107)
Full	*Déanfaidh mise mo theachínsa.* Do-FUT I-EMP ~~my~~ house-DIM-EMP 'I'll make my house.'	.20 (319)
Complex	*Caithfidh muid a bheith múinte.* Must-FUT we PT be polite 'We have to be polite.'	.07 (106)
Polar Question	*An dtógfaidh mise é?* Q take-FUT me it? Will I take it?	.21 (333)
Product Question	*Cá bhfuil sé ag dul anois?* Where be-PRES he PT go-VN now? Where's he going now?	.22 (365)

The two question categories together account for just over 40% of the data. *Full* utterances are also frequently expressed in the sample, and account for one fifth of the input sample. The remaining categories (i.e., *Single word, Fragment, Copula,* and *Complex*) occur with proportional frequencies of 7%–15%.

3.2. *Analysis two: Global analysis of communicative intent*

For the purposes of the present study we focus on the five most frequently expressed functions, as displayed in Table 2. The INCA-A categories have been paraphrased in order to enhance readability and the original INCA-A codes (plus definitions) used in the study can be found in the Appendix.

Table 2. *High Frequency Interchange: Speech act categories*

Communicative Intent	Example	% Frequency within sample*
Activity request	*Tabhair dom póigín.* Give to-me a-kiss Give me a kiss.	.18 (331)
Joint focus statement	*Tá Eoin ag ithe an briosca.* be-PRES Eoin PT eat-VN the biscuit Eoin is eating the biscuit.	.11 (192)
Joint focus product question	*Cá bhfuil sé ag dul anois?* Where be-PRES he PT go-VN now? Where's he going now?	.08 (144)
Activity polar question	*An dtógfaidh mise é?* Q take-FUT me it? Will I take it?	.07 (125)
Joint focus polar question	*An bhfuil sé ag ithe?* Q be-PRES he PT eat-VN Is he eating?	.06 (101)

* NB figures in parentheses denote token frequencies within all tables.

The most frequently expressed communicative intent in the sample is activity request. This regulatory intent alone accounts for 18% of the sample. Joint focus statements also occur with relatively high frequency and account for just over 10% of the sample. The remaining three high frequency intents involve questions. In total the five highest frequency intents account for half of the utterances in the data sample. The findings of Analysis Two then give an indication of the relatively restricted set of communicative intents expressed within the current sample of Child Directed Speech, and reflect the relatively routinised nature of child-caregiver interaction.

3.3. *Analysis three: Item-based analysis of form and function*

In the next section we present the results of the item-based analysis for each of the target global construction categories (i.e., *Fragment*, *Copula*, *Full*, and *Complex*), and discuss the types of communicative intents expressed by each frame. In doing so we aim to ascertain the degree of form-function correspondence within the sample. The results for each global construction category are presented in tables containing the following information:

1. A list of all item-based frames identified within the category along with the token frequency and also the proportional frequency of the frame within the category as a whole.
2. The proportion of the category accounted for by all the item-based frames. This figure shown at the bottom of each table indicates the degree of lexical specificity attested within each function.
3. The predominant communicative intent expressed by each frame. Any in- tent with a proportional frequency of 60% or over was identified as the predominant intent for a particular item-based frame.

3.3.1 Fragments. Fifteen frames were identified within the *Fragment* category, which together accounted for just under 80% of this category. The frames divide into two groups: non-verb-initial and verb-initial. Tables 3 (non- verb-initial) and 4 (verb-initial) display the frames identified in the category, their frequencies, and also the main communicative function expressed by each frame (that is any communicative function with a proportional frequency of 60% or over).

Table 3. *Fragments: Non-verb-initial*

Item-based frame	Example	% Frequency within *fragments*	Predominant intent
Maith an buachaill	*Maith an buachaill.* good boy 'Good boy.'	.05 (13)	Express approval (1.0)
An SUBJ (eile)[4]	*An leon.* the lion 'The lion.'	.05 (13)	No predominant intent identified.
Ceann SUBJ	*Ceann gorm.* One blue 'A blue one.'	.02 (4)	No predominant intent identified.
Proportion of fragment utterances accounted for by frames		*.12 (30/245)*	

The three non-verb-initial frames account for 12% of the fragment category and are distinct with regard to both form and their relation to function. *Maith an buachaill* has a marking function, specifically as a completive marking the end of an action sequence. The remaining two frames however, do not have a strong association with a specific function (i.e., *An SUBJ (eile)*, and *Ceann SUBJ*). However, the twelve verb-initial fragments account for 56% of the *fragment* category and contain eight different verbs in total. The verb- initial fragments are tied closely to the activity proposal function and thus would be

referred to as imperatives within standard linguistic terminology. The twelve verb-initial frames therefore form a distinct group both in terms of structure (i.e., all frames are verb-initial and subjectless) and their key function.

Table 4. *Fragments: Verb-initial*

Item-based frame	Example	% Freq. within *Fragments*	Predominant intent
Gabh i leith	*Gabh i leith.* Go-IMP in place 'Come here.'	.13 (33)	Activity request (.97)
Abair (. . .)	*Abair é mar sin.* say-IMP it like that 'Say it like ~~so~~.'	.10 (24)	Elicit (1.0)
Ná V (. . .)	*Ná bí ag ithe an choinín.* neg-IMP be PT eat-VN the rabbit 'Don't be eating the rabbit.'	.09 (23)	Prohibit (1.0)
Cuir OBJ X	*Cuir iad seo leis chomh maith.* put-IMP these with-it so well 'Put these with it as well.'	.03 (8)	Activity request (1.0)
Fan noiméad/ soicind	*Fan soicind.* wait-IMP a-second 'Wait a second.'	.03 (8)	Activity request (.88)
Cuir X OBJ	*Cuir isteach ansin é.* Put_IMP inside there it 'Put it in there.'	.03 (8)	Activity request (1.0)
Tabhair dom OBJ	*Tabhair dom póigín.* give-IMP to-me a-kiss 'Give me a kiss.'	.03 (7)	Activity request (1.0)
Breathnaigh air/ar X	*Breathnaigh ar an mbó.* look-IMP at the cow 'Look at the cow.'	.03 (7)	Direct attention (1.0)
Cuir an OBJ isteach X	*Cuir an litir isteach sa mbosca.* Put-IMP the letter inside-MOT in-the box 'Put the letter into the box.'	.03 (7)	Activity request (1.0)
Coinnigh ort	*Coinnigh ort.* keep-IMP on-you 'Carry on.'	.02 (6)	Activity request (1.0)
Faigh OBJ	*Faigh an dá phíosa eile.* get-IMP the two pieces other 'Get the two other pieces.'	.02 (5)	Activity request (1.0)
Cuir isteach X	*Cuir isteach an bealach seo é.* put-IMP inside the way this PRO 'Put it in this way.'	.02 (4)	Activity request (1.0)
Proportion of Fragment utterances accounted for by frames		*.57 (140/245)*	

3.3.2. *Copulas.* Table 5 displays the frames attested within the *Copula* Category. There are four copula frames attested in the sample, two of which involve the lexical item *sin* in which the copula is claimed to be implicitly stated (Mac Congáil 2004), and two containing the negative form of the present tense copula (i.e., *ní*). Therefore, in fact, there are no instances of frames in which the positive form of the copula verb (i.e., *is*) is used explicitly[4]. Together the four frames account for 95% of all copula utterances in the sample, thus displaying a high degree of item-based specificity. The frame *Sin (PRO) X* is used predominantly to express joint focus statements, specifically the labelling of objects in the immediate environment. *Sin é* is used exclusively as a marker. The two negative copula frames also have a very specific communicative intent, namely disagreement with a prior statement. Thus, the copula construction in the current sample is characterised by a very small number of item-based frames which map onto specific intents.

Table 5. *Copula frames*

Item-based frame	Example	% Frequency within *Copula*	Predominant intent
Sin (PRO) X	*Sin sneachta.* DEM snow 'That's snow.'	.68 (73)	Joint focus statement (.82)
Sin é	*Sin é.* DEM it 'That's it.'	.13 (14)	Marker (1.0)
Ní shin X	*Ní shin madra.* NEG-COP DEM dog 'That's not a dog.'	.07 (8)	Joint focus disagreement (1.0)
Ní hea	*Ní hea.* NEG-COP PRO 'No.'	.05 (5)	Joint focus disagreement (1.0)
Proportion of Copula utterances accounted for by frames		*.95 (100/107)*	

3.3.3**.** ***Full.*** **In total, 11 item-based frames were identified within the *Full* categ**ory. The frames accounted for 59% of all full utterances in the sample. In the present analysis the full frames are divided into two groups, those beginning with a

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form of the substantive verb *bí* and the remaining frames which begin with a lexical verb.. Table 6 presents item-based frames beginning with a form of the substantive verb *bí.* Four frames were identified, three of which contained *bí* in its present tense form *tá*. These four frames alone accounted for 45% of the *Full* category. Thus, the verb initial slot in almost half of the VSO(X) utterance did not contain a lexical verb; instead, the slot was filled by a verb whose main information value relates to the signalling of tense and polarity. Furthermore, in one of the frames, *tá/níl SUBJ ag VERBALNOUN . . .* , the lexical verbal element occurred in non-initial position (i.e., as a verbal noun). The predominant communicative function of the *tá* initial utterances is the expression of joint focus statements. Thus, the *tá* initial frames form a cluster of related structures centred around a specific function.

Table 6. *Full: Bí initial frames*

Item-based frame	Example	% Frequency within *Full*	Predominant intent
Tá SUBJ X.	*Tá sé dána.* be-PRES he bold 'He's bold.'	.26 (82)	Joint focus statement (.56)
Tá/níl SUBJ ag VN . . .	*Tá mé ag breathnú.* be-PRES I PT look-VN 'I'm looking.'	.14 (44)	Joint focus statement (.52)
Tá SUBJ X	*Tá fuinneoga air.* be-PRES window on-it 'It has windows.'	.03 (10)	Joint focus statement (.80)
Bhí SUBJ X	*Bhí Eoin i bhfolach.* be-PAST Eoin PT hide 'Eoin was hiding.'	.02 (6)	Past event statement (1.0)
Proportion of Full utterances accounted for by frames		*.45 (142/319)*	

Table 7 displays the second group of item-based frames found within the full category. Seven item-based frames were identified, and in total only five different verbs were identified within the frames. In all of these frames the verb was in the future tense. The frames were used predominantly to request or state an intent to carry out an action. Thus, item-based frames incorporating lexical verbs in initial position form a distinctive cluster with regard to form and function when compared to the *tá*-initial frames. The item- based, functional analysis thus highlights the restricted nature of VSO utterances in the Irish sample. While

the utterances do conform to the canonical word order pattern, their use is highly restricted with regard to function, and also incorporates a very limited set of verbs. In fact, the majority of VSO utterances consist of *tá*-initial utterances, many of which contain the verbal semantic weight in the form of a verbal noun towards the end of the utterance.

Table 7. *Full: Lexical verb initial frames*

Item-based frame	Example	% Freq. in *full*	Predominant function
Cuirfidh muid OBJ X	*Cuirfidh muid dath ar an mbláth sin.* Put-FUT we colour on the flower that 'We'll colour that flower.'	.03 (10)	Activity request (1.0)
Déanfaidh mé/mise/ muid OBJ	*Déanfaidh mise mo theachínsa.* Do-FUT I-EMP my house-DIM-EMP 'I'll make my house.'	.03 (8)	State intent (.81)
Tabharfaidh muid/mise OBJ IO	*Tabharfaidh muid an camán beag duitse.* Give-FUT we the hurley little to-you-EMP 'We'll give you the small hurley.'	.03 (8)	State intent (1.0)
Gabhfaidh mise/muid X	*Gabhfaidh muid suas staighre.* GO-FUT we up the-stairs 'We'll go upstairs.'	.03 (8)	State intent (.75)
Cuirfidh tú/ tusa/Eoin X OBJ	*Cuirfidh tusa isteach é sa cheann* Put-FUT you-EMP in(motion) it in-the ~~that~~ *gorm.* one blue 'You'll put it in a blue one.'	.02 (6)	Activity request (.80)
Cuirfidh mé/ muid X OBJ	*Cuirfidh muid le chéile iad.* Put-FUT we with together them 'We'll put them together.'	.02 (5)	State intent (1.0)
Gheobhaidh mise/muid OBJ	*Gheobhaidh mise an teidí anois.* Get-FUT I-EMP the teddy now 'I'll get the teddy now.'	.01 (4)	State intent (1.0)
Proportion of full utterances accounted for by frames		*.17 (49/319)*	

3.3.4. *Complex.* For the purposes of the present study, the analysis of complex utterances was focused on the first clause of the utterance. Some 57% of complex utterances incorporated one of five frames, as shown in Table 8. Four out of five frames map onto a specific communicative function. The initial slots of the complex utterances seem to act as functional markers indicating how the remaining clause of the utterance should be interpreted. For example, *Caith fidh* SUBJ CLAUSE is used to propose an activity or state an intent to act, *Fan go* CLAUSE is used as an imperative, and *Níl cead* CLAUSE has a prohibitory function.

Table 8. *Complex frames*

Item-based frame	Example	% Freq. in *Complex*	Predominant function
Caithfidh SUBJ CLAUSE	*Caithfidh muid a bheith múinte.* Must-FUT we PT be polite 'We have to be polite.'	.26 (29)	Activity request (.79)
Tá SUBJ (X) CLAUSE	*Tá tú in ann an figiúr a fheiceáil.* Be you in able the figure PR see 'You are able to see a figure.'	.16 (18)	No prototype function
Fan go CLAUSE	*Fan go bhfeicfidh tú.* Wait-IMP PR see-FUT you 'Wait until you see.'	.05 (5)	Activity request (1.0)
Níl cead CLAUSE	*Níl cead a bheith ag scríobh* Neg-be permission PR be PR write-VN *ar an mballa.* on the wall '[You're] not allowed to write on the walls.'	.06 (6)	Prohibit (1.0)
Shíl mé/mise CLAUSE	*Shíl mise gurbh shin leopard.* Think-PA I-EMP that COP DEM leopard 'I thought that was a leopard.'	.06 (6)	Belief statement (1.0)
Proportion of Complex utterances accounted for by frames		*.57 (70/106)*	

4 Discussion

We have presented an analysis of Irish Child Directed Speech based on both form and function. In doing so we aim to highlight the importance of incorporating a social dimension into the study of caregiver-child interaction through the analysis of communicative intent. In this section we discuss the implications of the findings, and the value of considering, not only the fine grained nature of the structural characteristics of the data, but also their use within caregiver-child interaction.

The analysis highlights the prevalence of item-based frames in the Irish in- put sample. Within the sample of the present study, 35 item-based frames accounted for just under 70% of non-interrogative, multiword utterances. Thus, the findings support previous studies of CDS which indicate the high degree of lexical specificity in the language addressed to young children, and also studies proposing a constructivist approach to early language development. The sample of Child Directed Speech presented here is indicative of the highly conventional nature of caregiver-child interaction which facilitates the creation and co-ordination of

shared ground (Clark 2009).

The findings of the structural analysis also provide insight into the representation of canonical word order in the sample. The analysis recorded a relatively high number of canonical VS(O)X utterances in the CDS sample, particularly when compared to the sample of English mothers analysed in Cameron- Faulkner et al. (2003). However, the item-based analysis of the VS(O)X utterances highlighted the restricted nature of frames within this category. In all, 43% of VS(O)X utterances contained *tá* in the initial verb slot. Thus, in almost half of the VS(O)X utterances, the initial verbal slot was not filled by a lexical verb. In the case of one *tá* initial frame (i.e., *tá* SUBJ *ag* VERBALNOUN . . .), the meaningful verbal element actually occurred after the subject in the form of a verbal noun. Thus, to a young child, not only does the existence of *tá* initial frames reduce the transparency of the VS(O)X word order by the lack of a lexical verb in verb-initial position, but additionally the *tá* SUBJ *ag* VERBAL- NOUN . . . frame may lead the child to believe that the salient verbal element of a scene may be expressed in non-initial position when expressing particular communicative intents.

It may be argued that the remaining VS(O)X frames which account for 14% of VS(O)X utterances may be more useful in providing evidence of the VSO word order of Irish. However, only six verbs are found within the frames, all of which are in the future tense. The use of canonical VSO based frames is therefore very restricted, both in terms of verb and tense. Thus, typologically-speaking, Irish may well display strong VSO characteristics, but closer examination of the present sample of Irish CDS shows that the frequency of utterances containing clear evidence of VSO ordering in the input is limited. Thus, the present study points to the need for caution in generalising from abstract linguistic notions such as word order (whatever the order may be) to Child Directed Speech when viewing the language from a child's perspective. Instead, it highlights the importance of analysing the actual speech addressed to young children in terms of item-based frames.

The current analysis and also previous studies have highlighted the lexically- based, repetitive nature of Child Directed Speech (e.g., Cameron-

Faulkner 2003; Stoll et al. 2009). However, while this type of input may be well suited to the early stages of development (assuming a usage-based, constructivist framework of the process), it could be argued that it is of less value in later stages of development, and for the acquisition of rarer, more complex con- structions. In answer to this, we highlight the fact that, while the lexically- based frames in the current study account for a substantial amount of the input, they do not account for all of it (see Stoll et al. 2009 for a similar observation). That is, the input sample analysed in the present study also contains a number of non-frame utterances, which no doubt add to the structural richness and diversity of the sample. Secondly, a number of recent studies have highlighted the value of Zipfian distributions and skewed input frequencies in the acquisition of more schematic representations of argument structure (e.g., Ellis and Ferreira-Junior 2009; Goldberg 2006; Ninio 2006). Typically, such studies have highlighted the fact that for each argument structure construction, one particular verb occurs with a much higher frequency in the input than others, resulting in a skewed input distribution (e.g., Goldberg 2006). Research suggests that children may use the high frequency verbs as a means of identifying the meaning of a construction (e.g., Goldberg et al. 2004). Thus, the repetitive nature of Child Directed Speech is interpreted as being beneficial, not only with regards to the regular presentation of frames to the young language learner, but also in its potential to increase the transparency of construction meaning, and thus aid the development of more schematic representations of the target language.

The current study also incorporated a function-based dimension to the study of Child Directed Speech, with the aim of linking item-based frames to their associated functions. Our motivation for doing so is rooted in a wealth of studies highlighting the function-based origins of early child interaction. In general terms, the functional analysis highlighted the prevalence of certain communicative intents over others. When analysing the mother's speech in terms of intent, just five communicative intents were shown to account for half of the data. The singular most frequently occurring function was that of activity request. While this may not appear to be a particularly new finding for those

working in the field of child language research, it is a noteworthy observation, particularly for those who view language mainly as a tool for the transmission of propositional knowledge. Indeed, the frequency of activity requests in the input sample appears to be reflected in Shatz's (1978b) observation that children tend to give an activity-based response to caregiver utterances, even in instances where the utterance could be construed as a request for information. It is possible that the restricted nature of communicative intents attested in the present study could be, to some extent, a consequence of the coding taxonomy used. As mentioned previously, some of the categories used in the pre- sent study are broader than others. For example the scope of the categories *joint focus statement* and *activity proposal* is much wider than others. Nevertheless, the predominance of certain functions over others is no doubt also an indication of the types of daily events and occurrences which form the basis of shared ground between caregiver and child. Such observations are well at- tested in the literature, and are the key to social, data driven approaches to language development (e.g., Bruner 1975; Tomasello 2003). The impact of the routinised nature of caregiver-child interaction becomes even more crucial when considering language development in societies where CDS as a specific register is rare or absent (see Lieven 1994 for a discussion of cross-linguistic and cross-cultural perspectives on caregiver-child interaction).

However, the main motivation for incorporating function in the study of Child Directed Speech was to ascertain the relationship between form and communicative intent. Our analyses indicate the presence of three patterns. The first relationship describes *form-function islands* in which a frame maps onto a specific communicative intent, either exclusively or predominantly. Form-function islands stand alone and do not bear any structural resemblance to other frames associated with the function in question. An example of a form- function island is *Sin* (PRO) X which was used to express a facet of joint focus statements. Form-function islands probably have limited value with regard to facilitating a more schematic representation of the target language within a young child's linguistic representation, and to some extent could be viewed as 'dead ends'. Knowing how to express a statement using *Sin*-initial frames results in very item-

specific knowledge within a VSO ordered language.

At the other end of the spectrum, frames may enter into the second type of form-function relationship, where a *plurifunctional* link exists between form and function; one frame expressed a number of different intents (e.g., *Ceann SUBJ*). While on the one hand child language researchers have pointed out the strong correlation between form and function in the input (e.g., Ninio 1992; Shatz 1979), it has also been widely noted that many utterances and constructions are plurifunctional (e.g., Halliday 1975; Karmiloff-Smith 1979) and, in- deed, this is one of the key reasons why coding for communicative intent can be problematic. However, in cases where the relationship between form and intent is plurifunctional, the wealth of the non-linguistic communication (i.e., gesture, gaze, and facial expression) and context available to the child aids understanding and interpretation of intent (e.g., Clark 2004).

Thirdly, and most frequently however, structurally similar frames appeared to cluster into groups according to the communicative intent for which they were employed (e.g., *tá* initial frames used in the expression of joint focus statements) and we refer to these as *form-function networks*. It is this type of relationship between form and function that may be of most value to the na- scent language learner with regard to discovering the underlying structure of their ambient language. We suggest that form-function networks exemplify the organizing feature of communicative intent. Form-function networks may present the child with a functional link between item-based frames, and in doing so facilitate processes of abstraction, by grouping together and thus high- lighting the structural similarity of frames. A number of usage-based researchers have suggested that processes of analogy and schematisation play an important role in the journey from item-based representation to more schematic knowledge of the target language (Abbot-Smith and Tomasello 2006; Stoll et al.
2009; Tomasello 2003), and it may be the case that this process is made possible by the natural groupings of structures around communicative intent.

We acknowledge certain limitations in the present study. Firstly, while we claim that the current sample of Irish Child Directed Speech contains a high degree of lexical specificity, the extent to which this is a consequence of the

particular register in question, as opposed to the language in general, cannot be ascertained. Minority languages are not only defined by numbers of speakers, but also frequently in terms of knowledge-base. To our knowledge, there have been no construction-based studies of Irish adult-adult conversation as yet, and also we are not aware of any freely available corpora of everyday Irish speech. However, the opportunity to consider aspects of the acquisition process in relation to a language as distinctive as Irish, as well as contributing in a small way to the language's knowledge base, makes this a worthwhile enterprise.

Two methodological issues also require highlighting. Our findings carry with them the limitations of any case study since we base our assumptions on the data of one participant. Secondly, the analysis of communicative intent brought its challenges. While we aimed to adhere to the coding system set out in INCA-A, and attained relatively high levels of reliability, we cannot be certain that the intents which we ascribe to the participant were always those that were intended. Indeed, the present study has provided us with a first hand in- sight into the difficulties and complexities of coding what is essentially a cognitive process occurring in the mind of the speaker.

Nevertheless, the present analysis indicates the importance of bringing a communicative, social dimension into usage-based studies of language acquisition. In trying to ascertain how children learn language from more experienced others, both the structure of the input and also its communicative intent need to be incorporated into the analysis. By incorporating function into the analysis of CDS we suggest that the item-based islands of linguistic knowledge are brought together by means of the pragmatic mainland. That is, pragmatic or communicative intent consolidates the item-based knowledge characteristic of the early stages of development, and may facilitate the child's extraction of a more abstract representation of linguistic knowledge.

Appendix

All Communicative intent paraphrases and original INCA-A codes discussed in current study are displayed in the list below. The definitions of each of the codes are then presented beneath. Full details of the INCA-A can be found in Ninio et al

(1994).

(i) Paraphrases and original INCA-A codes

Activity request
[NIA:RP] Activity
polar question
[NIA:YQ] Belief
statement [DNS:ST]
Direct
attention
[DHA:RP]
Elicit [NIA:EI]
Express approval
[NIA:AB] Joint
focus statement
[DJF:ST]
Joint focus product
question [DJF:QN] Joint
focus polar question
[DJF:YQ] Joint focus
polar question [DJF:YQ]
Joint focus disagreement
[DJF:DW] Marker
[MRK:MK]
Past event
statement
[DRE:ST]
Prohibit [NIA:PF]
State intent [NIA:SI]

(ii) Definitions of INCA-A codes mentioned in the study

Interchange types

DHA directing hearer's attention
to achieve joint focus of attention by directing hearer's attention to objects, persons, and events.

DJF discussing a joint focus of attention
to hold a conversation about something that both participants are attending to, e.g., objects, persons, ongoing actions of hearer and speaker, ongoing events

DRE discussing a recent event
to hold a conversation about immediately past actions and events

DNS discussing sentiments of participants
to hold a conversation about participants non-observable thoughts and feelings

MRK marking
to express socially expected sentiments on specific occasions such as thanking, apologizing, or to mark some event

NIA negotiating the immediate activity
to negotiate the initiation, continuation, ending and stopping of activities and acts; to direct hearer's and speaker's acts; to allocate roles, moves, and turns in joint attention

Speech acts

AB Approve of appropriate behaviour. Express positive evaluation of hearer's or speaker's acts.

DW Disagree with proposition expressed by previous speaker.

EI Elicit imitation of word or sentence by modelling or by explicit command.

MK Mark occurrence of event (thank, greet, apologize, congratulate etc.).

PF Prohibit/forbid/protest at hearer's performance of an act.

QN Ask a product-question (wh-question).

SI State intent to carry out act by speaker; describe one's own ongoing activity

ST Make a declarative statement

YQ Ask a yes/no question.

RP Request, propose, or suggest an action for hearer, or for hearer and speaker.

References

Abbot-Smith, Kirsten & Michael Tomasello. 2006. Exemplar-learning and schematization in a usage-based account of syntactic acquisition. *The Linguistic Review* 23, 275–290.

Aksu-Koç, Ahyan & Dan I. Slobin. 1985. *Acquisition in Turkish.* In Dan Slobin (ed.), *The cross- linguistic study of language acquisition*. Hillsdale, NJ.: Lawrence Erlbaum.

Bates, Elizabeth. 1976. *Language and context: studies in the acquisition of pragmatics*. New York: Academic Press.

Bloom, Lois. 1970. *Language development: Form and function in emerging grammars: Research monographs number 59*. Cambridge MA: MIT Press.

Bruner, Jerome, S. 1974. From communication to language: A psychological perspective. *Cognition* 3, 255–287.

Bruner, Jerome, S. 1975. The ontogenesis of speech acts. *Journal of Child Language* 2, 1–19. Budwig, Nancy. 1995. *A developmental-functionalist approach to child language*. Mahwah, NJ:Lawrence Erlbaum Associates.

Bybee, Joan & Joanne Scheibman. 1999. The effects of usage on degrees of constituency: The reduction of *don't* in English. *Linguistics* 37, 575–596.

Cameron-Faulkner, Thea, Elena Lieven & Michael Tomasello. 2003. A construction based analysis of child directed speech. *Cognitive Science* 27, 843–873.

Clark, Eve V. 2004. Pragmatics and language acquisition. In Laurence R. Horn & Gregory L. Ward (eds.), *The handbook of pragmatics*. Oxford: Blackwell.

Clark, Eve V. 2009. What shapes children's language? Child Directed Speech, conventionality, and the process of acquisition. In Virginia C. Mueller Gathercole (ed.), *Routes to language*. Hove: Psychology Press.

Comrie, Bernard. 1989. Language universals and linguistic typology. Chicago: University of Chicago Press.

Croft, William. 2001. *Radical Construction Grammar: Syntactic theory in typological perspective.*Oxford: Oxford University Press.

Dąbrowska, Ewa & Elena Lieven. 2005. Towards a lexically specific grammar of children's ques tion constructions. *Cognitive Linguistics* 16, 437– 474.

Dore, John. 1975. Holophrases, speech acts and language universals. *Journal of Child Language* 2, 21– 40.

Ellis, Nick & Fernando Ferreira-Junior. 2009. Construction learning as a function of frequency, frequency distribution, and function. *The Modern Language Journal* 93, 370 –385.

Ferrier, L. 1978. Some observations of error in context. In Natalie Waterson & Catherine. Snow (eds.), *The development of communication*. New York: Whiley.

Gallaway, Clare & Brian, J. Richards (eds.). 1994. *Input and interaction in language acquisition.*Cambridge: Cambridge University Press.

Goldberg, Adele. 2006. *Constructions at work*: *The nature of generalisation in language*. Oxford: Oxford University Press.

Goldberg, Adele, Devin Casenhiser & Nitya Sethuraman. 2004. Learning argument structure gen- eralizations. *Cognitive Linguistics* 15, 289–316.

Greene, David. 1966. *The Irish language: An Ghaeilge*. Cork: Mercier Press.

Halliday, Michael Alexander Kirkwood. 1975. *Learning to mean — explorations the development of language.* London: Edward Arnold.

Henry, Alison & Denise Tangney. 1999. Functional categories and parameter setting in second- language acquisition of Irish in early childhood. In Michel DeGraff (ed.), *Language creation and language change: Creolization, diachrony, and development*. Cambridge, MA: MIT Press.

Hickey, Tina. 1990. The acquisition of Irish: A study of word order development. *Journal of Child Language* 17, 17– 41.

Jesperson, Otto. 1922. *Language, its nature, development and origin.* London: Allen and Unwin.

Karmiloff-Smith, Annette. 1979. *A functional approach to child language.* Cambridge: CUP. Langacker, Ronald. 1987. *Foundations of cognitive grammar, Vol. 1*. Stanford: Stanford University Press.

Langacker, Ronald. 1991. *Foundations of cognitive grammar, Vol. 2*. Stanford: Stanford Univer- sity Press.

Lieven, Elena. 1994. Crosslinguistic and crosscultural aspects of language addressed to children. In Clare Gallaway & Brian J. Richards (eds.), *Input and interaction in language acquisition.* Cambridge: Cambridge University Press.

Mac Congáil, Nollaig. 2004. *Irish Grammar Book*. Indreabhán Conamara: Cló Iar-Chonnachta. McCloskey, James. 1983. A VP in a VSO language? In Gerald Gazdar, Ewan Klein & Geoffrey Pullum (eds.), *Order, concord and constituency*. Dun Laoghaire: Glendale Press.

McNeill, David. 1975. Semiotic extension. In Robert L. Solso (ed.), *Information processing and cognition: the Loyola symposium*. Hillsdale, NJ: Lawrence Erlbaum Associates.

MacWhinney, Brian & Catherine E. Snow. 1990. The Child Language Data Exchange System: An update. *Journal of Child Language* 17, 457– 472.

Ní Shúilleabháin, B. 1985. *Still at it: Irish/English interaction today*. In John Harris, David Little and David Singleton (eds.), *Perspectives on the English language in Ireland: Proceedings of the First Symposium on Hiberno-English*. Dublin: CLCS Trinity College Dublin.

Ninio, Anat. 1992. The relation of children's single word utterances to single word utterances in the input. *Journal of Child Language* 19, 87–110.

Ninio, Anat. 2001. Pragmatic keywords and the first combining verbs in children's speech. *First Language* 21, 433– 460.

Ninio, Anat. 2006. *Language and the Learning Curve: A new theory of syntactic*

development. Oxford: Oxford University Press.
Ninio, Anat & Jerome S. Bruner. 1978. The achievement and antecedents of labelling. *Journal of Child Language* 5, 1–15.
Ninio, Anat & Catherine E. Snow. 1988. Language acquisition through language use: The functional sources of children's early utterances. In Yonata Levy, Izchack M. Schlesinger & Martin D. S. Braine (eds.), *Categories and Processes in Language acquisition*. Hillsdale: Lawrence Erlbaum Associates.
Ninio, Anat, Catherine E. Snow, Barbara A. Pan & Pamela R. Rollins. 1994. Classifying com- municative acts in children's interactions. *Journal of Communication Disorders* 27, 158–187.
Osgood, Charles, E. & Chris Tanz. 1977. Will the real direct object in bitransitive sentences please stand up. In A Julliand (ed.), *Linguistic studies offered to J. Greenberg on the occasion of his sixtieth birthday*. Saratoga: Anima Libri.
Owens, Máire. 1991. *The Acquisition of Irish*. Multilingual Matters.
Peters, Ann M. 1983. *The units of language acquisition*. Cambridge: Cambridge University Press.
Pine, Julian, M. & Helen Martindale. 1996. Syntactic categories in the speech of young children. *Journal of Child Language* 23, 369–395.
Pine, Julian M. & Elena Lieven. 1997. Slot and frame patterns in the development of the deter- miner category. *Applied Psycholinguistics* 18, 123–138.
Shatz, Marilyn. 1978a. Children's comprehension of their mothers' question directions. *Journal of Child Language* 5, 39–56.
Shatz, Marilyn. 1978b. On the development of communicative understandings: An early strategy for interpreting and responding to messages. *Cognitive Psychology* 10, 271–301.
Shatz, Marilyn. 1979. How to do things by asking: Form-function relations in mothers' questions and their relation to children's responses. *Child Development* 50, 1093–1099.
Slobin, Dan I. 1973. Cognitive prerequisites for the development of grammar. In Charles A. Ferguson and Dan Slobin (eds.), *Studies of child language development*. New York: Holt, Rinehart, Winston.
Snow, Catherine E. 1979. The role of social interaction in language acquisition. In A. Collins (ed.), *Children's language and communication: Proceedings of the 1977 Minnesota Symposium on Child Development*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Snow, Catherine E. & Charles A. Ferguson. 1977. *Talking to Children*. Cambridge University Press.
Snow, Catherine, E., Barbara A. Pan, Alison Imbens-Bailey & Jane Herman. 1996. Learning how to say what one means: A longitudinal study of children's speech acts. *Social Development* 5, 56 –84.
Stenson, Nancy. 1981. *Studies in Irish syntax*. Tübingen: Narr.
Stoll, Sabina, Kirsten Abbot-Smith & Elena Lieven. 2009. Lexically restricted utterances in Rus- sian, German, and English Child-Directed Speech. *Cognitive Science* 33, 75–103.
Theakston, Anna, Elena Lieven, Julian Pine & Caroline Rowland. 2002. Going, going, gone: the acquisition of the verb 'go'. *Journal of Child Language* 29, 783–811.
Tomasello, Michael. 1992. *First verbs: A case study of early grammatical development*. New York: Cambridge University Press.
Tomasello, Michael. 2003. *Constructing a language: A usage-based approach of language acqui- sition*. Cambridge, MA: Harvard University Press.
Weisleder, Adriana and Sandra Waxman. 2010. What's in the input? Frequent frames in child- directed speech offer distributional cues to grammatical categories in Spanish and English. *Journal of Child Language* 37, 1089–1108.
Weist, R. 1986. Crosslinguistic perspective on cognitive development. In Theodore M. Schlecter and Michael P. Toglia (eds.), *New directions in cognitive science*. Norwood NJ: Ablex.