INFORMATION STRUCTURE AND DATIVE WORD-ORDER ALTERNATIONS IN ENGLISH AND KOREAN: L1 CHILDREN, L2 CHILDREN, AND L2 ADULTS

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ABSTRACT

This dissertation investigates whether first language (L1) and second language (L2) learners adhere to the *Given-before-New Principle*, such that they tend to prefer a discourse-given entity prior to a discourse-new entity, focusing on dative word-order alternations in English (Prepositional Dative (PD) vs. Double Object Dative (DOD)) and in Korean (canonical [IO–DO] order vs. scrambled [DO–IO] order). This project explores, first, the (causal) relationship between knowledge of Theory of Mind (ToM)—the ability to attribute mental states to self and to others—and adherence to the *Given-before-New Principle* in L1 children and, second, the transferability of this principle in L2ers. Two novel oral contextualized preference tasks—NP Task and Pronoun Task—in English and in Korean were developed to test adherence to the principle.

L1 data from the children (L1-English; L1-Korean; L2ers of English in their L1-Korean) yield mixed results regarding the relation between knowledge of ToM and compliance with the *Given-before-New Principle*. Ultimately, the very small number of [–ToM] children disallows any firm conclusions to be drawn.

Unlike the adult natives who overwhelmingly comply with the *Given-before-New Principle*, L2 data from the adults (L1-Korean L2ers of English; L1-English L2ers of Korean) and from the children suggest that intermediate-to-advanced L2ers show a *strong syntactic bias toward the default*—the PD in English and the canonical [IO–DO] order in Korean, when the given-referent is a *definite lexical NP*. An aural acceptability judgment task verified that this bias in English L2ers is not due to incomplete lexico-syntactic knowledge of the dative alternation. The overall generalization, across all L2 groups, is that with a *definite lexical NP* as a given-referent, when the less basic
construction aligning with [Given–New] competes with the more basic construction
aligning with [New–Given], L2ers tend to choose the latter, i.e., the default. In contrast,
when the given-referent is a pronoun, adult L2ers of English are more likely to prefer
[Given–New] over [New–Given], in line with the Given-before-New Principle. We
conclude that L2ers who have knowledge of the Given-before-New Principle in their L1
are unable to transfer it to their L2.
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# LIST OF ABBREVIATIONS

This dissertation employs Yale Romanization to transcribe Korean sentences. The following abbreviations are used to label linguistic terms included in this dissertation.

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CHAPTER 1.
INTRODUCTION

1.1 Introduction

This study investigates the effect of information structure on first language (L1) and second language (L2) speakers’ choices of word order in dative word-order alternations in English and in Korean. Information structure is a global term which refers to the way in which information within a proposition is packaged, taking into account the speaker’s and hearer’s assumptions, beliefs, knowledge, and state of mind. Among many other information structural categories, our focus is givenness. The speaker’s choice of word order is related to what the speaker assumes that the hearer already knows (given information) and what the speaker assumes that the hearer does not know (new information) in the particular discourse context. In the literature on information structure, it has been proposed that human language has a general, optimal information packaging in regard to givenness such that given information is more likely than new information to occupy an earlier position—well-known as the Given-before-New Principle, as stated in (1) and (2):

(1) “Given information should appear before new information.”

(Clark & Clark, 1977, p. 548)

(2) “Given before New Principle: State what is given before what is new in relation to it.”

(Gundel, 1988, p. 229)

How might the effects of givenness on word order be explained? There are two approaches to the function of the Given-before-New Principle, one from the speaker’s perspective and the other from the hearer’s perspective. It has been suggested that accessibility and readiness of activation of given information is higher than that of new information and a given entity is more easily retrieved than a new entity (e.g., Bock & Warren, 1985). On speaker-oriented processing accounts, under the assumption that
production takes places in an incremental way, the more accessible entity can be
processed more quickly than the less accessible entity, thereby conforming to the
Given–New order (e.g., Aronld Losongco, Wasow, & Ginstrom, 2000; Bock & Warren,
1985; Branigan, Pickering, & Tanaka, 2008; McDonald, Bock, & Kelly, 1993). On
hearer-oriented accounts, the Given–New order allows the hearer to connect given
information easily to its antecedent before new information is encountered; by contrast,
the New–Given order causes “a memory problem, because new information must be held
in abeyance while the listener waits for the given information with which it must be
integrated” (Clifton & Frazier, 2004, p. 886). This dissertation research is built on the
premise that the Given–New order facilitates both production and comprehension.

In the last few decades, there has been a great deal of empirical evidence in
support of this ostensible principle, and much of the data came from English corpus
studies. A phenomenon extensively examined with respect to this principle is the English
dative alternation (Arnold et al., 2000; Bresnan, 2007; Bresnan, Cueni, Nikitina, &
Baayen, 2007; Bresnan & Nikitina, 2009; Clark & Haviland, 1977; Collins, 1995; Quirk,
Greenbaum, Leech, & Svartvik, 1985; Thompson, 1990; inter alia). The dative alternation
has two syntactic variants that give rise to different postverbal constituent orders between
the two object arguments, theme and recipient. The prepositional dative construction (PD)
has the [NP THEME PP RECIPIENT] order, as in (3a), and the double object dative construction
(DOD) has the reverse order of [NP RECIPIENT NP THEME], as in (3b). Corpus-based studies
have found that whereas the given-theme tends to occur earlier than the new-recipient in
the PD in (3a), the given-recipient tends to occur earlier than the new-theme in the DOD
in (3b).

(3)  a. John gave the books to some children.  Given–New [NP THEME PP RECIPIENT]
b. John gave the children some books.  Given–New [NP RECIPIENT NP THEME]

A growing body of empirical crosslinguistic research suggests that the
Given-before-New Principle holds true for many other languages (for Japanese, Ferreira
& Yoshita, 2003; for Korean, Choi, 2009; for Persian, Marefat & Tahririan, 2001; for
Tahitian and Tahitian French, Snyder, 2003; inter alia). For instance, Choi’s (2009)
corpus study on Korean canonical/scrambled dative order with respect to information structure provides comparable evidence for the Given-before-New Principle. The Korean dative construction has alternating word orders between two object NPs—a direct object (DO) and an indirect object (IO). The canonical nonscrambled order has a preverbal constituent order of [IO–DO] and the scrambled order has the [DO–IO] order (see Chapter 2 for discussion). In compliance with the Given-before-New Principle, the given-recipient tends to precede the new-theme in the canonical order in (4a), while the given-theme tends to precede the new-recipient in the scrambled order in (4b).

(4) a. Given–New [IO–DO]—canonical order
Yenghuy-ka ku-aitul-eykey chayk-ul cwu-ess-ta.
Yenghuy-Nom those-children-Dat book-Acc give-Past-Decl
‘Yenghuy gave the children a book.’

b. Given–New [DO–IO]—scrambled order
Yenghuy-ka ku-chayk-ul aitul-eykey cwu-ess-ta.
Yenghuy-Nom that-book-Acc children-Dat give-Past-Decl
‘Yenghuy gave the book to children.’

It is this universalist view that forms the motivation for this dissertation in the domain of language acquisition. In the realms of both native language (L1) acquisition (§1.2) and second language (L2) acquisition (§1.3), this study addresses two critical questions of where this general, universal principle at work in L1 adults comes from, whether or not it is available in young children as well, and whether or not it is transferrable. The specific research issues include (i) the (causal) relationship between knowledge of Theory of Mind (ToM)—the ability to attribute mental states to self and to others—and adherence to the Given-before-New Principle in L1 children and (ii) the transferability of adherence to this principle in L2 adults and L2 children. In researching these issues, the project addresses the following two principal research questions:
1. Is ToM a prerequisite to the *Given-before-New Principle* in L1 children?

2. Do L2 learners (L2ers) who adhere to the *Given-before-New Principle* in their L1 automatically adhere to it in their L2?

We attempt, on the one hand, to illuminate the nature of the *Given-before-New Principle*, by testing the relation between ToM and adherence to the *Given-before-New Principle* L1 and L2 children, and, on the other hand, to locate generalizations in L2 acquisition in regard to the (non-)adherence to the *Given-before-New Principle*, by making comparisons between the L2 English of L1-Korean speakers and the L2 Korean of L1-English speakers.

1.2 L1 acquisition: Theory of Mind and adherence to Given-before–New

First, in the realm of L1 acquisition, previous, albeit limited, research on the *Given-before-New Principle* in the English dative alternation has yielded mixed results. For instance, Stephens (2010) reports contradictory results from her elicited-production experiments (Experiment 1 and Experiment 2) with native children between 3- and 5-years old (see Chapter 3). Experiment 1 showed that the information status of the two object NPs—*theme*-givenness and *recipient*-givenness—significantly influences construction choice such that children prefer Given–New orders in both the theme-given condition and the theme-recipient condition, though theme-givenness has a stronger effect than recipient-givenness. In contrast, Experiment 2 finds that theme-givenness has a significant effect, but recipient-givenness does not. In contrast to these results, de Marneffe, Grimm, Arnon, Kirby, and Bresnan (2012), in their corpus study using child-directed speech (CHILDES, MacWhinney, 2000) from 7 children between the ages of 2 and 5, observed that the discourse givenness of two object NPs is not a significant predictor of syntactic positioning in the English dative alternation.

Among many other possible factors such as different coding schemes of givenness, different ways of data analysis, different types of data (i.e., natural vs. elicited), etc. (see §3.2.2), we note that these inconsistent results may have to do with young children’s development of the awareness of others’ mental states, namely, ToM. ToM refers to the ability to attribute mental states to self and to others (Happé, 2003, citing
Premack & Woodruff, 1978). Children between age 3 and 5 come to have an understanding that others may have assumptions, beliefs, knowledge, and points of view that are different from their own, due to their different experience to the world around them (De Mulder, 2011; de Villiers, 2007). This conceptual understanding may be integral to knowledge of the Given-before-New Principle, because it subsumes the ability of determining what’s given and what’s new for the listener. The potential association of ToM with linguistic knowledge and the (in)ability to use it in discourse has been proposed, although the phenomenon in question was not directly related to givenness effects on constructional choices (e.g., Maratsos, 1974, 1976; Schafer & de Villiers, 2000). For instance, using story-telling tasks, Maratsos (1974) examined children’s use of definite and indefinite referential expressions. The proper use of (in)definite referential expressions in discourse requires that the speaker take into account the hearer’s referential knowledge as well as his/her own, which hence involves ToM. The results suggested that some 3- and 4-year-old children use definite NPs or pronouns to refer to an object not yet introduced into the discourse, i.e., without taking into account the interlocutors’ referential knowledge. On logical grounds, if young children are unable to contemplate and integrate into discourse what the listener does and does not know about what is being talked about, then they would fail to adhere to the givenness constraint. Hence, we speculate that adherence to the Given-before-New Principle emerges after development of ToM.

There are four logical possibilities regarding the relation between ToM and adherence to the Given-before-New Principle, as illustrated in Figure 1.1:

![Figure 1.1. Four Logical Outcomes between ToM and Given-before-New Principle](image-url)
If ToM is a necessary prerequisite for adherence to the *Given-before-New Principle*, outcomes (i) [– ToM], [– Given-before-New] and (ii) [+ ToM], [+ Given-before-New] are straightforward: Children who have not yet mastered ToM do not adhere to the *Given-before-New Principle*, while children who have mastered ToM do adhere to the principle. Outcome (iii) [+ ToM], [– Given-before-New] is also explicable, i.e., a lag between earlier development of ToM and later emergence of the *Given-before-New Principle*; however, the one outcome that is absolutely ruled out is (iv) [– ToM], [+ Given-before-New], earlier adherence to the *Given-before-New Principle* than emergence of knowledge of ToM. We experimentally test these predictions in L1-English and L1-Korean children, by independently testing their knowledge of ToM (i.e., ability to understand false beliefs) and ascertaining their adherence to the *Given-before-New Principle* in dative word-order alternations.

1.3 L2 acquisition: Transferability of adherence to Given-before-New

In the realm of L2 acquisition, the universality of the *Given-before-New Principle* gives rise to the issue of **whether L2 learners who have L1 knowledge of the *Given-before-New Principle will automatically adhere to it in their L2 (if they have acquired the relevant target syntax)**. We experimentally test this question by conducting a bidirectional study of L1-Korean L2 learners of English and L1-English L2 learners of Korean, focusing on the English dative alternation and on Korean dative sentences in canonical ([IO–DO]) and scrambled ([DO–IO]) orders. The purpose of the bidirectional comparison is to allow us to try to make generalizations of L2 learners’ knowledge of the discourse givenness constraint in dative word-order alternations. On top of this, we also consider different levels of L2 proficiency (intermediate L2ers vs. advanced L2ers) and different age groups (L2 adults vs. L2 children); the purpose of this is to see how the *Given-before-New Principle* interacts with syntactic development and cognitive development, respectively. Finally, comparisons between, on the one hand, L2 children with knowledge of the *Given-before-New Principle* in their L1 and, on the other, L2 children without it may be able to unveil the relationship between L1 knowledge of the *Given-before-New Principle* and (the development of) L2 adherence to it.
1.4 Organization

This dissertation is structured in the following way: The first half of Chapter 2 outlines semantic and syntactic analyses of the English dative alternation and Korean dative constructions, along with a review of prior work on the distribution of information structure in these constructions. Chapter 2 also provides an overview of information structure, specifically, givenness—the notion of givenness and various kinds of coding scales/schemes. Next, I present the rubric of givenness created for the current study. Finally, I review empirical studies on givenness in the English dative alternation and in Korean canonical vs. scrambled dative orders.

Chapter 3 summarizes previous studies on L1 children’s age of acquisition and order of acquisition of the English dative alternation and Korean dative scrambling. Then the chapter reviews prior work on the effect of givenness on dative word-order alternations in L1-English children, L1-Japanese children (because no such research exists on L1-Korean children), and L2-English adults.

Chapter 4 presents the current study’s research questions and participants’ background information. In addition, we lay out the experimental designs, materials, and procedures of all experiments carried out in this dissertation—i.e., two false-belief tasks to test ToM in children, English and Korean oral contextualized preference tasks, and an English oral acceptability judgment task.

Chapter 5 details the operationalization, measurements, and computation of L2 proficiency and reports the results of the picture-narration task, which was used to assess L2 proficiency.

Chapter 6 reports group results and individual results from the L1-/L2-English studies, the L1-/L2-Korean studies, and the child L2-English study, each section followed by discussion and conclusion(s).

The final chapter makes comparisons crosslinguistically between L1 English and L1 Korean and bidirectionally between L1 Korean-L2 English and L1 English-L2 Korean. Finally, we provide answers to the research questions and make generalizations about (non-)adherence to the Given-before-New Principle in L1 acquisition and L2 acquisition.
CHAPTER 2.
ENGLISH AND KOREAN DATIVE WORD-ORDER ALTERNATIONS:
LINGUISTIC BACKGROUND AND INFORMATION STRUCTURE

2.1 Introduction

This chapter provides an overview of semantic and syntactic analyses of the English dative alternation and Korean dative constructions. This is followed by an overview of information structure, specifically givenness, and a review of prior work on the distribution of information structure as related to these constructions in both English and Korean.

In Section 2.2.1, I review two opposing semantic approaches to the English dative alternation. First, I detail the locus classicus of the semantic analyses of the dative alternation, proposed by Green (1974) and Oehrle (1976) and taken up by Pinker (1989) and his colleagues (Gropen, Pinker, Hollander, Goldberg, & Wilson, 1989), that the prepositional dative (PD), i.e., [NP\_THEME PP\_RECIPIENT], and the double object dative (DOD), i.e., [NP\_RECIPIENT NP\_THEME], denote distinct semantic meanings—the Meaning-to-Structure Mapping Hypothesis. Then I present a family of analyses that view the PD and the DOD as having the same meaning—the Harmonic-Alignment Hypothesis (Bresnan, 2007; Bresnan, Cueni, Nikitina, & Baayen, 2007; Bresnan & Nikitina, 2009).

Section 2.2.2 lays out two prevailing families of syntactic treatment of the English dative alternation: “symmetric theories” that posit essentially the same structure for the PD and the DOD (Harley, 1997, 2002; Pesetsky, 1995), and “asymmetric theories” that view the two dative variants as having distinct structures (Bruening, 2001, 2010a, b; Marantz, 1993).

In Section 2.3, I turn to Korean dative constructions, which also allow variants in terms of the relative positioning between direct object (DO) and indirect object (IO): the two orders which will be of interest in this research are IO (immediately) preceding DO.

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1 For the sake of convenience, I adopt the term “Meaning-to-Structure Mapping Hypothesis” from Bresnan et al. (2007) to refer to a family of semantic analyses that maintain that the two dative syntactic variants have different semantic structures. For the family of semantic analyses that analyze the PD and DOD constructions as having the same meaning, I use the term the “Harmonic Alignment Hypothesis.”
i.e., [IO_{RECIPIENT}–DO_{THEME}], IO (immediately) following DO, i.e., [DO_{THEME}–IO_{RECIPIENT}].

With regard to the syntactic derivation from one structure to the other, two opposing syntactic analyses are introduced (Baek & Lee, 2004; Kim, 2008). Baek & Lee (2004) claim that the underlying dative structure is the [DO–IO] order, from which the [IO–DO] order is derived via the operation of scrambling. Kim (2008), in contrast, argues that the [IO–DO] order is canonical and the [DO–IO] order is scrambled.

I then focus on information structure (i.e., givenness), which plays an important role in construction choice in dative word-order alterations, such that given information more typically precedes new information—the Given-before-New Principle. Section 2.4 provides an overview, encompassing the notion of givenness (§2.4.1) and the coding scales/schemes (§2.4.2). Finally, I present the rubric of givenness created for the current study (§2.4.3).

Section 2.5 reviews empirical studies on the distribution of information structure (i.e., givenness) in the English dative alternation and in Korean canonical vs. scrambled dative orders (for English: Arnold, Wasow, Losongco, & Ginstrom, 2000; Brown, Savova, & Gibson, 2012; Clifton & Frazier, 2004; Collins, 1995; Thompson, 1990; for Korean: Choi, 2009; Jackson, 2008).

2.2 English dative alternation

2.2.1 Semantic approaches

The English dative alternation permits two syntactic variants, the PD construction as in (1a) and the DOD construction as in (1b).

(1) a. John gave the book to his friend. \hspace{2em} PD [NP_{THEME} PP_{RECIPIENT}]
    b. John gave his friend the book. \hspace{2em} DOD [NP_{RECIPIENT} NP_{THEME}]

The terminology used with the dative alternation is set out in Table 2.1. In terms of grammatical functions of two object NPs, DO and IO, the PD has the [DO–IO] order, while the DOD has the [IO–DO] order. With respect to thematic roles, theme precedes recipient in the PD, while theme follows recipient in the DOD.
Table 2.1. Terms Used with the English Dative Alternation in the Present Study

<table>
<thead>
<tr>
<th>Terms</th>
<th>PD [NP THEME PP RECIPIENT]</th>
<th>DOD [NP RECIPIENT NP THEME]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO/theme</td>
<td>... gave [the book] [to his friend]</td>
<td>... gave [his friend] [the book]</td>
</tr>
<tr>
<td>IO/recipient</td>
<td>... gave [the book] [to his friend]</td>
<td>... gave [his friend] [the book]</td>
</tr>
</tbody>
</table>

In the literature on the semantics of the dative alternation, it has been extensively argued that the PD form and the DOD form are associated with discrete semantics (e.g., Green, 1974; Gropen et al., 1989; Oehrle, 1976; Pinker, 1989). Pinker (1989), among many others, established a semantic framework for dativization/dative shift, namely, the Meaning-to-Structure Mapping Hypothesis. This framework operates on, first, a lexical rule that acts directly on the verb’s semantic representation (i.e., “thematic core”), converting it into a new semantic representation, and, second, universal linking rules that map semantic structures onto syntactic structures (see (3) for the schematization). The “thematic core” of a verb consists of the participants in the events, i.e., X, Y, and Z, and the semantic functions, i.e., ACT, CAUSE, GO, HAVE, BE, TO. The thematic core of the PD is ‘X causes Y to go to Z,’ while the thematic core of the DOD is ‘X causes Z to have Y.’ In Pinker’s (1989) framework, the to-dative alternation is a gestalt shift via the lexical rule that takes a verb whose semantic structure contains the thematic core ‘X causes Y to go to Z,’ and transforms it into a new meaning containing in its semantic structure the thematic core ‘X causes Z to have Y’. Then linking rules in (2) come into play and map the semantic structure onto the syntactic structure.

(2)  
  a. Link the first argument of “cause” (agent) to the SUBJ function.
  b. Link the second argument of “cause” (theme) to the OBJ function.
  c. Link the first argument of “be” or “go” (theme) to the SUBJ function.
  d. Link the argument of “to” (recipient) to the OBL function.
  e. Link the third argument of “cause to have” (Z in “X causes Y to have Z”) to the OBJ2 function.

(adapted from Pinker, 1989, p. 74)

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2 The for-dative alternation is beyond the scope of this study.
3 In the present study, I use the term “recipient,” which can interchangeably be used with “goal.”
The *Meaning-to-Structure Mapping Hypothesis* for the *to*-dative alternation is schematized in (3).

(3)  *Meaning-to-Structure Mapping Hypothesis for to*-dative alternation

Within this framework, for the *to*-dative alternation, the PD entails the meaning of caused motion (CAUSE to GO) while the DOD involves a ‘have’ relationship (CAUSE to HAVE) between the first NP object and the second NP object, which results from the subject’s action on the first object. The semantics of CAUSE to HAVE places a semantic restriction on the recipient object that the semantics of CAUSE to GO does not. The first object must be the “prospective possessor” of the second object—the so-called “possessor/possession constraint” (Gropen et al., 1989; Oehrle, 1976; Pinker, 1989).

In (3) above, the rules that are involved in the transformation of semantic structure #1 (‘X causes Y to go to Z’) into semantic structure #2 (‘X causes Z to have Y’) are called *Broad-Range Rules* (possessor/possession constraint) (Gropen et al., 1989; Pinker, 1989). However, this productive rule is necessary but not sufficient to capture asymmetries between the PD and the DOD, as in (4)–(5).

(4)  a. John gave a gift to Mary.
     b. John gave Mary a gift.
The above asymmetry involves a semantic criterion. For example, verbs of types of communicated message (e.g., ask, cite, pose, quote, read, show, teach, tell, write) allow both the PD and the DOD, but verbs of manner of speaking (e.g., bark, mumble, mutter, whisper, yell) cannot occur in the DOD. In addition to the Broad-Range Rule, other necessary rules come into play in sequestering subclasses of dative verbs that disallow transformation of a predicate’s meaning from ‘CAUSE to GO’ to ‘CAUSE to HAVE’ and it is the Narrow-Range Rules that “license such extensions to be made for subclasses of semantically and morphologically similar verbs” (Gropen et al., 1989, p. 203).

In contrast, Bresnan and various colleagues (Bresnan, 2007; Bresnan et al., 2007; Bresnan & Nikitina, 2009) in their Harmonic-Alignment Hypothesis argue that the PD and DOD constructions have “overlapping meanings which permit them to be used as alternative expressions or paraphrases” (Bresnan, 2007, p. 76); the alternatives are flexibly selected in relation to various features of the theme and the recipient, features such as animacy, definiteness, givenness, pronominality, syntactic length, etc. To support their claim, Bresnan and colleagues (Bresnan et al., 2007; Bresnan & Nikitina, 2009) turned their attention to speakers’ usage data, using the World Wide Web and the one-million word Treebank Switchboard corpus (Marcus, Santorini & Marcinkiewicz, 1993). They found instances of both the PD and the DOD with give idioms, verbs of continuous imparting of force (e.g., pull), and verbs of manner of speaking (e.g., yell).

First, as for the give idioms, the give events in (6)–(7) are interpreted as being associated with the meaning of CAUSE to HAVE: the give event in (6) caused someone to have feelings of being frightened or nervous and the give event in (7) caused someone to have a headache. Neither theme—the creeps in (6) and a headache in (7)—is caused to go to the recipient object me. This semantic asymmetry is well captured by the Meaning-to-Structure Mapping Hypothesis, which rules out (6b) and (7b).
(6)  a. That movie gave me the creeps.
    b. *That movie gave the creeps to me.

(7)  a. The lighting here gives me a headache.
    b. *The lighting here gives a headache to me.

(Bresnan et al., 2007, p. 71, (3)–(4))

Against the Meaning-to-Structure Hypothesis, however, Bresnan et al. (2007) found from both the web and the corpora that such give idioms are actually used in the PD, which are “entirely well-formed and natural to many speakers,” as shown in (8)–(9) (p. 72).

(8)  a. … Orson Welles, who as the radio character, “The Shadow,” used to give the creeps to countless child listeners…
    (http://clps.k12.mi.us/platte/scifi/toppage21.htm)

    b. This story is designed to give the creeps to people who hate spiders, but is not true.
    (http://www.google.com/search?hl=en&ie=ISO-8859-1&q=%22give+the+creeps+to%22&btnG=Google+Search(cached))

(Bresnan et al., 2007, p. 72, (6a)–(6b))

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4 It is not known whether the examples from the web and the Treebank SWICHBOARD corpus come from native speakers of English only.
(9)  a. She found it hard to look at the Sage’s form for long. The spells that protected her identity also gave a headache to anyone trying to determine even her size, the constant bulging and rippling of her form gave Sarah vertigo.  
  (http://lair.echidnoyle.org/rpg/log/27.html)

b. From the heads, offal and the accumulation of fishy, slimy matter, a stench or smell is diffused over the ship that would give a headache to the most athletic constitution.  

(Bresnan et al., 2007, p. 72, (7a)–(7b))

As another piece of evidence for the *Meaning-to-Structure Hypothesis*, it has been suggested that verbs of instantaneous imparting of force involving ballistic motion (e.g., *blast, fling, flip, kick, poke, slap, throw, toss*) can be used in both PD and DOD syntax; in contrast, verbs of continuous imparting of force involving accompanied motion (e.g., *carry, drag, haul, lift, lower, pull, push, schlep*) are incompatible with DOD syntax (Gropen et al., 1989; Pinker, 1989), as illustrated in (10)–(11).

(10) Verbs of instantaneous imparting of force
    a. Lafleur throws/tosses/flips/slaps/kicks/pokes/flings/blasts him the puck; he shoots, he scores!
    b. Lafleur throws/tosses/flips/slaps/kicks/pokes/flings/blasts the puck to him; he shoots, he scores!

    (Bresnan & Nikitina, 2009, p. 114, (9))

(11) Verbs of continuous imparting of force
    a. I carried/pulled/pushed/schlepped/lifted/lowered/hauled the box to John.
    b. *I carried/pulled/pushed/schlepped/lifted/lowered/hauled John the box.

    (Bresnan & Nikitina, 2009, p. 114, (10))
Bresnan and Nikitina (2009) found examples of the DOD with verbs of continuous imparting of force, as in (12), which is against the contrast in (11).

(12) Verbs of continuous imparting of force

a. Karen spoke with Gretchen about the procedure for registering a complaint, and handcarried her a form, but Gretchen never completed it.

b. As Player A pushed him the chips, all hell broke loose at the table.

c. Therefore, when he got to purgatory, Buddha lowered him the silver thread of a spider as his last chance for salvation.

(Bresnan & Nikitina, 2009, p. 114, a selection of the examples from (11))

Finally, verbs of instrument of communication (e.g., cable, email, fax, phone, telegraph) can occur in the dative alternation, whereas verbs of manner of speaking (e.g., bark, mumble, mutter, whisper, yell) cannot occur in the DOD form (Gropen et al., 1989; Pinker, 1989), as illustrated in (13)–(14).

(13) Verbs of instrument of communication

a. Susan cabled/emailed/faxed/phoned/telegraphed/… the news to Rachel.

b. Susan cabled/emailed/faxed/phoned/telegraphed/… Rachel the news.

(Bresnan & Nikitina, 2009, p. 115, (12))

(14) Verbs of manner of speaking

a. Susan whispered/yelled/mumbled/barked/muttered… the news to Rachel.

b. *Susan whispered/yelled/mumbled/barked/muttered…Rachel the news.

(Bresnan & Nikitina, 2009, p. 115, (13))

Again, Bresnan and Nikitina (2009) found from the web that manner of speaking verbs do appear in the DOD as well, as presented in (15).

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5 Not all native speakers deem these acceptable.
(15) Verbs of manner of speaking\(^6\)

a. Shooting the Urasian a surprised look, she *muttered him a hurried apology* as well before skirting down the hall.
b. “Hi baby.” Wade says as he stretches. You just *mumble him an answer*. You were comfy on that soft leather couch. Besides…
c. The shepherd-dogs, guardians of the flocks, *barked him a welcome*, and the sheep bleated and the lambs pattered round him.

(Bresnan & Nikitina, 2009, p. 165, a selection of the examples from (14))

As such, while presenting counterexamples to the *Meaning-to-Structure Hypothesis*, using *give* idioms, verbs of continuous imparting of force, and verbs of manner of speaking, Bresnan and her colleagues (Bresnan et al., 2007; Bresnan & Nikitina, 2009) argue that “English dative verbs have more syntactic flexibility than we thought, occurring freely in alternative constructions” and “we cannot predict the dative alternation from meaning alone” (Bresnan et al., 2007, p. 75). Furthermore, Bresnan et al. (2007) established a probabilistic model which predicts the dative alternation in relation to various properties of themes and recipients, using the three-million word Switchboard corpus (Godfrey, Holliman, & MacDaniel, 1992). The corpus included 2,360 instances of dative constructions from the recorded and transcribed telephone conversations produced by 424 speakers. The model included 14 multiple variables: semantic class of verbs\(^7\) + accessibility of recipient + accessibility of theme + pronominality of recipient + pronominality of theme + definiteness of recipient + definiteness of theme + animacy of recipient + person of recipient + number of recipient + number of theme + concreteness of theme + structural parallelism in dialogue + length difference (log scale). It was found

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\(^6\) Some speakers, such as B. D. Schwartz and K. U. Deen, judge (15a) and (15b) as “very bad,” but (15c) as “okay.” Schwartz also provides an example that the verb *bark* is incompatible with the DOD: *The shepherd-dogs barked him the warning*. Schwartz points out that there seems to be some dialect variation here, such that British English speakers accept things like (15) more than North Americans do.

\(^7\) All the variables are binary, except for person of recipient—i.e., local–1st and 2nd vs. non-local–3rd—and the semantic classes of verbs—(i) abstract (e.g., *give it some thought*); (ii) transfer of possession (e.g., *give an armband, send*); (iii) future transfer of possession (e.g., *owe, promise*); (iv) prevention of possession (e.g., *cost, deny*); and (v) communication (e.g., *tell, give me your name*).
that all of the variables except for number of recipient are significant predictors in the selection of the variant of the dative alternation ($p < 0.001$, except for person of recipient, number of theme, and concreteness of theme at $p < 0.05$). As schematized qualitatively in (16), the bolded properties on the left (e.g., discourse given, pronoun, animate, definite) are more prominent than the unbolded properties on the right (e.g., nongiven, nonpronoun, inanimate, indefinite) such that they align harmonically with the more prominent syntactic positions ($\ni$), appearing in the immediately postverbal position—the bolded NP in [V NP NP] and [V NP PP]. That is, a given/pronominal/animate/definite entity tends to occur in the bolded, first object position in [V NP NP] and [V NP PP]. By contrast, the less prominent (i.e., a nongiven/nonpronominal/inanimate/indefinite) entity tends to occur in the second object position in both the PD and the DOD.

(16) Harmonic Alignment with Syntactic Position

<table>
<thead>
<tr>
<th>discourse given</th>
<th>nongiven</th>
</tr>
</thead>
<tbody>
<tr>
<td>pronoun</td>
<td>nonpronoun</td>
</tr>
<tr>
<td>animate</td>
<td>inanimate</td>
</tr>
<tr>
<td>definite</td>
<td>indefinite</td>
</tr>
</tbody>
</table>

[V NP NP]
[V NP PP]

(adapted from Bresnan et al., 2007, p. 80, (18))

The variables presented above are all absolute and in the diagram they are read separately in each dative variant, e.g., a discourse given-before-new alignment appears in both the PD and the DOD. In contrast, the length difference between the theme and the recipient can only be determined relationally to each other. Therefore, if the recipient shorter than the theme occurs in the DOD, then the recipient longer than theme occurs in the PD. More specifically, when the recipient is shorter than the theme, the shorter recipient harmonically aligns with the bolded, first NP in [V NP NP]; the recipient longer than theme, harmonically aligns with the unbolded PP in [V NP PP].
Bresnan et al. (2007, p. 82) observed that “the model formula shows quantitatively the harmonic alignment pattern shown qualitatively” in (16)–(17). In the model formula, positive coefficients prefer the PD and negative coefficients prefer the DOD. For example, the predictor ‘nongiven recipient’ has a positive coefficient value +0.99, thus preferring the PD (e.g., *give the toys to a child*), while ‘given recipient’ has the value 0, which is negative compared to +0.99, thus preferring the DOD (e.g., *give the children toys*). Likewise, the predictor ‘nongiven theme’ has a negative value –1.1, thus preferring the DOD (e.g., *give the children toys*), while ‘given theme’ has the value 0, which is positive compared to –1.1, thus preferring the PD (e.g., *give the toys to a child*).

Based on the corresponding results between the qualitative model pattern and the quantitative model pattern, Bresnan et al. (2007) concluded that “along with formal syntactic and semantic properties, the properties of animacy and discourse accessibility have an irreducible effect on dative syntax across written and spoken modalities, across verb senses, and across speakers” (p. 91).

Let us now take a closer look at Bresnan et al.’s (2007) coding schemes for variables, focusing on discourse accessibility (i.e., *givenness*), with which the present study is primarily concerned. For coding of *discourse givenness*, they adopted Michaelis & Hartwell’s (2007) criteria, which were modeled on the basis of Prince (1981) and Gundel, Hedberg, and Zacharski (1993). An NP is classified as *given* if its referent has been mentioned in the previous 10 turns of the dialogue. Otherwise, the NP is classified as *nongiven*. Using this coding scheme, Bresnan et al. (2007) examined

---

8 In Bresnan et al. (2007), length difference is originally included in the diagram, along with other variables (i.e., givenness, pronominality, animacy, and definiteness), but it does not work the way other variables align with syntactic position in the PD and the DOD. Therefore, I split Bresnan et al.’s (2007) diagram into (16) and (17).

9 Examples of formal syntactic properties include person, pronominality, and length difference; and examples of formal semantic properties are verb semantics, definiteness, and concreteness.
recipient-givenness and theme-givenness separately from each other—i.e., referential
givenness, which failed to capture the relation between the recipient and the theme—i.e.,
relational givenness. The two notions of givenness are “logically and empirically
independent of one another” (Gundel, 2003, p. 180). Although one object NP, based on
Michaelis & Hartwell’s coding criteria, may be referentially given, it may not be so
relationally, i.e., in relation to the other object NP. As a result, the probabilistic model
predicts the syntactic position of given/nongiven recipient regardless of givenness of the
theme and, likewise, the syntactic position of given/nongiven theme regardless of
givenness of the recipient. Accordingly, the reliability of the predictor discourse
givenness in the probabilistic model is at stake. In addition, it is unknown as to whether
the data of the Switchboard Corpus are from native speakers of English exclusively.

To summarize: Thus far, I have examined two families of semantic approaches to
the dative alternation. The Meaning-to-Structure Mapping Hypothesis (Gropen et al.,
1989; Pinker, 1989) views the PD and the DOD as having discrete, but related semantic
structures. On this view, the dative alternation is the result of a lexico-semantic rule,
which takes as input a verb with the semantic structure ‘X causes Y to go to Z’ and
converts it into the semantic structure, ‘X causes Z to have Y.’ Then universal linking
rules come into play in mapping the arguments of a verb with the semantics ‘X causes Y
to go to Z’ onto the PD syntax and ‘X causes Z to have Y’ onto the DOD syntax.

In contrast, the Harmonic-Alignment Hypothesis, proposed by Bresnan and
colleagues (Bresnan, 2007; Bresnan et al., 2007; Bresnan & Nikitina, 2009), argue that
the PD and the DOD have essentially the same semantic structures and choices of one
construction over the other are more likely to be made on the basis of various factors,
such as animacy, definiteness, information structure, pronominality, structural parallelism,
syntactic weight, etc.

2.2.2 Syntactic analyses

This section discusses two syntactic approaches to the English dative
alternation—the symmetric theory (Harley, 2002; Pesetsky, 1995) vs. the asymmetric
theory (Marantz, 1993; Bruening, 2010a, b). Harley (2002) slightly modified Pesetsky’s

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10 The notions of referential givenness and relational givenness are detailed in Section 2.4.1.
(1995) approach, whereby the PD and the DOD are basically the same structure. Let us first briefly present Pesetsky's dative structures. In the double complement structure (PD) in (18a), the complement of the V give is a prepositional phrase, whose head is P to, having the theme a letter in its specifier position and the recipient Mary in its complement position. In contrast, in the double object structure (DOD) in (18b), a prepositional phrase is headed by a null preposition G, with the theme a letter in its complement position and the recipient Mary in its specifier position.

(18) Pesetsky (1995)

a. PD ((456), cited by Harley, p. 33, (2a))

```
VP
...                  V'
   ＼               ＼
      ＼       ＼
   V       PP
      ＼       ＼
   give    DP
       ＼   ＼
    a letter P    DP
     ＼   ＼
 to    Mary
```

b. DOD ((511), cited by Harley, p. 33, (2b))

```
VP
...                  V'
   ＼               ＼
      ＼       ＼
   V                   PP
      ＼       ＼
   give    DP
       ＼   ＼
    Mary   P    DP
     ＼   ＼
 G    a letter
```

On this approach, which captures the c-command relation of the hierarchical structure proposed by Larson (1988) (“rightward is downward”) (cited in Harley, p. 40), the verb give directly selects the theta role of the DP in the specifier of the preposition, a letter in the PD and Mary in the DOD, and indirectly selects the theta role of the complement of the preposition to or the null preposition G, Mary and a letter, respectively. The indirect selection is completed by the selection of a PP whose P head selects its own theta role properly such that to selects goal and G selects theme. That is, whereas in the PD a goal is indirectly selected, in the DOD a goal is directly selected. Pesetsky (1995) suggested that “the semantics of to-objects seems to be a superset of the

---

11 A c-commands B iff the first node above A dominates B (and neither A nor B dominates the other).
semantics of directly selected goals” (p. 141). This superset-subset relation which is attributed to an overt preposition to accounts for the semantic contrast—e.g., send a book to London/*send London a book. Any case that is legitimate in the DOD is also legitimate in the PD, but not vice versa.

However, this claim runs into a problem. There are many cases that occur only in the DOD, as exemplified by Harley (2002) in (19).

(19) a. Mary gave John a kick.
   b. *Mary gave a kick to John.
   c. Bill threw Mary a glance.
   d. *Bill threw a glance to Mary.

(Harley, 2002, p. 41, (15a)–(15d))

In Harley’s (2002) modified version, for the PD structure, a PP is headed by an abstract preposition P_{LOC}, rather than P to, as in (20a). For the DOD structure, in line with some other researchers (Benveniste, 1966; Freeze, 1992; Guéron, 1995; Kayne, 1993) who identify the null preposition G as encoding possession, Harley calls this preposition P_{HAVE}, as in (20b).

(20) Harley (2002)

a. PD (p. 34, (3a))

<table>
<thead>
<tr>
<th>vP</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
</tr>
<tr>
<td>v</td>
</tr>
<tr>
<td>PP</td>
</tr>
<tr>
<td>CAUSE</td>
</tr>
<tr>
<td>DP</td>
</tr>
<tr>
<td>a letter</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>P_{LOC}</td>
</tr>
<tr>
<td>to Mary</td>
</tr>
</tbody>
</table>

b. DOD (p. 34, (3b))

<table>
<thead>
<tr>
<th>vP</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
</tr>
<tr>
<td>v</td>
</tr>
<tr>
<td>PP</td>
</tr>
<tr>
<td>CAUSE</td>
</tr>
<tr>
<td>DP</td>
</tr>
<tr>
<td>a letter</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>P_{HAVE}</td>
</tr>
<tr>
<td>Mary</td>
</tr>
<tr>
<td>to Mary</td>
</tr>
</tbody>
</table>
On this account, the two P heads, P_{LOC} and P_{HAVE}, being contained in parallel, small clause PPs in the PD and the DOD, respectively, make their own particular semantic contribution to the final interpretation. P_{HAVE} contributes to the possession relation in the DOD, which provides an explanation of the classic contrast—e.g., *taught Spanish to the students* vs. *taught the students Spanish*.\footnote{In the PD sentence, the goal object does not necessarily receive the prospective possessor role and thus there is no commitment as to whether or not the students learned some Spanish. In contrast, in the DOD sentence, in which the goal object is the prospective possessor, there is a much stronger implication that teaching was successful and thus the students actually learned some Spanish.}

However, this small clause analysis cannot account for the quantifier scope asymmetry between the PD and the DOD, which is discussed below, as pointed out by Bruening (2010a, b).

Let us now turn to the asymmetric theory, which was originally proposed by Marantz (1993) and developed by Bruening (2010a, b). Bruening, adopting Kratzer’s (1996, p. 120) “theory of Voice,” argued that the PD and the DOD have distinct syntactic underlying structures, as in (21).\footnote{On Kratzer’s (1996) theory of Voice, external arguments are base-generated in the specifier position of VoiceP (right above VP), which assigns accusative Case to internal arguments (i.e., direct objects), which are base-generated in the specifier position of VP.}

In the PD (e.g., *Maria gave the bottle to the baby*) in (21a), V (*give*) has two arguments, the theme NP *the bottle* and the recipient PP *to the baby*. In contrast, in the DOD (e.g., *Maria gave the baby the bottle*) in (21b), V (*give*) has only the theme argument *the bottle*, the recipient argument *the baby* being introduced by the Appl(i(cative)) head, which is located between VoiceP and VP.
Based on this asymmetric theory, Bruening (2010a) accounts for the asymmetries between the PD and the DOD with respect to quantifier scope, nominalizations, and idioms. First, whereas the PD is compatible with inverse scope of the second NP *every baby* over the first NP *a bottle* as in (22a), the DOD is incompatible with inverse scope of the second NP *every bottle* over the first NP *a baby* as in (22b).

(22) a. Maria gave a bottle to every baby. (*every baby* can distribute over *a bottle*)
   b. Maria gave a baby every bottle. (*every bottle* cannot distribute over *a baby*)

(Bruening, 2010a, p. 525, (12a)–(12b))

Bruening (2010a) handles this asymmetry by employing the m-command relation between two object arguments and scope-taking movement.\(^{14}\) Consider the tree structures in (23).

\(^{14}\) A m-commands B iff the first XP above A dominates B (and neither A nor B dominates the other).
(23) a. Maria gave a bottle to every baby.  

\[
\text{VoiceP} \\
\text{NP} \quad \text{Voice'} \\
\text{Maria} \quad \text{Voice} \quad \text{VP} \\
\text{NP1} \quad \text{V'} \\
\text{a bottle} \quad \text{V} \quad \text{PP} \\
\text{give} \quad \text{P} \quad \text{NP2} \\
\text{to} \quad \text{every baby} \\
\]

b. Maria gave a baby every bottle.

\[
\text{VoiceP} \\
\text{NP} \quad \text{Voice'} \\
\text{Maria} \quad \text{Voice} \quad \text{ApplP} \\
\text{NP1} \quad \text{Appl'} \\
\text{a baby} \quad \text{Appl} \quad \text{VP} \\
\text{V} \quad \text{NP2} \\
\text{give} \quad \text{every bottle} \\
\]

(Bruening, 2010a, p. 526 (13a)–(13b))

NB: The numbered NPs—NP1 and NP2—are mine.

In (23a) for the PD, NP1 and PP m-command each other, which results in equidistance for them to move to higher positions to take scope. That is, NP1 moves and takes a higher position for scope, or PP moves to a higher position than NP1 for scope-taking, thereby allowing inverse scope of NP2 every baby over NP1 a bottle. In contrast, in (23b) for the DOD, NP1 a baby asymmetrically m-commands NP2 every bottle, and NP2 is unable to cross over NP1 for any scope-taking movement.

Second, the PD allows nominalizations, while the DOD does not, where the first object NP either is introduced by of or is the possessor (Kayne, 1984; Pesetsky, 1995). Contrasts are provided in (24) vs. (25):

(24) a. the gift of a statute to Mary  
   
   b. the sale of a defective car to us

(Bruening, 2010a, p. 528, (19a)–(19b))
(25) a. *the gift of Mary (of) a statute
   (Bruening, 2010a, p. 528, (17a))

   b. *Mary’s gift of the letter by her teacher
      (Kayne, 1984, p. 146, (62), cited by Bruening, 2010a, p. 528, (17b))

   c. *the sale of us (of) a defective car
      (Bruening, 2010a, p. 528, (18a))

   d. *our sale of a defective car by this salesman
      (Kayne, 1984, p. 146, (62), cited by Bruening, 2010a, p. 528, (18b))

Bruening (2010a) argues that the DOD has a null morpheme Appl, and affixation of this null morpheme to V [V Appl] prevents further derivation, i.e., nominalization. In contrast, the PD does not have such a null morpheme.

Bruening (2010a, b) extensively discusses idiom asymmetries, but I focus only on the give idiom asymmetry between the PD and the DOD. Recall that Bresnan et al. (2007) challenged the claim that the contrasts of give idioms do not exist. Examples are repeated as in (26)–(29).

(26) a. That movie gave me the creeps.

   b. *That movie gave the creeps to me.

(27) a. The lighting here gives me a headache.

   b. *The lighting here gives a headache to me.
      (Bresnan et al., 2007, p. 71, (3)–(4))

---

15 Pesetsky (1995) argues that “affixation of null morphemes to a verbal root prevents further derivation” (Myers, 1984, cited in Bruening, 2010a, p. 528). It is noted that the [V Appl] combination does not prevent further head movement (including affixation) in Bruening (2010a), which assumes that the [V Appl] moves to Voice. What Appl prevents is the addition of further derivational morphology, e.g., nominalization.
(28) a. … Orson Welles, who as the radio character, “The Shadow,” used to *give the creeps to countless child listeners*…

   b. This story is designed to *give the creeps to people who hate spiders*, but is not true.

   (Bresnan et al., 2007, p. 72, (6a)–(6b))

(29) a. She found it hard to look at the Sage’s form for long. The spells that protected her identity also *gave a headache to anyone trying to determine even her size*, the constant bulging and rippling of her form gave Sarah vertigo.

   b. From the heads, offal and the accumulation of fishy, slimy matter, a stench or smell is diffused over the ship that would *give a headache to the most athletic constitution*.

   (Bresnan et al., 2007, p. 72, (7a)–(7b))

Bruening (2010a, b), however, claims that these cases are not true alternations and that they undergo shift from a DOD, namely, *R-dative shift*. One piece of evidence for *R-dative shift* is that truly alternating dative idioms retain their idiomatic interpretation in a passive form, but non-alternating ones cannot. Using Google, Bruening (2010a) found alternating examples in (30), but not non-alternating ones.

(30) a. The riot act was read to the protesters.

   b. A hand was lent to those who returned to New Orleans.

   c. A wide berth should be given to those who use mediation…

   (Bruening, 2010a, p. 539, (40a)–(40c))

(31) a. *The creeps were given to him.

   b. *A piece of your mind should be given to him.

   c. *A headache will be given to anyone who enters this room.

   (Bruening, 2010a, p. 539, (39a)–(39c))
Second, alternating dative idioms can undergo locative inversion, as in (32), but non-alternating ones cannot, as in (33).

(32) a. To the ministers should be read the proverbial riot act.
    b. To the accident victims was lent a sympathetic ear.

    (Bruening, 2010a, p. 539, (41a)–(41c))

(33) a. *To people who enter this room are given headaches.
    b. *To people who hate spiders are given creeps.

    (Bruening, 2010a, p. 539, (42a)–(42c))

Hence, the idioms presented in (28)–(29) are the DOD which underwent R-dative shift, as in (34b).

(34) Bruening (2010b)

a. DOD (p. 289, (6))

\[
\begin{array}{c}
\text{VoiceP} \\
\text{NP}_{\text{EXT}} \quad \text{Voice’} \\
\text{Voice} \quad \text{ApplP} \\
\text{NP}_{\text{GOAL}} \quad \text{Appl’} \\
\text{Appl} \quad \text{VP} \\
\text{V} \quad \text{NP}_{\text{THEME}} \\
\end{array}
\]

b. R-dative shift (p. 290, (8))

\[
\begin{array}{c}
\text{VoiceP} \\
\text{NP}_{\text{EXT}} \quad \text{Voice’} \\
\text{Voice} \quad \text{ApplP} \\
\text{Appl’} \quad \text{NP}_{\text{GOAL}} \\
\text{Appl} \quad \text{VP} \\
\text{V} \quad \text{NP}_{\text{THEME}} \\
\end{array}
\]

NB: Bolding is for expository purposes.

The only difference between the DOD and R-dative shift structures is that in the former (34a), NP$_{\text{GOAL}}$ is in the (left) specifier of ApplP, while in the latter (34b), NP$_{\text{GOAL}}$ is projected on the right. Bruening (2010b) further assumes that this rightward projection of
the specifier of ApplP is licensed only when the NP\textsubscript{GOAL} is extracted through an A’-movement process, as stated in (35).

(35) The Extraction Constraint on Rightward Specifiers

The specifier of ApplP may be ordered to the right of its sister only if the NP that occupies it undergoes Ā-extraction.

(Bruening, 2010b, p. 291, (9))

For the give idioms in (28) and (29), what motivates A’-extraction is heaviness of the NP\textsubscript{GOAL} (e.g., countless child listeners…, people who hate spiders, anyone trying to determine even her size, the most athletic constitution). Under the extraction constraint on rightward specifiers, the heavy NP\textsubscript{GOAL} can undergo rightward movement, right-adjoining to VoiceP, as illustrated in (36). This heavy, R-dative shift process results in the appearance of the preposition to. As a result, the linear order of R-dative shift looks the same as the PD on the surface, but it is in actuality, argues Bruening, the DOD.

(36) R-dative shift (p. 291, (10))
On the basis of these three arguments, i.e., quantifier scope, nominalizations, and idioms, Bruening (2010a, b) concludes that the asymmetric theory is on the right track in capturing the asymmetry between the PD and the DOD.

To summarize: In the preceding section, I presented two opposing syntactic approaches to the dative alternation, the symmetric theory (Harley, 2002; Pesetsky, 1995) and the asymmetric theory (Marantz, 1993; Bruening, 2010a, b). The symmetric theory postulates the same structure for the PD and the DOD, but with the positions of the two object NPs—theme and recipient—reversed. For instance, Harley (2002) proposes that the head of a PP in the PD is projected by Pₜₐₙₜₑₜ, while the head of PP in the DOD is projected by Pₜₜₑᵥₑ. Pₜₜₑᵥₑ brings to the DOD a possession relation between the first object and the second object. The symmetric theory supports the Meaning-to-Structure-Mapping Hypothesis, providing accounts for the two distinct semantic structures by the two different PP heads, Pₜₐₛₑ and Pₜₜₑᵥₑ. However, it does not account for certain asymmetries between the two dative variants.

In contrast, Bruening’s (2010a, b) asymmetric theory, can account for three PD–DOD asymmetries: quantifier scope, nominalizations, and idioms. He proposes that whereas the DOD has an ApplP whose head introduces the NPₜₜₑᵥₑₑₘₑₑₑ, the PD lacks ApplP. Bruening further argues that the DOD give idioms with PP variants (e.g., *This story is designed to give the creeps to people who hate spiders, but is not true*) are actually the result of R-dative shift, which requires the preposition to. The asymmetric theory thus argues against the Harmonic Alignment Hypothesis.
2.3 Korean dative constructions

2.3.1 Syntactic analyses

In Korean dative construction, the DO (theme) is marked by accusative case -(l)ul and the IO (recipient) is marked by dative case –eykey, as in (37).16

    Mary-Nom John-Dat book-Acc give-Past-Decl

‘Mary gave a/the book to John.’/‘Mary gave John a/the book.’

As Korean, a verb-final language, allows relatively free word order among preverbal constituents, the word order of the dative construction (when consisting of only S, IO, DO, and V) gives rise to six possibilities, as illustrated in (38).

The IO also can be marked by accusative case -(l)ul, as in (ia), albeit only with a small subset of dative verbs, such as cwu- ‘give,’ and verbs containing the benefactive verbal morpheme -cwu- (e.g., kulyecwu- ‘draw,’ mantulecwu- ‘make,’ sacwu- ‘buy,’ etc.).

(i)  a. [IO\_{DAT--DO\_{ACC}}] or [IO\_{ACC--DO\_{ACC}}]
    Mary-Nom John-Dat/-Acc book-Acc give-Past-Decl
    ‘Mary gave John a book.’

    b. [IO\_{DAT--DO\_{ACC}}] only
    Mary-Nom John-Dat/-Acc book-Acc send-Past-Decl
    ‘Mary sent a book to John.’

    (Jung & Miyagawa, 2004, pp. 107–108, (12a) & (11a))

Jung and Miyagawa (2004) argue that [IO\_{ACC--DO\_{ACC}}] bears a possession interpretation like the English DOD does (X causes Z to have Y), and, similarly, that [IO\_{DAT--DO\_{ACC}}], like the English PD, has no such implication of possession. Accordingly, [IO\_{ACC--DO\_{ACC}}] corresponds to the English DOD and [IO\_{DAT--DO\_{ACC}}] corresponds to the English PD. In this dissertation, the Korean studies examine dative-marked IOs only.

16 The IO also can be marked by accusative case -(l)ul, as in (ia), albeit only with a small subset of dative verbs, such as cwu- ‘give,’ and verbs containing the benefactive verbal morpheme -cwu- (e.g., kulyecwu- ‘draw,’ mantulecwu- ‘make,’ sacwu- ‘buy,’ etc.).

17 There are four different dative case markers: -ey (inanimate), -eykey (animate, slightly formal), -hanthey (animate, casual), or -kkey (honorific) (Sohn, 1994, p. 238).
(38) a. [S–IO–DO–V]
Mary-Nom John-Dat book-Acc give-Past-Decl
‘Mary gave a/the book to John.’/‘Mary gave John a/the book.’

b. [S–DO–IO–V]
Mary-Nom book-Acc John-Dat give-Past-Decl

c. [IO–S–DO–V]
John-Dat Mary-Nom book-Acc give-Past-Decl

d. [DO–S–IO–V]
book-Acc Mary-Nom John-Dat give-Past-Decl

e. [IO–DO–S–V]
John-Dat book-Acc Mary-Nom give-Past-Decl

f. [DO–IO–S–V]
book-Acc John-Dat Mary-Nom give-Past-Decl

Choi (2009) examined the frequency of Korean dative constructions (38a)–(38f) using the spoken portions of the million-word Sejong Modern Korean Corpus (Kim, 2000). There were 714 tokens of dative constructions containing both an overt IO and an overt DO. Of these, 98.5% employed (38a) or (38b); only 1.5% had (38c) or (38d);

18 The corpus consists of transcribed or pre-scripted texts of TV/radio drama shows, interviews, talk shows, news shows, lectures, and casual conversations.
and (38e) and (38f) were nonexistent. Based on this, in the present study I focus on the
two most frequent variants, [S–IO–DO–V] ([IO–DO], henceforth) and [S–DO–IO–V]
([DO–IO], henceforth). In the following, I present two opposing syntactic analyses of the
two orders: the underlying structure in one analysis is [DO–IO] (Baek & Lee, 2004) and
in the other it is [IO–DO] (Kim, 2008).

arguments for a [DO–IO] basic order: backwards binding, quantifier scope, weak
crossover effects, and the chain condition. Backwards binding—“a reversal of
c-command relations among the arguments between D-structure and S-structure”
(Pesetsky, 1995, p. 42)—states that the antecedent preceded by the anaphor at surface
structure binds the anaphor. Pesetsky (1995) notes that there is an asymmetry of
backwards binding between the PD and the DOD, as in (39b) and (39d). Backwards
binding is possible in the PD, as in (39b), but not in the DOD, as in (39d).

(39) a. Sue showed John and Mary to each other’s friends. (PD)
   b. Sue showed each other’s friends to John and Mary. (PD)
   c. Sue showed John and Mary each other’s friends. (DOD)
   d. *Sue showed each other’s friends John and Mary. (DOD)

The possibility of (39b), in which the reciprocal anaphor each other is not c-commanded
by its antecedent at surface structure, suggests that each other has been moved from an
underlying position over the recipient PP to John and Mary and is c-commanded by its
anaphor John and Mary. In contrast, (39d) does not exhibit such reconstruction effects.

Similarly, Baek and Lee (2004) observe an asymmetry of backwards binding in
Korean dative constructions: Backwards binding is possible in [IO–DO], as in (40b), but
not in [DO–IO], as in (41b).
(40) [IO–DO]

a. Sue-nun John kwa Mary-eykey selouy chinkwu-lul poyecwuessta.
    Sue-Top John and Mary-Dat each other’s friends-Acc showed
    ‘Sue showed John and Mary each other’s friends.’

b. Sue-nun selouy chinkwu-eykey John kwa Mary-lul poyecwuessta.
    Sue-Top each other’s friends-Dat John and Mary-Acc showed
    ‘Sue showed each other’s friends John and Mary.’

(41) [DO–IO]

a. Sue-nun John kwa Mary-lul selouy chinkwu-eykey poyecwuessta.
    Sue-Top John and Mary-Acc each other’s friends-Dat showed
    ‘Sue showed John and Mary to each other’s friends.’

    Sue-Top each other’s friends-Acc John and Mary-Dat showed
    ‘Sue showed each other’s friends to John and Mary.’

(Baek & Lee, 2004, pp. 672–673, (13a)–(13d))

According to Baek and Lee (2004), the possibility of (40b) suggests that even if the IO containing the reciprocal anaphor selo ‘each other’ is not c-commanded by its antecedent at surface structure, it is at some level of representation. Baek and Lee thus conclude that the IO has been moved over the DO John kwa Mary-lul ‘John and Mary’ and hence the (trace of the) IO is c-commanded by the DO. In contrast, the impossibility of (41b) indicates that the reciprocal DO is base-generated in its surface structure position, in which it c-commands the IO. From my judgment, however, backwards binding of the preceding IO anaphor (selouy chinkwu-eykey ‘each other’s friends’) by the DO antecedent (John kwa Mary-lul ‘John and Mary’) (40b/42) is simply unacceptable.
(42) [IO–DO]
*Sue-nun selouy chinkwu-eykey John kwa Mary-lul poyecwuessta.
Sue-Top each other’s friends-Dat John and Mary-Acc showed
‘Sue showed each other’s friends John and Mary.’

Baek and Lee (2004) then present a contrast concerning scope ambiguity between
[IO–DO] and [DO–IO], in both of which a universal quantifier motun ‘every’ precedes an
existential quantifier etten ‘some,’ as in (43). Scope ambiguity arises in the [IO–DO]
order, as in (43a), but not in the [DO–IO] order, as in (43b).

(43) a. [IO–DO]: Ambiguous
Sue-nun motun ai-eykey etten mwuncey-lul cwuessta.
Sue-Nom every child-Dat some problem-Acc gave
‘Sue gave every child some problem.’

b. [DO–IO]: Unambiguous
Sue-nun motun mwuncey-lul etten ai-eykey cwuessta.
Sue-Nom every problem-Acc some child-Dat gave
‘Sue gave every child some problem.’

(Baek & Lee, 2004, p. 674, (19a)–(19b))

Baek and Lee argue that scope ambiguity in [IO–DO] indicates that there is a trace of the
IO in its base-generated position c-commanded by the DO, as shown in (44). As a result,
the IO can take scope over the DO (motun ‘every’ > etten ‘some’) and vice versa (etten
‘some’ > motun ‘every’).

(44) Ambiguous [IO–DO]
Sue-nun motun ai-eykeyi etten mwuncey-lul ti cwuessta.
Sue-Nom every child-Dat some problem-Acc gave
‘Sue gave every child some problem.’

(Baek & Lee, 2004, p. 674, (19a))
Baek and Lee’s (2004) quantifier scope analysis receives criticism from Kim (2008). First of all, the data used in Baek and Lee are not appropriate to test scope ambiguity because sentence (43a) has the reading of motun > etten (every > some), which covers both situations in which ‘each kid received the same problem’ and ‘each kid received a different problem.’ In consequence, sentence (43a) illustrates “an issue of vagueness, not ambiguity” (Kim, 2008, p. 121). In addition, sentence (43b) indeed involves scope ambiguity, allowing both scope-taking of every over some (“Every problem is given to a different kid”) and some over every (“A particular kid got all the problems”) (Kim, 2008, p. 121).

As their third argument, Baek and Lee (2004) point out that there is a weak crossover asymmetry in Korean dative constructions, as in (45). The ‘weak crossover effect’ states that “[a] wh-phrase c-commanded at D-Structure by an NP containing a pronoun cannot be moved over that NP if the wh-[phrase] and the pronoun are coreferential” (Larson, 1988, p. 336). Consider (45a)–(45b). When a wh-phrase precedes a DP containing a pronoun that is coreferential with the wh-phrase, the [IO–DO] order in (45a) is unacceptable, but the [DO–IO] order in (45b) is acceptable.

(45) a. [IO–DO]
*ne-nun [etten salam-yeykey]j [ku-uy wolkup]-ul tj ponayss-ni?
You-Top which man-Dat his paycheck-Acc sent-Q
‘Which man did you send his paycheck?’

b. [DO–IO]
 ne-nun [nwukwu-uy wolkup]-ul [ku-uy emma]-eykey ponayss-ni?
You-Top whose paycheck-Acc his mother-Dat sent-Q
‘Whose paycheck did you send his mother?’

(Baek & Lee, 2004, p. 676, (22a)–(22b))

Baek and Lee assume that (45a) is unacceptable because the wh-phrase (i.e., etten ‘which’) in the IO, which is c-commanded at D-structure by the DO containing the co-indexed pronoun (i.e., ku-uy ‘his’), was moved over the DO and hence it produces a
weak crossover effect. In contrast, the acceptability of (45b) indicates that [DO–IO] is the base-generated structure, in which the wh-phrase (i.e., nwukwu-uy ‘whose’) in the DO c-commands the coreferential pronoun (i.e., ku-uy ‘his’) in the IO at D-structure as well as at surface structure.

Finally, Baek and Lee (2004) use the chain condition to show that [IO–DO] is derived from [DO–IO] by the operation of scrambling the IO over the DO. As observed by Rizzi (1986), when an R-expression Gianni moves over an anaphor si ‘to-himself,’ its trace and the anaphor form a chain, as in (46). The chain condition states that the trace of the R-expression cannot be locally c-commanded by the anaphor in a chain.

\[(46) \quad \text{*Gianni}_t \quad \text{si}_i \quad \text{è stato} \quad \text{affidato} \quad t_i\]

\[\text{Gianni to-himself was entrusted}\]

\[\text{‘Gianni was entrusted to himself.’}\]

(Rizzi, 1986, p. 71)

Now let us consider (47a) and (47b). According to Baek and Lee (2004), the [IO–DO] order in (47a) is unacceptable because the trace of the antecedent IO (i.e., haksayngtul-eykey ‘students’) is locally c-commanded by the reciprocal anaphor in the DO (selo ‘each other’). In contrast, the base-generated [DO–IO] order in (47b) does not involve any trace.

\[(47) \quad a. \quad \text{*na-nun} \quad \text{haksayngtul}-eykey \quad \text{selo}-lul \quad t_i \quad \text{sokayhayssta.}\]

\[\text{I-Top students-Dat each other-Acc introduced}\]

\[\text{‘I introduced the students each other.’}\]


b. \text{na-nun haksayngtul-ul selo-eykey sokayhayssta.}\n
\[\text{I-Top students-Acc each other-Dat introduced}\]

\[\text{‘I introduced the student to each other.’}\]
It should be noted, however, that if the verb *sokayha-* ‘introduce’ is replaced with *sokayhaycwu-* ‘introduce,’ which contains the benefactive verbal morpheme -cwu, the sentence becomes acceptable, as in (48).

(48) na-nun haksayngtul-i eykey selo-lul sokayhay-cwu-ess-ta.
   I-Top students-Dat each other-Acc introduced-give -Past-Decl
   ‘I introduced the students each other.’

It appears that the unacceptability of [IO–DO] in (47a) has to do with a particular verb *sokayha-* , not with violating the chain condition. As such, the chain condition including the reciprocal anaphor *selo* ‘each other’ shows inconsistency about the c-command relation between the IO and the DO.

Against Baek and Lee’s (2004) claim that the DO asymmetrically c-commands the IO in the base order, Kim (2008) argues for the opposite, on the basis of three pieces of evidence: quantifier scope, the chain condition, and idioms. First, Kim (2008) also notes the contrast of scope ambiguity between [IO–DO] and [DO–IO], in both of which *etten* ‘some’ precedes *motun* ‘every.’ The [IO–DO] in (49a) shows scope rigidity, allowing only one reading in which *etten* ‘some’ takes scope over *motun* ‘every’ (“Tom gave all the books to a particular kid”). In contrast, the [DO–IO] order in (49b) shows scope flexibility, allowing two possible readings: not only can *etten* ‘some’ take scope over *motun* ‘every’ (“All the kids received the same book”) but *motun* ‘every’ can take scope over *etten* ‘some’ (“Each kid received a different book”).
(49) a. [IO–DO]: (some > every; *every > some)
Tom-un etten ai-eykey motun chayk-lul cwu-ess-ta.
Tom-Top some kid-Dat every book-Acc give-Past-Decl
‘Tom gave every book to some kid.’

b. [DO–IO]: (some > every; every > some)
Tom-un etten chayk-lul motun ai-eykey cwu-ess-ta.
Tom-Top some book-Acc every child-Dat give-Past-Decl
‘Tom gave some book to every kid.’

(Kim, 2008, p. 120, (21a)–(21b))

Kim (2008) points out that in Korean, scope rigidity is observed in the canonical [SOV] order in (50a) (Ahn, 1990; Hastrom, 1998; Joo, 1989; Sohn, 1994), but not in the scrambled order [OSV] in (50b)—the so-called ‘scope freezing effect’: “scope is frozen in [the] canonical word order, while it is flexible in [the] scrambled order: the trace of the scrambled object allows the inverse scope to be possible” (p. 119).

(50) a. [S–O–V]: (some > every; *every > some)
etten haksayng-i motun chayk-ul ilk-ess-ta.
some student-Nom every book-Acc read-Past-Decl
‘Some student read every book.’

b. [O–S–V]: (some > every; every > some)
etten chayk-ul tí motun haksayng-i tí ilk-ess-ta.
some book-Acc every student-Nom read-Past-Decl
‘Every student read some book.’

(Kim, 2008, p. 119, (19)–(20))

The scope freezing effect tells us that [IO–DO] showing scope rigidity in (49a) is the underlying structure and [DO–IO] showing scope flexibility in (49b) is a derived one, which has a trace as in (51).
(51) [DO–IO]: (some > every; every > some)

Tom-un etten chayk-ul $t_i$ motun ai-eykey $t_i$ cwu-ess-ta.
Tom-Top some book-Acc every child-Dat give-Past-Decl

‘Tom gave some book to every kid.’

(Kim, 2008, p. 120, (21b))

Using the chain condition involving the reflexive anaphor cakicasin ‘self,’ Kim (2008) tests for the c-command relation between the IO and the DO. The two dative orders in (52) show an asymmetry: When the DO anaphor (cakicasin-ul ‘self’) is preceded by its IO antecedent (John-eykey ‘to John’), the sentence is acceptable, as in (52a); in contrast, when the IO anaphor (cakicasin-eykey ‘to self’) is preceded by its DO antecedent (John-ul ‘John’), the sentence is unacceptable, as in (52b).

(52) a. [IO–DO]

Sue-ka John-eykey $t_i$ cakicasin-ul $t_i$ poyecwu-ess-ta.
Sue-Nom John-Dat self-Acc show-Past-Decl

‘Sue showed self to John.’

b. [DO–IO]

*Sue-ka John-ul $t_i$ cakicasin-eykey $t_i$ poyecwu-ess-ta.
Sue-Nom John-Acc self-Dat show-Past-Decl

‘Sue showed John to self.’

(Kim, 2008, p. 122, (27a)–(27b))

Recall that the chain condition states that the trace of a moved R-expression cannot be locally c-commanded by the anaphor in a chain. The unacceptability of (52b) suggests that the R-expression John has moved over the anaphor cakicasin ‘self’ and, in consequence, the trace of the moved R-expression is locally c-commanded by the anaphor, which violates the chain condition. In contrast, the acceptability of (52a) indicates that the [IO–DO] is the base-generated structure.
Finally, turning to idioms, Kim (2008) finds that idioms in Korean tend to be formed by the combination of theme with the dative verb, to the exclusion of the recipient, as in (53)–(55).

(53) a. [IO–DO]
   Sue-nun  emma-eykey  olipal-ul  naymil-ess-ta.
   Sue-Top  mother-Dat  duck’s foot-Acc  show-Past-Decl
   ‘Sue lied to (her) mother.’

   b. [DO–IO]
   *Sue-nun  olipal-ul  emma-eykey  naymil-ess-ta.
   Sue-Top  duck’s foot-Acc  mother-Dat  show-Past-Decl

(54) a. [IO–DO]
   I-Top  John-Dat  one tray.of.food-Acc  shoot-Past-Decl
   ‘I treated John.’

   b. [DO–IO]
   I-Top  one tray.of.food-Acc  John-Dat  shoot-Past-Decl

(55) a. [IO–DO]
   Sue-nun  Joe-eykey  uysim-ul  sa-ss-ta.
   Sue-Top  Joe-Dat  doubt-Acc  buy-Past-Decl
   ‘Joe suspected Sue.’

   b. [DO–IO]
   *Sue-nun  uysim-ul  Joe-eykey  sa-ss-ta.
   Sue-Top  doubt-Acc  Joe-Dat  buy-Past-Decl

   (Kim, 2008, p. 123, (30)–(32))
In (53), for example, the theme *olipal-ul ‘duck’s foot’* combining with the dative verb *naymilessta ‘showed’* has an idiomatic interpretation in the [IO–DO] order: “Sue lied to (her) mother.” In contrast, the [DO–IO] order has a literal meaning only: “Sue showed a duck’s foot to her mother.” Kim (2008) argues that the idiomatic readings for [DO–IO] in (53)–(55) are not available because scrambling of the DO over the IO, which is driven by a special discourse function, such as focus or topic, may clash with the idiomatic reading.

As we have just seen, Baek and Lee’s (2004) analysis, in support of [DO–IO] as the underlying structure, reveals problems with backwards binding, scope ambiguity, the chain condition, and idioms. In line with Kim’s (2008) arguments that [IO–DO] is the basic, canonical order, in the next section I present corpus-based evidence that the canonical [IO–DO] order is far more frequent than the scrambled [DO–IO] order.

**2.3.2 Frequency-based analysis**

Choi (2009) compared the frequency between the [S–IO–DO–V] order and the [S–DO–IO–V] order using the spoken portions of the million-word Sejong Modern Korean Corpus (Kim, 2000) (refer to §2.3.1). The results suggested that the [IO–DO] order occurs far more frequently \(k = 599; 83.9\%\) than the [DO–IO] order \(k = 115; 16.1\%\). Using a small-scale mother-to-child speech corpus containing 240 dative sentences with both object NPs overt, Cho, Lee, O’Grady, Song, Suzuki, and Yoshinaga (2002) compared the frequency between [IO–DO] vs. [DO–IO]. Consistent with Choi’s (2009) results, the [IO–DO] order was far more frequent (70\%) than the [DO–IO] order (30\%). These frequency data suggest that [IO–DO] is more basic.

In the preceding sections, I detailed the semantic and syntactic analyses of dative constructions in English and Korean. With these analyses in mind, let us now turn to the issue of discourse factors which influence speakers’ choices of one variant over another in dative word-order alternations—namely, *information structure*, more specifically, the notion of discourse *givenness*. 
2.4 Information structure

2.4.1 Referential givenness vs. relational givenness

Information structure, first introduced by Halliday (1967), has been defined and used in many different ways in the literature, and there is as yet no consensus on the definition and use of terms or even on how many information-structural categories there are. Among the related notions are the functional perspective of the Prague School (e.g., Firbas, 1975; Sgall, Hajiíova, & Panevová, 1986), Chafe’s (1976) information packaging, and Vallduví’s (1990) informatics, etc. In this dissertation, I will use the term information structure, of which my focus is givenness. I am concerned primarily with the givenness constraint in discourse: “State what is given before what is new in relation to it” (Gundel, 1988, p. 229)—the so-called Given-before-New Principle.

For my study, I adopt Gundel’s (1988, 1999a, b, 2003) framework of information structure, whereby givenness is categorized into referential and relational dimensions. First, referential givenness refers to a relation between a linguistic expression (i.e., referents) and a corresponding non-linguistic (conceptual) entity in the interlocutors’ mental states. Representative examples of referential givenness include existential presupposition (Strawson, 1964), the familiarity scale (Prince, 1981), the familiarity condition on definite descriptions (e.g., Heim, 1982), various senses of referentiality and specificity (Enç, 1991; Fodor & Sag, 1982), topic continuity (Givón, 1983), activation and identifiability (Chafe, 1987, 1994; Lambrecht, 1994), level of accessibility (Ariel, 1988, 1990), status of hearer-old/hearer-new and discourse-old/discourse-new (Prince, 1992), degree of salience (Birner & Ward, 1998; Prince, 1992), and cognitive status (Gundel, Hedberg, & Zacharski, 1993).

Relational givenness concerns the partitioning of a proposition into two complementary parts, X and Y. X is what a sentence is about (e.g., topic) and Y is what is predicated about X (e.g., comment). For the relation of givenness between X and Y, X is given and Y is new in relation to each other. Some examples of relational givenness include the pairs of given/old–new (Behaghel, 1932; Prince, 1981), topic–comment (e.g., Gundel, 1988; Hockett, 1958; Reinhart, 1981; Strawson, 1964), theme–rheme (Firbas, 1966; Halliday, 1967; Vallduví, 1992), presupposition–focus (e.g., Chomsky, 1970; Jackendoff, 1972), and topic–predicate (Erteschik-Shir, 1997).
2.4.2 Rubrics and scales of givenness

My rubric of the given–new distinction and scale of givenness (i.e., given vs. new) are extensively indebted to Prince’s (1981) conceptualization, in which givenness is categorized into three levels in speaker–hearer terms:

    b. saliency (Chafe, 1976; Prince, 1978)
    c. shared knowledge (Clark & Haviland, 1977)

First, the notion of predictability/recoverability is drawn from Kuno’s (1972, 1978) old–new information and Halliday’s (1967) given–new information, although their criteria of givenness are not exactly the same. For Kuno (1978), “an element in a sentence represents old, predictable information if it is recoverable from the preceding context; if it is not recoverable, it represents new, unpredictable information” (1978, pp. 282–283). For Halliday and Hasan (1976), given information is defined as “expressing what the speaker is presenting as information that is recoverable from some source or other environment—the situation or the preceding text” (p. 326). Based on these notions, Prince (1981) conceptualizes givenness in terms of predictability/recoverability:

(57) Givenness in terms of predictability/recoverability:
    The speaker assumes that the hearer can predict or could have predicted that a particular linguistic item will or would occur in a particular position within a sentence.

    (Prince, 1981, p. 226)

Second, saliency is closely related to consciousness, which lies at the core of Chafe’s (1976) notion of givenness. In Chafe’s (1976) framework, the Given–New division is based on the speaker’s assumptions as to what is present in the addressee’s consciousness, and consciousness means “the activation of some available information in
the service of the self” (Chafe, 1980, p. 11). Chafe (1976) defines given information as “knowledge which the speaker assumes to be in the consciousness of the addressee at the time of the utterance” and new information as “what the speaker assumes he is introducing into the addressee’s consciousness by what he says” (p. 30). Relying on this notion, Prince (1981) formulates givenness in terms of saliency:

(58) Givenness in terms of saliency:

The speaker assumes that the hearer has or could appropriately have some particular thing/entity/... in his/her consciousness at the time of hearing the utterance.

(Prince, 1981, p. 228)

According to this rubric, in order for an NP to be given, “its referent must have been explicitly introduced in the discourse or be present in the physical context or be categorized in the same way as a referent previously introduced or physically present” (Prince, 1981, p. 229, citing Chafe, 1976, p. 32).

The final level of givenness is built on the basis of shared knowledge (e.g., Chafe, 1976; Clark & Haviland, 1977), as described in (59).

(59) Givenness in terms of shared knowledge:

The speaker assumes that the hearer “knows,” assumes, or can infer a particular thing (but is not necessarily thinking about it).

(Prince, 1981, p. 230)

Clark and Haviland (1977) define given information as “information that [the speaker] believes the listener already knows and accepts as true” and new information as “information [the speaker] believes the listener does not yet know” (p. 4, cited in Prince, 1981, p. 231). Prince (1981) notes that “whether the hearer knows the information directly for having been explicitly told it, or indirectly via inferencing (“bridging”) is immaterial” (p. 231). Thus, for Chafe (1976), the beer in (60a) whose referent is

19 Birner and Ward (1998) point out that Chafe’s (1976, 1980) notion of consciousness is slippery, critically noting that “it is unclear how the term ‘consciousness’ is rendered any clearer by being defined in terms of ‘activation’” (p. 10).
explicitly mentioned in the preceding sentence is given, but the beer (60b) is new. In contrast, for Clark and Haviland (1977), the beer is given in both (60a) and (60b).

(60)  a. We got some beer out of the trunk. The beer was warm.

 b. We got some picnic supplies out of the trunk. The beer was warm.

(Clark & Haviland, 1977, cited in Chafe, 1976, pp. 41–42)

As for the relation among the three levels of givenness, Prince (1981) points out that they are not mutually independent. If the speaker assumes that the hearer can predict that some particular item(s) will occur in some particular (relative) position within a sentence (givenness in terms of predictability/recoverability), then the speaker must assume that the hearer has some particular thing in his/her consciousness. Also, if the speaker assumes that the hearer has some particular thing(s) in his/her consciousness (givenness in terms of saliency), then the speaker assumes that the hearer can infer a particular item (givenness in terms of shared knowledge).

Let us now turn to the relevant coding scales/schemes that have been used in corpus and experimental studies, depending on the notion of givenness formulated by a particular study. There are two prevailing scales of givenness: (i) a two-way distinction between given and new, which has been widely employed by many researchers (e.g., Bresnan, 2007; Bresnan et al., 2007; Bresnan & Nikitina, 2009; Clifton & Frazier, 2004; Givón, 1988; Stephens, 2010; Thompson, 1990) and (ii) a three-way distinction of givenness into given, accessible/inferable, and new, following Prince’s (1992) scalar nature of givenness (e.g., Arnold et al., 2000; Collins, 1995).

For the binary distinction between given information and new information, givenness is generally measured in terms of recency of mention (e.g., Ariel, 1990; Arnold, 1998; Birner, 1998; Birner & Ward, 1998; Givón, 1983, 1988; Gundel et al., 1993). Givón (1983, 1988) developed a text-based quantified methodology—namely, Referential Distance (RD)—to measure topicality. RD refers to “the number of clauses to the last occurrence in the preceding discourse” (Givón, 1988, p. 248). Choi (2009), for instance, employed RD in her corpus study on givenness effects on constituent orderings in Korean dative constructions. An argument was coded as “given” if it had an identical
item or coreferential expression within the previous 20 sentences (i.e., RD 20); an argument was coded as “new” if it had not been mentioned or if its identical item or coreferential expression appears prior to the previous 20 sentences. Similarly, de Marneffe et al. (2012) and Bresnan et al. (2007) adopted Michaelis and Hartwell’s (2007) coding scheme, which is based on Prince (1981) and Gundel et al. (1993). In de Marneffe et al. (2012), an argument was considered as “given” when it was mentioned in the previous 10 turns in the dialogue; an argument was considered as “new” when it had been unmentioned or had been mentioned earlier than the previous 10 turns.

Another measure of givenness is based on Clark and Marshall’s (1981) linguistic copresence, which has been adopted in elicited-production studies (e.g., Stephens, 2010) and in on-line comprehension studies (e.g., Brown et al., 2012; Clifton & Frazier, 2004; Jackson, 2008). According to the rubric of linguistic copresence, a referent is “given” if it has already been mentioned in the conversation, and “new” otherwise. Linguistic copresence is equivalent to discourse-old in the work by Prince and by Ward and Birner. Discourse-old/discourse-new is distinguished from hearer-old/hearer-new: Discourse-old is information that has been evoked in the prior discourse-stretch, whereas hearer-old is information that the speaker believes to be present in the speaker’s knowledge store (Prince, 1992; Ward & Birner, 2001; Ward, Birner, & Huddleston, 2002). Consider the following sentence.

(61) I’m waiting for it to be noon so I can call Sandy Thompson.

(Prince, 1992, p. 301, (11))

In (61) Sandy Thompson is hearer-old in that the speaker assumes that the hearer knows the Sandy Thompson of whom s/he is speaking. In contrast, if the speaker assumes that the hearer does not know the Sandy Thompson of whom s/he would speak, then the speaker would say something like (62), using a hearer-new referent.

(62) I’m waiting for it to be noon so I can call someone in California.

(Prince, 1992, p. 301, (12))
In this rubric, hearer-new information is necessarily discourse-new information, but hearer-old information is not necessarily discourse-old. For instance, *Sandy Thompson* in (63a) is hearer-old, but discourse-new; but *Sandy Thompson* in (63b), a response to (63a), is both hearer-old and discourse-old.

(63)  
   a. I’m waiting for it to be noon so I can call *Sandy Thompson*.  
   b. Why are you trying to get in touch with *Sandy Thompson*?  
   
   (Prince, 1992, p. 303, (16))

Many of the on-line processing studies on givenness effects use the rubric of discourse-given/discourse-new by including a preceding context to establish givenness (e.g., Brown et al., 2012; Clifton & Frazier, 2004; Jackson, 2008).

Following Prince’s (1992) discourse model that breaks statuses for an entity into three categories, i.e., evoked (given), inferrable, and new, some researchers use the three-way distinction in coding corpus data—e.g., *given, accessible, new* in Collins (1995) and *given, inferable, new* in Arnold et al. (2000). In these studies, an NP is coded as “given” when its referent has already been mentioned in the discourse. An NP is classified as the intermediate category “accessible/inferable” when its referent has not been explicitly mentioned but can be inferred from the context. Finally, an NP is coded as “new” when introduced for the first time into the discourse.

Gundel and her colleagues (Gundel, 2003; Gundel et al., 1988, 1993) proposed the *Givenness Hierarchy*, whereby cognitive statuses (“information about location in memory and attention state,” Gundel et al., 1993, p. 274) are divided into six

---

20 Prince (1981) further splits three types of givenness (“assumed familiarity”) into seven (see also fn. 21):

---

(adapted from Prince, 1981, p. 237, (24))
categories—a scale of referential givenness—with respect to the form of referring expressions, as in (64).

(64) The Givenness Hierarchy (illustrated with English)

<table>
<thead>
<tr>
<th>Focus</th>
<th>Activated</th>
<th>Familiar</th>
<th>Uniquely Identifiable</th>
<th>Referential</th>
<th>Type Identifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>{it}</td>
<td>this</td>
<td>that N</td>
<td>the N</td>
<td>{−def} this N</td>
<td>{a N}</td>
</tr>
</tbody>
</table>

(adapted from Gundel et al., 1993, p. 275, (1))

On this hierarchy, the cognitive statuses are ordered according to degree of givenness from most restrictive (‘in focus’) to least restrictive (‘type identifiable’), along with the possible set of referents they include.21 The statuses are “implicationally related (by definition), such that each status entails (and is therefore included by) all lower statuses, but not vice versa” (Gundel et al., 1993, p. 276). For example, an entity which is ‘in focus’ is necessarily also ‘activated,’ ‘familiar,’ ‘uniquely identifiable,’ ‘referential,’ and ‘type identifiable.’ However, not all entities that are ‘familiar’ are ‘activated’ or ‘in focus.’

Gundel et al. (1993) crosslinguistically examined the correlations between cognitive statuses and linguistic forms, using four languages other than English: Chinese, Japanese, Russian, and Spanish. The results in Table 2.2 show, first, that the cognitive statuses necessary for appropriate use of corresponding referential forms are the same for all forms except demonstrative determiners and the indefinite article, and, second, that “forms which signal the most restrictive cognitive status (in focus) are always those with

21 Here are some examples of referents with respect to each status:

(ii) a. In Focus: (i) My neighbor’s bull mastiff bit a girl on a bike. (ii) It’s/That’s the same dog that bit Mary Ben last summer.

b. Activated: I couldn’t sleep last night. That kept me awake.

c. Familiar: I couldn’t sleep last night. The dog (next door) kept me awake.

d. Uniquely Identifiable: I couldn’t sleep last night. The dog (next door) kept me awake.

e. Referential: I couldn’t sleep last night. This dog (next door) kept me awake.

f. Type Identifiable: I couldn’t sleep last night. A dog (next door) kept me awake.

(Gundel, 1993, pp. 276–280, (9a)–(9b) & (2)–(6))

48
the least phonetic content, namely unstressed pronouns, clitics, and zero pronominals” (p. 285).

Table 2.2. Correlation between Linguistic Form and Highest Required Status

<table>
<thead>
<tr>
<th>Type</th>
<th>In Focus</th>
<th>Activated</th>
<th>Familiar</th>
<th>Uniquely Identifiable</th>
<th>Referential</th>
<th>Type Identifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>ø</td>
<td>tā ‘s/he, it’</td>
<td>TA</td>
<td>něi N</td>
<td>yi N ‘a N’</td>
<td>ø N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>zhè ‘this’</td>
<td>zhe ‘that’</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>něi ‘that’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>zhè N</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>it</td>
<td>HE, this, that, this N</td>
<td>that N</td>
<td>the N</td>
<td>[-def] this N</td>
<td>a N</td>
</tr>
<tr>
<td>Japanese</td>
<td>ø</td>
<td>kore ‘he’</td>
<td>aro N ‘that’ N</td>
<td></td>
<td></td>
<td>ø N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>kore ‘this’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sore ‘that’ medial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>are ‘that’ distal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>kono N ‘this N’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sono N ‘that N’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russian</td>
<td>ø</td>
<td>on ‘he’</td>
<td>øto N</td>
<td></td>
<td></td>
<td>ø N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>¿to ‘this’</td>
<td>to N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>¿to ‘that’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>ø</td>
<td>el ‘he’</td>
<td>øse N ‘that N’</td>
<td></td>
<td></td>
<td>ø N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>éste ‘this’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ése ‘that’ medial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>aquel ‘that’ distal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>este N</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>este N</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(adapted from Gundel et al., 1993, p. 284, Table 1)

22 Prince (1981) proposed a Familiarity Scale, whereby statuses are ordered according to degree of familiarity, from the most familiar (Evoked) to the least familiar (Brand-new), as follows.

(iii) Familiarity Scale (Prince, 1981)

\[
\text{Evoked} \supset \text{Situationally Evoked} \supset \text{Unused} \supset \text{Inferrable} \supset \text{Containing Inferrable} \supset \text{Brand-new Anchored} \supset \text{Brand-new}
\]

(Prince, 1981, p. 245, (32))

According to this scale, Situationally Evoked is equivalent to Textually Evoked, and statuses are mutually exclusive. Note also that Unused is higher than Inferrable and Inferrable is higher than Containing Inferrable. Examples are provided below:

(iv) a. I bought a Toyota. (Situationally Evoked)
   b. Ellen bought a Toyota. (Unused)
   c. One of the people that work at Penn bought a Toyota. (Containing Inferrable)
   d. A person that works at Penn bought a Toyota. (Brand-new Anchored)
   e. A person bought a Toyota. (Brand-new)

(Prince, 1981, p. 245, (33))
2.4.3 Model of givenness in the current study

Research on information structure has employed different notions, criteria, and coding scales/schemes of givenness. It is therefore important to provide a framework of information structure, from which the rubric of givenness/newness adopted in this dissertation is derived. First, the dimension of information structure in the current study involves both referential givenness and relational givenness. This study is primarily concerned with the relative positioning of the two object referents in the dative word-order alternations with respect to information structure, as listed in (65) for the English dative alternation and in (66) for Korean canonical/scrambled dative orders.

(65) English Dative Alternation: PD vs. DOD

<table>
<thead>
<tr>
<th>Construction</th>
<th>Information Structure</th>
<th>Relative Positioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. PD</td>
<td>Given–New</td>
<td>Given–New [NP PP]</td>
</tr>
<tr>
<td>b. PD</td>
<td>New–Given</td>
<td>New–Given [NP PP]</td>
</tr>
<tr>
<td>c. DOD</td>
<td>Given–New</td>
<td>Given–New [NP NP]</td>
</tr>
<tr>
<td>d. DOD</td>
<td>New–Given</td>
<td>New–Given [NP NP]</td>
</tr>
</tbody>
</table>

(66) Korean Dative Alternation: Canonical vs. Scrambled Orders

<table>
<thead>
<tr>
<th>Construction</th>
<th>Information Structure</th>
<th>Relative Positioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Canonical</td>
<td>New–Given</td>
<td>New–Given [IO–DO]</td>
</tr>
<tr>
<td>d. Scrambled</td>
<td>New–Given</td>
<td>New–Given [DO–IO]</td>
</tr>
</tbody>
</table>

In this dissertation, the level of information structure is, on the one hand, referential in that the givenness of a referent is determined in terms of the statuses of both hearer-old/hearer-new and discourse-old/discourse-new; on the other hand, the level of information structure is relative in that the givenness of the two object referents is considered in relation to each other. Within this framework, I integrate saliency (e.g., Clark & Haviland, 1977; Kuno, 1972) and shared knowledge (e.g., Chafe, 1976; Prince, 1978) into the notion of givenness/newness, as described in (67). Given information is
hearer-given in that it involves the hearer’s knowledge state and it is also discourse-given in that it is linguistically evoked.

(67) Given information is information that (i) has been explicitly mentioned several times in the preceding context such that it is already activated in the hearer’s mind/consciousness and (ii) has been heard by the hearer such that it is assumed that the hearer already knows it.

Based on this rubric, referential givenness is divided into two categories, given information and new information for the experiments in this dissertation. An NP is classified as given when its referent is explicitly mentioned (several times) in the preceding discourse context and is heard by the hearer (i.e., participants), and as new otherwise. The rubric on referential givenness is also the basis for the manipulation of relational givenness between the two object NPs in the dative constructions, by having one given and the other new, as shown in the example (68).

(68) John came home. When he entered the kitchen, he was happy to find two huge apple pies on the table. They were still warm and looked very delicious. Just then his mom came home. John asked, “Mom, what will we do with the two pies?” His mom said, “We will eat one and give away the other.” John knew what to do with the extra pie.

a. John brought the pie to some friends.
b. John brought some friends the pie.

In (68a)–(68b) the pie is referentially given, because it is explicitly mentioned and referred to several times in the preceding discourse context. By contrast, some friends in (68a)–(68b) is referentially new because it is unmentioned in the preceding context. In terms of relational givenness, the pie is given compared to some friends, and some friends is new compared to the pie.
To summarize: I reviewed the notions, criteria, and coding scales of information structure in the literature as regards givenness, focusing on Gundel (1988, 1999a, b, 2003) and Prince (1981). Gundel (1988, 1999a, b, 2003) divides information structure into two categories: Referential givenness involves a pairing between conceptual entities and referents in the mental states of the addressee (e.g., level of accessibility, activation and identifiability, degree of salience, statuses of hearer-old/hearer-new and discourse-old/discourse-new); relational givenness refers to informational partitioning of a proposition into two parts, such as topic–comment, theme–rheme, given–new. As this dissertation examines the relative positioning of the two object NPs in dative word-order alternations, referential and relational givenness are both considered.

Prince (1981) categorizes givenness into three levels in terms of predictability/recoverability (Halliday, 1967; Kuno, 1972, 1978), saliency (Chafe, 1976), and shared knowledge (Chafe, 1976; Clark & Haviland, 1977) between speakers and hearers. These three levels of givenness, however, are not mutually independent.

As for scales of givenness, two types are popularly used: a two-way division and a three-way division. The two-way division into given and new can be made based on recency of mention (e.g., Ariel, 1990; Arnold, 1998; Birner, 1998; Birner & Ward, 1998; Givón, 1983, 1988; Gundel et al., 1993), linguistic copresence (Clark & Marshall, 1981), discourse-old/discourse-new (Prince, 1992; Ward & Birner, 2001, 2002), etc. The representative example of recency of mention includes RD, which was originally developed by Givón (1983, 1988) to measure topicality as a text-based quantified methodology and is widely adopted in corpus studies (e.g., Choi, 2009; de Marneffe et al., 2012). The criterion of linguistic copresence is equivalent to that of discourse-old in that given information is linguistically, textually evoked. The three-way division, by contrast, includes an intermediate level between given and new, following Prince’s (1992) scale, i.e., given, inferable, and new.

This dissertation adopts the two-way division of givenness into given and new based on the rubric of givenness, into which saliency and shared knowledge are integrated. In this rubric, given information is an entity that has been explicitly mentioned several times in the preceding discourse context, while new information is an entity that has not been introduced into the context at all.
2.5 Information structure in the dative word-order alternations

2.5.1 Information structure in the English dative alternation

Prior work on the English dative alternation has shown that native adult speakers’ selections of one variant over the other have to do with a variety of linguistic and non-linguistic factors, such as animacy, definiteness, information structure, pronominality, structural parallelism, syntactic weight, etc. (e.g., Arnold et al., 2000; Bresnan et al., 2007; Brown et al., 2012; Clifton & Frazier, 2004; Collins, 1995; Quirk et al., 1972, 1985; Thompson, 1990; Wasow, 1997b; Wasow & Arnold, 2003). The focus of this dissertation is information structure (i.e., discourse givenness/accessibility). In what follows, I will review several empirical studies on the distribution of information structure in the English dative alternation.23

Thompson (1990), in her corpus-based study, investigated the degree and the effects of topicworthiness—“the likelihood of a noun phrase being the topic of discussion” (p. 241)—of object arguments in the dative alternation, by considering a cluster of discourse factors (“topicworthiness parameters”), such as activation state (i.e., information structure), animacy, identifiability, length, pronominality, proper nouns, and specificity.24

Following Chafe (1976, 1987), Thompson (1990) partitioned activation state into three categories: active, semiactive, and inactive. An active referent is one that is “presumed to be in the addressee’s consciousness” (Thompson, 1990, p. 245). A semiactive referent is one that is “inferable from previous discourse or its previous mention was rather distant” (p. 246). An inactive referent is one that is “presumed not to be in the addressee’s consciousness at all” (p. 246). The category active contrasts with the other two categories, semiactive and inactive.

For Thompson’s (1990) investigation into the distribution of activation status of themes and recipients, of the total 196 dative instances across PD and DOD constructions, only specific NPs—92 themes and 171 recipients—were examined. An NP was considered to be “specific unless it refers to a class of entities or has no referent” (p. 244). As presented in Table 2.3, Thompson (1990) found that recipients are overwhelmingly

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23 As Bresnan et al. (2007) was already reviewed in Section 2.2.1, it is not discussed here again.
24 Three written narratives were used: Agatha Christie’s Murder at the Vicarage (MAV); Dorothy Sayres’ Have his Carcase (HHC); Herbert Terrace’s Nim (NIM). MAV and HHC are murder stories and NIM is a personal narrative about attempts to teach sign language to a chimpanzee.
skewed toward the category active (92%), while themes are spread across the activation state scale from 55% active, to 33% semiactive, to 12% inactive. Thompson concluded that recipients are much more topicworthy than themes.

Table 2.3. Distribution of Activation Status across Dative Constructions (Thompson, 1990)

<table>
<thead>
<tr>
<th>activation state</th>
<th>Theme ($k = 92/196$)</th>
<th>Recipient ($k = 171/196$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>active</td>
<td>51 (55%)</td>
<td>158 (92%)</td>
</tr>
<tr>
<td>semiactive</td>
<td>30 (33%)</td>
<td>9 (5%)</td>
</tr>
<tr>
<td>inactive</td>
<td>11 (12%)</td>
<td>4 (2%)</td>
</tr>
</tbody>
</table>

(adapted from Thompson, 1990, p. 246, Table 6)

Thompson (1990) conducted further analysis focusing on the recipient only. This time, she used a modified database. Of the total 196 tokens, 11 clauses containing a pronominal theme (e.g., it, them) were excluded, because they categorically occur postverbally in the data, as in (69).

(69) I borrowed Roger’s pipe, smoked it for a while, and *gave it to Mack*. (NIM, 305)

(Thompson, 1990, p. 247, (5))

Out of a total 185 tokens consisting of 132 first NP recipients (DOD) and 53 second NP recipients (PD), again, only specific recipient NPs (as defined earlier) were analyzed for activation state: 128 first NP recipients and 34 second NP recipients. As summarized in Table 2.4, it was found that 97% of the recipients in the first NP position (DOD) are active and *none* inactive, while 65% of the recipients in the second NP position (PD) are active and 35% are semiactive or inactive. The results suggested to Thompson that recipients in the first NP position (DOD) are much more topicworthy than recipients in the second NP position (PD). In other words, a topicworthy recipient is much more likely to occur in the first NP position than in the second NP position.
Table 2.4. Distribution of Recipients regarding Activation State (Thompson, 1990)

<table>
<thead>
<tr>
<th>activation state</th>
<th>Recipient in the 1&lt;sup&gt;st&lt;/sup&gt; NP position</th>
<th>Recipient in the 2&lt;sup&gt;nd&lt;/sup&gt; NP position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DOD (k = 128)</td>
<td>PD (k = 34)</td>
</tr>
<tr>
<td>active</td>
<td>124 (97%)</td>
<td>22 (65%)</td>
</tr>
<tr>
<td>semiactive</td>
<td>4 (3%)</td>
<td>8 (23%)</td>
</tr>
<tr>
<td>inactive</td>
<td>0 (0%)</td>
<td>4 (12%)</td>
</tr>
</tbody>
</table>

(adapted from Thompson, 1990, p. 249, Table 13)

However, Thompson’s (1990) study provides a limited—more likely, misleading—view of the distribution of information structure in the dative alternation for the following reasons. First, high proportions of missing data appear to undermine the validity of the study’s findings. Of 196 tokens, only 92 themes (47%) and 171 recipients (87%) that were considered to be specific were analyzed on the degree of topicworthiness regarding activation status (refer to Table 2.3). For her further analysis, Thompson again analyzed only specific NPs: 128 of 132 first NP recipients (97%) and 34 of 53 second NP recipients (64%) for positioning of recipients in relation to activation status (refer to Table 2.4). Second, for the comparison of topicworthiness between the two object arguments, all the extracted themes and recipients were analyzed collectively across the two types of dative constructions, which does not show the detailed dynamics of topicworthiness in each construction (refer to Table 2.3). Finally, the effects of topicworthiness on constituent ordering were examined for recipients only, rather than for both themes and recipients (refer to Table 2.4).

Collins (1995), inspired by Thompson (1990), investigated the distribution of information structure in the dative alternation, using a corpus of 200,000 words of contemporary Australian English. Collins extracted 57 tokens of the PD and 108 tokens of the DOD. The informational variables include accessibility, definiteness, end-weight, and pronominality. For data analysis, both recipients and themes were taken into account by construction (see Table 2.5 below). Employing Halliday’s (1967) principle of “textual and situational recoverability” and Prince’s (1992) “scalar nature of the category,” the

---

25 The corpus includes 75,000 words of transcribed luncheon and dinner party conversations, 25,000 words of transcribed Parliamentary speeches, and 50 2,000-word texts from Category G (biography, essays, etc.) of the Australian Corpus of English.
informational variable *accessibility* was divided into three categories, *given*, *accessible*, and *new*. For an NP to qualify as *given*, it must be “directly recoverable” because it has been previously mentioned, referred to directly in discourse, or both. *Accessible* refers to “less directly recoverable” and “less salient” than a given referent as it has to be inferred, was last mentioned some time ago, or both. Finally, *new* means “nonrecoverable” because it was introduced for the first time into the discourse or despite already being present in the discourse, it has to be newly identified.

Table 2.5 shows the distribution of accessibility in the DOD and PD constructions. It was found that the DOD exhibits a striking contrast: Recipients are overwhelmingly *given* (89.8%) and themes are overwhelmingly *new* (81.5%). In contrast, the PD shows a spread-out distribution on the scale of accessibility: for themes, from 38.6% *given*, to 26.3% *accessible*, to 35.1% *new*; for recipients, from 42.1% *given*, to 33.3% *accessible*, to 24.6% *new*.

Table 2.5. Distribution of Accessibility in DOD and PD (Collins, 1995)

<table>
<thead>
<tr>
<th></th>
<th><strong>DOD (k = 108)</strong></th>
<th><strong>Recipient (k = 108)</strong></th>
<th><strong>Theme (k = 108)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>given</strong></td>
<td>97 (89.8%)</td>
<td>7 (6.5%)</td>
<td></td>
</tr>
<tr>
<td><strong>accessible</strong></td>
<td>10 (9.3%)</td>
<td>13 (12%)</td>
<td></td>
</tr>
<tr>
<td><strong>new</strong></td>
<td>1 (0.9%)</td>
<td>88 (81.5%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>PD (k = 57)</strong></th>
<th><strong>Theme (k = 57)</strong></th>
<th><strong>Recipient (k = 57)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>given</strong></td>
<td>22 (38.6%)</td>
<td>24 (42.1%)</td>
<td></td>
</tr>
<tr>
<td><strong>accessible</strong></td>
<td>15 (26.3%)</td>
<td>19 (33.3%)</td>
<td></td>
</tr>
<tr>
<td><strong>new</strong></td>
<td>20 (35.1%)</td>
<td>14 (24.6%)</td>
<td></td>
</tr>
</tbody>
</table>

(adapted from Collins, 1995, p. 43, Table 1)

A closer look at the PD data reveals that the spread-out distribution is not informative at all in relation to constituent ordering, for the following reason. In the coding of categories of information status between theme and recipient, Collins (1995) (like Thompson, 1990) used a *categorical criterion* in his study, instead of the *relative notion of givenness* of the two arguments. That is, he looked at just one object NP at a time, rather than both simultaneously. *Relative givenness* is crucial as it reveals the
proportion of not only two different levels (i.e., Given–Accessible, Given–New, Accessible–New, Accessible–Given, New–Given, New–Accessible) but also both the same (i.e., Given–Given, Accessible–Accessible, New–New). Unless the data show a highly skewed pattern as in the DOD, the data of absolute numbers by the categorical criterion (i.e., without considering relative givenness) do not account for much of constituent ordering patterns in terms of accessibility.

Arnold, Wasow, Losongco, and Ginstrom (2000) were, to the best of my knowledge, the first to pay attention to the relative relations between two object NPs in the dative alternation—relative givenness and relative weight in relation to each other. Many researchers have observed that syntactic weight, along with information structure, is a critical variable in determining speakers’ structural choices, such that the longer entity tends to occur later than the shorter one—end weight (e.g., Collins, 1995; Hawkins, 1994; Quirk et al., 1972, 1985; Thompson, 1990; Wasow, 1997a).

Arnold et al. (2000) conducted a corpus study on the effects of information structure and syntactic weight on constituent ordering in the dative alternation by taking both into account simultaneously. A total of 269 dative sentences of the verb give were extracted. Prince’s (1992) three-way distinction of information structure (i.e., givenness) was adopted: given, inferable, and new. However, the corpus data have only a small number of inferable NPs, and so given NPs and inferable NPs were combined into given for data analysis. Syntactic weight was measured as the relative length of the two object

26 The term end weight was first used by Quirk et al. (1972, p. 943). The notion of weight has been dealt with in two different ways, one in terms of length originally proposed by Behaghel (1909/10) and the other in terms of complexity (used equivalently to heaviness) first suggested by Chomsky (1975). Wasow (1997b) conducted a corpus study on Heavy NP shift, Particle movement, and the dative alternation, testing a variety of definitions of weight (e.g., words, nodes, phrasal nodes). The results revealed that all measures are “extremely good predictors of constituent ordering in the three constructions” (p. 91).

27 Arnold et al. (2000) used the Aligned-Hansard corpus (a mix of spoken and written data) composed of debates in the Canadian parliament to examine two types of constructions—the dative alternation and Heavy NP shift. Heavy NP shift is beyond the scope of this dissertation.

28 Here is an example from Arnold et al.’s (2000) corpus analysis: “The bank was told it should give its business to a friend of the Government” (p. 35).

29 Arnold et al. (2000) reported that the results of the study “were not substantially changed if the inferable NPs were grouped with the new ones or omitted altogether” (p. 36).
constituents, which was calculated by subtracting number of words in the recipient NP from number of words in the theme NP.\textsuperscript{30}

The results revealed that both relative givenness and relative weight are significantly correlated with constituent ordering in the dative alternation and “neither correlation can be reduced to the other” (Arnold et al., p. 36). The use of the DOD was higher when the theme was newer than the recipient as well as when the theme was longer than the recipient, thereby conforming to both the Given-before-New Principle and the principle of end weight. Another major finding was that givenness effects are more clearly observable when the length of the theme and the length of the recipient are closer to each other (theme = recipient). However, Arnold et al.’s (2000) results are based on a small sample size consisting of 269 instances of only one particular dative verb give.

We turn now to two on-line studies of the dative alternation; these sought to find processing evidence for givenness effects. Clifton and Frazier (2004) investigated whether the Given-before-New Principle holds generally in both the PD and the DOD constructions, using a speeded acceptability judgment paradigm.\textsuperscript{31} The stimuli include a preceding context sentence, which establishes givenness vs. newness of the two object NPs in the subsequent experimental sentence. When the theme NP of an experimental sentence is introduced into the context sentence—i.e., given-theme context—the PD has a Given–New order and the DOD has a New–Given order, as in (70a)–(70b). In contrast, in the given-recipient context where the recipient NP of an experimental sentence is introduced in the preceding context sentence, the PD has a New–Given order, while the DOD has a Given–New order, as in (70c)–(70d).

\textsuperscript{30} The categories of weight are as follows: (i) theme < recipient (theme NP length – recipient NP length = –2 or less); (ii) theme = recipient (theme NP length – recipient NP length = between –1 and 1); and (iii) theme > recipient (theme NP length – recipient NP length = 2 or more).
\textsuperscript{31} Each sentence appeared as a whole on a computer monitor, and the participant was instructed to pull a trigger with the right hand if the sentence or discourse was acceptable or normal, and a trigger with the left hand if it was unacceptable, ungrammatical, or anomalous. The participants were asked to respond as quickly as they could.
(70) A sample set of stimuli in Clifton and Frazier (2004, p. 890, (11a)–(11d))

**given-theme:** The catcher tossed *a ball* to the mound.

a. Given–New [NP PP]: The pitcher threw *the ball* to an umpire.
b. New–Given [NP NP]: The pitcher threw an umpire *the ball*.

given-recipient:** All the players were watching *an umpire*.

c. New–Given [NP PP]: The pitcher threw a ball to *the umpire*.
d. Given–New [NP NP]: The pitcher threw *the umpire* a ball.

Mean response times (RTs) and the mean proportions of “accept” responses were measured. As seen in Figure 2.1, the results show that in the DOD, the mean RTs of the Given–New order (70d) was significantly faster than that of the New–Given order (70b); in contrast, in the PD, this Given–New advantage was not observed ((70a) vs. (70c)). In terms of proportion of acceptance, whereas the PD was generally accepted in both Given–New and New–Given orderings (89.6% vs. 91.2%), the DOD showed marginal significance between Given–New order and New–Given order (83.4% vs. 76.4%, \( p = .052 \)). An interaction effect was found for RTs between PD vs. DOD and Given–New order, but not for acceptance rate.

---

**Figure 2.1.** Response Times and Correct Acceptance Rate (= P) (Clifton & Frazier, 2004)
In addition, Clifton and Frazier (2004) reinterpreted Arnold et al.’s (2000) data, noting the more limited distribution of the DOD. That is, “[t]he unmarked [NP–PP] construction can felicitously be used for both new-before-given and given-before-new, whereas the [NP–NP] construction is largely limited to given-before-new sentences” (p. 891). Clifton and Frazier thus concluded that advantage of the Given–New order holds for the DOD only.

Brown, Savova, and Gibson (2012) conducted a self-paced reading experiment to examine whether the Given-before-New Principle manifests generally in the dative alternation. Information status of the theme and the recipient in experimental sentences was manipulated by including a context sentence—given-theme vs. given-recipient, as illustrated in (71).

(71) A sample set of stimuli in Brown et al. (2012, p. 197, (2))

- **given-theme**: An understudy for a new Broadway show kept a notebook to document the show’s progress.
  a. Given–New [NP PP]
     The understudy showed the notebook to a violinist as he explained his ideas.
  b. New–Given [NP NP]
     The understudy showed a violinist the notebook as he explained his ideas.

- **given-recipient**: An understudy for a new Broadway show began conversing with a violinist who played in the orchestra.
  c. New–Given [NP PP]
     The understudy showed a notebook to the violinist as he explained his ideas.
  d. Given–New [NP NP]
     The understudy showed the violinist a notebook as he explained his ideas.

The study measured reading times (RTs) of the stimuli and accuracy on the comprehension questions. Figure 2.2 presents the RTs of the critical region only—i.e.,

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32 The task was self-paced, word-by-word reading using a moving window display (Just, Carpenter, & Woolley, 1982). All items were followed by a two-alternative comprehension question.
the second NP of the PD (recipient NP) and of the DOD (theme NP). The results reveal that whereas for the DOD, the reading time of the critical (theme) NP was significantly slower in New–Given order (71b) than the Given–New (71d), for the PD the critical (recipient) NP was read equally fast in both orders ((71a) vs. (71c)). When the DOD aligns with the New–Given information structure, it causes an on-line processing cost.

![Figure 2.2. Reading Times of the 2nd NP of the PD (recipient) and the DOD (theme)](Brown et al., 2012)

The results of Clifton and Frazier (2004) and Brown et al. (2012), taken together, suggest that the Given–New advantage is observed in the DOD only and that the DOD with New–Given information structure causes processing difficulty. The results of these two reception studies seem to be inconsistent with the results of corpus production studies, since the latter indicates that the givenness constraint holds across both constructions in the dative alternation.

**To summarize:** In the preceding section, I critically reviewed previous empirical research on information structure in the English dative alternation. Thompson (1990), in her corpus study on topichood of the two object NPs in the dative alternation, suggested that a topical recipient is more likely to occur in the first NP position than in the second NP position. In his corpus study, Collins (1995) investigated accessibility (given, accessible, new) of themes and recipients in the dative alternation. The results showed
that whereas in the DOD, recipients are overwhelmingly given and themes are overwhelmingly new, in the PD, there is a spread-out distribution. However, these two studies used a categorical criterion for a single entity, rather than a criterion of relative/relational givenness between the two arguments within a verb phrase. Arnold et al. (2000) adopted relative relations for givenness (given, inferable, new) as a coding scheme in their corpus study of the DOD, where they found, first, that the DOD was more likely to be used when the theme was newer than the recipient, thereby complying with the Given-before-New Principle, and, second, that when syntactic weight is controlled for, givenness effects become stronger. Bresnan et al. (2007) proposed a corpus-based probability model, which quantitatively predicts that the more prominent entity—i.e., animate, definite, given, pronominal—is more likely to appear in the syntactically more prominent position—i.e., the immediately postverbal position in the dative alternation. This model, like Thompson (1990) and Collins (1995), failed to employ a coding scheme of relative givenness.

I next reviewed two on-line reception studies. First, Clifton and Frazier (2004) in their speeded acceptability judgment task found that whereas in the PD, there is no significant difference in response times between Given–New and New–Given, in the DOD, there was a significant Given–New advantage on both response time and acceptance. Clifton and Frazier suggested that whereas the [NP–NP] construction is largely limited to the Given–New order only, the [NP–PP] construction can felicitously be used for both Given–New and New–Given orders, and is thus the default. Brown et al. (2012), in their self-paced reading task, found results consistent with those of Clifton and Frazier. Clifton and Frazier (2004) and Brown et al. (2012), taken together, suggest that there is a Given–New advantage only in the DOD, and that the DOD which aligns with New–Given information structure causes difficulty.

2.5.2 Information structure in Korean dative constructions

Choi’s (2009) study, to the best of my knowledge, is the only corpus-based analysis of the distribution of information structure in Korean dative constructions. Using the spoken portions of a million-word Sejong Modern Korean Corpus (Kim, 2000), Choi (2009) examined two dative word orders containing the two overt object arguments,
[(S)–IO–DO–V] ([IO–DO], \(k = 599\)) and [(S)–DO–IO–V] ([DO–IO], \(k = 115\)), regardless of whether or not subject was dropped.\(^{33}\)

Information structure was divided into *given information* and *new information* based on Givón’s (1983, 1988) referential distance (RD) criterion: An NP whose referent has been mentioned in the previous 20 sentences—RD 20—is considered “given” information; an NP beyond RD 20, even mentioned previously, is considered “new” information in the same way as an NP that has never been mentioned.

Table 2.6 shows that in the canonical [IO–DO] order, the Given–New order occurs over 8 times more often than the New–Given order (252 vs. 32). In contrast, in the scrambled [DO–IO] order, there is no ordering preference with respect to information structure (23 vs. 23). A closer look at both same suggests that [IO–DO] (\(k = 315\)), which is far more frequent than [DO–IO] (\(k = 69\)), is more basic (see also §2.3.2).

Choi (2009), asking whether effects of givenness were obscured by length, controlled for length such that the number of syllables between the theme and the recipient was equal.\(^{34}\) This time only 365 tokens with the same length were included for data analysis: 323 canonical tokens and 42 scrambled tokens. As summarized in Table 2.7, the preference for the Given–New order is observed in the scrambled [DO–IO] order as well, although it is not so strong as it is in the canonical [IO–DO] order (12:8 vs. 147:15, respectively).

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\(^{33}\) Other relevant aspects of data coding such as case marking, case dropping, etc. are unknown.

\(^{34}\) Choi (2009) measured length via syllables. Differences up to 2 syllables between the two object arguments (+2 to –2) were considered equal length.
Table 2.7. Information Structure of Canonical vs. Scrambled Order with Controlled Length between IO and DO (Choi, 2009)

<table>
<thead>
<tr>
<th>Construction Type</th>
<th>Given–New</th>
<th>New–Given</th>
<th>Both Same&lt;sup&gt;35&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>[IO–DO]</td>
<td>147</td>
<td>15</td>
<td>161</td>
<td>323</td>
</tr>
<tr>
<td>[DO–IO]</td>
<td>12</td>
<td>8</td>
<td>22</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>23</td>
<td>183</td>
<td>365</td>
</tr>
</tbody>
</table>

(adapted from Choi, 2009, p. 47, (13))

However, given the small sample size of the corpus used in the study—714 instances in the first analysis (refer to Table 2.6) and 365 instances in the second analysis (refer to Table 2.7), the data coding using RD 20 is problematic because it results in a large proportion of the category both same—54% and 50% in the respective analysis. In particular, for [DO–IO] in Table 2.6, there is no ordering preference, and both same (69) outnumbers the combined information structure of Given–New (23) and New–Given (23). The direction of information structure might be detected were both same identified as either Given–New or New–Given.

Jackson (2008) conducted an on-line whole-sentence reading task to examine discourse effects in the canonical dative sentence (S–IO–DO–V) in (72a/c) and the scrambled dative sentence (IO–S–DO–V) in (72b/d). Note that the scrambled order in her study, i.e., [IO–S–DO], involving scrambling of IO over S, is not the same as the scrambled order in Choi (2009) or my experiments in this study, i.e., [(S)–DO–IO] involving scrambling of DO over IO. Information status of object NPs of experimental sentences was manipulated—i.e., given recipient vs. given theme, as illustrated in (72).

---

<sup>35</sup> Including both same, [IO–DO] is 7 times more frequent than [DO–IO]. This, again, indicates that [IO–DO] is more basic.
A sample set of stimuli in Jackson (2008, p. 88, (4a)–(4d))

Context: ‘Yesterday Chelswu happened to hang out with a friend at a party.’

(\textit{NB: Context} = English translation)

\begin{enumerate}
  \item (Given–New) canonical
    \begin{align*}
    \text{Chelswu-nun } & \textbf{ku chinkwu-eykey } \text{yumyengan } \text{miswulka-lul } \text{sokayhayssta.} \quad \text{\textit{Chelswu introduced a famous artist to the friend.}} \\
    \text{Chelswu-TOP } & \textbf{that friend-DAT} \quad \text{famous } \text{artist-ACC} \quad \text{introduced}
    \end{align*}
  \item (New–Given) scrambled
    \begin{align*}
    \text{yumyengan } & \text{miswulka-eykey } \text{Chelswu-nun } \textbf{ku chinkwu-lul} \text{ sokayhayssta.} \quad \text{\textit{Chelswu introduced the friend to a famous artist.}} \\
    \text{famous } & \text{artist-DAT} \quad \text{Chelswu-TOP } \textbf{that friend-ACC} \quad \text{introduced}
    \end{align*}
  \item (New–Given) canonical
    \begin{align*}
    \text{Chelswu-nun } & \text{yumyengan } \text{miswulka-eykey } \textbf{ku chinkwu-lul} \text{ sokayhayssta.} \quad \text{\textit{Chelswu introduced the friend to a famous artist.}} \\
    \text{Chelswu-TOP } & \text{famous } \text{artist-DAT} \quad \textbf{that friend-ACC} \quad \text{introduced}
    \end{align*}
  \item (Given–New) scrambled
    \begin{align*}
    \textbf{ku chinkwu-eykey } & \text{Chelswu-nun } \text{yumyengan } \text{miswulka-lul } \text{sokayhayssta.} \quad \text{\textit{Chelswu introduced a famous artist to the friend.}} \\
    \textbf{that friend-DAT} & \text{Chelswu-TOP } \text{famous } \text{artist-ACC} \quad \text{introduced}
    \end{align*}
\end{enumerate}

Reading times (RTs) of the whole sentence were measured. The results are shown in Figure 2.3.

---

\textsuperscript{36} I used Jackson’s (2008) English glosses.
The canonical sentence was read equally fast in both information structures (e.g., (72a) vs. (72c)), whereas the scrambled sentence with Given–New information structure (e.g., (72d)) was read significantly faster than with the New–Given information structure (e.g., (72b)). In short, the Given–New advantage was observed only in the scrambled order. These results suggest that whereas the frequent, canonical order can be felicitously used in both Given–New and New–Given, the infrequent, scrambled order causes difficulties when it occurs with New–Given.

Finally, let us turn to the interplay between givenness and length in constituent ordering in Korean. Unlike English, in which the longer constituent tends to come later than the shorter one—\textit{Short-before-Long} (see §2.2.1 and §2.5.1), it has been suggested that head-final languages such as Japanese and Korean have the opposite preferred pattern—\textit{Long-before-Short} (e.g., Choi, 2007, 2009; Gibson, 2000; Hawkins, 1994; Yamashita & Chang, 2001), as illustrated in (73).
(73) a. [Long IO-before-Short DO]

\[
\text{[ilcali-lu ilhko noswukhanun silcikcatul]-eykey} \\
\text{[jobs-Acc lose and sleep on the street unemployed]-Dat}
\]

camcali-lul malyenhaycwuko …
shelter-Acc provide and …
‘(that) provides the unemployed who have lost their jobs and live on the street a shelter …’

b. [Long DO-before-Short IO]

\[
\text{Cengpwu-nun [cheycey nay-ey pwuphay-ka issesenun} \\
\text{government-Top [regime inside-in corruption-Nom exist}
\]

\[
\text{an toyntanun cem]-ul kwukmin cenchay-eykey kyoyuksikhiko isssta.} \\
\text{must not point]-Acc people all-Dat educate is}
\]

‘The government is educating the entire nation (about) the point that there must not be corruption within the regime.’

(Choi, 2009, p. 46, (11)–(12))

In English, a given entity (e.g., an anaphoric pronoun) is more likely to be shorter than a new entity, and the *Given-before-New Principle* and *Short-before-Long* each work toward the same ordering of constituents. In Korean, by contrast, the *Given-before-New Principle* clashes with *Long-before-Short*. In order to avoid this confound (across the two languages), the experimental stimuli must be controlled carefully such that the two object arguments in dative constructions are equal in length.

### 2.6 Summary of the chapter

In the preceding section, I reviewed one corpus study and one on-line study on givenness effects in canonical and scrambled dative orders in Korean. Choi (2009) in her corpus study found an overwhelming adherence to Given–New information structure in the canonical order, whereas there is no such preference in the scrambled order; however,
when length is controlled for, the Given–New preference appears in both the canonical order and the scrambled order. This study has several problems, though. First, the sample set is small (714 tokens for the first analysis and 365 tokens for the second analysis). Second, the coding scheme (i.e., RD 20) is problematic in that it cannot filter out “both same,” and consequently the proportion of missing data is too high. Jackson (2008) conducted an on-line whole-sentence reading task, focusing on the canonical dative order (S–IO–DO–V) and a scrambled dative order (IO–S–DO–V). It was found that the Given–New advantage is observed in the scrambled order only, which parallels the results of English reception studies (Brown et al., 2012; Clifton & Frazier, 2004) in the sense that a more basic, canonical variant can felicitously be used for both Given–New and New–Give information structure, whereas a less canonical variant causes processing difficulty when it aligns with New–Given information structure.
CHAPTER 3.  
PREVIOUS ACQUISITION RESEARCH

3.1  Introduction

This chapter critically reviews prior work on L1 children’s age of acquisition and order of acquisition of the constructions under investigation—the English dative alternation and Korean canonical vs. scrambled dative orders. This is followed by an examination of prior work on effects of information structure on the dative word-order alternations in L1-English children (§ 3.2), L1-Japanese children instead of L1-Korean children (§ 3.3), and L2-English adults (§ 3.4).

Section 3.2 reviews several empirical studies on L1-English children’s acquisition of PDs and DODs (Campbell & Tomasello, 2001; Conwell & Demuth, 2007; Gropen, Pinker, Hollander, Goldberg, & Wilson, 1989; Snyder & Stromswold, 1997; Viau, 2006) and their adherence to the *Given-before-New Principle* in the dative alternation (de Marneffe, Grimm, Arnon, Kirby, & Bresnan, 2012; Gropen et al., 1989; Stephens, 2010; Wilson, Pinker, Zaenen, & Lebeaux, 1981).

Section 3.3 discusses two experiments on L1-Korean children’s age of acquisition of dative scrambling (Cho, Lee, O’Grady, Song, Suzuki, & Yoshinaga, 2002). After that, I introduce one corpus study (Otsu, 1994) and one experimental study (Sugisaki & Isobe, 2001) on the effect of context on canonical vs. scrambled dative sentences in L1-Japanese children because there is no L1-Korean study on this and Japanese datives, similar to the corresponding construction in Korean, can alternate between canonical [IO\_DAT—DO\_ACC] order and scrambled [DO\_ACC—IO\_DAT] order.

Section 3.4 examines two empirical studies on L2 adults’ adherence to the *Given-before-New Principle* in the English dative alternation (Callies & Szczesniak, 2008; Marefat, 2005).

Finally, Section 3.5 provides a summary of this chapter.
3.2 L1-English children

3.2.1 L1 acquisition of the English dative alternation

As one of the main issues this dissertation addresses in the domain of L1 acquisition is children’s adherence to the *Given-before-New Principle*, it is important to ensure that L1-English children aged 5 to 8 have already mastered the syntax of the PD and DOD. This section reviews work on the age of acquisition and the order of acquisition of the two types of datives. At first blush, the results appear to be mixed:

(1)  
   a. PDs are acquired earlier than DODs.  
   b. DODs are acquired earlier than PDs.  
   c. Both constructions are acquired at the same age.

First, some (act-out) comprehension and elicited-imitation studies in the 70s and early 80s found that L1-English children aged 3 to 10 have more difficulty with the DOD than the PD (Cook, 1976; Fischer, 1971; Osgood & Zehler, 1981; Roeper, Lapointe, Bing, & Tavakolian, 1981). However, it was suggested that these results are more likely attributable to the peculiar sentences used in the stimuli, in which animacy of object NPs in the DOD was controlled such that both object NPs are animate, as in (2).

(2)  
   [animate recipient–animate theme]  
   a. The cow gave the dog the pig.\(^{37}\)  
   \hspace{1in} \text{(Roeper et al., 1981, p. 50, (22))}  
   b. The giraffe sent the hippopotamus the elephant.  
   \hspace{1in} \text{(Gropen et al., 1989, p. 210)}

In addition, Roeper et al. (1981) and White (1987) noted that DOD sentences are hard to interpret when an animate theme is given to an inanimate recipient, as in (3).

\(^{37}\) In Roeper et al. (1981), 71% of the kindergarten children interpreted the sentence *The cow gave the dog the pig* as *The cow gave the dog to the pig.*
(3) [inanimate recipient–animate theme]
   a. The dog gave the spoon the cow.  
      (Roeper et al., 1981, p. 50, (24))
   b. John gave the cookie the snake.
      (White, 1987, p. 267, (10c))

As such, it seems that children’s comprehension difficulty with the DOD is related to the semantic oddness of the stimuli rather than the greater syntactic complexity of the DOD over the PD. Gropen et al. (1989) warn against using “comprehension difficulty in children as evidence that their rule systems treat the double-object form as difficult or special” (p. 211).

Subsequently, some other researchers, such as Snyder and Stromswold (1997), Campbell and Tomasello (2001), and Viau (2006), found corpus-based evidence that DODs are acquired before PDs. These researchers examined L1-English children’s spontaneous speech using the CHILDES database (MacWhinney, 1989, 1995). For data analysis, the criterion for age of acquisition for all constructions was the first clear use in speech production, a criterion initially employed in Snyder and Stromswold (1997). To be considered the first clear use, the utterance should be “a novel utterance (i.e., not an unanalyzed routine or imitated utterance)” and it should be “spoken clearly (i.e., not mumbled, stuttered, etc.)” (Snyder & Stromswold, 1997, p. 287).

Snyder and Stromswold (1997) analyzed DODs and to-datives produced by 12 children. They found that 11 children acquired DODs earlier than PDs and only one child acquired both constructions at the same age. More precisely, the age of acquisition ranged from 1;8 to 2;11 for DODs and from 2;0 to 3;4 for PDs, and there was a significant difference in the mean age of acquisition between DODs (2;2.5) and PDs (2;6.8).

---

38 In Roeper et al. (1981), the children treated *The dog gave the spoon the cow* as *The dog gave the spoon to the cow*.

39 Snyder and Stromswold (1997) examined the files of Adam (2;3–5;2), Allison (1;4–2;10), April (1;10–2;11), Eve (1;6–2;3), Mark (1;5–6;0), Naomi (1;2–4;9), Nathaniel (2;6–3;9), Nina (2;0–3;3), Peter (1;10–3;2), Ross (2;6–7;0), Sarah (2;3–5;1), and Shem (2;3–3;2).
Campbell and Tomasello (2001) examined 7 children in their corpus study, including both for-datives and to-datives. As summarized in Table 3.1, the results showed that 5 children produced DODs before PDs, both in for-datives and in to-datives, and 2 children, Abe and Peter, showed the opposite patterns.

### Table 3.1. Age of First Use of the Three Dative Constructions for Seven Children (Campbell & Tomasello, 2001)

<table>
<thead>
<tr>
<th></th>
<th>DOD [NP NP]</th>
<th>PD [NP to NP]</th>
<th>PD [NP for NP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abe</td>
<td>2;6.14</td>
<td>2;6.18</td>
<td>2;5.20</td>
</tr>
<tr>
<td>Adam</td>
<td>2;3.4</td>
<td>2;11.13</td>
<td>2;10.30</td>
</tr>
<tr>
<td>Eve</td>
<td>1;6</td>
<td>1;10</td>
<td>1;11</td>
</tr>
<tr>
<td>Naomi</td>
<td>2;1.7</td>
<td>2;5.3</td>
<td>2;3.19</td>
</tr>
<tr>
<td>Nina</td>
<td>1;11.29</td>
<td>2;0.17</td>
<td>2;1.15</td>
</tr>
<tr>
<td>Peter</td>
<td>2;1.21</td>
<td>2;0.7</td>
<td>2;1.21</td>
</tr>
<tr>
<td>Sarah</td>
<td>2;9.29</td>
<td>3;2.23</td>
<td>3;0.18</td>
</tr>
</tbody>
</table>

(adapted from Campbell & Tomasello, 2001, p. 256, Table 1)

*Note.* The squared blocks indicating the earliest construction type are mine.

In sum, DODs emerged between 1;6 and 2;9.29, and PDs between 1;10 and 3;2.23 (1;10–3;2.23 for to-datives and 1;11–3;0.18 for for-datives). The mean age was 1;11 for the DOD and 1;9.3 for the PD.

Viau (2006) also found the same patterns in the order of acquisition in his corpus analysis of 22 L1-English children (CHILDES, MacWhinney, 2000). Seventeen children had both DODs and PDs. Of these 17 children, 15 acquired DODs earlier than

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40 Campbell and Tomasello (2001) examined the files of Abe (2;4.24–5;0.11), Adam (2.34–4;10.23), Eve (1;6–2;3), Naomi (1;2.29–4;9.3), Nina (1;11.16–3;3.21), Peter (1;9.7–3;1.21), and Sarah (2;3.5–5;1.6).
41 Peter produced the to-dative *I’ll show it to you* at 2;07, which is about 6 weeks earlier than the DOD (Campbell & Tomasello, 2001, p. 256). Abe’s first for-dative was not provided.
42 Viau (2006) examined the files of Abe (2;4–5;0), Adam (2;3–4;0), Allison (1;4–2;10), April (1;10–2;11), Emily (1;9–3;0), Eric (1;8–1;10), Eve (1;6–2;3), Jimmy (2;2–2;9), June (1;3–1;9), Lew (1;10–2;8), Mark (0;7–6;0), Naomi (1;1–5;1), Nathaniel (2;5–3;9), Nina (1;11–3;3), Peter (1;9–3;2), Ross (1;4–7;10), Sarah (2;3–5;1), She (1;7–2;5), Shem (2;2–3;2), Steven (0;5–2;9), Tow (1;7–2;5), and Trevor (2;0–3;11).
Both for-datives and to-datives were taken into consideration. The results revealed that the DOD was acquired between 1;7 and 2;10 and the PD between 1;10 and 3;4. There was a significant difference in the mean ages of acquisition between the DOD (2;1.6) and the PD (2;4.9).

Finally, some researchers did not find any clear evidence that one dative variant emerges earlier than the other. Gropen et al. (1989), in their corpus study of 5 children in CHILDES, did not find any consistent pattern in the order of acquisition of dative constructions. However, as pointed out by Snyder and Stromswold (1997), Gropen et al. (1989) made errors in the ages of two children—Mark and Ross—which critically affected data analysis, and thus I excluded this study from further discussion.

Let us now take a closer look at the results of the other three corpus studies using CHILDES (Campbell & Tomasello, 2001; Snyder & Stromswold, 1997; Viau, 2006). As seen, first, in Table 3.2 for age ranges of first use of DODs and PDs and, second, in Table 3.3 for mean ages of first use of DODs and PDs, previous corpus studies show that the age gaps are not wide between DODs and PDs.

Table 3.2. Age Range of First Use of DODs and PDs in Previous Corpus Studies

<table>
<thead>
<tr>
<th>CHILDES Studies</th>
<th>DOD</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snyder &amp; Stromswold (1997)</td>
<td>1;8–2;11</td>
<td>2;0–3;4</td>
</tr>
<tr>
<td>Campbell &amp; Tomasello (2001)</td>
<td>1;6–2;9.29</td>
<td>1;10–3;2.23</td>
</tr>
<tr>
<td>Viau (2006)</td>
<td>1;7–2;10</td>
<td>1;10–3;4</td>
</tr>
</tbody>
</table>

(adapted from Stephens, 2010, p. 15, Table 1.1)

43 One child acquired the PD first, and one child acquired both constructions at the same time. For the other 5, Viau (2006) did not provide any details.
44 Gropen et al. (1989) examined the files of Adam (2;3–5;2), Eve (1;6–2;3), Mark (1;5–4;7), Ross (2;7–6;6), and Sarah (2;3–5;1).
45 Gropen et al. (1989) also conducted an experiment on the acquisition of the dative alternation with 16 children, using 4 novel verbs (see §3.2.2). The ages of 15 children ranged between 6;3 and 8;6 and one was 5;0. The mean age of the 16 children was 7;4. As the children are old compared to those in the three reviewed corpus studies (Campbell & Tomasello, 2001; Snyder & Stromswold, 1997; Viau, 2006), I do not review their experimental study here. For the same reason, White (1987), in which children between 3;8 and 5;8 were tested, is also not reviewed.
Table 3.3. Mean Age of First Use of DODs and PDs in Previous Corpus Studies

<table>
<thead>
<tr>
<th>CHILDES Studies</th>
<th>DOD</th>
<th>PD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snyder &amp; Stromswold (1997)</td>
<td>2;2.5</td>
<td>2;6.8</td>
</tr>
<tr>
<td>Campbell &amp; Tomasello (2001)</td>
<td>1;1.1</td>
<td>1;9.3</td>
</tr>
<tr>
<td>Viau (2006)</td>
<td>2;1.6</td>
<td>2;4.9</td>
</tr>
</tbody>
</table>

The average mean differences between the two constructions ranged from 3.3 months (Viau, 2006), to 4.3 months (Snyder & Stromswold, 1997), to 8.2 months (Campbell & Tomasello, 2001). By the criterion of “first clear use,” all children have acquired both dative constructions by the age of 3.

In addition, I examined how early the verbs (*bring, give, mail, sell, send, show*) that were used in my experiments in this dissertation are reported to be produced in L1 spontaneous speech. In terms of the semantic class of the verbs, they can be classified into three types: giving (e.g., *give, hand, sell*, etc.), type of communication (e.g., *read, show, tell*, etc.), and accompanied motion in direction (e.g., *bring, take*) (Gropen et al., 1989, p. 243; Pinker, 1989). Gropen et al. (1989) found that dative verbs in these classes were produced by most of the children between 2 and 5. With respect to individual verb items, *bring, give, send,* and *show* were found to be used in both constructions by children before age 3 (Campbell & Tomasello, 2011).

Finally, when it comes to children’s abstract grammatical knowledge of the dative alternation and productive use in both constructions under experimental circumstances, Conwell and Demuth (2007) conducted two elicited-repetition experiments with L1-English children, aged between 2;11.4 and 3;1.2 for Experiment 1 and aged between 2;11.21–3;1.8 for Experiment 2. Two novel verbs (i.e., *gorp, pilk*) were used. Experiment 1 divided children into two groups: children in the PD group heard both of the novel verbs modeled in the PD, and children in the DOD group heard both of the novel verbs modeled in the DOD. A sample is provided in (4).

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47 Verbs *mail* and *send* are classified as verbs of sending (Gropen et al., p. 243; Pinker, 1989).
A sample set of stimuli in Conwell and Demuth (2007, p. 169)

\[E(xperimenter): \text{shows an action of transfer involving a familiar object (e.g., a cup or a key) and a novel, named recipient (i.e., Petey or Toby).}\]

There’s a word for what you just did; it’s ‘pilk’! Can you say ‘pilk’?" <Child repeats>

a. **PD condition**: You pilked the cup to Toby!

b. **DOD condition**: You pilked Toby the cup!

The results of Experiment 1 revealed that children in both the PD condition and the DOD condition did not show evidence for productive ability with the dative alternation, using the novel verbs in the construction in which they had heard them modeled. These results indicate syntactic priming effects. In addition, Conwell and Demuth (2006) speculate that the reason children only use novel verbs in the forms in which they were modeled is because they hear the novel verb modeled only in one dative form and never hear the novel verb alternate, rather than because they do not have full productive knowledge of the dative alternation.

In their Experiment 2, Conwell and Demuth kept the same design except that this time, each participant hears one verb modeled in the PD and the other verb modeled in the DOD. The results showed that in the PD condition, children used the PD 91.1\% of the time and the DOD 8.9\% of the time; in the DOD condition, however, rates of use were DOD 48\% and PD 52\%. These results, in contrast to those of Experiment 1, indicate that 3-year-olds have productive syntactic knowledge of the dative alternation, demonstrating ability to generalize a dative verb taught in the DOD form to the alternate PD form.

Taken together, various corpus and experimental studies present evidence that L1-English children acquire DODs and PDs by age 3. The age of L1-English children in this dissertation ranges from 5 to 8. Thus, it is safe to assume they have all mastered the syntax of the English dative alternation. They were therefore not independently tested on their syntactic knowledge of the verbs used in the constructions in question.

\[48 \text{ The experimenter invites the participant to play with a set of toys consisting of 2 novel machines, 2 familiar objects, and 2 recipients. The participant is shown how to use one of the machines and asked to use it to transfer one of the objects to one of the recipients. Finally, the participant is asked to repeat the action with a different recipient or theme.}\]
3.2.2 L1-English children’s adherence to Given-before-New

In the following, I will review a corpus study (de Marneffe et al., 2012) and several elicited-production studies (Gropen et al., 1989; Stephens, 2010; Wilson et al., 1981) on L1-English children’s syntactic choices with respect to discourse givenness in the dative alternation.

De Marneffe et al. (2012) conducted a corpus study (CHILDES, MacWhinney, 2000) to investigate whether L1-English children’s constructional choices in the dative alternation are driven by the same factors that affect adult production and to try to establish a harmonic alignment model as in Bresnan et al. (2007). They examined multiple variables, such as animacy, givenness, length, nominal expression type (i.e., lexical NP vs. pronoun), syntactic persistence, age, and MLU. For data analysis, a total of 530 dative utterances of give and show were collected from 7 children aged between 2 and 5. For the operationalization of givenness, following Bresnan et al. (2007), the study adopted Michaelis and Hartwell’s (2007) coding criteria, whereby a referent that has been mentioned within the previous 10 turns in the dialogue was treated as given information, and new otherwise.

The regression model revealed that 5 variables—length of theme, length of recipient, nominal expression type of theme, nominal expression type of recipient, and structural persistence—are significant ($p < .05$) predictors in the syntactic choices in child production of the dative alternation, but age, animacy, and givenness turned out not to be significant predictors. Pronominal themes are more likely to appear first in the PD (e.g., give it to the man [Adam, 4;0.14]), and pronominal recipients are more likely to appear first in the DOD (e.g., dolly could go to sleep and give him a hug [Nina, 2;11.06]). On the assumption that givenness is a confound with pronominality, pronominal themes and pronominal recipients were next removed from data analysis; but the results again showed that givenness still lacked predictive value in children’s construction choices.

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49 For length, the number of words was used. For structural persistence—priming—the 10 previous turns in conversation were examined for the most recent dative construction.
50 The data were from Abe, Adam, Naomi, Nina, Sarah, Shem, and Trevor.
51 de Marneffe et al. (2012) constructed the model in R “using the backward elimination method, which starts with all the variables, recursively eliminating variables one by one which do not significantly contribute to explaining the variance in the data, and stopping when the elimination of a variable would significantly reduce the model fit” (pp. 36–37).
Nevertheless, de Marneffe et al.’s (2012) results of givenness are inconclusive at least for the following three reasons. First, as the data set consists of dative constructions only with give and show produced by young children during a limited period, the data are categorically skewed such that a child uses the verb only in one dative form. For instance, Naomi produced only DODs at the ages of 2 and 3 and used both variants at the age of 4. This categorical syntactic pattern in the data set might have influenced the statistical analyses such that givenness was not a significant predictor.

Second, as Stephens (2010) points out, it is problematic that givenness was coded identically in the child data and adult data. A referent was counted as given if there was a coreferential expression in the previous 10 turns in the dialogue (Michaelis & Hartwell, 2007). However, as children have a more limited memory and attention span than adults do, the criterion of 10 turns may be too big for the distinction between given information and new information. If fewer turns than 10 had been employed to determine givenness, the effect of givenness might have been detected in the children’s syntactic choices.

Third, there was not enough variation of givenness between the two object NPs in the child data under consideration. Most of the themes and recipients were given, as shown in the following examples, give me it Mommy [Nina, 3;2.4], give you it [Abe, 3;6.19], Daddy can you take that out and show me it [Abe, 3;8.17], etc. de Marneffe et al. (2012) thus reran their model, excluding pronominal themes and recipients; yet, givenness was still not a significant factor. It might be because this time, the number of tokens was too small to yield a significant effect. For instance, for the PD, there were only 7 given themes and 8 new themes; 6 given recipients and 9 new recipients.

Finally, their harmonic alignment model is established on the basis of only 7 children using only two verbs give and show. The weaknesses of a corpus study based on spontaneous speech can be remedied by an experiment.

Wilson et al. (1981) conducted an elicited-production task using nonce verbs with 16 4- to 6-year-olds to investigate whether children would productively generalize to the alternate form they had not been taught. This study manipulates information status (i.e., givenness) of object NPs using a prompt question. Children were taught 4 novel verbs (e.g., doop) involving the movement of objects, each of which denotes a transfer of possession. The experimenter modeled either a PD (e.g., Look, the lion is dooping the
bear to the seal) or a DOD (e.g., Look, the lion is dooping the seal the bear). Then, the experimenter acted out the event again using 3 new animals, uttering either a PD (e.g., Look, the elephant is dooping the bird to the mouse) or a DOD (e.g., Look, the elephant is dooping the mouse the bird). Finally, the experimenter asked the child questions, one focusing on the theme, as in (5a)—i.e., the given-theme condition—and the other focusing on the recipient, as in (5b)—i.e., the given-recipient condition.


**PD modeled context**: Look, the elephant is dooping the bird to the mouse.

**DOD modeled context**: Look, the elephant is dooping the mouse the bird.

a. given-theme (theme-topic) condition

*Query:* What did the elephant do with the *bird*?

(i) He dooped the *bird* to the mouse. 

(ii) He dooped the mouse the *bird*. (more felicitous)

b. given-recipient (recipient-topic) condition

*Query:* What did the elephant do with the *mouse*?

(i) He dooped the bird to the *mouse*.

(ii) He dooped the *mouse* the bird. (more felicitous)

In accordance with the *Given-before-New Principle*, the more felicitous response is the PD in (5a), in which the theme is the current topic of attention and the recipient is the informative piece. In contrast, the more felicitous answer is the DOD in (5b), in which the recipient is the current topic of attention and the theme is the informative piece.

The results showed that children produced PDs most of the time across conditions, even when the DOD was modeled. One possible reason children were not sensitive to the *Given-before-New Principle* has to do with the experimental design. The information status of both of the object NPs is given since they were concurrently introduced by the experimenter in the preceding model sentence.
Gropen et al. (1989) conducted an act-out comprehension task as well as an elicited-production task with 16 children aged between 6;3 and 8;6,\textsuperscript{52} using 4 novel verbs of transfer (i.e., *calimode*, *keat*, *moop*, *orgulate*). The verbs involved the causation of transfer of an object from an operator (i.e., the experimenter or the child) to a recipient using a particular instrument. Each verb was taught in either a PD or a DOD.\textsuperscript{53} In the production task, the experimenter modeled either a PD form (e.g., *I’m mooping the car to the mouse*) or a DOD form (e.g., *I’m mooping the mouse a car*), and then the child was asked to respond to the question, designed to be either a *given-theme* condition or a *given-recipient* condition, as illustrated in (6). In the comprehension task, the child was asked to act out both the PD and the DOD.

(6) A sample set of stimuli in Gropen et al. (1989, p. 227)\textsuperscript{54}

**PD modeled context:** I’m mooping the car to the mouse.

**DOD modeled context:** I’m mooping the mouse a car.

a. **given-theme (theme-topic) condition**
   
   Query: Can you tell me what I’m doing with the ball?
   
   (i) You’re mooping the ball to the mouse.  
   (more felicitous)
   
   (ii) You’re mooping the mouse the ball.

b. **given-recipient (recipient-topic) condition**

   Query: Can you tell me what I’m doing with the mouse?
   
   (i) You’re mooping the ball to the mouse.
   
   (ii) You’re mooping the mouse the ball.  
   (more felicitous)

\textsuperscript{52} Of the 16 children, one child was 5;0.

\textsuperscript{53} In Gropen et al. (1989), each child’s session was divided into 4 blocks, one block per verb. Each block consisted of a teaching phase and an elicited-production task involving that verb. The comprehension task was administered immediately after the production task for each verb.

\textsuperscript{54} One major difference from the Wilson et al. (1981) study is that in Gropen et al. (1989), the modeled PD contained the combination of [definite theme–definite recipient] (e.g., *I’m mooping the car to the mouse*) and the modeled DOD had [definite recipient–indefinite theme] (e.g., *I’m mooping the mouse a car*). Gropen et al. did not provide any rationale behind this design.
The results of the comprehension task showed that the children correctly acted out 95% of the PDs and 86% of the DODs. The results of the production task are summarized in Table 3.4. When the PD was modeled, children produced PDs more frequently than DODs: 83% vs. 17% for the given-theme condition; 55% vs. 44% for the given-recipient condition. Likewise, when the DOD was modeled, DODs were produced slightly more than PDs: 58% vs. 42% for the given-theme condition; 50% vs. 45% for the given-recipient condition. Putting both contexts together, there was a significant effect of construction modeled, revealing that DODs were elicited more often when the DOD was modeled ($M = 0.54$) than when the PD was modeled ($M = 0.30$); PDs were elicited more often when the PD was modeled ($M = 0.69$) than when the DOD was modeled ($M = 0.44$).

Table 3.4. Mean Proportions of Trials in which Children Produced PDs and DODs (Gropen et al., 1989) 55

<table>
<thead>
<tr>
<th>Context</th>
<th>Condition</th>
<th>PD</th>
<th>DOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD modeled context</td>
<td>given-theme</td>
<td>83% (more felicitous)</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>given-recipient</td>
<td>55%</td>
<td>44% (more felicitous)</td>
</tr>
<tr>
<td>DOD modeled context</td>
<td>given-theme</td>
<td>42% (more felicitous)</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>given-recipient</td>
<td>45%</td>
<td>50% (more felicitous)</td>
</tr>
</tbody>
</table>

As for the effect of topic-givenness, when the PD was modeled, children produced PDs more frequently for the theme-topic question (6a) (83%) than for the recipient-topic question (6b) (55%); in contrast, children produced DODs more often for the given-recipient question (44%) than for the given-theme question (17%). These results, taken together, suggest that in the PD modeled context, topic-givenness had an effect; however, when the DOD was modeled, there was no significant effect on the production rate of either the PD or the DOD.

55 I combined Gropen et al.’s (1989) “Table 10: Proportion of trials in which children produced double-object sentences” (p. 230) and “Table 11: Proportion of trials in which children produced prepositional dative sentences” (p. 231). The score provided in Table 3.4 is the mean score from the combination of monosyllabic and polysyllabic verbs and the first trial and the second trial. As for the missing data (5%) in the given-recipient condition in the DOD modeled context, Gropen et al. did not provide any explanation.
In sum, children produced the modeled construction more frequently across conditions, albeit with the highest rate of the PD in the given-theme condition. There was a clear dispreference for the DOD when a non-topic-given entity precedes a topic-given entity (17%). However, like Wilson et al.’s (1981) experimental design, both object entities are introduced in the modeled sentences and hence both are given.

In a similar vein, Stephens (2010) conducted two elicited-production tasks to investigate, in Experiment 1, the effect of discourse *givenness* on dative construction choices in L1-English children, and in Experiment 2, the role of semantic verb class and verb frequency in relation to *givenness* effects.

For the operationality of *givenness*, Stephens (2010) adopted Clark and Marshall’s (1981) notion of “linguistic copresence” (see Chapter 2): An entity is *given* when “a referent … has been mentioned explicitly (and repeatedly) in the immediately preceding discourse” (p. 19). In both experiments, all of the referents for the arguments of the verb are physically copresent, but only the referent that is linguistically copresent is considered to be *given*.

Experiment 1 tested 64 children aged between 3 and 5.\footnote{\textsuperscript{56} Data were originally collected from 66 children, but 2 were excluded because they failed to produce any responses with both post-verbal arguments.} Four alternating dative verbs were used (i.e., *give*, *read*, *show*, *throw*).\footnote{\textsuperscript{57} In order to choose high frequency dative verbs, Stephens (2010) examined 7 corpora available in CHILDES—Abe, Adam, Naomi, Nina, Sarah, Shem, and Trevor. The estimated token frequency of these verbs, extracted via the CLAN command “freq,” is as follows: *give* ($k = 988$), *read* ($k = 348$), *show* ($k = 321$), and *throw* ($k = 321$).} The task consisted of 4 silently filmed critical-item vignettes, one for each verb, each with one male actor, one female actor, and one inanimate object. The description of the vignettes is provided in (7).

(7) Description of vignettes in Experiment 1 (Stephens, 2010, p. 84, (53))

\hspace{1em}a. *give*: a female actor *gives* a hat to a male actor  
\hspace{1em}b. *read*: a female actor *reads* a book to a male actor  
\hspace{1em}c. *show*: a male actor *shows* a shirt to a female actor  
\hspace{1em}d. *throw*: a male actor *throws* a ball to a female actor
Discourse context was manipulated via 4 discourse conditions: (i) the agent was mentioned (given-agent as a control condition) as in (8a); (ii) the location was mentioned (given-location as an additional condition) as in (8b); (iii) the theme was mentioned (given-theme condition) as in (8c); and (iv) the recipient was mentioned (given-recipient condition) as in (8d). The 4 orders of vignettes and 4 parings of vignette with one of the 4 discourse conditions were counterbalanced, yielding 16 experimental lists.

(8) A sample set of stimuli from Experiment 1 (Stephens, 2010, pp. 86–87, (55))

Vignette: a female (agent) gives a hat (theme) to a male (recipient)—the scene takes place near a bush (location)

E(xperimenter): This one’s with giving! Say giving! <Child: giving> Great! And…

a. given-agent condition (new theme & new recipient; control condition)

E: This one goes with the red picture! <E and child view picture of agent>

What’s that? <Child: a girl!> Yeah! Now let’s watch the movie about her!

<E shows vignette> Can you find the girl in that movie? <Child points> Yeah, there she is! Now I’ll start the story about her! Once upon a time there was a very nice girl. One day, the girl was outside, and <E shows vignette again>

What did she do?

b. given-location condition (new theme & new recipient; additional control condition)

E: This one goes with the green picture! <E and child view picture of location>

What’s that? <Child: a bush!> Yeah! Now let’s watch the movie about it!

<E shows vignette> Can you find the bush in that movie? <Child points>

Yeah, there it is! Now I’ll start the story about it! Once upon a time there was a green leafy bush. One day, a girl was outside by the bush, and <E shows vignette again> What did she do?

Stephens (2010) added the given-location condition to test whether the mention of additional referents in the immediate discourse would influence construction choices.
c. **given-theme** condition (given theme & new recipient)

_E_: This one goes with the blue picture! <E and child view picture of theme>

What’s that? <Child: a hat!> Yeah! Now let’s watch the movie about _it_!

<E shows vignette> Can you find the _hat_ in that movie? <Child points> Yeah, there _it_ is! Now I’ll start the story about _it_! Once upon a time there was a very nice brown _hat_. One day, a girl was outside with the hat, and <E shows vignette again> **What did she do?**

d. **given-recipient** condition (new theme & given recipient)

_E_: This one goes with the yellow picture! <E and child view picture of recipient>

What’s that? <Child: a boy!> Yeah! Now let’s watch the movie about _him_!

<E shows vignette> Can you find the _boy_ in that movie? <Child points> Yeah, there _he_ is! Now I’ll start the story about _him_! Once upon a time there was a very nice _boy_. One day, a girl was outside with the _boy_, and <E shows vignette again> **What did she do?**

As summarized in Table 3.5, the children’s responses were categorized into 4 types: (i) ‘V + theme’; (ii) ‘V + to-recipient’; (iii) ‘V + theme + to-recipient’; and (iv) ‘V + recipient + theme.’ Stephens coded the first 3 types of responses as the PD and the last type as the DOD.

<table>
<thead>
<tr>
<th>Type</th>
<th>Construction</th>
<th>Examples</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>V + theme</td>
<td>Read a book.</td>
<td></td>
</tr>
<tr>
<td>Type II</td>
<td>V + to-recipient</td>
<td>Read to a little boy.</td>
<td>PD</td>
</tr>
<tr>
<td>Type III</td>
<td>V + theme + to-recipient</td>
<td>She readed a book to the boy.</td>
<td></td>
</tr>
<tr>
<td>Type IV</td>
<td>V + recipient + theme</td>
<td>Give the boy a hat.</td>
<td>DOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read him a book.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>He showed the lady a t-shirt.</td>
<td></td>
</tr>
</tbody>
</table>

_Note_. The examples were taken from Stephens (2010, p. 88, (56)–(57))
Of a total of 256 possible responses (64 children \(\times\) 4 verbs), 172 met the inclusion criteria.\(^{59}\) As seen in Table 3.6, the children used PDs most often in the given-theme condition (100%), second most in the given-location condition (94%), third most in the given-agent condition (73%), and least in the given-recipient condition (42%). The DOD was used most often in the given-recipient condition, with a rate of only 58%.

Table 3.6. Proportion of PDs and DODs by Condition (Stephens, 2010)

<table>
<thead>
<tr>
<th>Condition</th>
<th>PD</th>
<th>DOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>given-agent (control)</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>given-location (additional control)</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>given-theme</td>
<td>100%</td>
<td>–</td>
</tr>
<tr>
<td>given-recipient</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>Mean</td>
<td>77%</td>
<td>23%</td>
</tr>
</tbody>
</table>

For the statistical analyses (a regression model), Stephens excluded data leading to categorical syntactic behavior because they cannot be analyzed in a probabilistic model: (i) 55 one-postverbal argument responses, all treated as the PD by the coding criteria;\(^{60}\)

\(^{59}\) Of the 172 responses, the following 2 were excluded from the analysis: The location was assigned the recipient role as in (v) and the theme was realized in a prepositional phrase as in (vi).

(v)  
**E:** One day, a girl was outside by the BUSH and what did she do?  
**Child:** Give it the hat.

(vi)  
**E:** One day, a lady sat down with the BOOK and what did she do?  
**Child:** Read the boy to the book.

\(^{60}\) The responses involving only one internal argument are illustrated in (vii).

(vii)  
\begin{enumerate}
\item a. theme-only responses treated as the PD  
  Showing a shirt. (given-agent; control)  
  She read the book. (given-location; additional control)  
  He throwed the ball. (given-recipient)
\item b. recipient-only responses treated as the PD  
  Read to a kid. (given-agent; control)  
  She readed to him. (given-recipient)
\end{enumerate}

(Stephens, 2010, p. 89, (60)–(61))

It was found that children never produced constructions with an NP recipient-object and an elided theme (e.g., *She read her*).
(ii) 28 two-argument uses of the verb *throw*, which were realized in the PD only (e.g., *He threw a ball to her*); and (iii) 36 two-argument responses in the given-theme condition, which were realized in the PD only. Consequently, the results of Experiment 1 were based on the three remaining verbs (*give, read, show*) that showed alternation.

The logistic regression model showed no difference between the two control conditions—given-agent vs. given-location, but a marginal statistical difference between the given-recipient condition and the given-agent (control) condition (*p* = 0.06).\(^61\) Stephens thus concluded that *theme-givenness* had a categorical effect on construction choice, always yielding theme-first PDs (see Table 3.6), and *recipient-givenness* had a relatively small effect, encouraging more recipient-first DODs.

Stephens (2010) also looked at three information-structure patterns by condition: (i) Given–New, (ii) New–Given, and (iii) New–New (i.e., both the given-agent condition and the given-location condition). It was found that all New–Given orders and almost all New–New orders occurred in the PD. In addition, 67% of DODs had Given–New information structure, whereas under 40% of PDs had Given–New. Hence, Stephens argued that the DOD may be a better indicator of information status than the PD.

As for pronominality, there was a correlation between *givenness* of object NPs and choice of referring expression (i.e., indefinite NP, definite NP, pronoun) (Spearman’s *r* = 0.55, *p* < 0.0001). For the given argument, children used a pronoun over 80% of the time and for the new argument, they used both definite NPs and definite NPs about half of the time (45% each).\(^62\) This is because ‘new’ entities were always contextually present via vignettes, each of which was shown twice during the session (see below). It was also found that all pronominal themes occurred in the PD, while pronominal recipients were “only slightly more likely to occur” in the DOD than in the PDs (p. 96).\(^63\)

However, a closer look at Stephens’ (2010) Experiment 1 reveals several problems. First, the experiment did not include any filler items. Each child saw only 4 experimental items, one per verb, plus one warm-up item.

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\(^{61}\) The variables included construction type (PD vs. DOD), discourse condition (given-agent vs. given-location vs. given-theme vs. given-recipient), age, order (trial number: 1–4), participant, and verb. Age, order, and verb did not contribute significantly to the model.

\(^{62}\) Of all new arguments, 10% were pronominal.

\(^{63}\) There were only 5 responses in which both object NPs were pronominal, all of which occurred in the PD (e.g., *She gave it to him* vs. *She gave him it*) (Stephens, 2010, p. 94).
Second, as pointed out above, new entities were always contextually given and children used definite NPs to refer to new entities 45% of the time. More problematically, there was a labeling phase with a series of pictures prior to the test phase, in which the children were asked to label the 4 given elements (agent, location, theme, recipient), the other 3 themes, and the other 3 recipients. That is, all ‘discourse-new’ items were shown (via pictures prior to vignettes) and labeled (verbally) and hence they are given. Although the new entity is less accessible and less salient than the given entity, it was already activated, verbally as well as visually, in the mind of each child.

Third, in the selection of high-frequency dative verbs, Stephens (2010) simply used a token frequency: *give* \((k = 988)\), *read* \((k = 348)\), *show* \((k = 321)\), *throw* \((k = 321)\) (see fn. 57). However, what has to be ensured is how frequently the particular verb involves two postverbal arguments, not how frequently the verb occurs. For instance, of 321 uses of *throw*, only 14 occurred in the dative construction, all of which were PDs, as in (9), and the other instances occurred in V + theme + (directional phrase), as in (10).

(9) a. No, throw it to me. (Mother to Adam)
   b. Can you throw the balloon to me? (Mother to Nina)

   (Stephens, 2010, p. 100, (63a) & (63c))

(10) a. Hey, you’re not supposed to throw books. (Mother to Abe)
   b. We’ll throw snowballs at each other. (Mother to Naomi)

   (Stephens, 2010, p. 100, (64a) & (64c))

This syntactic pattern showed up in Experiment 1: Of 48 responses with *throw*, 28 had 2 postverbal arguments, all of which were realized in PDs, and 20 had only the theme. Stephens thus suggested that avoidance of the DOD with *throw* may have to do with syntactic patterns in the input, conjecturing that “[p]erhaps for children of this age, the ‘throw + THEME’ pattern of argument realization is entrenched” (p. 100).

Moreover, Stephens (2010) coded (see Table 3.5) Type I (V + theme) as the PD, along with Type II (V + to-recipient). The problem is that of the 4 verbs that were used in Experiment 1, only *give* is (virtually) obligatorily ditransitive, as seen in (11)–(12). In the
description of an event, *give* requires both postverbal arguments, while the other verbs can be used with one postverbal argument.

(11) Type I (V + theme) coded as the PD
   a. *She gave the book.
   b. She read the book.
   c. She showed the book.
   d. *She threw the book.

(12) Type II (V + to-recipient) coded as the PD
   a. *She gave to the boy.
   b. She read to the boy.
   c. *She showed to the boy.
   d. *She threw to the boy.

The Type-I contrast between *give* and the other verbs in (11) yields the prediction that the children’s production rate of PDs will be lower with *give* than with the other verbs. Indeed, this can be verified in the distribution of Type-I responses in Table 3.7. Children produced Type-I responses with *give* the least.

Table 3.7. Distribution of Type I (V + theme) (Stephens, 2010)\(^\text{64}\)

<table>
<thead>
<tr>
<th>Verb</th>
<th>given-agent</th>
<th>given-location</th>
<th>given-theme</th>
<th>given-recipient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>give</td>
<td>–</td>
<td>2</td>
<td>1</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>read</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>show</td>
<td>2</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>throw</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>13</strong></td>
<td><strong>11</strong></td>
<td><strong>10</strong></td>
<td><strong>46</strong></td>
</tr>
</tbody>
</table>

(slightly modified from Stephens, 2010, p. 90, Table 3.1)

\(^{64}\) Of the 4 verbs, only *read* yields Type-II responses: given-agent (*k* = 3); given-location (*k* = 1); given-theme (*k* = 0); and given-recipient (*k* = 5).
Finally, according to my calculations, the statistical analyses were based on only 51 responses; this number was obtained by excluding from the total 172 responses, the 2 responses which failed to pattern with the others (see fn. 59) as well as the three subsets of data discussed above: (i) 55 responses with only one postverbal argument (coded as PDs);\(^{65}\) (ii) 28 responses with throw (all PDs); and (iii) 36 response in the given-theme condition (all PDs). Also, note that the experiment has a factor with four levels, i.e., discourse conditions with given-agent, given-location, given-theme, given-recipient. Therefore, the results of the statistical analyses should be interpreted cautiously.

Returning to the lack of DOD with throw, Experiment 1 is inconclusive between two possible accounts: One has to do with a semantic factor; the DOD is associated with “cause to possess,” but the PD with “cause to go.” Both meanings are available for give, read, and show; but for throw, “the cause to go meaning is so salient that the semantic preference outranked pressure from the discourse to use a double-object construction” (p. 99). An alternative input-based account is that Stephens’ (2010) corpus data “provided no evidence that children are exposed to double-object datives with throw” (p. 100).

As a follow-up to Experiment 1, Experiment 2 tested 25 4-year-olds,\(^{66}\) using two semantic verb classes, 6 caused possession only and 6 caused motion/caused possession. These 12 verbs were subdivided, based on verb frequency in child-directed speech in 7 CHILDES corpora, into high frequency (give, read, show for caused possession; bring, take, throw for caused motion) vs. low frequency (hand, loan, pass for caused possession; hurl, kick, toss for caused motion).\(^{67, 68}\) The task used 12 filmed critical-item vignettes (one per verb), which each had one male actor, one female actor, and one inanimate object. Unlike Experiment 1, there was no labeling phase in Experiment 2, because piloting showed that participants already knew labels for all the themes and recipients.

The stimuli were manipulated by 3 discourse conditions: given-agent (new theme & new recipient) as a control, as in (13a): given-theme (given theme & new recipient), as

\(^{65}\) The number 55 was obtained by combining the 46 Type-I responses (see Table 3.7) and the 9 Type-II responses (see fn. 64).

\(^{66}\) Originally, 26 children were tested. Data from one child were excluded because he only responded with I don’t know.

\(^{67}\) Stephens adopts Levin’s (1993) verb classification.

\(^{68}\) For low-frequency verbs, the range of use is between 0 and 32, and for high-frequency verbs, between 321–1482.
in (13b); and given-recipient (new theme & given recipient), as in (13c). The control condition (New–New) was used as the baseline value, against which the given-theme condition and the given-recipient condition were each compared.

(13) A sample set of stimuli of Experiment 2 in Stephens (2010, pp. 131–132, (73))

Vignette: a female (agent) tosses a hat (theme) to a male (recipient)

E(xperimenter): This one’s with *tossing!* Say *tossing!* <Child: *tossing*> Great! And…

a. given-agent condition (control)

E: This movie has a girl in it! Say girl! <Child: *girl*> Yeah, now let’s watch!

<E shows vignette> I see the girl! Do you see her? <Child affirms> Great! Now I’ll start the story! Once upon a time there was a very nice girl. One day, the girl was outside, and <E shows vignette again> What did she do?

b. given-theme condition

E: This movie has a hat in it! Say hat! <Child: *hat*> Yeah, now let’s watch!

<E shows vignette> I see the hat! Do you see it? <Child affirms> Great! Now I’ll start the story! Once upon a time there was a very nice hat. One day, a girl was outside with the hat, and <E shows vignette again> What did she do?

c. given-recipient condition

E: This movie has a boy in it! Say boy! <Child: *boy*> Yeah, now let’s watch!

<E shows vignette> I see the boy! Do you see him? <Child affirms> Great! Now I’ll start the story! Once upon a time there was a very nice boy. One day, a girl was outside with the boy, and <E shows vignette again> What did she do?

Of 300 possible responses (12 items × 25 children), 254 were produced. In responding to the critical question, children often replaced the target verb with another dative verb. The substitute dative verbs—give (k = 76), hand (k = 1), pass (k = 15), throw
(\(k = 36\)), and toss \((k = 3)\)—were included in the analysis. Of the 254 responses, 225 met the criteria for inclusion in the analysis, as summarized in Table 3.8. Forty-six responses with one postverbal argument, which were coded as PD, were excluded from the analyses. Of the 12 verbs used in the task, only 8 (give, hand, kick, pass, read, show, throw, toss) were produced with two postverbal arguments, 2 of which, hand \((k = 2)\) and pass \((k = 15)\), only appeared in the PD; these 17 responses were thus also excluded from the analyses. Accordingly, the study analyzed a total of 162 responses, elicited with 6 verbs (3 caused possession verbs—give, read, show; 3 caused motion verbs—kick, throw, toss), which were produced with two postverbal arguments and in both the PD and the DOD.

Table 3.8. Proportion of Responses with One vs. Both Arguments (Stephens, 2010)

<table>
<thead>
<tr>
<th>Verb</th>
<th>one postverbal argument</th>
<th>both postverbal arguments</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>bring</td>
<td>2 (100%)</td>
<td>0 (0%)</td>
<td>2</td>
</tr>
<tr>
<td>give</td>
<td>11 (12%)</td>
<td>81 (88%)</td>
<td>92</td>
</tr>
<tr>
<td>hand</td>
<td>excluded 1 (33%)</td>
<td>2 (67%)</td>
<td>3</td>
</tr>
<tr>
<td>kick</td>
<td>3 (19%)</td>
<td>13 (81%)</td>
<td>16</td>
</tr>
<tr>
<td>pass</td>
<td>excluded 2 (12%)</td>
<td>15 (88%)</td>
<td>17</td>
</tr>
<tr>
<td>read</td>
<td>7 (41%)</td>
<td>10 (59%)</td>
<td>17</td>
</tr>
<tr>
<td>show</td>
<td>2 (14%)</td>
<td>12 (86%)</td>
<td>14</td>
</tr>
<tr>
<td>throw</td>
<td>16 (28%)</td>
<td>42 (72%)</td>
<td>58</td>
</tr>
<tr>
<td>toss</td>
<td>2 (33%)</td>
<td>4 (67%)</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>46 (20%)</td>
<td>179 (80%)</td>
<td>225</td>
</tr>
</tbody>
</table>

Excluding hand and pass

(slightly modified from Stephens, 2010, p. 137, Table 4.4)

The response proportions of PDs and DODs by discourse condition (by verb) are summarized in Tables 3.9 and 3.10. Of 162 responses, 129 (80%) occurred in the PD and only 33 (20%) in the DOD.
Table 3.9. Proportion of PDs (Stephens, 2010)\(^6\)

<table>
<thead>
<tr>
<th>Verb</th>
<th>given-agent</th>
<th>given-theme</th>
<th>given-recipient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caused possession</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give</td>
<td>20/26 (77%)</td>
<td>24/24 (100%)</td>
<td>16/31 (52%)</td>
<td>60/81 (74%)</td>
</tr>
<tr>
<td>read</td>
<td>2/2 (100%)</td>
<td>3/4 (75%)</td>
<td>3/4 (75%)</td>
<td>8/10 (80%)</td>
</tr>
<tr>
<td>show</td>
<td>1/6 (17%)</td>
<td>3/3 (100%)</td>
<td>1/3 (33%)</td>
<td>5/12 (42%)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>23/34 (68%)</td>
<td>30/31 (97%)</td>
<td>20/38 (53%)</td>
<td>73/103 (71%)</td>
</tr>
<tr>
<td><strong>Caused motion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kick</td>
<td>1/2 (50%)</td>
<td>5/5 (100%)</td>
<td>6/6 (100%)</td>
<td>12/13 (92%)</td>
</tr>
<tr>
<td>throw</td>
<td>14/14 (100%)</td>
<td>13/14 (93%)</td>
<td>14/14 (100%)</td>
<td>41/42 (98%)</td>
</tr>
<tr>
<td>toss</td>
<td>2/2 (100%)</td>
<td>1/1 (100%)</td>
<td>0/1 (0%)</td>
<td>3/4 (75%)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>17/18 (94%)</td>
<td>19/20 (95%)</td>
<td>20/21 (95%)</td>
<td>56/59 (95%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40/52 (77%)</td>
<td>49/51 (96%)</td>
<td>40/59 (68%)</td>
<td>129/162 (80%)</td>
</tr>
</tbody>
</table>

(slightly modified from Stephens, 2010, Table 4.5, p. 138)

Table 3.10. Proportion of DODs (Stephens, 2010)\(^7\)

<table>
<thead>
<tr>
<th>Verb</th>
<th>given-agent</th>
<th>given-theme</th>
<th>given-recipient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caused possession</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give</td>
<td>6/26 (23%)</td>
<td>0/24 (0%)</td>
<td>15/31 (48%)</td>
<td>21/81 (26%)</td>
</tr>
<tr>
<td>read</td>
<td>0/2 (0%)</td>
<td>1/4 (25%)</td>
<td>1/4 (25%)</td>
<td>2/10 (20%)</td>
</tr>
<tr>
<td>show</td>
<td>5/6 (83%)</td>
<td>0/3 (0%)</td>
<td>2/3 (67%)</td>
<td>7/12 (58%)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>11/34 (32%)</td>
<td>1/31 (3%)</td>
<td>18/38 (47%)</td>
<td>30/103 (29%)</td>
</tr>
<tr>
<td><strong>Caused motion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kick</td>
<td>1/2 (50%)</td>
<td>0/5 (0%)</td>
<td>0/6 (0%)</td>
<td>1/13 (8%)</td>
</tr>
<tr>
<td>throw</td>
<td>0/14 (0%)</td>
<td>1/14 (7%)</td>
<td>0/14 (0%)</td>
<td>1/42 (2%)</td>
</tr>
<tr>
<td>toss</td>
<td>0/2 (0%)</td>
<td>0/1 (0%)</td>
<td>1/1 (100%)</td>
<td>1/4 (25%)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>1/18 (6%)</td>
<td>1/20 (5%)</td>
<td>1/21 (5%)</td>
<td>3/59 (5%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12/52 (23%)</td>
<td>2/51 (4%)</td>
<td>19/59 (32%)</td>
<td>33/162 (20%)</td>
</tr>
</tbody>
</table>

The logistic regression was fitted with syntactic construction (PD vs. DOD), discourse condition (given-agent vs. given-theme vs. given-recipient), verb frequency (high vs. low), verb type (caused possession only vs. caused motion/caused possession),

---

\(^6\) Stephens’ (2010) Table 4.5 included *hand* and *pass*, but for convenience, I excluded them in my modified table and recalculated every subtotal and total score. Stephens miscalculated the proportion of PDs in the given-theme condition (as 98%).

\(^7\) I created this table.
age, and order (i.e., trial number 1–12), participant, and verb. The results revealed that semantic verb class was significant, but verb frequency was not. When the two verb classes are put together, the children were significantly more likely to use PDs in the given-theme condition than in the control condition; they were also less likely to use PDs in the given-recipient condition than in the control condition, albeit not statistically. The significance was derived from the caused possession verbs (i.e., give, read, show): As shown in Table 3.9, the PD rates by condition are 68% in given-agent, 97% in given-theme, and 53% in given-recipient; by contrast, PDs with caused motion verbs (i.e., kick, throw, toss) were evenly distributed across the 3 conditions at the rate of about 95%.

As in Experiment 1, Experiment 2 found that information status and choice of referring expression were highly correlated for themes and recipients (Spearman’s \( r = -0.62, p < 0.0001 \)). All given arguments were realized as either pronouns (57%) or definite NPs (41%), and new arguments were realized as either definite NPs (57%) or indefinite NPs (38%).\(^{71}\) Again, the high proportion of definite NPs for the new arguments is attributable to the stimuli, in which new entities were visually available, albeit not discursively. Pronominal themes always occurred in PDs (theme-first), but pronominal recipients were used in both constructions.\(^{72}\) Stephens (2010) concluded that theme-givenness and theme-pronominality perfectly determines construction choice, always yielding PDs, while there is very little evidence for an effect from either recipient-givenness or recipient-pronominality.

When the three information structures—Given–New, New–Given, New–New (i.e., the control condition)—are considered together, the most common information structure pattern was the Given–New order, for both PDs and DODs. For PDs, both the New–New order and the New–Given order were equally frequent, whereas for DODs, there were several New–New orders, but the New–Given order hardly occurred, which is consistent with the pattern in Experiment 1.

Let us now take a closer look at Experiment 2. To avoid repetition, the same weaknesses as Experiment 1 are not discussed here (see the discussion above). Although this time the initial labeling phase was removed, new referents were still contextually

\(^{71}\) 6% of new arguments were pronominal.
\(^{72}\) Out of 34 pronominal recipients, 29 referred to given information and 5 to new information. Pronominal recipients for given information occurred in the DOD 55% of the time.
present via the vignettes. The proportion of definite NPs to refer to new referents was
even higher than that of Experiment 1 (45% vs. 57%).

Second, Stephens (2010) excluded from the analysis verbs showing categorical
syntactic patterns, i.e., hand and pass, which were used only in the PD. Given that the
given-agent condition is a control (i.e., New–New) and the experimental conditions are
given-theme and given-recipient, Stephens’ criteria for inclusion should also exclude kick
and throw, which, in the experimental conditions, were overwhelmingly produced in the
PD regardless of information structure, as presented in Table 3.11.

Table 3.11. Proportion of PDs (Stephens, 2010)

<table>
<thead>
<tr>
<th>Verb</th>
<th>given-agent</th>
<th>given-theme</th>
<th>given-recipient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused possession</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give</td>
<td>20/26 (77%)</td>
<td>24/24 (100%)</td>
<td>16/31 (52%)</td>
<td>60/81 (74%)</td>
</tr>
<tr>
<td>hand</td>
<td>0/0</td>
<td>2/2 (100%)</td>
<td>0/0</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>pass</td>
<td>5/5 (100%)</td>
<td>4/4 (100%)</td>
<td>6/6 (100%)</td>
<td>15/15 (100%)</td>
</tr>
<tr>
<td>read</td>
<td>2/2 (100%)</td>
<td>3/4 (75%)</td>
<td>3/4 (75%)</td>
<td>8/10 (80%)</td>
</tr>
<tr>
<td>show</td>
<td>1/6 (17%)</td>
<td>3/3 (100%)</td>
<td>1/3 (33%)</td>
<td>5/12 (42%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>28/39 (72%)</td>
<td>36/37 (97%)</td>
<td>26/44 (59%)</td>
<td>102/120 (85%)</td>
</tr>
<tr>
<td>Caused motion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kick</td>
<td>1/2 (50%)</td>
<td>5/5 (100%)</td>
<td>6/6 (100%)</td>
<td>12/13 (92%)</td>
</tr>
<tr>
<td>throw</td>
<td>14/14 (100%)</td>
<td>13/14 (93%)</td>
<td>14/14 (100%)</td>
<td>41/42 (98%)</td>
</tr>
<tr>
<td>toss</td>
<td>2/2 (100%)</td>
<td>1/1 (100%)</td>
<td>0/1 (0%)</td>
<td>3/4 (75%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>17/18 (94%)</td>
<td>19/20 (95%)</td>
<td>20/21 (95%)</td>
<td>56/59 (95%)</td>
</tr>
<tr>
<td>Total</td>
<td>45/57 (79%)</td>
<td>55/57 (96%)</td>
<td>46/65 (71%)</td>
<td>146/179 (82%)</td>
</tr>
</tbody>
</table>

(adiated from Stephens, 2010, p. 138, Table 4.5)

Third, Stephens (2010), again, used token frequency (i.e., how many times the
verb occurred in the 7 CHILDES corpora) to divide verbs into low-frequency verbs and
high-frequency verbs. As discussed in Experiment 1, the issue here should be how
frequently the verb is used with two postverbal arguments, plus how frequently the verb
occurs. Problematically, of the high-frequency verbs, especially with caused motion,
bring was used with only one postverbal argument ($k = 2$) and take was never used with
postverbal arguments, and hence they were all excluded from the analyses. This
subsequently has a critical influence on the original, well-balanced 3 × 2 × 2 × 12 design with discourse condition (given-agent vs. given-theme vs. given-recipient), semantic verb class (caused possession vs. caused motion), verb frequency (high frequency vs. low frequency), and verb (12 verbs), as presented in Table 3.12.

Table 3.12. Changed Experimental Design which was Used for the Analysis (Stephens, 2010)

<table>
<thead>
<tr>
<th>Verb</th>
<th>given-agent</th>
<th>given-theme</th>
<th>given-recipient</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caused possession</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give</td>
<td>26</td>
<td>24</td>
<td>31</td>
<td>81</td>
</tr>
<tr>
<td>read</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>show</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>34</strong></td>
<td><strong>31</strong></td>
<td><strong>38</strong></td>
<td><strong>103</strong></td>
</tr>
<tr>
<td>Caused motion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kick</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>throw</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>42</td>
</tr>
<tr>
<td>toss</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>18</strong></td>
<td><strong>20</strong></td>
<td><strong>21</strong></td>
<td><strong>59</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>52</strong></td>
<td><strong>51</strong></td>
<td><strong>59</strong></td>
<td><strong>162</strong></td>
</tr>
</tbody>
</table>

What remain for the statistical analysis, then, are only 3 high-frequency caused possession verbs plus 2 high-frequency and 1 low-frequency caused motion verbs. Therefore, the original balanced 6:6 ratio of high-frequency to low-frequency was replaced by 5:1. Worse, the n size of the low-frequency verb (toss) is just 4. With the design imbalance and the too small n size, it is no wonder that verb frequency is not a significant predictor.

To summarize: Thus far, I have reviewed previous L1-English child studies on the English dative alternation, specifically on the age and order of L1 acquisition of PD vs. DOD (§3.2.1) and on effects of givenness on the use of PD vs. DOD (§3.2.2). Corpus studies (Campbell & Tomasello, 2001; Snyder & Stromswold, 1997; Viau, 2006) provide clear evidence that English-acquiring L1 children use both the PD and the DOD with particular verbs by age 3.
As for the effects of *givenness* on dative word-order alternations in L1-English children, prior work has provided mixed results. de Marneffe et al.’s (2012) corpus study with production data from CHILDES (age range: 2–5) found that length of both theme and recipient, expression type of both theme and recipient, and structural persistence are significant predictors in syntactic choices in the dative alternation, but animacy and *givenness* are not. Wilson et al.’s (1981) elicited-production study using nonce verbs found no effects of *givenness* on children’s choices between PD and DOD; it was found that children (age range: 4–6) produced PDs most of the time across the given-theme and given-recipient conditions. As a follow-up to Wilson et al. (1981), Gropen et al. (1989) conducted an elicited-production study using nonce verbs and found that children (age range: 6–8) produced the DOD more often in the given-recipient condition (Given–New) than in the given-theme condition (New–Given) when the PD was modeled, but no difference emerged when the DOD was modeled. However, this *givenness* effect was overridden by the salience of the construction that was modeled.

More recently, Stephens (2010) conducted two elicited-production experiments based on token frequency of alternating dative verbs in CHILDES. The results of Experiment 1 showed that *theme-givenness* and *recipient-givenness* exhibited different degrees of effect on construction choices in children (age range: 3–5): *theme-givenness* had a categorical effect, whereas *recipient-givenness* had a relatively small effect. It was also found that the DOD is a better predictor of information structure than the PD, never aligning with New–Given orders. The results of Experiment 2 with children at age 4 revealed that semantic verb class (caused motion vs. caused possession) was significant, but verb frequency (higher frequency vs. lower frequency) was not. Discourse *givenness* influenced construction choice more for caused possession verbs than for caused motion verbs, although the interaction between discourse condition and semantic verb type was not significant. As for information structure, for the PD, the most frequent use was in the Given–New order ($k = 49$); uses in the New–New order ($k = 40$) and the New–Given order were equally frequent ($k = 40$). Likewise, for the DOD, use in the Given–New

---

73 Stephens (2010) only presented bar charts for the distribution of information structure patterns by construction, based on which I figured out how frequently the PD occurred in each information structure. Unfortunately, for the DOD, however, I could only approximate the numbers: Given–New ($k \approx 19$), New–New ($k \approx 12$), New–Given ($k \approx 2$).
order was the most frequent; moreover, there was a strong dispreference for use in the New–Given order.

3.3 L1-Korean children and L1-Japanese children

3.3.1 L1 acquisition of Korean dative scrambling

As with L1-English children’s syntactic knowledge of the dative alternation, it is important to ensure that L1-Korean children have command of Korean dative scrambling, on which their word-order preferences will be tested with respect to information structure. This dissertation includes L1-Korean children aged between 4 and 8, and thus even the youngest age group—4 years—has to have mastery of dative scrambling.

Cho, Lee, O’Grady, Song, Suzuki, and Yoshinaga (2002) conducted an act-out comprehension experiment to examine L1-Korean children’s word-order preferences in canonical [IO\textsuperscript{DAT}–DO\textsuperscript{ACC}] order and scrambled [DO\textsuperscript{ACC}–IO\textsuperscript{DAT}] order. Forty L1-Korean children aged between 4 and 7 were asked to respond to requests with the help of stuffed toys and other props provided by the experimenter.\footnote{The 40 children consisted of 10 four-year-olds (mean age 4;4); 10 five-year-olds (mean age 5;7); 10 six-year-olds (mean age 6;5); and 10 seven-year-olds (mean age 7;6).} The experiment used a 2 × 2 design with animacy (animate vs. inanimate) and word order (canonical vs. scrambled), yielding 4 types of sentences: [both animate; canonical] as in (14ai), [both animate; scrambled] as in (14a(ii)), [both inanimate; canonical] as in (14bi), and [both inanimate; scrambled] as illustrated in (14bii).

\[\text{The 40 children consisted of 10 four-year-olds (mean age 4;4); 10 five-year-olds (mean age 5;7); 10 six-year-olds (mean age 6;5); and 10 seven-year-olds (mean age 7;6).}\]

\[\text{There was a total of 20 test sentences, with 5 tokens of each sentence type. The test sentences were randomized. The dative verbs were } \text{kkiwecwu- ‘insert,’ milecwu- ‘push,’ nehecwu- ‘put,’ poyecwu- ‘show,’ pwuchyecwu- ‘stick,’ tencyecwu- ‘throw’.}\]
A sample set of stimuli in Cho et al. (2002, p. 900, (3))

a. [Animate–Animate]
   (i) Canonical [IO_{DAT}–DO_{ACC}]
   
   So-hanthey kom-ul mile-cwu-llay-yo?
   cow-Dat bear-Acc push-Ben-Fut-Decl
   ‘Will you push the bear to the cow?’

   (ii) Scrambled [DO_{ACC}–IO_{DAT}]
   
   Kom-ul so-hanthey mile-cwu-llay-yo?
   bear-Acc cow-Dat push-Ben-Fut-Decl
   ‘Will you push the bear to the cow?’

b. [Inanimate–Inanimate]
   (i) Canonical [IO_{DAT}–DO_{ACC}]
   
   Moca-ey sonswuken-ul tencye-cwu-llay-yo?
   cap-Dat handkerchief-Acc throw-Ben-Fut-Decl
   ‘Will you throw the handkerchief at the cap?’

   (ii) Scrambled [DO_{ACC}–IO_{DAT}]
   
   Sonswuken-ul moca-ey tencye-cwu-llay-yo?
   handkerchief-Acc cap-Dat throw-Ben-Fut-Decl
   ‘Will you throw the handkerchief at the cap?’

The results showed that on the scrambled [DO–IO] order, the mean accuracy was 93% in the animate condition and 95% in the inanimate condition. By contrast, on the canonical [IO–DO] order, the mean accuracy was 61% in the animate condition and 67.5% in the inanimate condition. Thus, accuracy on the scrambled [DO–IO] order in both conditions was far higher than on canonical [IO–DO] order in both conditions, regardless of age. Focusing on 4-year-olds only (n = 10), accuracy on the canonical [IO–DO] order

There are four different dative case markers: -ey (inanimate), -eykey (animate, slightly formal), -hanthey (animate, casual), or -kkey (honorific) (Sohn, 1994, p. 238).
was 20% in the animate–animate condition and 44% in the inanimate–inanimate condition, and accuracy on the scrambled [DO–IO] order was 88% in both the conditions.


(15) The Hierarchy Hypothesis

Children prefer sentences whose word order reflects the relative prominence of grammatical relations.

(Cho et al., 2002, p. 902, (5))

This hypothesis predicts that children will show better performance on word order in accordance with the order of the relational hierarchy [DO–IO].

As an alternative explanation, Cho et al. (2002) rely on the concept of iconicity, suggesting that children may prefer word order which identically aligns with the sequence of the corresponding actions or situations. For instance, dative sentences containing a DO (theme) and an IO (recipient) typically denote events or situations in which a subject acts on the DO, which, as a result, influences the IO (e.g., Pinker, 1989; Langacker, 1995, inter alia).

(16) The Iconicity Hypothesis

Children prefer sentences whose word order is iconic with the corresponding situation.

(Cho et al., 2002, p. 903, (7))

This hypothesis makes the same prediction as their first hypothesis about Korean children’s word order preference—[DO THEME–IO RECIPIENT]—which corresponds to the chain of action, “agent → patient → goal” (Cho et al., 2002, p. 903).
However, it is possible that in the Cho et al. study, the L1-Korean children simply ignore case markers, instead paying attention to the order of two NPs. Following the iconicity of sequence, they take the first NP and act on the second NP with it, resorting to a linear strategy. This explains the higher accuracy on the \([\text{DO}_{\text{THEME}} – \text{IO}_{\text{RECIPIENT}}]\) order than on the \([\text{IO}_{\text{RECIPIENT}} – \text{DO}_{\text{THEME}}]\) order. For this reason, in the next section I provide another piece of evidence from L1-Japanese children that even 3-year-olds can produce the scrambled dative order.\(^{77}\)

3.3.2 L1 acquisition of Japanese dative scrambling

To the best of my knowledge, L1-Korean children’s adherence to the \textit{Given-before-New Principle} in the dative construction has yet to be explored. Thus, I will instead review L1-Japanese child studies on canonical vs. scrambled dative sentences, which also provides information on children’s age of acquisition of canonical vs. scrambled dative sentences.

Sugisaki and Isobe (2001) conducted a truth-value-judgment task (TVJT) with 20 L1-Japanese children between 3;11 and 5;0 (mean age 4;6). In the task, at the end of each story, a character named Meowce appears and says what he thinks happened in the story. The child is asked to judge whether Meowce’s statement is right or wrong. The task included 3 types of dative orders: \([\text{S–IO–DO–V}]\), \([\text{S–DO–IO–V}]\), and \([\text{IO–S–DO–V}]\).\(^{78}\) There were 2 \([\text{S–IO–DO–V}]\) orders, (17a) and (17c). In addition to 5 filler items, the task had only 4 experimental items, with a single token per condition, which are all provided in (17). The sample story for (17b) is given in (18).

\(^{77}\) Suzuki (2007) used the same methodology as in Cho et al. (2002) and likewise found that L1-Japanese children (age range: 4–6) showed higher accuracy on the scrambled dative order than on the canonical dative order (with and without context). However, this study suffers from the same flaws as Cho et al.’s.

\(^{78}\) Sugisaki and Isobe (2001) did not have \([\text{DO–S–IO–V}]\) because of difficulty in making a story.
a. [S–IO–DO–V]
   Satoshi-ga  akachan-ni  Pokémon-o  misetayo.
   Satoshi-Nom  baby-Dat  Pokémon-Acc  showed
   ‘Satoshi showed his Pokémon to the baby.’

b. [S–DO–IO–V]
   Satoshi-ga  Pikachu-o  okaasan-ni  misetayo.
   Satoshi-Nom  Pikachu-Acc  mother-Dat  showed
   ‘Satoshi showed Pikachu to his mother.

c. [S–IO–DO–V]
   Ookido Hakase-ga  Kasumi-ni  atarashii Pokémon-o misetayo.
   Dr. Ookido-Nom  Kasumi-Dat  new Pokémon-Acc  showed
   ‘Dr. Ookido showed a new Pokémon to Kasumi.’

d. [IO–S–DO–V]
   Kasumi-ni  Satoshi-ga  Pichu-o  misetayo.
   Kasumi-Dat  Satoshi-Nom  Pichu-Acc  showed
   ‘Satoshi showed Pichu to Kasumi.’
(18) A sample story: The story for (17b)

Satoshi came back home with his Pokémon Pikachu during his long journey, in order to introduce Pikachu to his mother. Opening the door, Satoshi said, “Mom, I’m back home!” However, there was no response. On the table he found a memo that said, “I’m out shopping.” Looking at the memo, he said, “Oh no, Mom cannot meet Pikachu right now.” However, he got a good idea. He took Pikachu to his room, and showed him a picture. In that picture, Satoshi and his mother were smiling. He said, “Hey look, Pikachu. This is my mom!” Pikachu looked very happy to see Satoshi’s mother.

Meowce: Satoshi-ga Pikachu-to ouchi-ni kaette kitayo.

‘Satoshi came back home with Pikachu.’

Sosite, Satoshi-ga Pikachu-o okaasan-ni misetayo. (=17b)

‘And Satoshi showed Pikachu to his mother.’

(English translation, Sugisaki & Isobe, 2001, p. 548, (25))

Table 3.13 provides the results of the number and proportion of correct answers. The children correctly responded to nonscrambled orders ((17a) and (17c)) at least 85% of the time and to one type of scrambled order (17d) 95% of the time and to the other (17b) 60% of the time.

<table>
<thead>
<tr>
<th>Dative Orders</th>
<th>Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>(17a) [S–IO–DO–V]</td>
<td>17/20</td>
<td>85%</td>
</tr>
<tr>
<td>(17b) [S–DO–IO–V]</td>
<td>12/20</td>
<td>60%</td>
</tr>
<tr>
<td>(17c) [S–IO–DO–V]</td>
<td>19/20</td>
<td>95%</td>
</tr>
<tr>
<td>(17d) [IO–S–DO–V]</td>
<td>18/20</td>
<td>90%</td>
</tr>
</tbody>
</table>

(adapted from Sugisaki & Isobe, 2001, p. 548, (26))

Sugisaki and Isobe (2001) accounted for the substantial accuracy difference between (17b) and (17d) by the difference in syntactic movement between the two orders,
following Tada’s (1993) three-way classification of scrambling.\textsuperscript{79} [S–DO–IO–V] in (17b) is S(hort)-scrambling and [IO–S–DO–V] in (17d) is M(iddle)-scrambling: M-scrambling involves either an A-position or an A’-position, while S-scrambling involves only an A-position. However, Sugisaki and Isobe do not explain why S-scrambling causes difficulty for L1-Japanese children, but M-scrambling does not. Moreover children were tested on only one sentence per condition. Last but not least, the experimental design has biased answers: If correctly interpreted, all 4 experimental sentences are “false.” Table 3.14 shows the wrong interpretation of each sentence when incorrectly judged as “true.”

Table 3.14. Interpretations of Stimuli (Sugisaki & Isobe, 2001)

<table>
<thead>
<tr>
<th>Stimuli</th>
<th>Interpretation</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>(17a) [S–IO–DO–V]</td>
<td>[S–DO–IO–V]</td>
<td>True</td>
</tr>
<tr>
<td>(17b) [S–DO–IO–V]</td>
<td>[S–IO–DO–V]</td>
<td>True</td>
</tr>
<tr>
<td>(17c) [S–IO–DO–V]</td>
<td>[IO–S–DO–V]</td>
<td>True</td>
</tr>
<tr>
<td>(17d) [IO–S–DO–V]</td>
<td>[S–IO–DO–V]</td>
<td>True</td>
</tr>
</tbody>
</table>

(adapted from Sugisaki & Isobe, 2001, p. 548 (26)

Although there were 5 filler items, explanation was not provided (but if all were “true,” that would balance out the design). These flaws of the experiment disallow us to make any generalization about L1-Japanese children’s acquisition of dative scrambling.

Otsu (1994) found evidence from Okubo’s (1981–1983) production corpus that L1-Japanese children as young as 3 spontaneously produce the scrambled dative order, in accordance with the Given–New order, as illustrated in (19)–(20).\textsuperscript{80}

\textsuperscript{79} Tada (1993) classifies scrambling into three types: L(ong)-scrambling, M(iddle)-scrambling, and S(hort)-scrambling. “L-scrambling moves an element to sentence-initial position across a clause boundary. M-scrambling is clausal-internal scrambling to sentence-initial position. S-scrambling is permutation of the IO–DO order within the VP” (cited in Sugisaki & Isobe, 2001, p. 539).

\textsuperscript{80} Otsu (1994) states that Okubo’s corpus is a “fairly large production corpus” (p. 260).
(19) Canonical \([\text{IO}_{\text{DAT}}-\text{DO}_{\text{ACC}}]\)

a. (Referring to Winnie-the-Pooh)

\[
\begin{align*}
\text{Puu-san-ni} & \quad \text{wan-piisu-(o) kise.} \\
\text{Pooh-Dat} & \quad \text{dress-(Acc) put.on+Imp} \\
\text{‘Dress Pooh.’}
\end{align*}
\]

b. Aya-tyan-ni Aya-tyan-ni obake-(o) osie tai.

\[
\begin{align*}
\text{Aya-tyan-Dat} & \quad \text{Aya-tyan-Dat ghosts-(Acc) teach want} \\
\text{‘I want to tell Aya (little sister’s name) about ghosts.’}
\end{align*}
\]

(Atsu, 1994, p. 261, (10a)–(10b))

(20) Scrambled \([\text{DO}_{\text{ACC}}-\text{IO}_{\text{DAT}}]\)

a. (Referring to the data cards of his utterances)

\[
\begin{align*}
\text{Kore-(o)} & \quad \text{otoosan-ni misette agemasyoo.} \\
\text{these-(Acc) Daddy-Dat show let’s} \\
\text{‘Let’s show these to Daddy.’}
\end{align*}
\]

b. (Referring to the band-aid on his finger)

\[
\begin{align*}
\text{Kore-(o)} & \quad \text{otoosan-ni hatte moratta-no.} \\
\text{this-(Acc) Daddy-Dat put.on get-Past} \\
\text{‘Daddy put this on.’}
\end{align*}
\]

(Atsu, 1994, p. 260, (9a)–(9b))

To summarize: In the above section, I reviewed two experimental studies, one on L1 Korean and the other on L1 Japanese, as well as one L1-Japanese child corpus study on the acquisition of the canonical \([\text{IO–DO}]\) order vs. the scrambled \([\text{DO–IO}]\) order. First, Cho et al.’s (2002) act-out comprehension study found that L1-Korean children at age 4 show higher accuracy on the scrambled order than on the canonical order. However, it is possible that children, resorting to a linear strategy, pick up the object named by the first NP and use it to act on the object named by the second NP, which corresponds to the chain of action in the word order: \([(\text{agent} \rightarrow \text{DO}_{\text{THEME}} \rightarrow \text{IO}_{\text{RECIPIENT}})]. In contrast,
Sugisaki and Isobe (2001) in their TVJT study observed that Japanese children (age range: 3–5) perform better on the canonical order than on the scrambled order. However, the methodological problems inherent in the design call into question the results of the study. Finally, Otsu’s (1994) corpus study provides evidence from spontaneous production data that L1-Japanese children as young as 3 are able to produce scrambled dative order, in compliance with Given–New information structure.

3.4  L2-English adults

This section reviews research on L2 adults’ knowledge of the Given-before-New Principle. There is only a handful of studies on L2 adults that investigate the effects of information structure on word-order alternations with regard to the dative alternation and none on L2 children.

3.4.1 L2-English adults’ adherence to Given-before-New

Marefat (2005) investigated the effect of information structure on the English dative alternation in Persian EFL learners, using an elicited written-production task and an acceptability judgment task (AJT). The experimental design used a 2 (PD vs. DOD) × 2 (accusative vs. dative) matrix, whereby the production task included 4 types of interrogative sentences—prompts—with 2 prompts in each construction, i.e., 2 PDs and 2 DODs, as shown in (21).

(21) A sample set of the production task in Marefat (2005, p. 68, (4)–(7))

a. What did you give to Mary?       PD-accusative prompt
b. Whom did you give the book to?   PD-dative prompt
c. What did you tell Mary?          DOD-accusative prompt
d. Whom did Mary tell the secret?   DOD-dative prompt

Both the production task and the AJT used 8 alternating dative verbs (ask, build, give, send, show, teach, tell, write), half of which were used for PD prompts and half for DOD prompts. For the production task, there was a total of 16 experimental items ((4 verbs × 2
PD prompts) + (4 verbs × 2 DOD prompts)). Participants were asked to respond to each prerecorded prompt in a written format as they were listening.

The AJT presented question-answer pairs, and the answers were the test sentences, as illustrated in (22). Information status of the object NPs in the test sentences was determined by whether the referent was mentioned in the prompt. The test sentences alternate between two variants by construction type (PD vs. DOD) and by information structure (Given–New vs. New–Given).

(22) A sample set of the AJT in Marefat (2005, p. 68 (4)–(7))

a. What did you give to Mary? PD-accusative prompt
   (i) I gave a book to Mary. [New–Given] PD
   (ii) I gave Mary a book. [Given–New] DOD

b. Whom did you give the book to? PD-dative prompt
   (i) I gave the book to Mary. [Given–New] PD
   (ii) I gave Mary the book. [New–Given] DOD

c. What did you tell Mary? DOD-accusative prompt
   (i) I told a secret to Mary. [New–Given] PD
   (ii) I told Mary a secret. [Given–New] DOD

d. Whom did Mary tell the secret? DOD-dative prompt
   (i) Mary told the secret to me. [Given–New] PD
   (ii) Mary told me the secret. [New–Given] DOD

There was a total of 32 experimental items. Participants were asked to listen to the question-answer pairs and then rate the naturalness using a Likert scale from 1 (totally unnatural) to 7 (totally natural).

\[81 ((4 \text{ verbs} \times 2 \text{ PD prompts}) \times 2 \times 2) + ((4 \text{ verbs} \times 2 \text{ DOD prompts}) \times 2 \times 2)\]
L2ers were divided into 4 levels of proficiency, advanced \((n = 37)\), high-intermediate \((n = 45)\), low-intermediate \((n = 36)\), and elementary \((n = 35)\).\(^{82}\)

As seen in Table 3.15, the results of the production task suggested that neither the natives nor the L2 groups showed any sensitivity to information structure. As for construction type, however, separate chi-squares revealed that all L2 groups produced PDs significantly more often than DODs. Especially, the elementary group showed the strongest preference for the PD (92.9%).

Table 3.15. Proportion of Responses by Information Structure vs. Construction Type in the Production Task (Marefat, 2005)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Information Structure</th>
<th>Construction Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Given–New</td>
<td>New–Given</td>
</tr>
<tr>
<td>Native</td>
<td>39</td>
<td>47.4%</td>
<td>52.6%</td>
</tr>
<tr>
<td>Advanced</td>
<td>37</td>
<td>50.2%</td>
<td>49.7%</td>
</tr>
<tr>
<td>High-intermediate</td>
<td>45</td>
<td>49.7%</td>
<td>50.2%</td>
</tr>
<tr>
<td>Low-intermediate</td>
<td>36</td>
<td>49.0%</td>
<td>50.9%</td>
</tr>
<tr>
<td>Elementary</td>
<td>35</td>
<td>44.4%</td>
<td>55.5%</td>
</tr>
</tbody>
</table>

(adapted from Marefat, 2005, p. 70, Table 1)

The mean scores of the AJT are summarized in Table 3.16. The results showed that the high-intermediate and advanced L2 groups performed in the same way as the native group, scoring the Given–New order higher than the New–Given order across conditions; by contrast, neither the low-intermediate L2 group nor the elementary L2 group showed consistent preference for the Given–New order. The elementary L2 group preferred the PD across all conditions.

\(^{82}\) The Michigan Proficiency Test was used to categorize L2ers into low-intermediate to advanced proficiency. How L2ers were placed into the elementary group, however, was not mentioned.
Table 3.16. Mean Ratings (1 to 7) by Prompt in Each Group in the AJT (Marefat, 2005)

<table>
<thead>
<tr>
<th>Prompt 1</th>
<th>PD</th>
<th>DOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt 2</td>
<td>Whom (given-theme)</td>
<td>What (given-recipient)</td>
</tr>
<tr>
<td></td>
<td>[G–N]</td>
<td>[N–G]</td>
</tr>
<tr>
<td>Native</td>
<td>6.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Advanced</td>
<td>6.0</td>
<td>3.0</td>
</tr>
<tr>
<td>High-inter.</td>
<td>6.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Low-inter.</td>
<td>6.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Elementary</td>
<td>6.4</td>
<td>2.6</td>
</tr>
</tbody>
</table>

(slightly modified from Marefat, 2005, p. 71, Table 2)

Notes. [G–N] = [Given–New]
[N–G] = [New–Given]
High-inter. = High intermediate;
Low-inter. = Low intermediate

In sum, all groups, except for the elementary L2 group, show inconsistent performance across the tasks. In the production task, all the groups were insensitive to information structure. In the AJT, in contrast, the advanced and high-intermediate L2 groups preferred the Given–New order, but the low-intermediate and elementary L2 groups did not. Regarding the elementary group’s preference for the PD, Marefat (2005) assumed that L2ers’ L1 (Persian) grammar, which lacks the DOD, comes into play when they make the decision between the PD and the DOD in the Target Language, English.

However, the study is called into question for the following reasons: First, the production task and the AJT did not include any filler items. Second, both tasks, albeit having test sentences preceded by a prompt question, failed to include discourse contexts to establish givenness; that is, the distinction between given information and new information was not made in the discourse context.

In addition, as summarized in Table 3.17, the prompt question, consisting of either a PD or a DOD, not surprisingly, caused a strong priming (echoicity) effect for

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83 The original table also included the standard deviations, which were removed here.
both natives and L2ers in the production task, which is responsible for the lack of sensitivity to givenness.

Table 3.17. Proportion of Echoic/Primed Responses in the Production Task (Marefat, 2005)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Echoic/Primed Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natives</td>
<td>39</td>
<td>70.2%</td>
</tr>
<tr>
<td>Advanced</td>
<td>37</td>
<td>81.9%</td>
</tr>
<tr>
<td>High-intermediate</td>
<td>45</td>
<td>82.2%</td>
</tr>
<tr>
<td>Low-intermediate</td>
<td>36</td>
<td>80.6%</td>
</tr>
<tr>
<td>Elementary</td>
<td>35</td>
<td>51.6%</td>
</tr>
</tbody>
</table>

(adapted from Marefat, 2005, p. 76, Table 5)

Interestingly, the elementary group’s echoicity was the lowest. This is because they almost always produced PDs (92.9%), regardless of the construction type of the prompt questions. As for the AJT, a significant effect for echoicity was found in all L2 groups, but not in the native group.  

Third, as shown in Table 3.18, for the production task, I calculated the maximum possible number of responses in each group and compared them with the number of responses presented by Marefat (2005).

---

84 The separate repeated Measures ANOVAs also showed significant effects for: Prompt 2 in the native group; Prompt 1 and Prompt 2 in the advanced L2 group; Echoicity in the high-intermediate and low-intermediate L2 groups; Prompt 1 in the elementary L2 group.
Table 3.18. Total Number of Responses Produced and Maximum Number of Responses in the Production Task (Marefat, 2005)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>G–N</th>
<th>N–G</th>
<th>PD</th>
<th>DOD</th>
<th>Total N × 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td>39</td>
<td>292</td>
<td>324</td>
<td>289</td>
<td>327</td>
<td>616 &lt; 624</td>
</tr>
<tr>
<td>Advanced</td>
<td>37</td>
<td>331</td>
<td>328</td>
<td>369</td>
<td>290</td>
<td>659 &gt; 592</td>
</tr>
<tr>
<td>High-intermediate</td>
<td>45</td>
<td>344</td>
<td>348</td>
<td>384</td>
<td>308</td>
<td>692 &lt; 720</td>
</tr>
<tr>
<td>Low-intermediate</td>
<td>36</td>
<td>278</td>
<td>289</td>
<td>311</td>
<td>256</td>
<td>567 &lt; 576</td>
</tr>
<tr>
<td>Elementary</td>
<td>35</td>
<td>239</td>
<td>299</td>
<td>500</td>
<td>38</td>
<td>538 &lt; 560</td>
</tr>
</tbody>
</table>

(Adapted from Marefat, 2005, p. 70, Table 1)

Notes. 1. G–N = Given–New
2. N–G = New–Given
3. \( \text{Total} \) was calculated two ways, one by \( 1 + 2 \) and the other by \( 3 + 4 \).
4. \( \text{Total} \) was calculated by the number of participants in each group \( \times 16 \) test items.
5. The difference between \( \text{G–N} \) and \( \text{N–G} \) indicates the missing data.

The number of responses (\( \text{Total} \)) included for the data analysis should be equal to or smaller than the maximum possible number of responses (\( \text{Total} \)). Problematically, however, an exception to this was found in the advanced group. The produced number of responses (659) outnumbers the maximum possible responses (592). In the data analysis of the production task, Marefat (2005) provided no explanation about the coding procedure, the missing data, and mismatched total number of responses. Accordingly, several things are left unknown: whether the L2ers know that all the verbs alternate between the PD and the DOD; whether they provided responses with only one postverbal argument (e.g., V + theme, V + PP-recipient, etc.); or whether they simply did not respond.

Callies and Szczesniak (2008) conducted a corpus study using German and Polish EFL learners’ compositions in order to examine the effect of information structure on the L2ers’ choices of PD vs. DOD in longer contexts. The EFL learners’ compositions were taken from the International Corpus of Learner English (ICLE; Granger, Hung, & Petch-Tyson, 2002), which mostly consists of argumentative essays, and native compositions were taken from Louvain Corpus of Native English Essays (LOCNESS;
Granger et al., 2002). Of the 15 highly frequent alternating dative verbs, only 8 verbs containing two postverbal arguments were included in the data analysis: bring, give, offer, pay, send, show, teach, and tell. Whereas fixed-theme expressions (e.g., give birth to) possibly occurring in the alternation were included, fixed-goal expressions (e.g., bring to an end) occurring in favor of one variant were excluded, as presented in Table 3.19.

Table 3.19. Fixed Expressions Found in Corpora (Callies & Szczesniak, 2008)

<table>
<thead>
<tr>
<th>Expressions excluded</th>
<th>Expressions included</th>
</tr>
</thead>
<tbody>
<tr>
<td>bring to an end</td>
<td>give birth to</td>
</tr>
<tr>
<td>bring to light/life/reality</td>
<td>give rise to</td>
</tr>
<tr>
<td>bring to power</td>
<td>give way to</td>
</tr>
<tr>
<td>bring to a halt/stop/standstill</td>
<td>show consideration for</td>
</tr>
<tr>
<td>carry to an extreme</td>
<td>pay attention to</td>
</tr>
<tr>
<td>take into account/consideration</td>
<td></td>
</tr>
<tr>
<td>take for a walk</td>
<td></td>
</tr>
<tr>
<td>take to heart</td>
<td></td>
</tr>
</tbody>
</table>

(adapted from Callies & Szczesniak, 2008, p. 176, Table 4)

As seen in Table 3.20, there was a congruence of preference for either variant across the three corpora: give, show, teach, and tell in favor of the DOD—“DOD prone” verbs; pay and send in favor of the PD—“PD prone” verbs. Such congruence was not found in bring and offer—“indeterminate,” and Callies and Szczesniak (2008) suggested that this is because bring and offer were under-represented in the corpora and that the congruence across corpora would be detected in a larger corpora containing more instances with these verbs.

85 The compositions in the corpora come from EFL undergraduates whose English proficiency level ranges from higher intermediate to advanced (Granger et al., 2002). The study examined only the data from those who had spent a maximum of 12 months in an English-speaking country. The native English corpus consists of US LOCNESS and BRITISH LOCNESS.

86 The whole list of 15 verbs is: bring, carry, give, hand, offer, pass, pay, read, sell, send, show, take, teach, tell, write. Their frequencies were checked through comparison with the British National Corpus (BNC).
Table 3.20. Dominant Dative Variants in the Production of L2ers and Natives (Callies & Szczesniak, 2008)

<table>
<thead>
<tr>
<th>Verb</th>
<th>L1 German</th>
<th>L1 Polish</th>
<th>Natives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PD</td>
<td>DOD</td>
<td>PD</td>
</tr>
<tr>
<td>give</td>
<td>39</td>
<td>115</td>
<td>68</td>
</tr>
<tr>
<td>show</td>
<td>9</td>
<td>43</td>
<td>5</td>
</tr>
<tr>
<td>teach</td>
<td>3</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>tell</td>
<td>1</td>
<td>145</td>
<td>1</td>
</tr>
<tr>
<td>pay</td>
<td>12</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>send</td>
<td>21</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>bring</td>
<td>4</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>offer</td>
<td>2</td>
<td>4</td>
<td>19</td>
</tr>
</tbody>
</table>

(adapted from Callies & Szczesniak, 2008, p. 178, Table 6)

Callies and Szczesniak (2008) examined the syntactic weight of object arguments.

Table 3.21 presents the mean-word length of object arguments in 4 verbs (bring, give, offer, pay).

Table 3.21. Mean Word-Length of Object Arguments in the PD and the DOD (Callies & Szczesniak, 2008)

<table>
<thead>
<tr>
<th>Verb</th>
<th>L1 German</th>
<th>L1 Polish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PD</td>
<td>DOD</td>
</tr>
<tr>
<td></td>
<td>theme</td>
<td>recipient</td>
</tr>
<tr>
<td>bring</td>
<td>1.5</td>
<td>3.5</td>
</tr>
<tr>
<td>give</td>
<td>2.1</td>
<td>4.1</td>
</tr>
<tr>
<td>offer</td>
<td>1.8</td>
<td>4.0</td>
</tr>
<tr>
<td>pay</td>
<td>1.6</td>
<td>4.4</td>
</tr>
</tbody>
</table>

(adapted from Callies & Szczesniak, 2008, p. 179, Table 7)

The mean-word lengths in the DOD were the following: The recipient ranged from 1 to 1.6, which is either an anaphoric pronoun or a simple NP, and the theme ranged from 2.5
to 6.8. In the PD, by contrast, the difference between the two objects was not so striking as in the DOD, probably because length is partly conflated with pronoun (vs. NP). Callies and Szczesniak concluded that “the end-weight principle influences the learners’ choice of either variant” (p. 178).

The qualitative analysis revealed that information structure interacts with syntactic weight in L2ers’ choices of dative variants, as presented in (23) and (24). The short, pronominal given recipient precedes the long, new theme in the DOD, as in (23), whereas the short, given theme precedes the long, new recipient in the PD, as in (24).

(23) a. Being married makes life a lot easier. I told Conny of our problems finding a place to live. Housing owners treat you like foreigners or social outcasts unless you show them the document saying that you are married. (GICLE)

   b. People’s using drugs is the result of psychological or emotional problems of some kind. Relying on drugs, in their opinion, brings them relief, pleasure or a means of escaping from these problems. (PICLE)

(24) a. There is absolutely no point in separating garbage. This is just a waste of energy and time and on top it cost [sic!] [in original—KSP] a lot of money. We could sent [sic!] [in original—KSP] all our garbage to countries of the third world especially to the very poor countries, those having almost nothing that they would have at least something of the industrial countries. (GICLE)

   b. There is a possibility that if homosexuals obtain the rights they fight for, other groups may demand the equal treatment. This may mean giving rights to people whose sexual preferences are now regarded as deviations such as for example pedophilia. (PICLE)

   (Callies & Szczesniak, 2008, p. 179, (23)–(24))

Callies and Szczesniak (2008) turned their attention to the competition between information structure and syntactic weight, as illustrated in (25a) and (25b).
In (25a), information structure wins over syntactic weight: the given entity, albeit more syntactically complex, is placed before the new entity, albeit less syntactically complex. By contrast, information structure wins over syntactic weight in (25b): the less syntactically complex entity, albeit new, is placed before the more syntactically complex entity, albeit given. Callies and Szczesniak concluded that information structure and syntactic weight play major roles in advanced L2ers’ choice of either the PD or the DOD.

However, this study failed to detect to what extent each factor influences L2ers’ constructional choices in the dative alternation for the following reasons. First and foremost, Callies and Szczesniak (2008) did not provide any coding criteria for givenness, and it is thus unclear how givenness of object arguments was determined. Second, they simply counted the number of occurrences of the PD and the DOD for each verb and found a dominant variant across the three corpora, based on which they grouped verbs into the three types (as in Table 3.20). These results alone do not tell us much about the role of information structure in L2ers’ construction choices. Third, Callies and Szczesniak never looked at the information-structure patterns quantitatively. Consequently, interactions between information structure and syntactic weight could not be attested. Fourth, as shown in examples (23a)–(23b), information structure, pronominality, and syntactic weight are confounded in the corpora. It should be noted that there is a high correlation between information structure and syntactic weight, such that the given entity tends to be simple—e.g., anaphoric pronouns—and the new entity
tends to be complex (e.g., Arnold et al., 2000). Accordingly, it is unclear which of the
three factors influences L2ers’ constructional choices. Callies and Szczesniak should
have controlled for syntactic weight in the analysis, e.g., by restricting the data only to
instances with very little length difference between the two postverbal arguments. In
addition, corpus data are not free from under-representation of certain verbs (e.g., *read*,
*sell*, *write*), as well as the other confounding factors, such as structural parallelism and
different degrees of topic continuity throughout the corpus.

Taken together, methodologically, the validity of the empirical evidence is at
stake. Hence, L2ers’ knowledge of the *Given-before-New Principle* would benefit from
more rigorous investigation.

### 3.5 Summary of the chapter

First, to ensure L1 children’s syntactic knowledge of the dative alternation in
English and dative scrambling in Korean, I have reviewed prior work on the age of
acquisition and the order of acquisition of the dative alternation in L1-English children
(§3.2.1) and dative scrambling in L1-Korean children (§3.3.1) and L1-Japanese children
(§3.3.2). Corpus studies provide clear evidence that English children use both dative
constructions by age 3, at least with some verbs. For L1-Korean and L1-Japanese
children, putting aside some methodological problems, investigation of children’s
acquisition of dative scrambling points to young children’s use of dative scrambling
(Sugisaki & Isobe, 2001; Otsu, 1994).

As for the effects of *givenness* on dative word-order alternations in L1-English
children, prior work has yielded mixed results. Some researchers, such as de Marneffe et
al. (2012) and Wilson et al. (1981) found no effects of *givenness* on children’s
construction choice in the dative alternation. By contrast, other elicited-production
studies provided (some) evidence in support of *givenness* effects (Gropen et al., 1989;
Stephens, 2010).

Finally, I reviewed two L2 adult studies on adherence to the *Given-before-New
Principle* in the English dative alternation. Marefat (2005) conducted a production task
and an AJT with Persian EFL learners. In the production task, L2ers showed no
sensitivity to givenness. In the AJT, in contrast, the more proficient L2 groups accepted
Given–New orders more than New–Given orders, whereas the less proficient L2 groups accepted PDs more than DODs, regardless of information structure. Callies and Szczesniak (2008), in a corpus study using compositions from German and Polish EFL learners’ compositions, found that advanced adult L2ers placed shorter, discourse-given information before longer, discourse-new information in the English dative alternation. The weaknesses of previous studies discussed above were taken into consideration in designing my experiments and analyzing the data in the present study. The next chapter details the methodology of the novel experiments that were developed for the present study.
CHAPTER 4.
METHODS

4.1 Introduction

This chapter lays out the methods of the 5 main experiments: 2 L1 studies (L1 English and L1 Korean), 2 adult L2 studies (adult L2 English and adult L2 Korean), and 1 child L2 study (child L2 English). Some of the methods overlap: All the L1 studies employ the same cognitive measure and all the L2 studies employ the same proficiency measure. In addition, the English studies have the same main tasks as do the Korean studies. Accordingly, all the methodology is presented in one chapter to avoid repetition.

This chapter is organized as follows. The next section (§4.2) overviews the composition of the tasks included in the current study: (i) English and Korean oral contextualized preference tasks, each of which consists of an NP Task and a Pronoun Task; (ii) an English acceptability judgment task (AJT); and (iii) false-belief tasks composed of the Sally-Anne task and the Smarties task. Section 4.3 presents all the participants’ backgrounds, and Section 4.4 presents the research questions in the current study. The section following (§4.5) details the methods of the main tasks, the English and Korean oral contextualized preference tasks and the English AJT. The final section (§4.6) describes the methods of the 2 false-belief tasks.

4.2 Composition of tasks in the L1 studies and the L2 studies

This thesis includes 4 types of tasks: (i) 2 novel oral contextualized preference tasks, one in English and one in Korean, each consisting of an NP Task and a Pronoun Task; (ii) an English AJT; (iii) 2 types of false-belief tasks, the Sally-Anne task and the Smarties task (Hogrefe, Wimmer, & Perner, 1986; Wimmer & Perner, 1983); and (iv) a picture-narration task (see Chapter 5). The oral contextualized preference tasks examine adherence to the Given-before-New Principle and the AJT tests the syntax of the English dative alternation. I also adopted the false-belief tasks to measure children’s mastery of Theory of Mind (ToM) and the picture-narration task (Song & Schwartz, 2009; Unsworth, 2005, 2008; Whong-Barr & Schwartz, 2002) to assess L2 learners’ level of proficiency.
In order to test adherence to the *Given-before-New Principle* with respect to the English dative alternation in L1 children, L2 adults, and L2 children, one first needs to ascertain whether they have acquired the syntax of the dative alternation, such that they in fact allow both the PD and the DOD for those alternating dative verbs used to test such adherence (Park & Schwartz, 2012). Recall that empirical evidence (Campbell & Tomasello, 2001; Gropen et al., 1989; Snyder & Stromswold, 1997; Viau, 2006, among others) suggests that L1-English children acquire the dative alternation by the age of 3 (see §3.2.1). Also, recall that most of the children between 2 and 5 produce both dative variants for verbs of giving (e.g., *give, hand, sell*), verbs of type of communication (e.g., *read, show, tell*), and verbs of accompanied motion in a direction (e.g., *bring, take*) (Gropen et al., 1989). My L1-English study includes English-acquiring children aged between 5 and 8, and thus on the assumption that they have already acquired the dative alternation with the verbs used in this study, the AJT is administered to only L2 adults and L2 children, excluding L1 children.87

For the same reason, it is necessary first to ascertain whether L1-Korean children and L2-Korean adults have command of dative scrambling and thus allow both the canonical dative order and the scrambled dative order. However, unlike the English dative alternation in which only some dative verbs allow both variants, which poses a challenge for L1 and L2 acquisition, Korean dative verbs all allow scrambling. In addition, empirical evidence presented by Sugisaki and Isobe (2001) suggests that 3- to 5-year-old Japanese-acquiring children show mastery of dative scrambling (see §3.3.2). For these reasons, syntactic knowledge of Korean dative scrambling is not independently tested in this study.

The composition of tasks in each study is summarized in Table 4.1 for the English studies and 4.2 for the Korean studies.

---

87 In L1 acquisition, children tend to *over-accept*, in which case my assuming knowledge on their part of both the PD and the DOD for the verbs used in my English experiments (i.e., *bring, give, mail, sell, send, show*) would not be a problem.
Table 4.1. Composition of English Studies

<table>
<thead>
<tr>
<th>Group</th>
<th>Preference</th>
<th>AJT</th>
<th>False-Belief</th>
<th>Picture-Narration</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Adult</td>
<td>√</td>
<td>√</td>
<td>√ (some)</td>
<td></td>
</tr>
<tr>
<td>L1-English Child</td>
<td>√</td>
<td></td>
<td>☑</td>
<td>(some)</td>
</tr>
<tr>
<td>L2-English Adult</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2-English Child</td>
<td>√ (L1 &amp; L2)</td>
<td>√</td>
<td>√ (some)</td>
<td>(L2 English)</td>
</tr>
</tbody>
</table>

The child L1 studies include the oral contextualized preference tasks and the false-belief tasks. In addition, some L1 children, as a control for comparison with L2 children, participated in the picture-narration task, the purpose of which was to measure the level of proficiency of L2 learners. As for the adult L2 studies, the L2-English study is composed of the oral contextualized preference tasks, the AJT, and the picture-narration task. The L2-Korean (adult) study has only the oral contextualized preference tasks and the picture-narration task. Finally, the child L2-English study consists of the oral contextualized preference tasks in both Korean (the L1) and English (the target language), the AJT, the false-belief tasks (in the L1), and the picture-narration task (in English). As a control for comparison with L1 children and L2ers, L1 adults were administered the oral contextualized preference tasks, the AJT (only L1-English adults), and the picture-narration task (only some L1 adults). All studies were followed by a brief background questionnaire, which consists of a demographic background section (e.g., age, gender, etc.) and a language background section (e.g., L1, age of L2 onset, length of exposure, etc.). All the background questionnaires are presented in Appendix A.

Table 4.2. Composition of Korean Studies

<table>
<thead>
<tr>
<th>Group</th>
<th>Preference</th>
<th>False-Belief</th>
<th>Picture-Narration</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-Korean Adult</td>
<td>√</td>
<td></td>
<td>√ (some)</td>
</tr>
<tr>
<td>L1-Korean Child</td>
<td>√</td>
<td>√</td>
<td>√ (some)</td>
</tr>
<tr>
<td>L2-Korean Adult</td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

88 The false-belief tasks were administered in the L1, Korean.
4.3 Participants

A total of 187 participants involving 7 different population groups participated in this study, as laid out in Tables 4.3 and 4.4: L1-English adults (n = 20) and children (n = 31); L1-Korean adults (n = 20) and children (n = 29); adult (n = 30) and child (n = 18) L1-Korean L2ers of English; and adult (n = 39) L1-English L2ers of Korean. Only the Korean native children were tested in Korea; all the other participants were tested in the U.S. The L1-Korean child L2ers of English were all born in Korea, having lived there between 4 and 7 years before coming to Hawai‘i with (their siblings as well as) their parents, both of whom were Korean; in short, these children were not Heritage Korean speakers.

The participants’ relevant details are summarized in Table 4.3 for L1 participants and Table 4.4 for L2 participants. The details of each participant are presented in Appendix B.

Table 4.3. L1-English/Korean Participants’ Backgrounds

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>F:M</th>
<th>Age at Time of Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Adult</td>
<td>20</td>
<td>10:10</td>
<td>18–65 (M = 28.9)</td>
</tr>
<tr>
<td>L1-English Child</td>
<td>31</td>
<td>14:17</td>
<td>5–8 (M = 6.5)</td>
</tr>
<tr>
<td>L1-Korean Adult</td>
<td>20</td>
<td>18:2</td>
<td>21–41 (M = 28.2)</td>
</tr>
<tr>
<td>L1-Korean Child</td>
<td>29</td>
<td>16:13</td>
<td>4–8 (M = 5.2)</td>
</tr>
</tbody>
</table>

Note. F = females; M = males; M = mean

Table 4.4. L2-English/Korean Participants’ Backgrounds

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>F:M</th>
<th>Age at Time of Testing</th>
<th>Age of L2 Onset</th>
<th>Length of Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2-English Adult</td>
<td>30</td>
<td>20:10</td>
<td>18–50 (M = 28.2)</td>
<td>10–15 (M = 11.7)</td>
<td>0;2–22;0 (M = 3;8)</td>
</tr>
<tr>
<td>L2-English Child</td>
<td>18</td>
<td>11:7</td>
<td>5–10 (M = 8.5)</td>
<td>4–7 (M = 5.7)</td>
<td>0;3–4;0 (M = 2;0)</td>
</tr>
<tr>
<td>L2-Korean Adult</td>
<td>39</td>
<td>23:16</td>
<td>19–39 (M = 24.2)</td>
<td>15–33 (M = 20.0)</td>
<td>0;0–13;0 (M = 1;2)</td>
</tr>
</tbody>
</table>

Note. F = females; M = males; M = mean

For the English studies, (i) L1-English children were all recruited at the University of Hawai‘i Laboratory School; (ii) L2-English children were individually
recruited and tested in Hawai‘i; (iii) L1-English adults were all recruited at the University of Hawai‘i; and (iv) L2-English adults were also all recruited at the University of Hawai‘i. For the Korean studies, (i) L1-Korean children were all recruited at a child care center in South Korea; (ii) L1-Korean adults were all recruited and tested at the University of Hawai‘i; (iii) 13 out of 39 L2-Korean adults were recruited and tested at the University of Hawai‘i and the rest at the University of Washington.

‘Age’ is of importance for the 3 child studies in this dissertation—2 child L1 studies and 1 child L2 study. First, the child L1 studies attempt to test the causal relation between Theory of Mind (ToM) and the Given-before-New Principle, with those who have mastered ToM, i.e. [+ToM], and those who have not, i.e., [–ToM]. Recall that children come to have knowledge of ToM between 3 and 5 (De Mulder, 2011; de Villiers, 2007). I therefore targeted children between the ages of 4 and 5 for the [–ToM] group and those older than 5 for the [+ToM] group. Actual grouping into [–ToM] and [+ToM] was based on the results of the 2 false-belief tasks.

As for the child L2 study, following Schwartz (2003, 2004), in which ‘L2 child’ is defined as a child who was first exposed to the nonnative language between the ages of 4 and 7, I recruited those whose age of L2 onset is between 4 and 7.

4.4 Research questions

This thesis addresses the following research questions in the domain of L1 acquisition and in the domain of L2 acquisition. We conjecture that the mixed results of children’s (non-)compliance with the givenness constraint is due to their lack of knowledge of Theory of Mind (ToM), based on which the causal relation between knowledge of ToM and the Given-before-New Principle is tested.

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89 The L1-English children were all recruited at the University of Hawai‘i Laboratory School, where the youngest I could find were age 5. For the L1 Korean children, on the other hand, the data were collected at a child care center in Korea, where I could access 4-year-old children.

90 For initial exposure in child L2 acquisition, Schwartz (2003, 2004) sets the lower boundary at age 4 and the upper boundary at age 7. The reason for the lower-limit age is because it is widely assumed that most of the L1 grammar is in place by age 4 (Schwartz, 2004, p. 48). For the upper limit, the L2 literature on age and ultimate attainment (e.g., DeKeyser, 2000; Johnson & Newport, 1989, 1991) suggests that an L2 child who begins acquiring the target language no later than age 7 shows native-like attainment on a range of morpho-syntactic properties.
**L1 acquisition**

1. Do *L1 English-/Korean-acquiring children* who have knowledge of *ToM* show adherence to the *Given-before-New Principle*?

2. Do *L1 English-/Korean-acquiring children* who do not have knowledge of *ToM* show adherence to the *Given-before-New Principle*?

**L2 acquisition**

1. Do *L1-Korean adult L2ers of English* who (i) have knowledge of the *Given-before-New Principle* in their L1 Korean and (ii) allow both the PD and the DOD (per individual verb) show a preference for the Given–New ordering in the two variants of the English dative alternation?

2. Do *L1-English adult L2ers of Korean* who have knowledge of the *Given-before-New Principle* in their L1 English show a preference for the Given–New ordering in canonical and scrambled variants of the Korean dative construction?

3. Do *L1-Korean child L2ers of English* who (i) have mastery of *ToM*, (ii) have knowledge of the *Given-before-New Principle* in their L1 Korean, and (iii) allow both the PD and the DOD (per individual verb) show a preference for the Given–New ordering in the two variants of the English dative alternation?

4. Is there an effect of L2 proficiency on adherence to the *Given-before-New Principle*?

4.5 Main tasks

4.5.1 Oral contextualized preference tasks

4.5.1.1 English oral contextualized preference tasks

I developed an oral contextualized preference task to test participants’ ordering preference in the English dative alternation (i.e., PD vs. DOD).

**Materials**

There are 2 types of tasks, an *NP Task* and a *Pronoun Task*, in which the two object NPs involved the following factors: definiteness, givenness, animacy, and length. First, *definiteness* is controlled such that the given-referent in the NP Task uses a combination of a definite article with a lexical N (e.g., *the pie, the policeman*, etc.) and
the given-referent in the Pronoun Task uses a pronoun (e.g., *it*, *him/her*, etc.). In both tasks, the new referents are all plural indefinites formed with *some* (e.g., *some friends*, *some cookies*, etc.). Table 4.5 schematizes the combination of definiteness of the two object arguments in the NP Task and the Pronoun Task.

Table 4.5. Definiteness of Two Object NPs in the English Preference Tasks

<table>
<thead>
<tr>
<th></th>
<th>given-referent</th>
<th>new-referent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NP Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[+definite]</td>
<td>[–definite]</td>
</tr>
<tr>
<td>the + lexical N</td>
<td>the + lexical N</td>
<td>some + plural N</td>
</tr>
<tr>
<td>(e.g., <em>the pie</em>, <em>the policeman</em>)</td>
<td>(e.g., <em>some friends</em>, <em>some cookies</em>)</td>
<td></td>
</tr>
<tr>
<td><strong>Pronoun Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>proun</td>
<td>some + plural N</td>
</tr>
<tr>
<td></td>
<td>(e.g., <em>it</em>, <em>him/her</em>)</td>
<td>(e.g., <em>some friends</em>, <em>some cookies</em>)</td>
</tr>
</tbody>
</table>

Two types of referential expressions are used as the given-referents—a definite lexical NP in the NP Task and a pronoun in the Pronoun Task—for the following reason. In English, the most continuous topic is encoded by a pronoun and the least continuous topic is expressed by a [–definite] lexical NP (Givón, 1983; Gundel, 2003; Gundel et al., 1988, 1993). Therefore, the NP Task and the Pronoun Task are designed to investigate whether L2 learners and natives show (different/similar degrees of) sensitivity to givenness in accordance with the degree of topic continuity (i.e., givenness).

The experimental factor *givenness* of the two object arguments, theme and recipient, is manipulated as follows: given-theme & new-recipient (*given-theme* condition) vs. given-recipient & new-theme (*given-recipient* condition), as laid out in Table 4.6. The *given-theme* condition results in Given–New order for the PD and New–Given order for the DOD. In contrast, the *given-recipient* condition results in Given–New order for the DOD and New–Given order for the PD.
Table 4.6. Information Structure per Condition in the English Preference Tasks

<table>
<thead>
<tr>
<th>Condition</th>
<th>Construction Type</th>
<th>Information Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DOD [NP_RECIPIENT–NP_THEME]</td>
<td>New–Given</td>
</tr>
<tr>
<td><strong>given-recipient &amp; new-theme</strong></td>
<td>PD [NP_THEME–PP_RECIPIENT]</td>
<td>New–Given</td>
</tr>
<tr>
<td></td>
<td>DOD [NP_RECIPIENT–NP_THEME]</td>
<td>Given–New</td>
</tr>
</tbody>
</table>

Research has shown that comprehension can be compromised when the object NPs are both animate or both inanimate, or when an animate theme is given to an inanimate recipient (Cook, 1976; Fischer, 1971; Roeper et al., 1981; White, 1987). For this reason, I employ the prototypical relationship between theme and recipient in the event structure of datives: inanimate theme and animate recipient, as shown in Table 4.7.

Table 4.7. Animacy of Two Object NPs in the English Preference Tasks

<table>
<thead>
<tr>
<th>Condition</th>
<th>Information Structure</th>
<th>Animacy Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>given-theme &amp; new-recipient</strong></td>
<td>Given–New</td>
<td>Inanimate–Animate</td>
</tr>
<tr>
<td></td>
<td>New–Given</td>
<td>Animate–Inanimate</td>
</tr>
<tr>
<td><strong>given-recipient &amp; new-theme</strong></td>
<td>New–Given</td>
<td>Inanimate–Animate</td>
</tr>
<tr>
<td></td>
<td><strong>Given–New</strong></td>
<td>Animate–Inanimate</td>
</tr>
</tbody>
</table>

In order to factor out the correlation between givenness and syntactic weight, the syntactic weight (i.e., number of words) between the direct object and indirect object was controlled for, such that the relative length of the two is between 0 and 1, as shown in Table 4.8. In the NP Task, the length of the given referent (e.g., *the pie, the teacher*) and the new referent (*some friends, some letters*) is the same; in the Pronoun Task, the given referent, which is expressed by a pronoun (e.g., *it, him*), has one word less than the new referent (e.g., *some friends, some pies*).
Table 4.8. Relative Length in Words of Two Object NPs in the English Preference Tasks

<table>
<thead>
<tr>
<th>NP Task</th>
<th>direct object length − indirect object length = 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronoun Task</td>
<td>direct object length − indirect object length = −1</td>
</tr>
</tbody>
</table>

Arnold et al. (2000), in their dative-alternation corpus study, categorized relative length (syntactic weight) of the two object NPs into three categories: (i) theme > recipient, (ii) theme = recipient, and (iii) theme < recipient.\(^{91}\) When the difference in length ranges between −1 and 1, it is considered to be category (ii). Based on these coding criteria, the length of the two object NPs in the English preference tasks is equal (theme = recipient).

Finally, as seen in Table 4.9, the number of mentions that the given referent has in the context preceding the test sentences in the NP Task ranges between 5 and 10 in the given-theme condition and between 3 and 10 in the given-recipient condition; the average frequency of the given referent is 6.7 in the given-theme condition and 5.7 in the given-recipient condition. In the Pronoun Task, the frequency range is between 3 and 6 in the given-theme condition and between 2 and 7 in the given-recipient condition; the average frequency is 4.8 in the given-theme condition and 3.5 in the given-recipient condition. Overall, frequency of the given referent is slightly higher in the given-theme condition than in the given-recipient condition in both the NP Task and the Pronoun Task.

Table 4.9. Number of Mentions of the Given Referents in Each English Preference Task

<table>
<thead>
<tr>
<th></th>
<th>NP Task</th>
<th>Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>given-theme</strong> &amp; new-recipient</td>
<td>5–10 ($M = 6.7$)</td>
<td>3–6 ($M = 4.8$)</td>
</tr>
<tr>
<td><strong>given-recipient</strong> &amp; new-theme</td>
<td>3–10 ($M = 5.7$)</td>
<td>2–7 ($M = 3.5$)</td>
</tr>
</tbody>
</table>

Six alternating *to*-dative verbs are used in the test sentences: *bring*, *give*, *mail*, *sell*, *send*, *show*. These verbs were selected for the following two reasons: First, they are common verbs; second, there is no semantic difference between the PD and the DOD (cf. *teach*, *throw*, etc.). Each verb is utilized in the given-theme condition and in the

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\(^{91}\) Specifically, (i) theme > recipient (theme-NP length − recipient-NP length = 2 or more); (ii) theme = recipient (theme-NP length − recipient-NP length = between −1 and 1); and (iii) theme < recipient (theme-NP length − recipient-NP length = −2 or less)
given-recipient condition, totaling 12 test items (6 tokens × 2 conditions). In addition, there are 12 filler items designed to obscure the phenomenon under investigation: the NP Task includes *it*-that clefts vs. non-clefts and adverb preposing vs. postposing; the Pronoun Task includes *it*-that clefts vs. non-clefts and grammatical vs. ungrammatical phrasal verbs (e.g., *listen to NP vs. listen NP, look for NP vs. *look NP, etc.). The reason that half of the fillers are ungrammatical in the Pronoun Task is because the DOD construction is ungrammatical when the theme is a pronoun (e.g., *Mary showed some friends it). For each item in the preference tasks, a minimal PD–DOD pair is provided (see (1)). In half the minimal pairs, the PD is presented first; in the other half, the DOD comes first. Items are randomized for each participant.

As illustrated in the sample items in (1a/2a), when the theme (the pie/them) is the given referent, the PD has Given–New order (John brought the pie to some friends/Mary gave them to some girls), and the DOD has the reverse order (John brought some friends the pie/*Mary gave some girls them). In (1b/2b), on the other hand, when the recipient (the teacher/him) is the given referent, it is the DOD that has the Given–New order (John sent the teacher some letters/Mary sold him some toys) and the PD has the reverse order (John sent some letters to the teacher/Mary sold some toys to him). Note that when the pronominal theme occurs in the second NP position as in (2aii), the sentence becomes illicit. All experimental items per task, including the practice items, are provided in Appendices C and D.
(1) A sample set of stimuli in the English NP Task

a. **given-theme & new-recipient**
   
   John came home. When he entered the kitchen, he was happy to find **two huge apple pies** on the table. They were still warm and looked very delicious. Just then his mom came home. John asked, “Mom, what will we do with the **two pies**?” His mom said, “We will eat one and give away the **other**.” John knew what to do with the **extra pie**.

   (i) John brought **the pie** to some friends. [**Given–New**] PD
   (ii) John brought some friends **the pie**. [**New–Given**] DOD

b. **given-recipient & new-theme**
   
   John liked **his English teacher**. He liked **her** voice and the way **she** explained everything to him. **She** helped him have a good time in **her** class so he never got bored. **She** was always kind and nice to him. So when **she** left for another school, he was very sad. He missed **her** very much.

   (i) John sent some letters to **the teacher**. [**New–Given**] PD
   (ii) John sent **the teacher** some letters. [**Given–New**] DOD
(2) A sample set of stimuli in the English Pronoun Task

a. **given-theme** & **new-recipient**

Christmas was coming. Mary knitted **five sweaters** in all different colors. The sweaters had pretty yellow buttons and two big pockets. The sweaters also had a cute, pink bunny design on the front. She put the sweaters in pretty boxes with cards. Now the sweaters were ready for Christmas.

(i) Mary gave them to some girls. **[Given–New] PD**
(ii) *Mary gave some girls them.* **[New–Given] DOD**

b. **given-recipient** & **new-theme**

Mary’s family is going to move. Last weekend, they had a big moving sale. Mary was helping her parents with the sale. Just then a little boy walked into the yard. He was eating a strawberry ice cream. Mary let him look around for a while. Finally, the boy was ready to pay.

(i) Mary sold some toys to him. **[New–Given] PD**
(ii) Mary sold him some toys. **[Given–New] DOD**

**Procedure**

The instructions as well as the stimuli are presented using PowerPoint. While the participant listens, the pictures come up on the laptop screen. The narrator explains how to perform the task and introduces two teddy bears: *Bobo*, recorded by a male native speaker of English, and *Kayu*, recorded by a female native speaker of English.
Hello, we’re going to play a game called “Which way is the better way to say things in English?” Here’s how to play the game. Let me introduce our friends Bobo and Kayu. This is Bobo <picture of Bobo>. This is Kayu <picture of Kayu>. First, you will hear a story. But, how does the story end? Bobo and Kayu know how the story ends! Bobo and Kayu will say the ending in two different ways. Let me know which one you think is the better way to say things in English, Bobo’s way or Kayu’s way. We will play this game with different stories and pictures. We hope you’ll like it. Are you ready? Then let’s practice first.

After the instructions, the participant is given 3 (non-dative) practice items. Next, the main task session begins. First, the recorded context is played, accompanied by illustrations, which is followed by the narrator’s recorded question, “Hey, Bobo and Kayu, do you know what happened next?” Then one character (e.g., Bobo) shows up on the screen and utters one version of the dative sentence (e.g., PD), immediately followed by the other character uttering the other version of the sentence (e.g., DOD). The oral context and the test sentences are presented as many times as the participant wants. L1 and L2 adults did this for themselves by pressing directional keys on the keyboard while L1 and L2 children had the experimenter do this for them. L1 adults generally listened to the test sentences once. L1 children, L2 adults, and L2 children sometimes listened to the test sentences twice, only rarely three times and never more than that. Immediately after the two test sentences, the participant is asked, via the narrator’s audio recording, “Which one is the better way to say it?”, and his/her response is recorded in a written format by the experimenter.

The same procedure was used for both preference tasks except that in the English Pronoun Task, the instructions clearly forewarn that some ungrammatical sentences may be included, as presented in (4).
Hello, we’re going to play a game. Here’s how to play the game. Let me introduce our friends Bobo and Kayu. This is Bobo <picture of Bobo>. This is Kayu <picture of Kayu>. First, you’ll hear a story. But how does the story end? Our friends Bobo and Kayu know the ending. They will say the ending the right way or the wrong way. One of them may be the right way and the other may sound funny. Or sometimes they may both sound right. Please let me know which one you think is the better way to say it in English, Bobo’s way or Kayu’s way. We will play this game with different stories and pictures. We hope you’ll like it. Are you ready? Then let’s practice first.

The NP Task and the Pronoun Task were administered separately: For L1 and L2 adults, on the same day; for L1 and L2 children, on different days. Some participants had the NP Task first, others the Pronoun Task.

4.5.1.2 Korean oral contextualized preference tasks

The Korean oral contextualized preference tasks are basically the translation of the English counterparts.

Materials

For Korean, there are also an NP Task and a Pronoun Task, for the following reason. When overtly realized, the most continuous topic is encoded by a pronoun and the least continuous topic is encoded by a lexical NP (Hwang, 1983 specifically for Korean). Therefore, the Korean preference tasks used two types of referential expressions—a lexical NP and a pronoun—to investigate whether L1 speakers and L2ers of Korean would show (different/similar degrees of) sensitivity to givenness between the NP Task and the Pronoun Task.

The Korean preference task is the same as the English version, except for the following properties. As the given-referent, the NP Task uses a combination of a demonstrative ku ‘that’ with a lexical N (e.g., ku phai ‘that pie,’ ku sensayngnim ‘that teacher,’ etc.) and the Pronoun Task uses three kinds of compound-type pronouns, which were made by combining a demonstrative ku ‘that’ with a morpheme or a noun (e.g.,
In both tasks, the new referents are all indefinite NPs with the plural marker -tul (e.g., chinkwutul ‘friends,’ chayktul ‘books,’ etc.). Table 4.10 illustrates the combination of definiteness of the two object arguments in the NP Task and the Pronoun Task.

Table 4.10. Definiteness of Two Object NPs in the Korean Preference Tasks

<table>
<thead>
<tr>
<th></th>
<th>given-referent</th>
<th>new-referent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[+definite]</td>
<td>–definite]</td>
</tr>
<tr>
<td><strong>NP Task</strong></td>
<td>that + lexical N</td>
<td>plural N</td>
</tr>
<tr>
<td></td>
<td>(e.g., ku phai ‘that pie,’</td>
<td>(e.g., chinkwutul ‘friends,’</td>
</tr>
<tr>
<td></td>
<td>ku sensayngnim ‘that teacher’)</td>
<td>chayktul ‘books’)</td>
</tr>
<tr>
<td><strong>Pronoun Task</strong></td>
<td>compound-type pronoun</td>
<td>plural N</td>
</tr>
<tr>
<td></td>
<td>(e.g., kukes ‘it,’</td>
<td>(e.g., chinkwutul ‘friends,’</td>
</tr>
<tr>
<td></td>
<td>kupwun ‘him/her (honorific),’</td>
<td>chayktul ‘books)</td>
</tr>
<tr>
<td></td>
<td>kuay ‘him/her’)</td>
<td></td>
</tr>
</tbody>
</table>

Givenness was manipulated in the same way as in the English version of the tasks: **given-recipient & new-theme vs. given-theme & new-recipient.** As laid out in Table 4.11, the given-recipient condition results in **Given–New** for the canonical order and **New–Given** for the scrambled order. In contrast, the given-theme condition results in **Given–New** for the scrambled order and **New–Given** for the canonical order.

---

92 Sohn (1994) claims that “pure third person pronouns are not available, but demonstrative-noun compounds” are (p. 221). The demonstrative-noun compounds are formed by combining a demonstrative ku ‘that’ with a noun (e.g., ku kes ‘that thing,’ ku ay ‘that child (he/him/she/her),’ ku salam ‘adult-familiar (he/him/she/her),’ ku i ‘adult-blunt (he/him/she/her),’ and ku pwun ‘adult-polite (he/him/she/her)’) (Sohn, 1999, p. 207). According to Lee (1970), the third person pronoun ku ‘he/him’ initially began to be used due to the influence from a Western literary genre, the novel, some of which are written from a third-person’s point of view (cited in Cho, 1989, p. 255). As a result, ku ‘he/him’ and kunye ‘she/her’ are often used in literary works, but not so much in a colloquial language.
Table 4.11. Information Structure per Condition in the Korean Preference Tasks

<table>
<thead>
<tr>
<th>Condition</th>
<th>Construction Type</th>
<th>Information Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>given-recipient &amp; new-theme</td>
<td>canonical</td>
<td>[IO_{RECIPIENT}–DO_{THEME}] Given–New</td>
</tr>
<tr>
<td></td>
<td>scrambled</td>
<td>[DO_{THEME}–IO_{RECIPIENT}] New–Given</td>
</tr>
<tr>
<td>given-theme &amp; new-recipient</td>
<td>canonical</td>
<td>[IO_{RECIPIENT}–DO_{THEME}] New–Given</td>
</tr>
<tr>
<td></td>
<td>scrambled</td>
<td>[DO_{THEME}–IO_{RECIPIENT}] Given–New</td>
</tr>
</tbody>
</table>

Following Choi (2009), the relative length of the two object NPs was calculated based on “syllables” of the object arguments excluding the 2-syllable dative marker (i.e., -ey-key) and the 1-syllable accusative marker (i.e., -ul/-ul-ul). Choi’s coding scheme regarded a difference between −2 and 2 syllables as falling into the category of “no difference.” In the Korean preference task, the relative length between the direct object and the indirect object ranges between −2 and 1 in the NP Task and between −1 and 1 in the Pronoun Task, as presented in Table 4.12. Therefore, we contend that both of our Korean preference tasks do not involve a length difference between the two object arguments.

Table 4.12. Relative Length in Syllables of Two Object NPs in the Korean Preference Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>direct object length – indirect object length</th>
<th>range</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP Task</td>
<td>direct object length – indirect object length</td>
<td>between −2 and 1</td>
</tr>
<tr>
<td>Pronoun Task</td>
<td>direct object length – indirect object length</td>
<td>between −1 and 1</td>
</tr>
</tbody>
</table>

Finally, as presented in Table 4.13, the number of mentions that the given referent has in the preceding context in the NP Task ranges between 2 and 5 in the given-recipient condition and between 3 and 6 in the given-theme condition; the average frequency of the given referent is 3.3 in the given-recipient condition and 4.3 in the given-theme condition. In the Pronoun Task, the frequency range is between 2 and 4 in the given-recipient condition and between 3 and 6 in the given-theme condition, and the average frequency is 3 in the given-recipient condition and 4.3 in the given-theme condition.
Table 4.13. Number of Mentions of the Given Referents in Each Korean Preference Task

<table>
<thead>
<tr>
<th></th>
<th>NP Task</th>
<th>Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>given-recipient</strong> &amp;</td>
<td>2–5 (M = 3.3)</td>
<td>2–4 (M = 3.0)</td>
</tr>
<tr>
<td><strong>new-theme</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>given-theme</strong> &amp;</td>
<td>3–6 (M = 4.3)</td>
<td>3–6 (M = 4.3)</td>
</tr>
<tr>
<td><strong>new-recipient</strong></td>
<td></td>
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</tr>
</tbody>
</table>

The 6 English alternating to-dative verbs were translated into Korean: cwuta ‘give,’ kacyetacwuta ‘bring,’ palta ‘sell,’ ponayta ‘send,’ poyecwuta ‘show,’ and puchita ‘mail.’ As for fillers, the NP Task includes it-that clefts vs. non-clefts and adverb preposing vs. non-preposing; the Pronoun Task consists of it-that clefts vs. non-clefts and null subjects vs. overt subjects). In contrast to the English Pronoun Task where the DOD with a pronominal theme is ungrammatical (e.g., *Mary gave some friends them), in the Korean Pronoun Task, both the canonical and scrambled orders are grammatical, as in (6) below, and thus all fillers were also grammatical.

As seen in the sample items in (5a)/(6a), when the recipient referents (ku sensayngnim ‘that teacher’ and kuay ‘him’) are given, the canonical order has the Given–New order, and the scrambled order has the New–Given order. In (5b)/(6b), by contrast, when the theme referents (ku phai ‘that pie’ and kuketul ‘them’) are given, it is the scrambled order that has the Given–New order.

All experimental items per task, including the practice items, are provided in Appendices E and F.
(5) A sample set of stimuli in the Korean NP Task

a. **given-recipient & new-theme**

철수는 영어 선생님을 아주 좋아했어요. 선생님은 아름다운 목소리로 아주 쉽게 설명을 했기 때문에 철수는 영어 수업이 전혀 지루하지 않았어요.

선생님은 항상 친절했어요. 그래서 선생님이 다른 학교로 떠났을 때, 철수는 슬펐어요. 철수는 선생님이 너무 보고 싶었어요.

[Chelswu liked *(his) English teacher* very much. *(The) teacher* explained things in a way that is very easy to understand in a beautiful voice, so Chelswu never got bored in English class. *(The) teacher* was always kind *(to him)*. So when *(the) teacher* left for another school, Chelswu was sad. Chelswu missed *(the) teacher* very much.]

(i)  

**[Given IO–New DO]**

Chelswu-nun **ku sensayngnim-eykey** phyencitul-ul ponaysseyo.
Chelswu-Top **that teacher-Dat** letters-Acc sent

‘Chelswu sent the teacher letters.’

(ii)  

**[New DO–Given IO]**

Chelswu-nun phyencitul-ul **ku sensayngnim-eykey** ponaysseyo.
Chelswu-Top letters-Acc **that teacher-Dat** sent

‘Chelswu sent letters to the teacher.’

Chelswu played and came back home. When Chelswu entered (the) kitchen, there were two apple pies looking delicious on (the) table. Chelswu asked (his) mom, “Mom, why did you bake two pies?” (His) mom answered, “We will eat one and give away the other.” Chelswu knew what to do with the extra pie.

(i) [New IO–Given DO]

Chelswu-nun chinkwutul-eykey ku phai-lul kacyetacwuesseyo. Chelswu-Top friends-Dat that pie-Acc brought

‘Chelswu brought friends the pie.’

(ii) [Given DO–New IO]

Chelswu-nun ku phai-lul chinkwutul-eykey kacyetacwuesseyo. Chelswu-Top that pie-Acc friends-Dat brought

‘Chelswu brought the pie to friends.’
A sample set of stimuli in the Korean Pronoun Task

a. **given-recipient** & new-theme

Yenghuy’s family was going to move. Yenghuy’s parents decided to sell unwanted items. Yenghuy was helping (her) parents with the sale. Just then a boy walked into the yard. The boy was eating a strawberry ice cream and looked at (the) items for a while. Finally, the boy walked up to Yenghuy to pay.

(i) **[Given IO–New DO]**

Yenghuy-nun kuay-eykey cangnamkamtul-ul palasseyo.
Yenghuy-Top him-Dat toys-Acc sold

‘Yenghuy sold him toys.’

(ii) **[New DO–Given IO]**

Yenghuy-nun cangnamkamtul-ul kuay-eykey palasseyo.
Yenghuy-Top toys-Acc him-Dat sold

‘Yenghuy sold toys to him.’
b. **given-theme & new-recipient**

Christmas was coming. Yenghuy knitted **five sweaters** in all different colors. (Yenghuy) put on yellow buttons and a pink bunny design on the front of **(the) sweater**. Yenghuy put **(the) finished sweaters** in pretty boxes with cards. Now Yenghuy is ready for Christmas.

(i) [New IO–Given DO]

Yenghuy-nun chinkwutul-eykey **kukestul-ul** cwuesseyo.

Yenghuy-Top friends-Dat **them-Acc** gave

‘Yenghuy gave friends them.’

(ii) [Given DO–New IO]

Yenghuy-nun **kukestul-ul** chinkwutul-eykey cwuesseyo.

Yenghuy-Top **them-Acc** friends-Dat gave

‘Yenghuy gave them to friends.’

### 4.5.2 Acceptability judgment task

In order to test L2 adherence to the *Given-before-New Principle* in the English dative alternation, one first needs to ascertain whether L2 learners in fact allow both the PD and the DOD for those alternating dative verbs used to test such adherence (Park & Schwartz, 2012). Therefore, as a prerequisite to the oral contextualized preference tasks, I developed an oral contextualized AJT targeting the alternating verbs used in the oral contextualized preference task. The task was inspired by Whong-Barr and Schwartz’s (2002) oral grammaticality judgment task, which followed McDaniel and Cairns (1990, 1996). However, the present task introduces the following major difference in method. The stimuli are not acted out with props; instead, the stimuli as well as instructions are all
recorded by native English speakers and presented aurally accompanied by pictures on a computer screen via PowerPoint.

Materials

The task includes the same 6 verbs that are used in the English oral contextualized preference tasks, namely, the alternating dative verbs bring, give, mail, sell, send, and show. Each verb appears in the PD in one test sentence and the DOD in the other. In addition, there are 18 verbs for fillers, consisting of 6 non-alternating dative verbs, 6 locative verbs (3 alternating and 3 non-alternating), and 6 unaccusative verbs (3 alternating and 3 non-alternating), totaling 48 experimental items. Items are randomized.

The stimuli comprise a short dialogue between two characters, Pig and Monkey, and a minimal pair of test sentences using the targeted dative verbs, one in the PD and the other in the DOD, as illustrated in (7). All the experimental items, including the practice items, are provided in Appendix G.

(7) Sample set of stimuli in the English AJT

Pig: How was your trip to Disneyland last summer?

Monkey: It was fantastic! I took a lot of pictures.

a. Monkey showed the pictures to Pig. \textit{PD}

Is this the right way to say it, or does it sound funny?

b. Monkey showed Pig the pictures. \textit{DOD}

Is this the right way to say it, or does it sound funny?

Procedure

The task is presented on a computer monitor via PowerPoint. First, the recorded instructions by a native English speaker explain how to perform the task and introduce 4 characters, Pig and Monkey, as illustrated in (8), who engage in the short conversation, as well as Bobo and Kayu, who present the test sentences. Monkey and Bobo are recorded by
two different male native speakers, and *Pig* and *Kayu* are recorded by two different female native speakers.  

(8) Hello! We are going to play a quiz game called “Is this the right way to say things in English?” Let me explain how to play the game. Here are two friends, Pig and Monkey. This is Pig <picture of Pig>. This is Monkey <picture of Monkey>. First, you will hear a conversation between Pig and Monkey. Then their friends Bobo and Kayu will show up. This is Bobo <picture of Bobo>. This is Kayu <picture of Kayu>. Bobo and Kayu know what happened next. They will say things the right way or the wrong way. There will always be two sentences. One may be the right way and the other may sound funny. Or sometimes they may both sound right. Or they may both sound funny. Please let us know whether you think what Bobo and Kayu say is the right way, or sounds funny. We hope you will like this game. Are you ready? Then let’s practice first!

After the instructions, the participant is given 3 (non-dative) practice items. During the practice session, the experimenter guides the participant by giving additional instructions upon request and answers the participant’s questions. Finally, the main task session begins. First, the conversation between Monkey and Pig is presented, which is followed by the narrator’s question, “Hey, Bobo and Kayu, do you know what happened next?” Then *Bobo* and *Kayu*, the same characters that are used in the oral contextualized preference task, appear and utter the test sentence using two different dative constructions, one using the PD and the other using the DOD. Each test sentence is immediately followed by a question, “Is this the right way to say it, or does it sound funny?” The participant’s response for each test sentence is recorded in a written format by the experimenter.

The AJT was always preceded by the oral contextualized preference tasks: For adults, the two types of tasks were administered on the same day; for L2 children, on different days.

93 Bobo and Kayu in the AJT are the same as in the preference tasks: Bobo and Kayu are both physically constant and voice (male vs. female) constant.
4.6 False-belief tasks

In the literature on ToM, there are two widely used assessment procedures, one the “unexpected location/transfer task” developed by Wimmer and Perner (1983) and the other the “unexpected contents task” developed by Hogrefe, Wimmer, and Perner (1986). The belief in question in the former task, also known as the “Sally-Anne task,” has to do with the location of an object (e.g., a marble, a ball) that is known to the child participant but not to a story character (Sally). The child participant is asked to judge Sally’s belief. In contrast, the latter task, called the “Smarties task,” asks a question about someone else’s belief that concerns the contents of a container (e.g., a Smarties tube).

I adopted both false-belief tasks to examine children’s mastery of ToM. The 2 tasks are administered to all the children in their native language.

The two following sections (§4.6.1 and §4.6.2) introduce the materials and procedures of the Sally-Anne task and the Smarties task, respectively.

4.6.1 The Sally-Anne task

In the classic Sally-Anne task, a child is presented with the following scenario, accompanied by the Sally-Anne pictures in Figure 4.1 or by toy props: First, the experimenter tells the child which character is Sally and which is Anne. Sally places her marble in a basket and then goes out for a walk. While she is gone, Anne takes the marble out of the basket and hides it inside a box. And then, she also goes out. When Sally comes back, she wants to play with her marble. Finally, the child is asked a belief question: “Where will Sally look for her marble?”
This is Sally. Sally has a basket. This is Anne. Anne has a box.

Sally has a marble. She puts the marble into her basket.

Sally goes out for a walk.

Anne takes the marble out of the basket and puts it into the box.

Now Sally comes back. She wants to play with her marble. Where will Sally look for her marble?

Figure 4.1. Pictures Used in the Classic Sally-Anne Task (Frith, 1989, p. 160)

In the present study, the Sally-Anne story is recorded by a native speaker (of the participant’s L1) and aurally presented with slightly modified pictures on a computer screen via PowerPoint. As presented in Figure 4.2, there are a total of 8 scenes. In the final scene, the same critical belief question is asked. The response “inside the basket” is classified as passing the Sally-Anne task, and “inside the box” as failing the task.
This is Sally. Sally has a basket.

This is Anne. Anne has a box.  
(Anne with her box appears on the computer screen.)

Sally also has a marble. 
(The marble in Sally’s hand appears.)

Sally puts the marble into her basket.

Then she goes out for a walk.

Anne takes the marble out of Sally’s basket and puts it into her box. Then she goes outside.

Sally comes back and wants to play with her marble.

Where will Sally look for her marble?

Figure 4.2. Pictures of Sally-Anne Task Slightly Modified with English Narration in the Present Study
4.6.2 The Smarties task

For a container well-known to children, I chose an M&Ms tube for native English American children and a popular Korean snack box (e.g., a Kancho box, a Pepero box) for native Korean children. I ensured that each child clearly knew the container by asking him or her before the test.

Figure 4.3 illustrates an example of how the Smarties task works.

First, the experimenter shows the child a candy box—e.g., an M&Ms tube—containing something that is unexpected—a pen or a pencil—and asks, “What’s in here?” The child’s answer is usually the contents that the container typically holds, “candy” or “M&Ms.” Then the child is shown the real contents inside the container, i.e., the pen/pencil, and is told the following story: “Your friend [John] is going to come in now. He hasn’t seen this tube before. When [John] comes in, I’ll show him this tube just like this and ask: ‘What’s in here? Then, what will [John] say?’” The response “candy” or “M&Ms” is classified as passing the Smarties task, and “a pen/pencil” as failing the task.
4.7 Summary of the chapter

In addition to presenting the research questions of the present study, this chapter laid out the materials and procedures of the tasks that are included to investigate them: (i) the English preference tasks (§4.5.1.1); (ii) the Korean preference tasks (§4.5.1.2); (iii) the English AJT (§4.5.2); and (iv) the false-belief tasks (§4.6). The rationale, methods, and results of the picture-narration task, which is the measurement of L2 proficiency, will be detailed in the next chapter (Chapter 5).
CHAPTER 5.
MEASURING L2 PROFICIENCY

5.1 Introduction

This thesis investigates the Given-before-New Principle with respect to English and Korean dative word-order alternations in developing L1ers and L2ers. A cross-sectional study in L2 research of this kind needs the measurement of participants’ L2 proficiency, on the basis of which comparisons can be made within a group and between groups regarding their knowledge of a given phenomenon. The present study involves 3 L2 groups: L2-English adults, L2-English children, and L2-Korean adults. The measurement of L2 proficiency allows us to make comparisons among different levels of L2 proficiency within the same population group, as well as between L2-English adults and L2-English children at approximately the same proficiency level. This chapter is primarily concerned with the operationalization, measurements, and computation of L2 proficiency, for which this chapter is greatly indebted to Unsworth (2005, 2008).

Following Unsworth (2005), in which the construct of L2 proficiency is operationalized as “the ability to produce lexically, morphologically and syntactically complex and accurate utterances in the target language (TL)” (p. 153), the present study analyzes participants’ utterances with respect to complexity and accuracy in terms of morpho-syntax and the lexicon. That is, an L2 proficiency score is computed based on three component parts measuring (i) morpho-syntactic complexity, (ii) lexical complexity, and (iii) morpho-syntactic and lexical accuracy. Phonology is not considered.

The chapter is organized as follows. The next section (§5.2) introduces the picture-narration task used to collect elicited-production data, which are transcribed and analyzed so as to measure L2 proficiency in this study. In Section 5.3, I briefly operationalize L2 proficiency. Section 5.4 provides a critical overview of a variety of analysis units (§5.4.1) and metrics of morpho-syntactic complexity (§5.4.2) and lexical density (§5.4.3) in (L1 and) L2 acquisition research, each followed by the motivation for the particular measure used in the current study and the results of that measure. Section 5.5 lays out detailed criteria for error-free utterances, §5.5.1 for L2 English and §5.5.2 for L2 Korean, and then reports the accuracy results (§5.5.3). Section 5.6 explains the
process of computation of L2 proficiency in the present study, and the next section (§ 5.7) summarizes the results of grouping. Finally, Section 5.8 summarizes the chapter.

5.2 Picture-narration task

In choosing a task for the measurement of proficiency, foremost consideration was given to task complexity and length of time in completing the task. Given that the current study includes child L2ers aged between 5 and 10, some of whom do not read and write, a task involving reading and/or writing was ruled out. Second, adult L2ers take part in 2 (L2-Korean) or 3 (L2-English) main experiments—oral contextualized preference tasks and the AJT—and child L2ers complete 2 false-belief tasks as well as 5 main experiments—2 versions of the oral contextualized preference tasks, in L1-Korean and in L2-English, and the AJT; the task for proficiency could therefore not take longer than 10 minutes. With these practical considerations in mind, I decided to use an easy, simple picture-narration task, following Whong-Barr and Schwartz (2002) and Song and Schwartz (2009).

I slightly modified the pictures used in Song and Schwartz (2009) such that it is clearer to identify the characters and actions. The task consists of 3 sets of 4 pictures that depict events in sequential order. Clearly sequenced pictures provide a series of scenes consisting of everyday activities that fit together to create simple stories—i.e., a morning routine, fighting between friends, and nighttime parenting (i.e., getting a baby to sleep alone). Focusing on each scene, participants tell the story step by step while following the sequence presented in the pictures. As a result, the elicited-production data included very few elliptical or fragmentary segments.

L2ers were shown the pictures on a laptop computer via PowerPoint and asked to tell a story in their L2 about what they saw. The numbered pictures, as in Figure 5.1, were presented one at a time for each story. As a control, some L1 adults and L1 children participated in the picture-narration task (see Table 5.1). Utterances were recorded using either a digital audio recorder (e.g., Zoom H2 portable stereo recorder) or the audio editing application Audacity downloaded on the experimenter’s laptop computer. It took about 5 to 10 minutes for each participant to complete the task.
The recorded oral data were transcribed in a Word document format, and then exported into a txt file to be converted to CHAT transcription format using the CLAN (Computerized Language Analysis) program of CHILDES (MacWhinney, 2000). Each
recording was transcribed 3 times by 3 transcribers in each language—2 native-speaker student assistants and me. The 3 transcriptions were cross-checked with each other, and when there was disagreement, I either made decisions based on the transcriptions and the oral data or checked it with the 2 transcribers to reach an agreement. For the L1 data, disagreement did not occur almost at all; for the L2 data, it occurred very few times—e.g., murmuring and morphemes, such as past tense morphemes (brush vs. brushed), plural morphemes (breakfast vs. breakfasts), (in)definite articles, etc., which were caused mainly due to L2ers’ phonetic problems (e.g., teeth vs. teething). Table 5.1 summarizes the number of (i) participants in the main tasks (the oral contextualized preference tasks and the English AJT), (ii) transcripts of the picture-narration task, and (iii) transcribers.

<table>
<thead>
<tr>
<th>Group</th>
<th>Participants</th>
<th>Transcripts</th>
<th>Transcribers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Children</td>
<td>31</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>L1 Adults</td>
<td>20</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>L2 Children</td>
<td>18</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>L2 Adults</td>
<td>30</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td><strong>Korean Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Adults</td>
<td>20</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>L2 Adults</td>
<td>39</td>
<td>39</td>
<td>3</td>
</tr>
</tbody>
</table>

5.3 Operationalization of L2 proficiency

As already mentioned, the present study, following Unsworth (2005), operationalizes L2 proficiency as “the ability to produce lexically, morphologically and syntactically complex and accurate utterances in the target language (TL)” (p. 153). Elicited spontaneous speech data collected via the picture-narration task are analyzed based on three measures, (i) morpho-syntactic complexity, (ii) lexical complexity, and (iii) morpho-syntactic and lexical accuracy. It is assumed that each variable, to the same degree, contributes to the measurement of the construct of L2 proficiency, as illustrated in Figure 5.2.
5.4 Complexity measures in L2 acquisition

Complexity, together with accuracy and fluency (CAF), has commonly been used to measure learners’ performance on tasks in L2 acquisition (e.g., Chaudron & Parker, 1990; Foster & Skehan, 1996; Larsen-Freeman, 2006; Larsen-Freeman & Long, 1991; Robinson, 2007; Skehan & Foster, 1997; Song & Schwartz, 2009; Spoelman & Verspoor, 2010; Unsworth, 2005; Whong-Barr & Schwartz, 2002; Wolfe-Quintero, Inagaki, & Kim, 1998; Yuan & Ellis, 2003, among many others). Accuracy is discussed in §5.5 and fluency is beyond the scope of this study. Complexity involves two linguistic components, morpho-syntax and the lexicon. In what follows, various metrics of complexity with respect to each component are examined and the particular metrics to be used for morpho-syntactic complexity and lexical diversity in the current study are motivated.

5.4.1 Basis unit for measurement

There are various basic units of analysis in L2 research, such as utterance, clause, minimal terminal unit (T-unit), communication unit (c-unit), and Analysis of Speech unit (AS-unit). In the selection of an analysis unit, one has to consider the type of data (e.g., spoken vs. written) under investigation and the general levels of proficiency of the L2ers from whom the data are collected. This section evaluates T-unit, c-unit, and AS-unit in
turn, which are all commonly applied to the assessment of L2 development, and then provides a rationale for the selected analysis unit for the current study.

5.4.1.1 Types of basis units

First, T-unit is defined as “one main clause plus whatever subordinate clauses happen to be attached or embedded within it” (Hunt, 1965, p. 735). Although originally devised for L1 children’s writing, the T-unit has been popularly used for both spoken data and written texts in L2 research (e.g., Chaudron & Parker, 1990; Larsen-Freeman, 1978a, b, 1983; Larsen-Freeman & Strom, 1977; Scott & Tucker, 1974; Song & Schwartz, 2009; Unsworth, 2005). Norris and Ortega (2009) claim that the T-unit is appropriate for written data produced by intermediate and advanced L2ers because they are likely to contain full clauses and sentences, as exemplified in a sample of written data with T-unit boundaries (marked by an upright double slash ||), illustrated in (1).

(1) There are many different contributions between artists and scientists to society. || First artists contribute to society for entertainment. || Many people need it for relax after hard work. || Artists contribute to society as film artists, singers and so on. || Furthermore artists contribute to society with make new-work fields which are related to kind of activity. ||

(Schneider & Connor, 1990, p. 415)

In an attempt to capture the elliptical nature of spoken data, the c-unit was proposed by Loban (1966):

grammatical independent predication(s) or … answers to questions which lack only the repetition of the question elements to satisfy the criterion of independent predication… “Yes” can be admitted as a whole unit of communication when it is an answer to a question such as “Have you ever been sick?” (pp. 5–6).

94 Hunt (1970) rephrased the definition of T-unit as “one main clause plus whatever subordinate clause and nonclausal expressions are attached to or embedded within it” [emphasis mine] (p. 14).
Chaudron (1988) provided another definition of c-unit: “an independent grammatical predication, the same as a T-unit except that in oral language elliptical answers to questions also constitute predication” (p. 445). For example, in the question–answer pair in (2), in which the answer on the table is not accompanied by a verb yet it has a communicative value, it is considered as a c-unit.

(2) Q: Where’s my hat?
   A: On the table.

   (Crooks, 1990, p. 184)

As a c-unit includes both a grammatical predication within a speaker’s turn and an answer, which could be either grammatical or ungrammatical, to an interlocutor’s questions, it is more suitable for oral or dialogic data elicited in low-proficiency learners, which may involve low formality and contain many nonsyntactic segments. However, as Foster, Tonkyn, and Wigglesworth (2000) pointed out, it is difficult to apply the c-unit to the segmentation of oral data because there is no available published sample of segmentation into c-units of an extended oral text.

Finally, the AS-unit was devised by Foster et al. (2000) as an improved alternative for oral discourse segmentation. The AS-unit is defined as “a single speaker’s utterance consisting of an independent clause or sub-clausal unit, together with any subordinate clause(s) associated with it” (p. 365). The AS-unit is appropriate for highly interactional data that include many nonsyntactic segments, as in the sample text segmented into AS-units (marked by an upright single slash | ) in (3).
(3) A: \{ which which \} what is your opinion? \\
B: \{ maybe \} \{ er \} \{ he \}^{95} \\
A: \{ long time? \} \\
\{ or it’s for \} for you it’s a major mistake or a small mistake? \\
B: \{ maybe three months \} \\
A: \{ three month for this one \} \\
\{ okay \} \\
\{ for me it’s ten \} \\
B: \{ ten? \} \\
A: \{ ten years \} \\
B: \{ yeah \} \\
\{ ten years \} \\
\{ oh very long \} \\

(Foster et al., 2000, p. 370, (48))

5.4.1.2 T-unit as the basis unit for the present study

Although the type of data in the picture-narration task is spoken language, the T-unit was chosen as an analysis unit for the following reasons. First, the data were elicited as a monologue without any interaction with or interruption by an interlocutor, so that they contain very few fragmentary and elliptical segments. In addition, L2ers in this study fall into the intermediate and advanced levels in terms of morpho-syntactic and lexical accuracy such that they produced full clauses and sentences most of the time. Nevertheless, as transcribed oral data, especially those produced by L2ers, are messier than written data, application of T-units to segmentation requires very specific guidelines.

The present study calculates complexity and accuracy on the basis of the T-unit, which is defined as “one main clause plus whatever subordinate clause and nonclausal expressions are attached to or embedded within it” (Hunt, 1970, p. 14). T-units in English oral data are devised based on Ortega, Iwashita, Rabie, & Norris’ (in prep.) coding

^{95} In Foster et al. (2000), disfluency features such as false starts, functionless repetitions, and self-corrections are put inside curly brackets \{ \}. In (3), in which a self-correction occurs in B’s following turn, the final version “maybe three months” is counted as an AS-unit, with the previous version “maybe er he” excluded.
guidelines for T-unit analysis. Each transcription was analyzed for T-units two to three times. Inter-rater reliability was assessed via the Pearson Correlation.

The English data consisting of 86 transcripts (18 transcripts for L1-English children, 18 transcripts for L2-English children, 20 transcripts for L1-English adults; and 30 transcripts for L2-English adults) were originally counted \textit{three times}. The coders were asked to provide the coding details which showed divisions of utterances into T-units, rather than simply provide the number of T-units. For the L1-English child data (18 transcripts), the L1-English adult data (20 transcripts), and the L2-English child data (18 transcripts), one English-speaking coder turned out not to follow the guidelines carefully, and so his coding results were excluded; there are thus \textit{only two} counts per transcript. For L2-English adult data (30 transcripts), in contrast, there are \textit{three} counts. The correlation between the 2 coders was 0.84 for the L1-English child data, 0.98 for the L1-English adult data, and 0.86 for the L2-English child data, \( p < .001 \). Table 5.2 presents the correlation of the number of T-units among coders for the L2-English adults.

Table 5.2. Correlations of Number of T-units among Coders for the L2-English Adult Transcripts

<table>
<thead>
<tr>
<th></th>
<th>Coder A</th>
<th>Coder B</th>
<th>Coder C</th>
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<tbody>
<tr>
<td>Coder A</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coder B</td>
<td>.947***</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Coder C</td>
<td>.922***</td>
<td>.977***</td>
<td>—</td>
</tr>
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</table>

*** \( p < .001 \) level.

For the Korean data, I developed the criteria for T-unit analysis myself. As presented in Table 5.3 for the Korean data (consisting of 47 transcripts), there were strong correlations of number of T-units between the 3 coders.

\footnote{For the two lowest correlations, on the L1-English child data (\( r = 0.840, \ p < .001 \)), there were 10 agreements out of 18 transcripts, and on the L2-English child data (\( r = 0.860, \ p < .001 \)), there were 12 agreements out of 18 transcripts. In the case of the disagreement, the difference in counts of T-units was very small, ranging from 1 to 3 with an average of 1.6 for the L1-English child data and 1.8 for the L2-English child data.}
Table 5.3. Correlations of Number of T-units among Coders for the Korean Transcripts

<table>
<thead>
<tr>
<th></th>
<th>Coder A</th>
<th>Coder B</th>
<th>Coder C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coder A</td>
<td>—</td>
<td>.957***</td>
<td>.965***</td>
</tr>
<tr>
<td>Coder B</td>
<td>.957***</td>
<td>—</td>
<td>.969***</td>
</tr>
<tr>
<td>Coder C</td>
<td>.965***</td>
<td>.969***</td>
<td>—</td>
</tr>
</tbody>
</table>

*** p < .001 level.

For both the English and Korean data, the counts were cross-checked with each other, and when there was a difference in the counts, I made my own decision based on the coding guidelines.

The results of the mean score and the range of T-unit in each population are summarized in Table 5.4.

Table 5.4. Number of T-units by Participants in the Picture-Narration Task in the Present Study

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Children</td>
<td>18</td>
<td>13.5</td>
<td>11 – 18</td>
</tr>
<tr>
<td>L1 Adults</td>
<td>20</td>
<td>36.6</td>
<td>12 – 68</td>
</tr>
<tr>
<td>L2 Children</td>
<td>18</td>
<td>14.9</td>
<td>12 – 19</td>
</tr>
<tr>
<td>L2 Adults</td>
<td>30</td>
<td>28.3</td>
<td>16 – 50</td>
</tr>
<tr>
<td><strong>Korean Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1 Adults</td>
<td>9</td>
<td>23.1</td>
<td>16 – 43</td>
</tr>
<tr>
<td>L2 Adults</td>
<td>39</td>
<td>20.7</td>
<td>11 – 67</td>
</tr>
</tbody>
</table>

Overall, adults produced more T-units than children did. L1 adults produced more T-units than their L2 counterparts did. In contrast, for L1 and L2-English children, the range and mean of T-units were almost the same. The T-unit of each individual is provided in Appendix H.
5.4.2 Morpho-syntactic complexity

There is a variety of metrics of morpho-syntactic complexity, which are calculated based on (i) mean length of a chosen analysis unit, (ii) mean rate of subordination, or (iii) verbs per a given analysis unit, as summarized in Table 5.5.

Table 5.5. Morpho-syntactic Complexity Measures in Previous Research

<table>
<thead>
<tr>
<th>Central Focus of Calculation</th>
<th>Measures</th>
<th>Key References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (in morphemes, words, etc.)</td>
<td>• Mean length of utterance (MLU)</td>
<td>Brown (1973)</td>
</tr>
<tr>
<td></td>
<td>• Mean length of T-unit</td>
<td>Hunt (1965)</td>
</tr>
<tr>
<td></td>
<td>• Mean length of c-unit</td>
<td>Loban (1976)</td>
</tr>
<tr>
<td></td>
<td>• Mean length of clause</td>
<td>Scott (1988)</td>
</tr>
<tr>
<td>Rate of Subordination</td>
<td>• Mean number of (subordinate) clauses per T-unit</td>
<td>Elder &amp; Iwashita (2005)</td>
</tr>
<tr>
<td></td>
<td>• Mean number of (subordinate) clauses per c-unit</td>
<td>Skehan &amp; Foster (2005)</td>
</tr>
<tr>
<td></td>
<td>• Mean number of (subordinate) clauses per AS-unit</td>
<td>Michel, Kuiken, &amp; Vedder (2007)</td>
</tr>
<tr>
<td>Verbal Density</td>
<td>• Mean number of verbs per T-unit</td>
<td>Chaudron &amp; Parker (1990)</td>
</tr>
<tr>
<td></td>
<td>• Mean number of verbal utterances and modals, semi-auxiliaries, infinitival to, and tensed verbs per utterance</td>
<td>Valian (1991)</td>
</tr>
</tbody>
</table>

(slightly modified from Norris & Ortega, 2009, p. 559, Table 1)

5.4.2.1 Types of morpho-syntactic complexity

Length-based metrics are computed by dividing the number of morphemes or words by a chosen analysis unit, among which MLU is widely used as a measure of morpho-syntactic development in L1 acquisition (Brown, 1973). Norris and Ortega (2009) note that length of clause is different from the other length-based metrics; that is, all the multi-clausal units—i.e., utterance, T-unit, c-unit, and AS-unit—can be lengthened by “the addition of subordinate clauses” (p. 561), as seen in example (4).

97 Semi-auxiliaries include (e.g., gonna, wanna, hafta, gotta).
(4)  

a. They were happy.  

b. They were happy because they can go back their ball and they could make friends.  

(Ortega et al., in prep., (1.5))

For this reason, the mean length of the multi-clausal unit is often viewed as an index of “overall syntactic complexity” (Norris & Ortega, p. 561). In contrast, the mean length of the clause (in words) is not affected by the addition of subordinate clauses, as seen in (5). Any increase results from “the addition of pre- or postmodification within a phrase (via adjectives, adverbs, prepositional phrases, or nonfinite clauses) or as a result of the use of nominalizations” and thus, it is considered as “phrasal complexity” (Norris & Ortega, 2009, p. 561).

(5)  

a. They were happy.  

b. They were happy because they can go back their ball and they could make friends.

Rate of subordination is calculated by dividing the total number of (subordinate) clauses by the number of chosen analysis units (see Table 5.5). Although subordination metrics have been widely used as a measure of complexity, they have received criticism as a measure of complexity in developing children, because it increases with increasing age in older L1 children, like MLU does (e.g., Hunt, 1970; Loban, 1976). Unsworth (2005) casts doubts on the validity of using rate of subordination as the syntactic complexity measure in L1 and L2 children through her reviews of Hunt (1970) and Verhoeven and Vermeer (1989) as well as her own empirical examination. Hunt (1970) used mean number of subordinations per T-unit to analyze L1-English children’s written data and found that as children mature, they tend to use more subordinate clauses per T-unit. As Unsworth (2005) points out, a measure of syntactic complexity should not be

98 According to Ortega et al.’s (in prep.) coding guidelines, (4b) is considered as 1 T-unit: “Count 2 subordinate clauses to a main clause which are coordinated (with [elided] complementizer) as 1 T-unit,” e.g., “I think/imagine/expect that A and (that) B = 1 T-unit; A because B and C = 1 T-unit” (Ortega et al., in prep.).
correlated with ‘age’ for L1 children who have the same age range as L2 children; otherwise, it would not be clear whether an older L2 child’s high syntactic complexity is attributable to maturity as a function of age or to L2 development. Verhoeven and Vermeer (1989) compared spontaneous oral data with the standardized Dutch TAK test (Toets Allochtone Kinderen ‘Immigrant children test’) in L2 children by using rate of subordination. They found that there was no correlation between the rate of subordination and any of the syntactic measures in the TAK test (i.e., a sentence comprehension task and a sentence formation task). Instead, the correlation was observed between the rate of subordination and MLUw.\textsuperscript{99} The review of Hunt (1970) and Verhoeven and Vermeer (1989) led Unsworth (2005) to conclude that subordination is unsuitable for measuring syntactic complexity in L1 and L2 children.

In addition, Unsworth (2005) in her own study with L1 children aged 7 through 11 finds that “no fewer than ten of the 30 children produce no subordinate clauses whatsoever” (p. 183). She thus draws the conclusion that if one were to rely on subordination measures, the target native-like level for L2 participants would be very low, which consequently leads to very little room to measure development. The current study also measured the mean number of subordinations per T-unit (from the picture-narration task) in 18 L1-English children aged 5 to 8 and in 20 L1-English adults, as presented in Table 5.6, and found that the results were consistent with those of Unsworth (2005).

Table 5.6. Rate of Subordination in L1-English Children and Adults in the Present Study\textsuperscript{100}

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Children</td>
<td>18</td>
<td>0.11</td>
<td>0.00 – 0.38</td>
<td>0.12</td>
</tr>
<tr>
<td>L1-English Adults</td>
<td>20</td>
<td>0.28</td>
<td>0.00 – 0.69</td>
<td>0.17</td>
</tr>
</tbody>
</table>

One third of the L1 children (6 out of 18) produced no subordinate clauses at all. The mean score was 0.11 for the L1 children and 0.28 for the L1 adults.

\textsuperscript{99} MLUw means “mean length of utterance in words,” which is obtained by dividing the total number of words by the total number of utterances.

\textsuperscript{100} There was only one adult participant who produced no subordinate clause.
Alternatively, verbal density is used to measure syntactic complexity. Verbal density is calculated by counting the number of (finite and nonfinite) verbs and dividing that by the total number of T-units. It was originally used as a measure of syntactic complexity in Pica and Long (1986) to analyze ESL teacher speech as well as conversations between native speakers and nonnative speakers. Chaudron and Parker (1990) adopted it to measure proficiency using L2ers’ free and elicited-production data. However, neither of these studies provided the motivation for using verbal density as a measure of syntactic complexity.

In her study on L1 children’s use of syntactic subjects and related sentence constituents, Valian (1991) also measured modals, semi-auxiliaries, and tensed verbs (e.g., past tense, 3sg. present –s), verbs (i.e., pure transitive, pure intransitive, optionally transitive) per utterance in 2 year-old L1-English and L1-Italian children. I will focus on the English data here. The L1-English children were divided into 4 groups based on their MLUs, ranging from 1.53 to 4.38: Group I (1.53 – 1.99, $M = 1.77$); Group II (2.24 – 2.76, $M = 2.49$); Group III (3.07 – 3.72, $M = 3.39$); and Group IV (4.12 – 4.38, $M = 4.22$). The results showed that the mean proportion of modals increased “gradually and steadily as a function of age and MLU across all four groups” (p. 58): 3% in Group I, 6% in Group II, 9% in Group III, and 14% in Group IV. The usage of infinitives increased “irregularly with group, and most markedly between Groups II and III” (p. 63). As for tensed verbs, there was an increase in the average frequency of past tense use with group, but no increase in the proportion of past tense until Group IV. Finally, the usage of verbs increased “markedly from Group I to Group IV” (p. 71), and there was a strong correlation between verb use and MLU ($r = .81$, $p < .001$). Taken together, it was found that children’s use of modals, tensed verbs, and (tensed and tenseless) verbs increases as MLU advances and that the usage of modals and verbs are strongly correlated with overt-subject use, which jointly indicates that verbal density can be used as an index of morpho-syntactic complexity in developing learners.

Unsworth (2005) provided a rationale for employing verbal density as the morpho-syntactic complexity measure. First, it can capture grammatical complexity at the clause level by including both finite and nonfinite verbs. Second, it can be calculated regardless of targetlikeness because it counts both tensed and tenseless verb forms,
thereby including learners’ non-targetlike inflectional forms. Finally, in order to factor out the function of age, Unsworth calculated verbal density scores for 3 child L1 groups (7-, 9-, and 11-year-olds) and L1 adults and then compared them with each other. The results revealed that the 3 L1-child age groups did not significantly differ from each other, which indicates no function of age in L1 children in terms of verbal density. By contrast, the (3 groups of) L1 children, as a single group, did differ significantly from the L1 adult group. As assumed by Unsworth, this results from differences in cognitive maturity between children and adults. Finally, it should be noted that the children in Valian’s (1991) study, who did show a function of age, were 2-year-olds.

5.4.2.2 Results of verbal density

Based on Valian’s (1991) findings and Unsworth’ (2005) rationale, the present study adopts verbal density as a measure of morpho-syntactic complexity. Table 5.7 summarizes the results of verbal density for L1-/L2-English children and L1-/L2-English adults in the present study. Individual verbal density is provided in Appendix H.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Children</td>
<td>18</td>
<td>1.884</td>
<td>1.385 – 2.750</td>
<td>0.365</td>
</tr>
<tr>
<td>L1-English Adults</td>
<td>20</td>
<td>2.167</td>
<td>1.571 – 2.976</td>
<td>0.404</td>
</tr>
<tr>
<td>L2-English Children</td>
<td>18</td>
<td>1.787</td>
<td>1.176 – 2.263</td>
<td>0.265</td>
</tr>
<tr>
<td>L2-English Adults</td>
<td>30</td>
<td>2.160</td>
<td>1.500 – 2.906</td>
<td>0.379</td>
</tr>
</tbody>
</table>

Both L2 children and L2 adults pattern similarly to their L1 age-equivalents in terms of verbal density. The mean score for L2 children (1.787) is slightly lower than that of L1 children (1.884), and the mean score for L2 adults (2.160) is virtually the same as that of L1 adults (2.167). In terms of the highest score, the same patterns were observed. Overall, adults obtain higher scores than children. However, this does not necessarily mean that L2-English adults are more proficient than L2 children. Tests of normality revealed that both the L2 adult data and the L2 child data have a normal distribution (Shapiro-Wilk for both groups: $p > .05$). The disparity between L2 children and L2 adults may be explained
in terms of cognitive differences between children and adults, as Unsworth (2005) suggests that “children as a group are limited by their cognitive immaturity relative to the adults” (p. 188). The resolution to this problem will be addressed in the following.

For the Korean studies, the results of verbal density in L1-/L2-Korean adults are displayed in Table 5.8. The mean for the L2-Korean adults (1.440) is lower than that of L1-Korean adults (1.653).

Table 5.8. Verbal Density in L1-/L2-Korean Adults in the Present Study

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-Korean Adults</td>
<td>9</td>
<td>1.653</td>
<td>1.313 – 2.045</td>
<td>0.242</td>
</tr>
<tr>
<td>L2-Korean Adults</td>
<td>38</td>
<td>1.440</td>
<td>1.056 – 1.875</td>
<td>0.203</td>
</tr>
</tbody>
</table>

When L2-English adults are compared with L2-Korean adults, the mean scores and maximum scores for L2-English adults are higher than those of L2-Korean adults. Using the same logic for the difference between L2-English children and L2-English adults above, it is not the case that L2-Korean adults are less proficient than L2-English adults. L2-Korean adults’ mean and maximum scores are even lower than those of L1-English children. The test of normality indicates that the L2-Korean data have a normal distribution as well (Shapiro-Wilk: $p > .05$). Such a disparity between the two L2 adult groups is attributable to crosslinguistic variation between English and Korean.

For verbal density, then, an effect of cognitive maturity between children and adults and an effect of crosslinguistic variation between English and Korean was found: The mean scores and maximum scores of verbal density for L2 children are lower than for L2 adults; the mean scores and maximum scores of verbal density for L2-English adults are higher than for L2-Korean adults. In order to ensure that the respective variations do not adversely influence L2ers’ proficiency scores, the verbal density scores are, following Unsworth (2005), converted into standardized scores—z-scores—for the L2-English children, L2-English adults, and L2-Korean adults separately. The converted z-scores are used for the L2 Koreans as well—despite there being a single group in L2 Korean (there is no L2-Korean child group)—for the purpose of making (rough) comparisons between L2-English adults and L2-Korean adults.
5.4.3 **Lexical complexity**

The term “lexical complexity” is interchangeably used with “lexical diversity” or “lexical richness” in the current study. The domain of lexis, too, has various measures, such as type-token ratio (TTR), Guiraud’s (1960) root TTR (Guiraud’s index), and corrected TTR.

5.4.3.1 Types of lexical complexity

The traditional TTR is the ratio between different words (types) and the total number of words (tokens), which is calculated by dividing the total number of types (V) by number of tokens (N). TTR has been widely used in the assessment of lexical diversity; yet, it is well-known that TTR is susceptible to length of utterances. Richards (1987) pointed out that the type-token ratio decreases as the number of tokens increases. Johansson (2008) explains that the reason for this is that a speaker/writer often has to use the same function words in order to produce one new (lexical) word, although the number of tokens can increase infinitely.

Alternatively, revised TTR measures such as Guiraud’s index and Carroll’s (1964) corrected TTR have been proposed. Guiraud’s index is calculated by dividing the number of different lexical types by the square root of the total number of tokens (V/√N); and the corrected TTR is calculated by dividing the number of different words by the square root of twice the number of words in the sample (V/√2N). By taking the square root of the total number of tokens, the TTR problem of the ratio being negatively correlated with sample size is alleviated. However, these measures are not independent of sample size, either. Richards (1987) tested Guiraud’s index using cumulatively larger samples taken from a 2-year old child and found that the ratio is positively related to the number of tokens. Another critical observation by Richards (1987) was that the ratio curve, which rises sharply as sample size increases, begins to level out when the number of tokens reaches approximately 250.

I examined the total number of tokens per individual in my data set to determine whether each is above 250. A total of 133 data samples consisting of L1/L2 children and L1/L2 adults were examined. Combining the English and Korean samples, the results

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101 The sample is a 45-minute recording from Sian (2;2.2).
show that 17 out of 86 L2 data samples and 15 out of 47 L1 data samples contained 250 tokens or more, all of which are data samples from adults.

### 5.4.3.2 Results of Guiraud’s index

Although many data samples in my data set contain fewer than 250 tokens, Guiraud’s index is adopted as a measure of lexical diversity based on the following claim of Broeder, Extra, and van Hout (1993): Given that increased output generally accompanies increasing proficiency, a correlation between sample size and Guiraud’s index “is not by definition objectionable” (p. 154). Table 5.9 presents the results of Guiraud’s index for the L1-/L2-English children and adults in the current study. The results of Guiraud’s index for each individual are provided in Appendix H.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Children</td>
<td>18</td>
<td>5.261</td>
<td>3.638 – 7.182</td>
<td>0.812</td>
</tr>
<tr>
<td>L1-English Adults</td>
<td>20</td>
<td>7.989</td>
<td>4.936 – 10.607</td>
<td>1.441</td>
</tr>
<tr>
<td>L2-English Children</td>
<td>18</td>
<td>5.269</td>
<td>4.229 – 6.577</td>
<td>0.695</td>
</tr>
<tr>
<td>L2-English Adults</td>
<td>30</td>
<td>6.636</td>
<td>5.170 – 8.379</td>
<td>0.758</td>
</tr>
</tbody>
</table>

Table 5.9. Guiraud’s Index for L1-/L2-English Children and Adults in the Present Study

Both L2 children and L2 adults show patterns similar to their L1 age-equivalents. The mean score for L2 children (5.269) is virtually the same as that of L1 children (5.261) and the mean score for L2 adults (6.636) is lower than that of L1 adults (7.989). With respect to the highest score, the maximum for L2 children (6.577) is lower than the maximum for L1 children (7.182), and the same pattern is observed for L2 adults (8.379) and L1 adults (10.607). L1/L2 adults again obtain higher scores than L1/L2 children do. The test of normality showed that both L2 data sets have a normal distribution (Shapiro-Wilk for both groups: \( p > .05 \)). Using the same logic used for verbal density, the disparity between L2 children and L2 adults is attributable to cognitive maturity.

Table 5.10 summarizes the results of Guiraud’s index for L1-/L2-Korean adults, along with L1-/L2-English adults for comparisons.
Table 5.10. Guiraud’s Index in L1-/L2-English and Korean Adults in the Present Study

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Adults</td>
<td>20</td>
<td>7.989</td>
<td>4.936 – 10.607</td>
<td>1.441</td>
</tr>
<tr>
<td>L2-English Adults</td>
<td>30</td>
<td>6.636</td>
<td>5.170 – 8.379</td>
<td>0.758</td>
</tr>
<tr>
<td>L1-Korean Adults</td>
<td>9</td>
<td>7.875</td>
<td>5.625 – 10.145</td>
<td>1.353</td>
</tr>
<tr>
<td>L2-Korean Adults</td>
<td>38</td>
<td>6.990</td>
<td>4.817 – 10.473</td>
<td>1.284</td>
</tr>
</tbody>
</table>

In contrast to verbal density (i.e., syntactic complexity) which shows crosslinguistic variation between English and Korean, such variation is not found for lexical diversity. The two L2 adult groups do not differ significantly from each other. The test of normality revealed that the L2-Korean data have a normal distribution (Shapiro-Wilk: \( p > .05 \)).

For cognitive maturity differences between L2-English children and L2-English adults, the scores of Guiraud’s index are also converted into *z*-scores for the L2-English children, L2-English adults, and L2-Korean adults separately.

5.5 Accuracy

Accuracy is measured by the rate of error-free T-units in terms of morpho-syntax and the lexicon, which is calculated by counting the number of error-free T-units and dividing that by the total number of T-units. The current study, mostly following Unsworth (2005), presents the specific criteria about what to count as errors in the domain of morphology, syntax, and lexicon. First, when utterances include self-corrections, they are evaluated on the basis of the corrected form. Second, when the participant makes repeated errors, for example, using a non-targetlike form of a verb stem (e.g., *was teared* rather than *was torn*) or using a particular word incorrectly (e.g., *asleeping*), only the first instance is counted as an error, because otherwise one persistent error can result in inappropriate deflation of the score. Except for these two cases, other morpho-syntactic errors which are repeated are counted separately (e.g., 3sg. present –*s*, past tense, omission of obligatory determiner, etc.).

In addition, the following utterances, which are given in CHAT format, are excluded for the verbal density and rate of error-free calculations: utterances which are
incomplete, utterances which contain unidentifiable material, and utterances which are formulaic, as illustrated in (6)–(8).

(6) Incomplete utterances
   a. Participant (PPT): And she has…
   b. PPT: hakkyo-ey ka-ass-nun…
       school-Goal go-Past-incomplete Conj…

(7) Unidentifiable material in utterances, as indicated by xxx
   a. PPT: I’m making xxx all there.
   b. PPT: Ay-ka ilena-camaca xxx
       child-Nom wake up-Conj
       ‘As soon as a child wakes up, xxx’

(8) Formulaic utterances
   a. PPT: I don’t know.
   b. PPT: Molla-yo.
       don’ know-Decl
       ‘I don’t know.’

In what follows, I categorize errors into the domains of morphology, syntax, and the lexicon in L2 English and L2 Korean. An error-free utterance must not contain any error of the kind presented below.

5.5.1 Criteria for an error-free utterance in L2 English

5.5.1.1 Morphological errors

Morphological errors include:
(9) Subject-verb agreement
   a. Participant (PPT): His mother look worried.
      Target: His mother looks worried.
   b. PPT: The girl and the boy was fighting because they both wanted a book.
      Target: The girl and the boy were fighting because they both wanted a book.

(10) Tense agreement
   PPT: First she went to the bathroom and start to brush her teeth.
   Target: First she went to the bathroom and started to brush her teeth.

(11) Non-targetlike verb form (e.g., past participle)
   PPT: The book was teared.
   Target: The book was torn.

(12) Non-targetlike nouns
   PPT: A girl is brushing her tooth.
   Target: A girl is brushing her teeth.

(13) Non-targetlike adjectives
   PPT: She wears the green colors high heels.
   Target: She wears the green colored high heels.

(14) Noun countability
   a. PPT: She eats cereals with milk.
      Target: She eats cereal with milk.
   b. PPT: After all, a little hour later the baby bear comes over to the parents again.
      Target: After all, a few hours later the baby bear comes over to the parents again.
5.5.1.2 Syntactic errors

Syntactic errors include:

(15) Missing elements, including subjects, copula/auxiliary verbs, complementizers, and conjunctions

a. PPT: But suddenly he feels he felt scared so Ø couldn’t sleep at all.
   Target: But suddenly he feels he felt scared so he couldn’t sleep at all.

b. PPT: After Ø finished brush teeth, she washed her face with soap.
   Target: After she finished brushing her teeth, she washed her face with soap.

c. PPT: There Ø toothpaste, a cup, and a brush on the table.
   Target: There is/are toothpaste, a cup, and a brush on the table.

d. PPT: She Ø wearing the nice dress and holding the purple bag.
   Target: She is wearing the nice dress and holding the purple bag.

e. PPT: He wanted Ø take the book away from her.
   Target: He wanted to take the book away from her.

f. PPT: She ate a breakfast with cereal Ø milk.
   Target: She ate breakfast with cereal and milk.

g. PPT: He went to Mom and Dad Ø said I want to sleep with you.
   Target: He went to Mom and Dad and said I want to sleep with you.
(16) Non-targetlike use of determiners
   a. PPT: Mary has Ø appointment with her friends.
      Target: Mary has an appointment with her friends.
   b. PPT: She is eating the breakfast.
      Target: She is eating breakfast.
   c. PPT: She read some book.
      Target: She read a book.

(17) Overuse of be verb
   a. PPT: The bear is wake up.
      Target: The bear wakes up//The bear is waking up//The bear woke up.
   b. PPT: The girl and the boy are try to get more space for them.
      Target: The girl and the boy try to get more space for them//The girl and the boy are trying to get more space for them//They girl and the boy tried to get more space for them.

(18) Non-targetlike aspect (e.g., present progressive)
   PPT: He is not sleep.
   Target: He is not sleeping.102

(19) Non-targetlike voice
   PPT: [The mother] was tried to read the book again.
   Target: [The mother] tried to read the book again.

(20) Non-targetlike to infinitive
   PPT: They want to reading something.
   Target: They want to read something.

102 An alternative is *He is not asleep*, although this is not aspect.
(21) Non-targetlike subcategorization
   a. PPT: He asked to his parents.
      Target: He asked his parents.

   b. PPT: The boy is approaching to her.
      Target: The boy is approaching her.

   c. PPT: They are pulling book each other.
      Target: They are pulling the book toward each other.

5.5.1.3 Lexical errors
   Lexical errors include the non-targetlike use of target forms in terms of meaning
   and/or function, such as:

(22) Non-targetlike preposition
   a. PPT: Mary gets up at morning.
      Target: Mary gets up in the morning.

   b. PPT: In the end their book was split as two part.
      Target: In the end their book was split into two parts.

(23) Non-targetlike subordinating coordinator
   PPT: They keep fighting that they’re gonna get the close thing.
   Target: They keep fighting so that they’re gonna get the close thing.

(24) Non-targetlike phrasal verb
   a. PPT: He was able to fall asleep, listening his mom reading some stories.
      Target: He was able to fall asleep, listening to his mom reading some stories.

   b. PPT: She looked herself.
      Target: She looked at herself.
(25) Non-targetlike use of lexical items
   a. PPT: Her face express is not happy.
      Target: Her facial expression is not happy.
   b. PPT: He feel asleep.
      Target: He falls asleep//He feels sleepy.
   c. PPT: She dressed a pretty pink dress.
      Target: She put on a pretty pink dress.
   d. PPT: He is talking to his parents, “I’m not sleepy.”
      Target: He is telling his parents, “I’m not sleepy.”
   e. PPT: The shoe is green color.
      Target: The shoe is green.
   f. PPT: The woman and the boy grab the book very hardly.
      Target: The woman and the boy grabbed the book very hard.

(26) Non-targetlike collocation
   PPT: She’s now good to go out of home.
   Target: She’s now good to go out of the house.

5.5.2 Criteria for an error-free utterance in L2 Korean

5.5.2.1 Morphological errors
   Morphological errors include:

---

103 I checked the errors for accuracy with a (Korean) PhD student specializing in Korean as well as the 2 Korean native-speaker student assistants.
(27) Non-targetlike postpositions

a. PPT: nam-un mwul-ul seyswu hay-ss-eyo.
   remain-RC water-Acc wash face-Past-Decl

   Target: nam-un mwul-lo seyswu hay-ss-eyo.
   remain-RC water-Inst wash face-Past-Decl
   ‘(She) washed her face with the remaining water.’

b. PPT: pwuek-eyse tuleo-ko…
   kitchen-Source enter-and

   Target: pwuek-ulo tuleo-ko…
   kitchen-Goal enter-and
   ‘(She) entered the kitchen and…’

c. PPT: Tim-i chimday-eyse nwuwe-iss-ess-nuntey…
   Tim-Nom bed-Source lie-be-Past-while…

   Target: Tim-i chimday-ey nwuwe-iss-ess-nuntey…
   Tim-Nom bed-Loc lie-be-Past-while…
   ‘While Tim was lying down on the bed…’
(28) Non-targetlike case markers

a. PPT:  emma-ka iyaki-ka il-koiss-eyo.
        mommy-Nom story-Nom read-Prog-Decl

        Target:  emma-ka iyaki-lul il-koiss-eyo.
                  mommy-Nom story-Acc read-Prog-Decl
      ‘Mommy is reading a book.’

b. PPT:  Suzi-lul wul-ess-eyo.
        Suzi-Acc cry-Past-Decl

        Target:  Suzi-ka wul-ess-eyo.
                  Suzi-Nom cry-Past-Decl
      ‘Suzi cried.’

(29) Non-targetlike verb inflection

         that woman-Nom clothes-Acc wear-Caus-Past-Decl

        Target:  ku yeca-ka os-ul iph ess-eyo.
                  that woman-Nom clothes-Acc wear-Past-Decl
      ‘She got dressed.’

b. PPT:  meyttwuki soli-ka tule-se…
         grasshopper sound-Nom hear-and

        Target:  meyttwuki soli-ka tule-i-ese…
                  grasshopper sound-Nom hear-Pass-and
      ‘The chirps of grasshoppers are heard…’
(30) Non-targetlike negation

a. PPT: cam-i mos-wa-ss-eyo.
sleep-Nom cannot-come-Past-Decl

Target: cam-i an-wa-ss-eyo.
sleep-Nom not-come-Past-Decl
‘One cannot sleep.’

b. PPT: pwumo-nim-un an-tul-ess-eyo.
parents-Hon-Top not-hear-Past-Decl

Target: pwumo-nim-un mot-tul-ess-eyo.
parents-Hon-Top cannot-hear-Past-Decl
‘Parents didn’t hear (it).’

5.5.2.2 Syntactic errors

Syntactic errors include errors involving word order and non-targetlike functional elements. Korean allows a relatively free word order as long as the verb-final constraint is observed. For example, as presented in Chapter 2, Korean dative constructions have six possible word orders (when only S, IO, DO, and V are present). Almost all constituents can move around: [S–IO–DO–V], [S–DO–IO–V], [IO–S–DO–V], [DO–S–IO–V], IO–DO–S–V], [DO–IO–S–V]. However, NPs, postpositional phrases, adverbials, and clauses can be added after the verb in the case of postposing, as in (31).

104 Korean has two types of negative adverbs in declaratives and interrogatives, an(i) ‘not’ and mos ‘not possibly, cannot, unable’; simple negation is expressed by the former type, while inability or impossibility is expressed by the latter (Sohn, 1999, p. 389).
(31) Postposing

PPT:

kuliko kabang-un tul-koiss-eyo son-ey.
and bag-Top hold-Prog-Decl hand-Loc

Option:

kuliko kabang-un son-ey tul-koiss-eyo.
and bag-Top hand-Loc hold-Prog-Decl

‘And (she) is holding a bag in her hand.’

The L2ers produced no errors involving word-order in their L2 Korean. In addition, as Korean does not have subject-verb agreement or an article system, there are no morpho-syntactic errors involving those syntactic properties in the L2-Korean data.

As for errors of missing elements, Korean is a null-argument language and therefore arguments can be dropped when they are recoverable from the discourse context, as seen in (32)–(34). Moreover, case (e.g., nominative -ka/-i, accusative -ul/-ulul, dative -eykey/-hantey/-kkey (honorific), genitive, -uy, etc.) can be omitted especially in a colloquial language, as shown in (33)–(34). Accordingly, omission of case markers is not considered as an error.

\[105\]

\[105\] In formal written contexts, omitting too many case markers may sound awkward. Lee, Jang, and Seo (2009) classify the following sentence as an omission error.

(viii) wuli-Ø(ka) phyenhan mikuk saynghwal-Ø(ul) ttenace yeki wasseyo.
    we-Ø(Nom) comfortable American life-Ø(Acc) leave here came

‘We left our comfortable life in America and came here.’

However, in a spoken context, (viii) sounds quite natural; so this kind of omission is not considered an error.
(32) Argument drop

PPT: Ø wuyu kacyewa-ss-eyo.
Ø milk bring-Past-Decl
‘(Yengmi) brought milk.’

kuliko Yengmi-nun Ø ssiliel-kwa mek-ess-eyo.
And Yengmi-Top Ø cereal-with eat-Past-Decl
‘And Yengmi had it on her cereal.’

Option: Yengmi-nun wuyu kacyewa-ss-eyo.
Yengmi-nun milk bring-Past-Decl
‘Yengmi brought milk.’

kuliko Yengmi-nun wuyu-lul ssiliel-kwa mek-ess-eyo.
And Yengmi-Top milk-Acc cereal-with eat-Past-Decl
‘And Yengmi had it on her cereal.’

(33) Case drop

a. PPT: ku namca-nun ku yeca-Ø ilk-nun chaek-ul ilkosipheha…
that man-Top that woman-Ø read-RC book-Acc want to read…

Option: ku namca-nun ku yeca-ka ilk-nun chaek-ul ilkosipheha…
that man-Top that woman-Nom read-RC book-Acc want to read…
‘The man wants to read the book that the woman is reading…’

b. PPT: animyen tonghwachaek-Ø ilkedala ha-nun…
or story book-Ø read-RC

Option: animyen tonghwachaek-ul ilkedala ha-nun…
or story book-Acc read-RC
‘Or, read (him) a storybook…’
(34) Argument and case drop

PPT: onul-un emma-Ø caymiissnun chayk-ul ilk-eyo.
today-Top mom-Ø interesting book-Acc read-Decl
‘Today mom wants to read an interesting book.’

apeci-to ku chayk-ul ilk-kosiph-eyo.
father-also that book-Acc read-want-Decl
‘Father also wants to read the book.’

haciman emma-ka apeci-eykey Ø cwu-kosiphci-an-ayo.
but mom-Nom father-Dat Ø give-want-not-Decl
‘But mom doesn’t want to give it to father.’

Option: onul-un emma-ka caymiissnun chayk-ul ilk-eyo.
today-Top mom-Nom interesting book-Acc read-Decl
‘Today mom wants to read an interesting book.’

apeci-to ku chayk-ul ilk-kosiph-eyo.
father-also that book-Acc read-want-Decl
‘Father also wants to read the book.’

haciman emma-ka apeci-eykey ku chayk-ul cwu-kosiphci-an-ayo.
but mom-Nom father-Dat that book-Acc give-want-not-Decl
‘But mom doesn’t want to give the book to father.’

5.5.2.3 Lexical errors

Lexical errors include:
(35) Non-targetlike subordinating coordinator
   a. PPT: emma appa pang-ey tuleka-myen emma appa-hantey…
       mom dad room-Goal enter-if mom dad-Dat…

       Target: emma appa pang-ey tuleka-se emma appa-hantey…
       mom dad room-Goal enter-and mom dad-Dat…
       ‘(He) enters his mom and dad’s room and then … to his mom and dad.’

   b. PPT: hakkyo-ey ka-konase chinkwu-lul manna-alke-yeyyo.\textsuperscript{106}
       school-Goal go-after friend-Acc meet-Fut-Decl

       Target: hakkyo-ey ka-se chinkwu-lul manna-alke-yeyyo.
       school-Goal go-and friend-Acc meet-Fut-Decl
       ‘(She) goes to school and meets her friend.’

(36) Non-targetlike use of lexical items
       Yengmi-Nom toothpaste-Acc do-Past-Decl

       Target: Yengmi-ka yangchicil-ul hay-ss-eyo.
       Yengmi-Nom brushing teeth-Acc do-Past-Decl
       ‘Yengmi brushed her teeth.’

\textsuperscript{106} The sentence means “After X has gone to school, Y will meet his or her friend.”
(37) Non-targetlike collocation

a. PPT: ku capci-ka kkaycye-ss-eyo.
   that magazine-Nom break-Past-Decl

   Target: ku capci-ka ccicyecye-ss-eyo.
   that magazine-Nom torn-Past-Decl
   ‘The magazine got ripped.’

b. PPT: kulayse chayk-ul pwulecye-se...
   so book-Acc break-and

   Target: kulayse chayk-i ccicecye-se...
   so book-Nom torn-and
   ‘So the book got ripped…’

c. PPT: Yengmi-ka os-ul pakkwu-ko...
   Yengmi-Nom clothes-Acc exchange/replace-and

   Target: Yengmi-ka os-ul kalaip-ko...
   Yengmi-Nom clothes-Acc change-and
   ‘Yengmi changes her clothes.’

d. PPT: meli-ul ssis-eyo.
   hair-Acc wash-Decl

   Target: meli-ul kam-ayo.
   hair-Acc shampoo-Decl
   ‘(She) shampoos her hair.’
5.5.3 Accuracy results

Each transcription was checked for accuracy twice by 4 native-speaker student assistants in English and 2 native-speaker student assistants in Korean. The two judgments were cross-checked with each other. When there was a disagreement, in some cases I checked with the raters and in other cases, especially for Korean, I made my own decision based on the annotations provided by the raters. To assess inter-rater reliability, Cohen’s Kappa was conducted.

A sample of 10% of the 133 transcripts was randomly selected. Cohen’s Kappa was found to have a value of 0.837 for the English data and 0.813 for the Korean data. Kappa has a range from 0 to 1.00; any Kappa value larger than 0.81 is considered to indicate almost perfect agreement (Landis & Koch, 1977).

Table 5.11 summarizes the results of the rates of error-free utterances for English L1/L2 children and adults and for Korean L1/L2 adults. The individual accuracy results are all provided in Appendix H.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Children</td>
<td>18</td>
<td>83.7%</td>
<td>66.7% – 93.8%</td>
<td>0.095</td>
</tr>
<tr>
<td>L1-English Adults</td>
<td>20</td>
<td>95.2%</td>
<td>83.3% – 100%</td>
<td>0.051</td>
</tr>
<tr>
<td>L2-English Children</td>
<td>18</td>
<td>67.6%</td>
<td>23.1% – 94.1%</td>
<td>0.496</td>
</tr>
<tr>
<td>L2-English Adults</td>
<td>30</td>
<td>68.2%</td>
<td>30.8% – 95.0%</td>
<td>0.173</td>
</tr>
<tr>
<td>L1-Korean Adults</td>
<td>9</td>
<td>99.2%</td>
<td>95.5% – 100%</td>
<td>0.016</td>
</tr>
<tr>
<td>L2-Korean Adults</td>
<td>38</td>
<td>61.1%</td>
<td>35.3% – 85.0%</td>
<td>0.148</td>
</tr>
</tbody>
</table>

5.6 Computation of L2 Proficiency in the present study

The proficiency measures used in the present study yield three sets of sub-scores: (i) verbal density for morpho-syntactic complexity, (ii) Guiraud’s index for lexical diversity, and (iii) rate of error-free utterances for accuracy. Unsworth (2005) used a principal component analysis (PCA) to combine the three sub-scores into a single score under the assumption that original variables (i.e., verbal density, Guiraud’s index, and
rate of error-free utterances) correlate with each other, such that it is assumed that they measure the same construct, namely, L2 proficiency. However, this assumption does not hold for my L2 data set. The scores of verbal density and Guiraud’s index correlate with each other, $r = .562$, $p < .001$, but neither of them has a meaningful relation with accuracy. In consequence, PCA is considered to be inadequate for combining the sub-scores into a single score.\(^{107}\)

Alternatively, based on the assumptions that the three sub-scores are not redundant and that each variable contributes to the measurement of L2 proficiency to an equal degree, I converted all three sub-scores into standardized z-scores to make them comparable and then combined them into a final single score. These final scores are used as the proficiency score. Negative z-scores are below the average and positive z-scores are above the average. The procedure of computation is set out in Figure 5.3. The three sub-scores and their converted z-scores in each individual are all provided in Appendix H.

\[\text{Morpho-syntactic complexity} \quad \text{Lexical complexity} \quad \text{Morpho-syntactic complexit}^y\]

\[\text{• Verbal density} \quad \text{• Guiraud’s index} \quad \text{• Rate of error-free T-units}\]

\[\text{z-score} \quad \text{z-score} \quad \text{z-score}\]

\[\text{Combined into a single score} = \text{L2 Proficiency Score}\]

Figure 5.3. The Proficiency Measurement Overview in the Present Study

\(^{107}\) However, there were very high correlations between the final scores via PCA and the three z-scores combined into a single score in the present study.
5.7 Results

5.7.1 Results per group

Child L2ers and adult L2ers are divided into two proficiency levels, higher level and lower level. Positive proficiency scores and negative proficiency scores were placed into higher and lower proficiency groups, respectively. Table 5.12 outlines each group’s proficiency details. The individual details are all provided in Appendix H.

Table 5.12. Proficiency Details by Proficiency Level in Each Group in the Present Study

<table>
<thead>
<tr>
<th>Group</th>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2-English Children (n = 18)</td>
<td>Higher</td>
<td>11</td>
<td>1.558</td>
<td>-0.203 – 4.148</td>
<td>1.383</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>7</td>
<td>-2.449</td>
<td>-4.441 – -0.842</td>
<td>1.088</td>
</tr>
<tr>
<td>L2-English Adults  (n = 30)</td>
<td>Higher</td>
<td>16</td>
<td>1.211</td>
<td>-0.087 – 4.806</td>
<td>1.362</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>14</td>
<td>-1.384</td>
<td>-3.822 – -0.278</td>
<td>1.037</td>
</tr>
<tr>
<td>L2-Korean Adults   (n = 38)</td>
<td>Higher</td>
<td>19</td>
<td>1.211</td>
<td>0.088 – 3.508</td>
<td>1.045</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>19</td>
<td>-1.211</td>
<td>-3.333 – -0.039</td>
<td>1.060</td>
</tr>
</tbody>
</table>

Positive values are above the mean (0) and negative values are below the mean (0). Those whose final score is above the mean are included in the higher group and those whose final score is below the mean are included in the lower group. However, when a participant’s proficiency score is very close to the mean but his/her rate of error-free utterances is above 90%, he/she is placed in the higher group. There are two such cases: one L2-English child (-0.203; 94%) and one L2-English adult (-0.087; 95%).

Based on these criteria, the L2-English children (n = 18) are divided into the Higher group (n = 11), ranging from 0.123\(^{108}\) to 4.148, and the Lower group (n = 7), ranging from -4.441 to -0.842. The L2-English adults (n = 30) are divided into the Higher group (n = 16), ranging from 0.076\(^{109}\) to 4.806, and the Lower group (n = 14), ranging from -3.822 to -0.278. Finally, the L2-Korean adults (n = 38) are divided into the Higher group (n = 19), ranging from 0.088 to 3.508, and the Lower group (n = 19), ranging from -3.333 to -0.039.

\(^{108}\) Except for the -0.203 score moved up into the Higher group, the lowest score is 0.123.

\(^{109}\) Except for the -0.087 score moved up into the Higher group, the lowest score is 0.076.
5.7.2 Results of L2-English children and L2-English adults combined

In order to make comparisons between similar proficiency levels across L2-English children and L2-English adults (see Chapter 7), we needed to employ the same range of subscores by collapsing the 2 groups. Accordingly, the three z-scores were recalculated and combined into final single proficiency scores. The resulting divisions (L2-English children: Higher group, \(n = 4\) and Lower group, \(n = 14\); L2-English adults: Higher group, \(n = 22\) and Lower group, \(n = 8\)) are summarized in Table 5.13. The individual details are all provided in Appendix I.

Table 5.13. Proficiency Details by Proficiency Level for Comparisons between L2-English Children and L2-English Adults in the Present Study

<table>
<thead>
<tr>
<th>Group</th>
<th>Level</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2-English Children</td>
<td>Higher</td>
<td>4</td>
<td>1.048</td>
<td>0.753 – 1.644</td>
<td>0.408</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>14</td>
<td>-2.204</td>
<td>-4.889 – -0.081</td>
<td>1.631</td>
</tr>
<tr>
<td>L2-English Adults</td>
<td>Higher</td>
<td>22</td>
<td>1.505</td>
<td>0.119 – 5.095</td>
<td>1.249</td>
</tr>
<tr>
<td></td>
<td>Lower</td>
<td>8</td>
<td>-0.806</td>
<td>-2.503 – -0.028</td>
<td>1.001</td>
</tr>
</tbody>
</table>

5.8 Summary of the chapter

This chapter presented the operationalization, measures, and computation of L2 proficiency. Following Unsworth (2005, 2008), L2 proficiency is measured with respect to complexity and accuracy for morpho-syntax and the lexicon. For the basic analysis unit, the T-unit is chosen because the elicited-production data obtained from the L2ers contained very few elliptical or fragmentary segments. Verbal density, which is calculated by counting the number of verbs and dividing that by the total number of T-units, is selected as the measure of morpho-syntactic complexity. Guiraud’s index, which is calculated by dividing the number of different lexical types by the square root of the total number of tokens \((V/\sqrt{N})\), is used for measuring lexical diversity. Finally, accuracy is calculated by counting the number of error-free T-units and dividing that by the total number of T-units. The three scores—verbal density, lexical diversity, and accuracy—are each converted into standardized scores—z-scores—for the L2-English children, L2-English adults, and L2-Korean adults, separately. Finally, the three sets of
z-scores are combined into a final single score, which is used for determining L2 proficiency level. Each L2 group is divided into two levels: the higher group whose score is above the mean (0); the Lower group whose score is below the mean (0).
CHAPTER 6.
RESULTS, DISCUSSION, AND CONCLUSIONS

6.1 Introduction

The current study investigates, on the one hand, the (causal) relation between knowledge of Theory of Mind (ToM) and adherence to the Given-before-New Principle in L1 children and L2 children, and, on the other, adherence to the Given-before-New Principle in L2 adults and L2 children. This chapter reports results of data analyses of all the studies, the L1-/L2-English studies and the L1-/L2-Korean studies.

The structure of this chapter is as follows: Section 6.2 briefly outlines the presentation sequence and statistical analyses for group results. Section 6.3 provides the motivation and criteria for individual consistency. Section 6.4 reviews the hypothesis that knowledge of Theory of Mind (ToM) is a prerequisite for the Given-before-New Principle and presents the results of the measurement of ToM in L1-English children, L1-Korean children, and L1-Korean child L2ers of English. In the subsequent three sections, group results and then individual results are reported on L1-English and adult L2-English studies (§6.5), L1-Korean and adult L2-Korean studies (§6.6), and the child L2-English study (§6.7), respectively. More specifically, the structure of each section is as follows:

1. **L1-English and adult L2-English studies** (§6.5)
   a. Adult L1 English (§6.5.1)
   b. Child L1 English (§6.5.2)
   c. Adult L2 English (§6.5.3)

2. **L1-Korean and adult L2-Korean studies** (§6.6)
   a. Adult L1 Korean (§6.6.1)
   b. Child L1 Korean (§6.6.2)
   c. Adult L2 Korean (§6.6.3)

3. **Child L2-English study** (§6.7)

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The child L2-English study is presented at the end because it includes comparisons with both the L1-Korean study and the L2-English study. The results from the control groups (i.e., L1-English adults and L1-Korean adults) provide a baseline value in each language. Each section is followed by discussion and conclusions. The final section (§6.8) summarizes the chapter.

6.2 Presentation sequence and statistical analysis for group results

Group results are presented by condition in which information structure was manipulated—given-theme and new-recipient vs. given-recipient and new-theme.

For the English studies, recall that the Given–New order in the given-theme condition aligns with the PD [NP THEME PP RECIPIENT] construction, as in (1a) and (2a), and the Given–New order in the given-recipient condition aligns with the DOD [NP RECIPIENT NP THEME] construction, as in (3a) and (4a).

**given-theme**

(1) **NP Task**
   a. John brought the pie to some friends. [Given–New] PD
   b. John brought some friends the pie. [New–Given] DOD

(2) **Pronoun Task**
   a. John brought it to some friends. [Given–New] PD
   b. *John brought some friends it. [New–Given] DOD

**given-recipient**

(3) **NP Task**
   a. John sent the teacher some letters. [Given–New] DOD
   b. John sent some letters to the teacher. [New–Given] PD

(4) **Pronoun Task**
   a. Mary sold him some toys. [Given–New] DOD
   b. Mary sold some toys to him. [New–Given] PD
For the Korean studies, recall that information structure of dative word orders was manipulated such that the Given–New order in the given-recipient condition aligns with the canonical [IO–DO] order, as in (5a) and (6a), and the Given–New order in the given-theme condition aligns with the scrambled [DO–IO] order, as in (7a) and (8a).

**given-recipient**

(5) **NP Task**

a. canonical [Given–New]
   
   Chelswu-nun  *ku sensayngnim-eykey* phyencitul-ul ponaysseyo.
   Chelswu-Top  *that teacher-Dat* letters-Acc sent
   ‘Chelswu sent the teacher letters.’

b. scrambled [New–Given]
   
   Chelswu-nun phyencitul-ul *ku sensayngnim-eykey* ponaysseyo.
   Chelswu-Top letters-Acc *that teacher-Dat* sent
   ‘Chelswu sent letters to the teacher.’

(6) **Pronoun Task**

a. canonical [Given–New]
   
   Yenghuy-nun  *kuay-eykey* cangnamkamtul-ul palasseyo.
   Yenghuy-Top  *him-Dat* toys-Acc sold
   ‘Yenghuy sold him toys.’

b. scrambled [New–Given]
   
   Yenghuy-nun cangnamkamtul-ul *kuay-eykey* palasseyo.
   Yenghuy-Top toys-Acc *him-Dat* sold
   ‘Yenghuy sold toys to him.’
**given-theme**

(7) **NP Task**

a. scrambled [**Given−New**]

Chelswu-nun *ku phi-lul* chinkwutul-eykey kacyetakwuesseyo.
Chelswu-Top *that pie-Acc* friends-Dat brought

‘Chelswu brought the pie to friends.’

b. canonical [**New−Given**]

Chelswu-nun chinkwutul-eykey *ku phi-lul* kacyetakwuesseyo.
Chelswu-Top friends-Dat *that pie-Acc* brought

‘Chelswu brought friends the pie.’

(8) **Pronoun Task**

a. scrambled [**Given−New**]

Yenghuy-nun *kukestul-ul* chinkwutul-eykey cwuesseyo.
Yenghuy-Top *them-Acc* friends-Dat gave

‘Yenghuy gave them to friends.’

b. canonical [**New−Given**]

Yenghuy-nun chinkwutul-eykey *kukestul-ul* cwuesseyo.
Yenghuy-Top friends-Dat *them-Acc* gave

‘Yenghuy gave friends them.’

The data are analyzed in terms of the proportion (%) of **Given−New choices** (out of 6 tokens) in each of the 4 conditions, i.e., *given-theme* in the NP Task, *given-recipient* in the NP Task, *given-theme* in the Pronoun Task, *given-recipient* in the Pronoun Task.

For statistical analysis, a population with too small a sample size is either excluded or integrated into a larger population, but only when this does not affect the group results. For instance, the L1 and L2 children were divided into 3 groups depending on how they fared on the false-belief tasks, (i) YES/YES, both false-belief tasks passed, (ii) YES/NO, one task passed, and (iii) NO/NO, neither task passed. This (unfortunately)
resulted in very small NO/NO groups for both L1-English children \((n = 5)\) and L1-Korean children \((n = 3)\), and hence these groups were excluded from statistical analysis; for L1-Korean child L2ers of English (who, recall, completed the false-belief tasks in Korean), there were no NO/NO children and only 2 YES/NO children, and so the 2 groups were integrated into a single group \((n = 16)\) for statistical analysis of their L1-Korean NP and Pronoun Tasks.

We conducted two types of statistics. First, paired samples \(t\)-tests were used to test for statistical differences between Given–New choices vs. New–Given choices in each condition within a group (e.g., for Group X, in the given-theme condition of the NP Task, in the given-recipient condition of the NP Task, in the given-theme condition of the Pronoun Task, and in the given-recipient condition of the Pronoun Task). In this case, although we conduct multiple \(t\)-tests, the data sets for comparisons are made independently from each other and thus Bonferroni correction is not performed.

Data were then analyzed in a two-way Analysis of Variance (ANOVA) to detect main effects and interaction effects, (i) for L1-English and L1-Korean adults, on information status (given-theme vs. given-recipient) and on type of referent (NP Task vs. Pronoun Task) as between-participant variables and (ii) for L1-English and L1-Korean children, L2-English and L2-Korean adults, and L2-English children, on information status (given-theme vs. given-recipient) and group as between-participant variables per task. Finally, post hoc analysis was conducted when it was necessary to determine which groups differed from each other. All statistical tests used an alpha value of .05.

6.3 Motivation and criteria of individual consistency

In addition to group results in each population, the data were further analyzed for consistency in each individual’s [Given–New] choices (i.e., where word order aligns with information structure). This closer examination of the individual results can reveal the patterns of [Given–New] vs. [New–Given] choices within each group (even when statistical differences may not have been found), and, if any, the direction of ordering preferences in each individual. The results of individual consistency are presented by condition, i.e., given-theme vs. given-recipient, in both the NP Task and the Pronoun Task, yielding 4 conditions: (i) given-theme in the NP Task; (ii) given-theme in the
Pronoun Task; (iii) given-recipient in the NP Task; (iv) given-recipient in the Pronoun Task. As with group results, the English studies present the *given-theme* condition first, and the Korean studies present the *given-recipient* condition first. The ordering sequences of the 4 conditions for the English studies and the Korean studies are set out in Table 6.1.

Table 6.1. Ordering Sequence of Individual Consistency across Conditions per Study

<table>
<thead>
<tr>
<th></th>
<th>given-theme</th>
<th>given-recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>Korean</td>
<td>given-recipient</td>
<td>NP Task</td>
</tr>
<tr>
<td></td>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
</tbody>
</table>

We calculated probabilities to set the criteria for individual consistency. Recall that each condition consists of 6 tokens. Probabilities of 4 or more out of 6 and 5 or more out of 6 were computed; the probability of getting 4 or more out of 6 correct simply by guessing is .34 (i.e., 34% chance). In other words, of 3 individuals who are guessing, one will get 4 or more out of 6 correct by choosing Given–New orders. For 5 or more out of 6, the probability is .11 (11% chance). Of 10 individuals who are guessing, one will get 5 or more out of 6 correct. As the *Given-before-New Principle* is a relatively soft constraint as compared to syntactic constraints (e.g., binding, subjacency), we adopt a comparatively moderate criterion for individual consistency. Those who chose at least 4 (out of 6) Given–New (or New–Given) orderings (per condition) were counted as “consistent.”

However, this only holds when there are 6 tokens, as is always the case in the Korean study. Recall that L2-English adults and L2-English children were tested on their knowledge of dative syntax via the acceptability judgment task (AJT), after the oral contextualized preference tasks; only the verbs on which both the PD and the DOD were accepted were analyzed for the Preference Tasks. That is, some individuals had only 5 verbs correct, some only 4, and so on. We set the cutoff for inclusion in the consistency analysis at 4 verbs (*k* = 4), viz., individuals who in the AJT had 4 verbs or more correct (i.e., *k* = 4, *k* = 5, *k* = 6); those with a correctness score of less than 4 were excluded.

Probabilities were therefore also calculated for the case of 5 tokens and 4 tokens. Out of 5 tokens, the probability of getting 3 or more correct is .50 (i.e., 50% chance) and
4 or more is .19 (19% chance). Since the probability .50 is at chance level, the probability .19 was chosen. That is, of 5 individuals who are guessing, one will get 4 or more out of 5 correct by choosing Given–New orderings. Out of 4 tokens, the probability of getting 2 or more out of 4 correct is .69 (69%) and 3 or more is .31 (31%), and so the latter, which is close to the probability of 4 or more out of 6 (i.e., .34), was chosen as the criterion here. Thus, in the L2-English individual preference-task analyses, only those who chose Given–New (or New–Given) orderings (per condition) either in at least 4 out of 5 or 6 tokens or in at least 3 out of 4 tokens were counted as “consistent.” Table 6.2 presents the criteria for individual consistency depending on the number of tokens and the probability in each population in the present study. When an individual satisfies the consistency criteria, he or she gets a √ in the tables of individual consistency, which indicates “consistent” (see Tables 6.3 and 6.4).

Table 6.2. Criteria for Individual Consistency in Each Population in the Present Study

<table>
<thead>
<tr>
<th>Table 6.2. Criteria for Individual Consistency in Each Population in the Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1-English Adults &amp; Children</td>
</tr>
<tr>
<td># of tokens criteria probability</td>
</tr>
</tbody>
</table>

6.3.1 Criterion of individual adherence to Given–New for the English studies

As for the criterion of an individual’s adherence to the Given-before-New Principle, in the given-theme condition in English, Given–New PD competes with New–Given DOD. Recall that the PD can be felicitously used for both Given–New and New–Given, whereas the DOD causes processing difficulty when paired with New–Given (e.g., Brown et al., 2012; Clifton & Frazier, 2004). Hence, in the given-theme condition, it is uncertain whether (strong) preference for the Given–New PD has to do with information structure per se, i.e., Given–New vs. New–Given, or with construction type, i.e., PD ([NP PP]) vs. DOD ([NP NP]).
Happily, these two factors can be teased apart in English in the *given-recipient* condition, in which New–Given PD competes with Given–New DOD. If a speaker’s choice is more guided by construction type, i.e., PD vs. DOD, his/her choice would be **New–Given PD** ([NP PP]) regardless of the *Given-before-New Principle*; on the contrary, if information structure is at play, he/she would more likely choose **Given–New DOD** ([NP NP]) in compliance with the *Given-before-New Principle*. Hence, the *given-recipient* condition is much more informative in determining an individual’s adherence to the *Given-before-New Principle* in the English dative alternation.

With this in mind, an individual is considered to be **truly adhering to the **Given-before-New Principle** (marked as YES) when he or she shows consistency in choosing Given–New orders in **3 or more (≥ 75%) of 4 conditions** (i.e., at least one of which must always be a *given-recipient condition*). The rubric of individual consistency and adherence to the *Given-before-New Principle* for our English studies is in Table 6.3.

Table 6.3. Rubric of Individual Consistency of the Given–New Orderings and Adherence to Given-before-New for Our English Studies

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to the Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>given-theme</strong> [NP PP]</td>
</tr>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>✓ in either task</td>
<td>✓ in either task</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>otherwise</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Notes.** ✓ = passing the consistency criteria (i.e., ≥ 4 out of 6 tokens, ≥ 4 out of 5 tokens, or ≥ 3 out of 4 tokens)
YES = passing the adherence criterion (i.e., ≥ 3 ✓s out of 4 conditions)

6.3.2 Criterion of individual adherence to Given–New for the Korean studies

For Korean, the *given-recipient* condition, where Given–New [IO–DO] competes with New–Given [DO–IO], corresponds information structurally to the *given-theme* condition in English. Research on both frequency (Choi, 2009) and processing (Jackson,
2008) suggests that whereas the canonical [IO–DO] order can be felicitously used in both Given–New and New–Given, scrambled orders causes processing difficulty when paired with New–Given. The focus is thus on the given-theme condition in Korean.

Accordingly, for our Korean studies, an individual is considered to be truly adhering to the Given-before-New Principle (marked as YES) only if he/she shows consistency of Given–New in 3 or more (≥ 75%) of 4 conditions (i.e., at least one of which must always be a given-theme condition), as laid out in Table 6.4.

Table 6.4. Rubric of Individual Consistency of the Given–New Orderings and Adherence to Given-before-New for Our Korean Studies

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to the Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>given-recipient</td>
<td>given-theme</td>
</tr>
<tr>
<td>NP Task, Pronoun Task</td>
<td>NP Task, Pronoun Task</td>
</tr>
<tr>
<td>√, √</td>
<td>√ in either task</td>
</tr>
<tr>
<td>√ in either task</td>
<td>√, √</td>
</tr>
<tr>
<td>√, √</td>
<td>√, √</td>
</tr>
<tr>
<td>otherwise</td>
<td></td>
</tr>
</tbody>
</table>

Notes. √ = passing the consistency criterion (i.e., ≥ 4 out of 6 tokens)
YES = passing the adherence criterion (i.e., ≥ 3 √s out of 4 conditions)

6.4 Given-before-New and ToM in L1 and L2 children

We made a conjecture that young children’s (non-)compliance with adult-like information structure has to do with their mastery of knowledge of ToM. Let us now turn to our predictions of a (causal) relation between these two. Recall that there are four logically possible outcomes, (9), as illustrated in Figure 6.1 (see Chapter 1):

(9) a. [–ToM], [–Given-before-New]
b. [+ToM], [+Given-before-New]
c. [+ToM], [–Given-before-New]
d. [–ToM], [+Given-before-New]
Figure 6.1. Four Logical Outcomes between ToM and Given-before-New

Notes. [+ToM] = children who have mastered ToM  
[-ToM] = children who have not yet

If there is a causal relation between ToM and the *Given-before-New Principle*, outcomes (i)/(9a) and (ii)/(9b) are straightforward: Children who have not yet mastered ToM do not adhere to the *Given-before-New Principle*, while children who have mastered ToM do adhere to the principle. Outcome (iii)/(9c) is also explicable, i.e., a lag between earlier development of ToM and later emergence of the *Given-before-New Principle*; however, the one outcome that is absolutely ruled out is (iv)/(9d), earlier adherence to the *Given-before-New Principle* than emergence of knowledge of ToM.

Children’s mastery of ToM was assessed by means of 2 false-belief tasks—the Smarties task and the Sally-Anne task in their native language (English or Korean). The children were divided into 3 groups based on the results: (i) [YES/YES] who passed both false-belief tasks; (ii) [YES/NO] who passed one of the tasks; (iii) [NO/NO] who passed neither. The distribution of age with respect to ToM is summarized in Tables 6.5 to 6.7.

Table 6.5. ToM and Distribution of Age: L1-English Children

<table>
<thead>
<tr>
<th>Child Group</th>
<th>N</th>
<th>5 years</th>
<th>6 years</th>
<th>7 years</th>
<th>8 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>YES/NO</td>
<td>17</td>
<td>0</td>
<td>13</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>NO/NO</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>2</td>
<td>17</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>
As Table 6.5 shows, for L1-English children \((n = 31; \text{age range } = 5–8; M = 6.5)\), there were 9 children who placed in the YES/YES group, 17 in the YES/NO group, and 5 in the NO/NO group. The youngest group (5-year-olds) has NO/NO only; the 2 oldest groups (i.e., 7- and 8-year-olds) do not have any NO/NO. L1-English children in this study begin to show knowledge of ToM from age 6.

Table 6.5 presents the results for L1-Korean children \((n = 29; \text{age range } = 4–8; M = 5.2)\): There were 15 children in the YES/YES group, 11 in the YES/NO group, and 3 in the NO/NO group. The 3 oldest groups (i.e., 6-, 7-, and 8-year-olds) have neither YES/NO nor NO/NO children. L1-Korean children in the present study begin to show knowledge of ToM from age 4.

Table 6.6. ToM and Distribution of Age: L1-Korean Children

<table>
<thead>
<tr>
<th>Child Group</th>
<th>(N)</th>
<th>4 years</th>
<th>5 years</th>
<th>6 years</th>
<th>7 years</th>
<th>8 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>15</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>YES/NO</td>
<td>11</td>
<td>2</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NO/NO</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
<td><strong>6</strong></td>
<td><strong>16</strong></td>
<td><strong>2</strong></td>
<td><strong>4</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

L1-Korean child L2ers of English \((n = 18; \text{age range } = 5–10; M = 8.5)\) placed in only YES/YES \((n = 15)\) and YES/NO \((n = 3)\), as shown in Table 6.7. That this population has no NO/NO children is likely due to their relatively older age as compared to those of the two L1-child groups and to a very small number at the ages of 5 \((n = 1)\) and 6 \((n = 1)\).

Table 6.7. ToM and Distribution of Age: L1 Korean-L2 English Children\(^{111}\)

<table>
<thead>
<tr>
<th>Child Group</th>
<th>(N)</th>
<th>5 years</th>
<th>6 years</th>
<th>7 years</th>
<th>8 years</th>
<th>9 years</th>
<th>10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>YES/NO</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NO/NO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
<td><strong>3</strong></td>
<td><strong>6</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

\(^{111}\) Recall that L2 children took the 2 false-beliefs tasks in their L1, Korean. Also, although 18 L2 children were originally tested, data from only 16 were included for analysis (see §6.7 for details).
6.5  Adult/Child L1- and adult L2-English studies

The English studies included in this section involve 3 different population groups: (i) L1-English adults, (ii) L1-English children, and (iii) L1 Korean-L2 English adults.

6.5.1  Adult L1 English

6.5.1.1  Group results: L1-English adults

The group results for L1-English adults are provided in Figure 6.2. In the *given-theme* condition, native adults chose Given–New [NP PP] (i.e., PD) 86% of the time in the NP Task ($t(19) = 11.831, p = .001$) and 99% of the time in the Pronoun Task. The latter has to do with the ungrammaticality of the New–Given [NP Pronoun] variant—the *[NP Pronoun] constraint (Akmajian & Henry, 1975; Collins, 1995; Erteschik-Shir, 1979; Kay, 1996; Larson, 1988). The DOD is not possible when the IO is a full NP (e.g., *some friends*) and the DO is a pronoun (e.g., *it*), as in (10b).\(^{112}\)

(10) Mary traveled to Spain with her family last summer. Sunday morning she went to a market for sightseeing and bought a *pretty cup*. It was green and said, “Made in Spain” on the bottom. One month later, she came back home. She pulled *the pretty cup* out of her bag.

a. Mary showed *it* to some friends.  
   [Given–New] PD
b. *Mary showed some friends *it*.  
   [New–Given] DOD

Thus, the categorical pattern in the given-theme condition of the Pronoun Task indicates that our native adults are sensitive to the *[NP Pronoun] constraint.

In the *given-recipient* condition, L1-English adults chose Given-New [NP NP] 71% of the time in the NP Task and 82.5% in the Pronoun Task. Paired samples $t$-tests revealed that there were significant differences between Given–New orders and New–Given orders in both Tasks ($t(19) = 5.225, p = .001$; $t(19) = 6.091, p = .001$).

\(^{112}\) While the sequence [NP Pronoun] is out in the DOD (e.g., *Mary showed some friends it*), the DOD is possible when both objects are pronoun (e.g., *John gave him it*).
In order to statistically detect differences in sensitivity between conditions and between tasks, the data were analyzed in a two-way Analysis of Variance (ANOVA) with information status (given-theme vs. given-recipient) and referent type (NP Task vs. Pronoun Task) as between-participant variables and proportion of Given–New choices as the dependent variable. The results showed that there were main effects for information status ($F(1, 76) = 18.488, p < .001$) and for referent type ($F(1, 76) = 11.523, p < .01$). The given-theme condition had a significantly higher proportion of Given–New choices than the given-recipient condition did, and the Pronoun Task had significantly more Given–New choices than the NP Task did; the latter is in part due to the ungrammaticality of \([\text{NP Pronoun}]\).

Finally, L1-English adults’ consistent preference for Given–New in both the given-theme condition and the given-recipient condition across the tasks resulted in no interaction effect between information status and referent type.

### 6.5.1.2 Individual results: L1-English adults

The results of individual consistency are summarized in Table 6.8 for L1-English adults. The criterion of individual consistency here (marked as $\checkmark$) is at least 4 out of 6 tokens (but see below); and the criterion of adherence to the Given-before-New Principle (marked as YES) is Given-New choices in at least 3 out of 4 conditions (see §6.3).
Table 6.8. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L1-English Adults

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NP Task Pronoun Task</td>
</tr>
<tr>
<td>given-theme</td>
<td>√</td>
</tr>
<tr>
<td>given-recipient</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>×</td>
</tr>
<tr>
<td></td>
<td>√</td>
</tr>
<tr>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; × = < 4 Given–New choices; YES = ≥ 3 √s out of 4 conditions; NO = < 3 √s

L1-English adults had higher Given–New rates in the given-theme condition than in the given-recipient condition. Each condition yields a maximum of 40 √s (20 participants × 2 tasks per condition). For the given-theme condition, where Given–New order aligns with [NP PP], there were 39 √s (98%: 19 √s from the NP Task; 20 √s from the Pronoun Task). For the given-recipient condition, where Given–New order aligns with [NP NP], there were 32 √s (80%: 15 √s from the NP Task; 17 √s from the Pronoun Task). These results suggest that native adult speakers virtually never use the DOD for New–Given, whereas they do use the PD for both Given–New and New–Given. Finally, according to the criteria of adherence to the Given-before-New Principle, 17 out of 20 (85%) L1-English adults adhered to this principle, consistently preferred the Given–New order.

6.5.1.3. Discussion and conclusion: L1-English adults

The group results (Figure 6.2) and the individual results (Table 6.8) suggest that L1-English adults (n = 20) have a harmonic alignment in the dative alternation with respect to information structure. When a given theme precedes a new recipient, they are significantly more likely to choose Given–New [NP THEME PP RECIPIENT] (PD); when a given recipient precedes a new theme, they are significantly more likely to choose...
Given–New [NP<sub>RECIPIENT</sub> NP<sub>THEME</sub>] (DOD). These results dovetail with earlier adult corpus and experimental studies on information structure in the English dative alternation, which thereby validates our experimental paradigm.

It was observed that L1-English adults also showed a different degree of sensitivity to givenness with respect to construction type (PD vs. DOD). The proportion of Given–New choices was significantly higher on the PD in the given-theme condition than on the DOD in the given-recipient condition in both tasks (PD = 86% > DOD = 71% in the NP Task; PD = 99% > DOD = 82.5% in the Pronoun Task). These results suggest that whereas our native adults use the DOD for the Given–New order almost exclusively, they use the PD for both Given–New and New–Given orders, albeit to a lesser extent for the latter. Hence, our comprehension data provide evidence that the PD is the default, as claimed earlier in Clifton and Frazier (2004).

Recall that Clifton and Frazier (2004) noted that in their reanalysis of both a corpus study and a production study by Arnold et al. (2000), whereas the (Given–New) definite–indefinite [NP PP] order occurs much more frequently than the (New–Given) indefinite–definite [NP NP] order, the (New–Given) indefinite–definite [NP PP] order is equally frequent as the (Given–New) definite–indefinite [NP NP] order. Moreover, in their own speeded acceptability judgment task (see Figure 6.3 below), Clifton and Frazier found that there is a significant advantage in [NP NP] (DOD) sentences, both in terms of response times and accuracy, when they align with the Given–New order—but, importantly, this advantage is not extended to [NP PP] (PD) sentences, i.e., [NP PP] is felicitous in both aligned Given–New and nonaligned New–Given orders.
In addition, as already noted above, the present study also found a significant effect of referent type. Given–New orders were chosen significantly more often in the Pronoun Task than in the NP Task in both conditions (Pronoun = 99% > NP = 86% in the given-theme condition; Pronoun = 82.5% > NP = 71% in the given-recipient condition). Thus, in the given-theme condition, native adults chose [Given–New] PD significantly more often in the Pronoun Task ((12a) > (12b)), where the [New–Given] DOD (e.g., *John brought some friends it) is ungrammatical, than in the NP Task ((11a) > (11b)).

**given-theme**

(11) NP Task
a. John brought the pie to some friends.  [Given–New] PD
b. John brought some friends the pie.  [New–Given] DOD

(12) Pronoun Task
a. John brought it to some friends.  [Given–New] PD
b. *John brought some friends it.  [New–Given] DOD
As for the given-recipient condition, where all choices are grammatical, native adults chose [Given–New] DOD significantly more often again in the Pronoun Task ((14a) > (14b)) than in the NP Task ((13a) > (13b)).

**given-recipient**

(13) NP Task
   a. John sent the teacher some letters. [Given–New] DOD
   b. John sent some letters to the teacher. [New–Given] PD

(14) Pronoun Task
   a. Mary sold him some toys. [Given–New] DOD
   b. Mary sold some toys to him. [New–Given] PD

This stronger effect of givenness (in the given-recipient condition) in the Pronoun Task over the NP Task can be partly explained by the relative length difference between the theme and the recipient in each task; in the NP Task, the theme (e.g., *the teacher*) and the recipient (e.g., *some letters*) have identical length, whereas in the Pronoun Task, the theme (e.g., *some toys*) is relatively longer than the recipient (e.g., *him*). The native adults tend to place the shorter NP prior to the longer NP (*Mary sold him some toys* rather than *Mary sold some toys to him*), in accord with the so-called End Weight Principle (e.g., Behaghel, 1909/10; Hawkins 1990, 1994; Quirk et al., 1972; Wasow, 1997a, b).113

The significant difference regarding referential type (pronoun vs. lexical NP) also provides empirical evidence for the Givenness Hierarchy in English (Givón, 1983; Gundel et al., 1993), whereby cognitive statuses (i.e., givenness) are ordered from most restrictive to least restrictive with respect to referring expressions. Based on the results of our native adults, I present a reduced version of the Givenness Hierarchy in Figure 6.4, which includes only the three levels relevant to the degree of givenness in the present

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113 William O’Grady (personal communication, 9 May 2014) suggests that another possible factor may have to do with the fact that these (indirect object) pronouns have reduced forms: *əm, er, əm* for *him, her, them*. These reduced forms are “phonologically dependent on an immediately preceding verb or preposition,” i.e., they are (phonological) clitic pronouns (Nevis, Joseph, Wanner, & Zwicky, 1994, p. xiii). Note that our test sentences did not include reduced forms.
study: the most continuous topic in the form of a pronoun, the next continuous one, a definite lexical NP (the + N), and the least continuous one, an indefinite NP (some + N).

![Givenness Scale in English](adapted from Gundel et al., 1993, p. 275, (1))

### 6.5.2 Child L1 English

L1 children’s adherence to the *Given-before-New Principle* was tested with respect to their knowledge of ToM. Recall that children’s mastery of ToM was measured via 2 false-belief tasks—i.e., the Smarties task and the Sally-Anne task. L1-English children (n = 31; age range = 5–8; M = 6.5) were divided into 3 groups: (i) **YES/YES** children (n = 9) who passed both tasks, (ii) **YES/NO** children (n = 17) who passed one of the tasks, and (iii) **NO/NO** children (n = 5) who passed neither task (see Table 6.5 in §6.4 for the details).

Recall that in order to test for adherence to the *Given-before-New Principle* in the English dative alternation, one first needs to determine whether both the PD and the DOD are allowed for those verbs used to test such adherence. On this logic, in Chapter 3 (§3.2.1), I provided evidence that L1-English children acquire DODs and PDs by the age of 3. Given the L1-English children’s age range—i.e., 5 to 8—in my study, I assume that they have all mastered the syntax of the English dative alternation, and in particular for the 6 (common) verbs used in the current study (i.e., *bring, give, mail, sell, send, show*).

#### 6.5.2.1 Group results: L1-English children

For statistical analysis, the NO/NO group was excluded because its sample size (n = 5) is too small (see §6.2). The results for the YES/YES and the YES/NO groups are presented in Figure 6.5 for the NP Task and Figure 6.6 for the Pronoun Task. In the *given-theme* condition, the YES/YES and the YES/NO groups significantly preferred
Given–New [NP PP] (PD) in the NP Task (74%, \(t(8) = 4.914, p = .001\); 79%, \(t(16) = 6.061, p = .001\)) and in the Pronoun Task (83%, \(t(8) = 6.928, p = .001\); 88%, \(t(16) = 10.286, p = .001\)).

In the given-recipient condition, however, the 2 groups showed different patterns between the NP Task and the Pronoun Task: In the NP Task, the YES/YES group showed no preference between Given–New and New–Given (50% vs. 50%), but the YES/NO group chose New–Given [NP PP] (61%) more often than Given–New [NP NP] (39%), although not statistically. In the Pronoun Task, the YES/YES group chose Given–New [NP NP] more often than New–Given [NP PP] (61% vs. 39%), again, although not statistically; in contrast, the YES/NO group showed no ordering preference between Given–New and New–Given (45% vs. 55%). In sum, L1-English children’s ordering preferences in the given-recipient condition were not statistically verified.

Figure 6.5. Preference by Condition in the NP Task: L1-English Children
A two-way ANOVA was conducted on information status (given-theme vs. given-recipient) and group (L1 adults vs. YES/YES children vs. YES/NO children) as between-participant variables. The results of the NP Task found that information status had a significant effect ($F(1, 86) = 33.643, p < .001$); all three groups had higher proportions of Given–New choices in the given-theme condition than in the given-recipient condition (86% vs. 71% for L1 adults; 74% vs. 50% for YES/YES; 79% vs. 39% for YES/NO). The factor group also had a significant effect ($F(2, 86) = 8.802, p < .001$). The interaction of information status and group was significant, mainly due to the different patterns between the YES/YES group and the YES/NO group ($F(2, 86) = 3.461, p < .05$). The post hoc test revealed a significant difference between L1 adults and the YES/YES group as well as between L1 adults and the YES/NO group, but not between the 2 L1 child groups.

As for the Pronoun Task, there were main effects of information status ($F(1, 86) = 58.495, p < .001$) and group ($F(2, 86) = 22.084, p < .001$). The interaction between information status and group had a significant effect ($F(2, 86) = 6.458, p < .01$). The difference was significant between L1 adults and the YES/YES group as well as between L1 adults and the YES/NO group, but not between the 2 L1 child groups.
6.5.2.2 Individual results: L1-English children

It was found that unlike L1-English adults, L1-English children had a high rate of no ordering preference—what I will call a “split response,” choosing 3 Given–New orders and 3 New–Given orders out of 6 tokens per condition. Based on the individual consistency criterion of at least 4 out of 6 tokens within each condition (of each task), an individual’s result from 6 tokens (per condition) can be either consistent (i.e., ≥ 4 Given–New vs. ≤ 2 New–Given; ≥ 4 New–Given vs. ≤ 2 Given–New) or split (i.e., 3 Given–New vs. 3 New–Given). Thus, the possible maximum number of consistent or split responses is 4 in each participant (i.e., one per condition), which yields for the 31 L1-English children (9 YES/YES, 17 YES/NO, 5 NO/NO) a maximum of 124 consistent or split responses (31 × 4 conditions). Of these, 26 (21%) were split responses (cf. 7.5% split responses for L1-English adults). By condition, the rate of split responses in the given-recipient condition (31%) was higher than in the given-theme condition (11%), which resulted in children showing no ordering preference in the given-recipient condition. This suggests that the given-recipient condition, where Given–New aligns with DOD, causes difficulties in L1-English children. They are struggling with the construction choice with respect to information structure when Given–New [NP NP] competes with New–Given [NP PP].

In order to try to detect the directions of ordering preference in the given-recipient condition, which were not apparent in the group results, we examined the ratio of individual consistency between Given–New vs. New–Given, excluding split responses.

Table 6.9 summarizes the consistency results in the given-recipient condition for the NP Task. Out of a total of 20 consistent responses (i.e., 11 split responses excluded) for the 31 children (20 + 11 = 31), the overall ratio of individual consistency between Given–New [NP NP] vs. New–Given [NP PP] in the given-recipient condition was 8:12 (3:2 for YES/YES, 4:8 for YES/NO, 1:2 for NO/NO).114

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114 Both the consistent response (i.e., at least 4 out 6 tokens) and the split response (i.e., 3 tokens vs. 3 tokens) are determined based on 6 tokens per condition: Each condition yields either one consistent response or one split response per participant.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>YES/NO</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>NO/NO</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31</strong></td>
<td><strong>14</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New [NP NP] and 3 New–Given [NP PP]

Table 6.10 presents the consistency results in the given-recipient condition of the Pronoun Task. Out of a total 23 consistent responses (i.e., 8 split responses excluded), the ratio of individual consistency between Given–New [NP NP] vs. New–Given [NP PP] was 14:9 (5:1 for YES/YES, 4:8 for YES/NO, 5:0 for NO/NO). The YES/YES and NO/NO groups had more consistency on Given–New [NP NP] (DOD), while the YES/NO group had more consistency on New–Given [NP PP] (PD).


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>YES/NO</td>
<td>4</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>NO/NO</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>31</strong></td>
<td><strong>14</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New [NP NP] and 3 New–Given [NP PP]

These results suggest that the YES/NO group shows a preference for the PD in the given-recipient condition in both the NP Task and the Pronoun Task despite New–Given
information structure. By contrast, the YES/YES group shows sensitivity to givenness when the given entity is a pronoun, but not (clearly) when the given entity is a definite lexical NP. Similarly to the YES/YES group, the NO/NO group shows a preference for Given–New [NP NP] when the given entity is a pronoun.

To have an even closer look, let us now turn to the details of individual consistency of Given–New in each condition in L1-English children (n = 31), as summarized in Table 6.11.

Table 6.11. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L1-English Children

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>given-theme</td>
<td></td>
</tr>
<tr>
<td>Given–New [NP PP]</td>
<td></td>
</tr>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>other</td>
<td>other</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>×</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; × = < 3 √s out of 4 conditions; NO = < 3 √s

Each condition in each task yields a maximum of 31 consistent responses. For the given-theme condition across the tasks (31 × 2 tasks = 62 = the maximum), 55 responses (89%) were consistent (25 from the NP Task; 30 from the Pronoun Task), whereas for the given-recipient condition across the tasks, only 22 responses (35%) were consistent (8 from the NP Task; 14 from the Pronoun Task). As for individual children’s adherence

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115 Responses that are not consistent in the given-theme condition are all split fifty-fifty between Given–New [NP PP] and New–Given [NP NP], that is, no child consistently chose the DOD.
to the *Given-before-New Principle*, 6 (67%) from the YES/YES group, 6 (35%) from the YES/NO group, and 4 (80%) from the NO/NO group displayed adherence to the principle.

### 6.5.2.3 Discussion and conclusion: L1-English children

The group results (Figure 6.5 for the NP Task and Figure 6.6 for the Pronoun Task) suggest that in the *given-theme* condition, L1-English children significantly prefer *Given–New [NP PP]* over *New–Given [NP NP]* across the tasks. In the *given-recipient* condition, in contrast, some groups showed no ordering preference, especially in the NP Task, where the rate of split responses is high. Overall, L1-English children as a group do not adhere to the *Given-before-New Principle*.

Let us now return to the relation between compliance with the *Given-before-New Principle* and knowledge of ToM in L1 children. Recall that there are four possible outcomes concerning this relation. For convenience, here I present Figure 6.1 again.

![Figure 6.1. Four Logical Outcomes between ToM and the Given-before-New Principle](image)

**Notes.** Modelled on [Tolmie & Wellman, 2001] with permission.

The YES/YES children and the NO/NO children are unproblematic: We consider the YES/YES group as [+ToM] and the NO/NO group as [–ToM]. But the YES/NO children are not as straightforward in that they passed one of the false-belief tasks—the Smarties...
test\textsuperscript{116}—and are thus considered to fall between the YES/YES group and the NO/NO group. There may be some false-belief understanding in the YES/NO children, although it is not as solid as that of YES/YES children. In this respect, they can be grouped into [+ToM]; on the other hand, they may be grouped into [–ToM] in that their knowledge is not yet complete. Hence, these children in our study are not individually considered to test the putative causal relation between [+/–ToM] and the Given-before-New Principle.

The results of individual consistency (Table 6.11) show that 6 out of 9 YES/YES children adhere to the Given-before-New Principle, but the other YES/YES children do not; these results conform to, respectively, outcomes (ii) and (iii) in Figure 6.1. The NO/NO group also has cases of both non-adherence (1 out of 5) and adherence (4 out of 5) to the principle; these results conform to, respectively, outcomes (i) and (iv) in Figure 6.1. While categories (i)–(iii) are understandable under a hypothesis positing a causal relation between knowledge of TOM and adherence to the Given-before-New Principle (see §6.4), those 4 children, falling into category (iv), constitute a problem: outcome (iv)––[–ToM], [+Given-before-New]—should not occur if ToM is a prerequisite to the principle. Still, we are somewhat hesitant to view these cases, i.e., 4 out of 5 NO/NO children, as conclusive evidence that there is no causal relation between the two because the sample size of the NO/NO group is so small. If this scales up with more NO/NO children, ToM is not the explanation for the Given-before-New Principle.

6.5.3  Adult L2 English  
6.5.3.1 Group results: L2-English adults  
L2-English adults were divided into 2 proficiency levels (see Table 5.12 in §5.7): (i) Higher group \((n = 16)\) and (ii) Lower group \((n = 14)\). Recall that in order to test L2ers’ sensitivity to the Given-before-New Principle in the English dative alternation, one first needs to ascertain whether they in fact permit both the PD and the DOD for those verbs used to test such sensitivity. Therefore, the data analysis of the 2 oral contextualized preference tasks included, for each participant, only those critical items with the verbs that he or she allowed as both PD and DOD in the AJT (for L1 adults, a

\textsuperscript{116} All YES/NO children passed the Smarties test, but not the Sally-Anne test.
total of 114 verb items; for the Higher L2 adult group, a total 70 verb items; and for the Lower L2 adult group, a total of 53 verb items), as presented in Table 6.12.

Table 6.12. Number of Verbs on which Both PD and DOD were Accepted in AJT: L2-English Adults

<table>
<thead>
<tr>
<th>Verb</th>
<th>L1 adults (n = 20)</th>
<th>Higher L2ers (n = 16)</th>
<th>Lower L2ers (n = 14)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>bring</td>
<td>20</td>
<td>11</td>
<td>7</td>
<td>114 out of 120</td>
</tr>
<tr>
<td>give</td>
<td>20</td>
<td>16</td>
<td>12</td>
<td>70 out of 96</td>
</tr>
<tr>
<td>mail</td>
<td>15</td>
<td>7</td>
<td>8</td>
<td>53 out of 84</td>
</tr>
<tr>
<td>sell</td>
<td>19</td>
<td>10</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>send</td>
<td>20</td>
<td>12</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>show</td>
<td>20</td>
<td>14</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

First, for the L1 adults, there was no difference in group results between the 114 verb items (i.e., just those verbs on which both the PD and the DOD were accepted per individual in the AJT) and all 120 verb items. This is compared in Table 6.13.

Table 6.13. Comparisons of Group Results of Preference by Condition between 120 Verb Items and 114 Verb Items: L1-English Adults

<table>
<thead>
<tr>
<th>Condition</th>
<th>120 verb items</th>
<th>114 verb items</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Given–New] PD</td>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td>NP Task</td>
<td>86%</td>
<td>85%</td>
</tr>
<tr>
<td>Pronoun Task</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>[Given–New] DOD</td>
<td>71%</td>
<td>69%</td>
</tr>
<tr>
<td>NP Task</td>
<td>82.5%</td>
<td>82%</td>
</tr>
<tr>
<td>Pronoun Task</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes. 120 verbs = all items
114 verb items = verb items on which both the PD and the DOD were accepted per individual in the AJT

As for L2ers, for the NP Task, as is presented in Figure 6.7, in the given-theme condition, both the Higher L2 group and the Lower L2 group significantly preferred the Given–New [NP PP] order (83%, $t(15) = 4.251, p = .001$; 81%, $t(13) = 2.963, p = .011$). In contrast, in the given-recipient condition, the Higher L2 group numerically (but not statistically) preferred the New–Given [NP PP] order (63%). The Lower L2 group significantly preferred the New–Given [NP PP] order (68%, $t(13) = -3.085, p = .009$).

117 In Figures 6.2, 6.5, and 6.6, L1-English adults’ group results on the preference tasks are based on all 120 items; from here on out, their results are based on the 114 verb items.
The data from the NP Task were analyzed in a two-way ANOVA with information status (given-theme vs. given-recipient) and group (L1 adult vs. Higher L2 vs. Lower L2) as between-participant variables. The results revealed that information status had a significant effect ($F(1, 468) = 80.580, p < .001$); all 3 groups chose Given–New more in the given-theme condition than in the given-recipient condition (85% vs. 69% for L1 adults; 83% vs. 37% for the Higher L2 adults; 81% vs. 32% for the Lower L2 adults).

The factor group also had a significant effect ($F(2, 468) = 11.575, p < .001$). Post hoc analysis found that there were significant differences between L1 adults and the Higher L2 group and between L1 adults and the Lower L2 group, but not between the 2 L2 groups. The interaction of information status and group was also significant ($F(2, 468) = 8.090, p < .001$). L1-English adults and L2ers patterned alike in the given-theme condition, whereas they showed striking contrasts in the given-recipient condition. L1-English adults showed a clear preference in the given-recipient condition for Given–New [NP NP], while both L2 groups showed a preference for the reversed order, i.e., New–Given [NP PP].

Now let us turn to the results of the Pronoun Task, which are quite different from those of the NP Task (for the L2ers), as shown in Figure 6.8.
This time both L2 groups displayed similar patterns to that of L1 adults across conditions, with preferences for the Given–New order in both the given-theme condition (94% for the Higher L2 group, $t(15) = 8.875, p = .001$; 92% for the Lower L2 group, $t(13) = 5.582, p = .001$) and the given-recipient condition (69% for the Higher L2 group; 62% for the Lower L2 group). Paired samples $t$-tests revealed that in the given-recipient condition, there was a significant difference between Given–New [NP PP] and New–Given [NP NP] for the Higher L2 group ($t(15) = 3.372, p = .004$), but not for the Lower L2 group.

A two-way ANOVA run on the Pronoun Task revealed that the factor information status (given-theme vs. given-recipient) had a significant effect ($F(1, 468) = 56.668, p < .001$); all 3 groups had Given–New more in the given-theme condition than in the given-recipient condition (99% vs. 82% for L1 adults; 94% vs. 69% for the Higher L2 group; 92% vs. 62% for the Lower L2 group). The factor group also had a significant effect ($F(2, 468) = 6.380, p < .01$). The difference was significant between L1 adults and the Higher L2 group and between L1 adults and the Lower L2 group, but not between the 2 L2 groups. In contrast, there was no significant interaction between information status and group. All 3 groups had parallel patterns across conditions, preferring Given-New orders over New–Given orders.
6.5.3.2 Individual results: L2-English adults

Recall that the inclusion criterion for data analysis on individual consistency requires a participant to accept both the PD and the DOD on \textit{at least 4 of the 6 verbs} in the AJT; this led to the retention of 13 out of 16 Higher L2ers and 6 out of 14 Lower L2ers. The criterion for consistency in each condition is \textit{at least 3 out of 4 tokens} \((k = 4)\), \textit{at least 4 out of 5 tokens} \((k = 5)\), or \textit{at least 4 out of 6 tokens} \((k = 6)\) (see §6.3).

Table 6.14 summarizes individual consistency of the Given–New orders and individual adherence to the \textit{Given-before-New Principle} in L2-English adults. Adult L2ers (who allowed both PD and DOD per individual verb on \textit{4 verbs or more out of 6}) showed more consistency in the given-theme conditions than in the given-recipient conditions. By group, 7 (54\%) of 13 Higher L2ers and 3 (50\%) of 6 Lower L2ers consistently preferred the Given–New order in \textit{at least 3 out of the 4 conditions}, thereby being considered to be truly adhering to the \textit{Given-before-New Principle}.


<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>Given–New [NP PP]</td>
<td></td>
</tr>
<tr>
<td>(\times)</td>
<td>(\checkmark)</td>
</tr>
<tr>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
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<tr>
<td>(\checkmark)</td>
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<td>(\checkmark)</td>
<td>(\checkmark)</td>
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<tr>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

Notes. \(\sqrt{\checkmark} = \geq 3\) Given–New choices out of 4 \textit{tokens}; \(\geq 4\) Given–New choices out of 5 or 6 \textit{tokens}; otherwise \(\times\)  
YES = \(\geq 3\) \(\sqrt{\checkmark}\)s out of 4 \textit{conditions}; NO = \(< 3\sqrt{\checkmark}\)

\(^{118}\) Of 31 L2 adults, 19 allowed both the PD and the DOD per given verb on \textit{at least 4 of 6 verbs}.
6.5.3.3 Discussion and conclusion: L2-English adults

L2-English adults’ compliance with the *Given-before-New Principle* in the *given-theme* conditions is unproblematic. This is not so for the *given-recipient* condition, however. In the *given-recipient* conditions, adult L2ers show (significant) preference for Given–New [NP NP] in the Pronoun Task, but they prefer the *New–Given* [NP PP] order in the NP Task. The given-theme condition has Given–New aligning with [NP PP], whereas the given-recipient condition has Given–New aligning with [NP NP]. It is uncertain whether L2ers’ observance of Given–New in the given-theme conditions stems from a preference for [NP PP] or from the *Given-before-New Principle*. L2ers’ observance of Given–New in the *given-recipient* conditions, however, more obviously results from their compliance with the *Given-before-New Principle*; accordingly, the *given-recipient* condition is critical in judging L2ers’ adherence to the principle. Note that it was determined (from the AJT) that the cause of these L2ers’ syntactic bias for the New–Given [NP PP] order (in the given-recipient condition of the NP Task) cannot be incomplete lexico-syntactic knowledge of the set of verbs that enter into the English dative alternation.

We integrate two factors to account for adult L2ers’ bias for [NP PP] (PD). The first has to do with *input frequency*. In Clifton and Frazier’s (2004) reanalyses of Arnold et al.’s (2000) corpus and production studies, they found (New–Given) indefinite–definite [NP PP] order to be *equally frequent* as (Given–New) definite–indefinite [NP NP] order. In addition, in her Switchboard corpus study, Bresnan (2007) found that for the DOD, [Pronoun NP] is far more frequent than [NP NP]. Our data likewise show that L1 adults chose Given–New [NP NP] with two lexical NPs at a relatively lower rate (69% in the NP Task vs. 82% in the Pronoun Task). The second factor is that *the PD is the default*, as claimed by Clifton and Frazier (2004), which was corroborated in our native adult data (§6.5.1.3). The PD can be felicitously used for both Given–New and New–Given orders, whereas the DOD is infelicitous for the New–Given order. In light of these two factors, we are now in a position to return to the *given-recipient* condition in the NP Task: When

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While the PD is more *type-frequent* (only a subset of dative verbs enter into dative alternation), the DOD is far more *token-frequent*. If input frequency plays a role in determining the adult L2ers’ default, they are evidently more sensitive to type-frequency than to token-frequency.
the (less basic) (Given–New) [NP NP] order competes with the (more basic) felicitous (New–Given) [NP PP] order, adult L2ers are prone to choose the latter—i.e., the default.

Finally, both the group results on the basis of proficiency level (Figure 6.7 for the NP Task and Figure 6.8 for the Pronoun Task) and the results on the basis of analysis by individuals (Table 6.14) suggest an implicational scale for Korean adult L2ers of the English dative alternation, as illustrated in Figure 6.9:

![Figure 6.9. Implicational Scale for L2-English Adults’ Use of Given-before-New](image)

Initial, ostensible compliance with the Given-before-New Principle is in the given-theme condition, whether the given referent be a definite lexical NP or a pronoun, although this may simply be reliance on the (safe) default PD. Genuine adherence to the principle is ascertainable in the given-recipient condition, and this begins with pronominal given referents. Last to show adherence are lexical-NP given referents in the given-recipient condition; this lag between pronominals and lexical NPs suggests that the adult L2ers are differentially sensitive to givenness in accordance with the degree of topic continuity.

To sum up, adult L2ers’ bias for [NP PP] cannot simply be due to their lack of lexico-syntactic knowledge of the DOD (i.e., for particular verbs). Adult L2ers who have acquired the English dative alternation for a given verb comply with the Given-before-New principle when the given-theme is a pronoun or a definite lexical NP, when the given-recipient is a pronoun, but not (yet) when the given-recipient is a definite lexical NP. In short, our L2-English adults who adhere to the Given-before-New Principle in their L1 show incomplete adherence to this principle in their L2.

6.5.4 Summary of the English studies

To summarize: L1-English adults overwhelmingly adhere to the Given-before-New Principle such that they prefer Given–New [NP PP] over New–Given...

Unlike with L1 adults, the harmonic alignment of information structure does not appear in L1-English children. L1 children as a group prefer Given–New [NP PP] in the given-theme conditions. However, they do not show any evident ordering preference between Given–New and New–Given in the given-recipient conditions, the crucial conditions. A closer examination (excluding children with split responses) into response consistency in the given-recipient conditions found that in the NP Task, L1 children prefer New–Given [NP PP]; in the Pronoun Task, only the YES/NO group does so, while the YES/YES group and the NO/NO group prefer Given–New [NP NP]. Both the group results and the individual results suggest that L1-English children, aged 5-8, do not generally adhere to the Given-before-New Principle, having a syntactic bias toward the [NP PP] construction.

The (causal) relation between ToM and the Given-before-New Principle in L1 children was tested via individual consistency on four logically possible outcomes, as laid out in (9), repeated here for convenience:

(9)  
   a. [–ToM], [–Given-before-New]  
   b. [+ToM], [+Given-before-New]  
   c. [+ToM], [–Given-before-New]  
   d. [–ToM], [+Given-before-New]

If a causal relation holds, children who have not yet mastered ToM should not adhere to the Given-before-New Principle. This logic rules out outcome (9d). However, adherence to the principle was observed in both [+ToM] children (6 out of 9 in the YES/YES group) and [–ToM] children (4 out of 5 in the NO/NO group), and the latter group does not support a causal relation between ToM and the Given-before-New Principle.

Regarding adult L2 acquisition, the group results (Figure 6.7 for the NP Task and Figure 6.8 for the Pronoun Task) suggest that in the given-theme condition, adult L2ers (with lexico-syntactic knowledge of the dative alternation) prefer Given–New [NP PP] over New–Given [NP NP] across tasks. But in the given-recipient condition, they prefer
**Given–New [NP NP]** in the *Pronoun Task only*, and statistical significance between Given–New and New–Given emerged only in the Higher L2 group; in the given-recipient condition of the NP Task, adult L2ers prefer **New–Given [NP PP]** over Given–New [NP NP]. The results of individual consistency (Table 6.14) show that 10 out of 19 (53%) intermediate-to-advanced L2 adults (who allowed both PD and DOD on 4 or more of the 6 verbs) adhere to the *Given-before-New Principle*. These results suggest that about half of the L2-English adults have a bias for [NP PP], which overrides the *Given-before-New Principle*. We appeal to the proposal by Clifton and Frazier (2004) who argue—based on both the felicity of New–Given PD in given-recipient contexts and L1 adult on-line speeded AJT data—that the **PD is the default**. We suggest that the adult L2ers of English who do not comply with the *Given-before-New Principle* (crucially, in the given-recipient condition) prefer the PD default, despite the fact that they do adhere to the principle in their L1, as shown in the adult native Korean data discussed in the next section.

### 6.6 Adult/Child L1- and adult L2-Korean studies

The Korean studies involve 3 different population groups: (i) L1-Korean adults, (ii) L1-Korean children, and (iii) L1 English-L2 Korean adults.

#### 6.6.1 Adult L1 Korean

**6.6.1.1 Group results: L1-Korean adults**

Figure 6.10 shows the group results of L1-Korean adults. In the *given-recipient* condition, where Given–New orders align with the canonical [IO–DO] order, L1-Korean adults chose Given–New 86% and 87.5% of the time in, respectively, the NP Task and the Pronoun Task. In the *given-theme* condition, where Given–New orders align with the scrambled [DO–IO] order, they chose Given–New orders at the rates of 68% and 66% in, respectively, the NP Task and the Pronoun Task. There were significant differences between Given–New choices and New–Given choices across all conditions (86%, $t(19) = 9.245, p = .001$; 87.5%, $t(19) = 14.047, p = .001$; 68%, $t(19) = 2.643, p = .016$; 66%, $t(19) = 2.594, p = .018$).
A two-way ANOVA was conducted on information status (given-recipient vs. given-theme) and referent type (NP Task vs. Pronoun Task). The results showed that information status had a significant effect ($F(1, 76) = 14.271, p < .001$), but referent type did not. L1-Korean adults had significantly higher proportions of Given–New choices in the given-recipient condition than in the given-theme condition across the tasks ($[\text{IO–DO}] = 86\% > [\text{DO–IO}] = 68\%$ for the NP Task; $[\text{IO–DO}] = 87.5\% > [\text{DO–IO}] = 66\%$ for the Pronoun Task); however, the NP Task and the Pronoun Task yielded virtually identical proportions of Given-New choices across the conditions (86\% vs. 87.5\% for the given-recipient condition; 68\% vs. 66\% for the given-theme condition). The parallel patterns both across conditions and across tasks resulted in no interaction of information status and referent type.

### 6.6.1.2 Individual results: L1-Korean adults

As summarized in Table 6.15, L1-Korean adults had no problems with the given-recipient condition, where Given–New order aligns with the canonical order. However, in this condition it is uncertain whether this has to do with information structure per se, i.e., Given–New vs. New–Given or with construction type, i.e., canonical [IO–DO] order vs. scrambled [DO–IO]. This confound disappears in the given-theme condition where Given–New order occurs in the scrambled order. Using the same logic as
in the English studies in regard to the given-recipient condition (§6.5.1.2), in Korean the given-theme condition is critical in determining an individual’s adherence to the Given-before-New Principle.

Table 6.15. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L1-Korean Adults

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP Task:</td>
<td>NP Task:</td>
</tr>
<tr>
<td>x</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>x</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
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<tr>
<td>x</td>
<td>x</td>
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<td>x</td>
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<tr>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>18</td>
<td>20</td>
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<tr>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>L1-Korean adults (n = 20)</td>
<td></td>
</tr>
</tbody>
</table>

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; x = < 4 Given–New choices; YES = ≥ 3 √s out of 4 conditions; NO = < 3 √s

According to the criteria of at least 4 tokens (out of 6) for individual consistency and at least 3 conditions (out of 4) for adherence to the Given-before-New Principle, 15 out of 20 (75%) L1-Korean adults consistently preferred the Given–New order.

6.6.1.3 Discussion and conclusion: L1-Korean adults

Both the group results (Figure 6.10) and the individual results (Table 6.15) suggest that L1-Korean adults overwhelmingly adhere to the Given-before-New Principle in Korean canonical/scrambled dative orders. With a given recipient, they prefer Given–New [IO–DO] over New–Given [DO–IO]; with a given theme, they prefer Given–New [DO–IO] over New–Given [IO–DO]. The results conform to Choi’s (2009) corpus study on information structure in Korean dative constructions, which thereby validates our Korean experimental paradigm.
A statistical examination shows that there is a significant main effect of construction type (canonical [IO–DO] vs. scrambled [DO–IO]). L1-Korean adults choose Given–New orders significantly more often on the canonical order (86% and 87.5% across tasks) than on the scrambled order (68% and 66% across tasks). On the flip side, the New–Given [DO–IO] order (14% and 12.5% across tasks) is significantly less likely to be chosen than New–Given [IO–DO] (32% and 34% across tasks). Our L1 adults use the canonical order for both Given–New and New–Given, while adhering to the Given-before-New Principle nevertheless (i.e., scrambling preference only in the given-theme conditions).

The significant effect of construction type observed in our L1 adults is consistent with Jackson’s (2008) findings in her on-line reading-for-comprehension experiment on the given-before-new advantage in canonical vs. scrambled word orders in L1-Korean adults. I reviewed her study in Chapter 2. The dative sentences in Jackson include two types: [S–IO–DO–V] order as the canonical type, as in (15a/15c), and [IO–S–DO–V] order for the scrambled type, as in (15b/15d). Although Jackson used scrambled sentences that are different from those in our study [S–DO–IO–V] (see §2.5.2), her results may still be extendable to other types of Korean scrambled sentences.
A sample set of stimuli in Jackson (2008, p. 88, (4a)–(4d))

Context: ‘Yesterday Chelswu happened to hang out with a friend at a party.’

(NB: Context = English translation)

a. (Given–New) canonical

Chelswu-nun  **ku chinkwu-eykey**  yumyengan miswulka-lul sokayhayssta.
Chelswu-TOP  **that friend-DAT**  famous artist-ACC introduced

‘Chelswu introduced a famous artist to the friend.’

b. (New–Given) scrambled

yumyengan miswulka-eykey Chelswu-nun  **ku chinkwu-lul**  sokayhayssta.
famous artist-DAT Chelswu-TOP  **that friend-ACC**  introduced

‘Chelswu introduced the friend to a famous artist.’

c. (New–Given) canonical

Chelswu-nun  yumyengan miswulka-eykey  **ku chinkwu-lul**  sokayhayssta.
Chelswu-TOP famous artist-DAT  **that friend-ACC**  introduced

‘Chelswu introduced the friend to a famous artist.’

d. (Given–New) scrambled

**ku chinkwu-eykey**  Chelswu-nun  yumyengan miswulka-lul sokayhayssta.
**that friend-DAT**  Chelswu-TOP famous artist-ACC introduced

‘Chelswu introduced a famous artist to the friend.’

Figure 6.11 presents the reading times of canonical and scrambled dative sentences from Jackson (2008).

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120 I used Jackson’s (2008) English glosses.
Native Korean adults show the given-before-new advantage in the scrambled dative order only, reading the Given–New scrambled order (at 3,683 ms) significantly faster than the New–Given scrambled order (at 4,182 ms). This is because natives always read the canonical [S–IO–DO] order quickly (3,109 ms vs. 3,098 ms), whether or not it aligns with Given–New. Our preference data and Jackson’s (2008) on-line data together suggest that the canonical order can be felicitously used for both Given–New and New–Given orders, which thus indicates that the canonical [S–IO–DO] order is the default.

In contrast to construction type, no statistical difference is found for referent type. Recall that we used two types of referential expressions—i.e., a definite lexical NP and a pronoun—in the NP Task and the Pronoun Task, respectively. For the given referent, the NP Task uses [demonstrative + N] (e.g., ku phai ‘that pie’, ku sensayngnim ‘that teacher’) and the Pronoun Task uses a compound-type pronoun by combining the demonstrative ku ‘that’ with either a morpheme (e.g., kukes ‘it’, kupwun ‘he/him/she/her (honorific)’) or a noun (e.g., kuay ‘he/him/she/her’). L1-Korean adults show no difference in sensitivity to (non-)givenness between the 2 tasks, the proportions of Given–New choices being virtually identical. This differs from the L1-English adult results, where Given–New orders are chosen significantly more often in the Pronoun Task than in the NP Task. This difference between the 2 studies reflects an important crosslinguistic difference. Consider the Korean examples in (16) (where double-strikethrough indicates ‘phonetically empty’):
(16) a. [given-recipinet→new-theme]

Chelswu liked (his) **English teacher** very much. (The) teacher explained things in a way that is very easy to understand in a beautiful voice, so Chelswu never got bored in English class. (The) teacher was always kind (to him). So when (the) teacher left for another school, Chelswu was sad. Chelswu missed (the) teacher very much.

b. [given-theme→new-recipient]

Chelswu played and came back home. When Chelswu entered (the) kitchen, there were **two apple pies** looking delicious on (the) table. Chelswu asked (his) mom, “Mom, why did you bake **two pies**?” (His) mom answered, “We will eat **one** and give away the **other**.” Chelswu knew what to do with the **extra pie**.
Unlike English, in which pronouns are used to refer to an entity which was previously mentioned in the discourse, Korean uses zero-anaphora for a topical referent whose givenness has already been established, as illustrated in (16a) with the understood recipient (*ku sensayngnim-eykey* ‘the teacher’) and in (16b) with the understood theme (*ku phai-lul* ‘the pie’). As illustrated in Figure 6.12, in English the most continuous topic tends to be expressed by pronouns (Givón, 1983; Gundel et al., 1993; Marslen-Wilson, Levy, & Tyler, 1982), whereas in Korean the most continuous topic tends to be encoded by zero-anaphora (Hwang, 1983).

![Figure 6.12. Givenness Scales in English and Korean (adapted from Shin, 2007, p. 10 (7))](image)

In addition, as shown in the discourse contexts of the stimuli (that precede the test sentences) in the present study, illustrated in (17), Korean also has a tendency to use proper names, e.g., *Chelswu* in (17a)–(17b), kinship terms, e.g., *emma* ‘mom’ in (17b), and official titles, e.g., *sensayngnim* ‘teacher’ in (17a), to refer to a given entity to express social position, kinship, and interpersonal relations (Kim, 1997; Oh, 2002).
(17) a. **철수** (Chelswu)는 영어 선생님(yenge sensayngnim ‘(his) English teacher’)을 아주 좋아했어요. 선생님(sensayngnim ‘(the) teacher’)은 아름다운 목소리로 아주 쉽게 설명을 했기 때문에 철수(Chelswu)는 영어 수업이 전혀 지루하지 않았어요. 선생님(sensayngnim ‘(the) teacher’)은 항상 친절했어요. 그래서 선생님(sensayngnim ‘(the) teacher’)이 다른 학교로 떠났을 때, 철수(Chelswu)는 슬펐어요. 철수(Chelswu)는 선생님(sensayngnim ‘(the) teacher’)이 너무 보고 싶었어요.

[Chelswu liked (his) English teacher very much. (The) teacher explained things in a way that is very easy to understand in a beautiful voice, so Chelswu never got bored in English class. (The) teacher was always kind (to him). So when (the) teacher left for another school, Chelswu was sad. Chelswu missed (the) teacher very much.]


[Chelswu played and came back home. When Chelswu entered (the) kitchen, there were two apple pies looking delicious on (the) table. Chelswu asked (his) mom, “Mom, why did you bake two pies?” (His) mom answered, “We will eat one and give away the other.” Chelswu knew what to do with the extra pie.]

This factor also figures into the lack of difference in the Given–New choices between the NP Task and the Pronoun Task in Korean.
Finally, based on the discussion above, we suggest a modified givenness scale for Korean, in which the compound-type pronouns are treated the same as definite lexical NPs (demonstrative + N), as schematized in Figure 6.13.

![Figure 6.13. Givenness Scale in Korean](image)

**6.6.2 Child L1 Korean**

**6.6.2.1 Group results: L1-Korean children**

Recall that L1 children’s adherence to the *Given-before-New Principle* was tested in relation to their mastery of Theory of Mind. The L1-Korean children thus were divided into 3 groups based on the results of the 2 false-belief tasks, the Smarties test and the Sally-Anne test: (i) **YES/YES** children \( (n = 15) \) who passed both tasks, (ii) **YES/NO** children \( (n = 11) \) who passed one of the tasks, and (iii) **NO/NO** children \( (n = 3) \) who passed neither task (see Table 6.6 in §6.4 for the details of the results). For statistical analysis, the 3 NO/NO children were excluded because the sample size is too small.

As seen in Figure 6.14 for the NP Task and in Figure 6.15 for the Pronoun Task, in the *given-recipient* condition, a significant preference was found only in the YES/NO group in the NP Task: Given–New [IO–DO] (67%) vs. New–Given [DO–IO] (33%) \( (t(10) = 2.803, p = .019) \). In the *given-theme* condition of the NP Task, the YES/NO group significantly preferred New–Given [IO–DO] (64%) over Given–New [DO–IO] (36%) \( (t(10) = -2.324, p = .042) \). As for the YES/YES group, the only slight (numerical)

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121 Note that our Korean experiments did not use zero anaphora. Our results are therefore only relevant to the givenness scale (i.e., topic continuity by referential type) for compound-type pronouns, definite NPs (demonstrative + N), and indefinite NPs.
preference showed up in the given-theme condition of the Pronoun Task: Given–New [DO–IO] (60%) over New–Given [IO–DO] (40%).

![Figure 6.14. Preference by Condition in the NP Task: L1-Korean Children](image)

The data were analyzed in a two-way ANOVA on *information status* (given-recipient vs. given-theme) and *group* (L1 adults vs. YES/YES children vs. YES/NO children). Statistical results of the NP Task revealed a significant main effect of both *information status* \( (F(1, 86) = 13.468, p < .001) \) and *group* \( (F(2, 86) = 13.285, \)
All groups chose Given–New more in the given-recipient condition than in the given-theme condition (86% vs. 68% for L1 adults; 56% vs. 48% for YES/YES children; 67% vs. 36% for YES/NO children). Differences were significant between L1 adults and the YES/YES group as well as between L1 adults and the YES/NO group, but not between the 2 L1 child groups. There was no interaction of information status and group.

As for the Pronoun Task, main effects were observed both for information status ($F(1, 86) = 4.375, p < .05$) and for group ($F(2, 86) = 12.388, p < .001$). A significant difference emerged between L1 adults and the YES/YES children and between L1 adults and the YES/NO children, but not between the 2 child groups. This time, the interaction of information status and group was also significant ($F(2, 86) = 3.427, p < .05$).

### 6.6.2.2 Individual results: L1-Korean children

Similar to what was found in the L1-English child vs. adult comparison, the rate of split responses in the individual L1-Korean child results was high as compared to that of the L1-Korean adult group. The maximum possible number of split responses is 4 for each participant since there are 4 conditions, which yields a maximum of 116 split responses from 29 L1-Korean children ($29 \times 4$ conditions). Of these, 33 cases (28%) were split half-half, i.e., 3 Given–New orders and 3 New–Given orders in any particular condition (cf. 12.5% split responses for L1-Korean adults and 21% split responses for L1-English children). By condition, there are more split responses in the given-theme condition (38%) than in the given-recipient condition (19%). These high rates of split responses resulted in the lack of evident ordering preferences for the L1-Korean children in some conditions.

In order to capture the directions of ordering preference, we examined the ratio of individual consistency between Given–New vs. New–Given based on the criterion of **at least 4 out of 6 tokens** (per condition), excluding split responses (see §6.3). The results of the given-recipient condition across the 2 tasks are summarized in Table 6.16. Out of a total of 47 consistent responses (i.e., 11 split responses excluded) ($47 + 11 = 58$), 30 had the Given–New [IO–DO] order and 17 had the New–Given [DO–IO] order. By group, the ratio of individual consistency between Given–New [IO–DO] vs. New–Given
[DO–IO] was 19:10 for the YES/YES group and 11:3 for the YES/NO group, both of which showing a clear preference for the **Given–New [IO–DO]**; in contrast, the NO/NO group (0:4) preferred the reverse order—**New–Given [DO–IO]**.


<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th><strong>given-recipient condition for NP Task &amp; Pronoun Task</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Given–New [IO–DO]</strong></td>
<td><strong>New–Given [DO–IO]</strong></td>
<td><strong>Split Response</strong></td>
</tr>
<tr>
<td>YES/YES</td>
<td>15</td>
<td>19</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>YES/NO</td>
<td>11</td>
<td>11</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>NO/NO</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29</td>
<td>30</td>
<td>17</td>
<td>11</td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New and 3 New–Given

Table 6.17 provides the ratio of individual consistency between Given–New [DO–IO] vs. New–Given [IO–DO] in the **given-theme condition**, again for the NP Task and the Pronoun Task combined.


<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th><strong>given-theme condition for NP Task &amp; Pronoun Task</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Given–New [DO–IO]</strong></td>
<td><strong>New–Given [IO–DO]</strong></td>
<td><strong>Split Response</strong></td>
</tr>
<tr>
<td>YES/YES</td>
<td>15</td>
<td>11</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>YES/NO</td>
<td>11</td>
<td>3</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>NO/NO</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29</td>
<td>16</td>
<td>20</td>
<td>22</td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New and 3 New–Given

226
In the given-theme condition, of a total of 36 consistent responses (22 split responses excluded) \((36 + 22 = 58)\), the ratio of individual consistency between Given–New [DO–IO] vs. New–Given [IO–DO] was 16:20. This small difference is attributed to the opposing preference directions between the YES/YES group and the YES/NO group: 11:7 for the YES/YES group and 3:10 for the YES/NO group. The NO/NO group showed no ordering preference (2:3).

Finally, I looked at the details of individual consistency of Given–New orders and adherence to the Given-before-New Principle, as summarized in Table 6.18.

Table 6.18. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L1-Korean Children

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NP Task Pronoun</td>
<td>NP Task Pronoun</td>
<td>YES/YES ((n = 15)) YES/NO ((n = 11)) NO/NO ((n = 3))</td>
</tr>
<tr>
<td>(\times) (\times)</td>
<td>(\times) (\times)</td>
<td></td>
<td>2 0 1 NO</td>
</tr>
<tr>
<td>(\times) (\sqrt)</td>
<td>(\times) (\times)</td>
<td></td>
<td>2 2 0 NO</td>
</tr>
<tr>
<td>(\sqrt) (\times)</td>
<td>(\times) (\times)</td>
<td></td>
<td>1 5 0 NO</td>
</tr>
<tr>
<td>(\sqrt) (\times)</td>
<td>(\times) (\times)</td>
<td></td>
<td>3 1 0 NO</td>
</tr>
<tr>
<td>(\sqrt) (\sqrt)</td>
<td>other</td>
<td>other</td>
<td>2 1 0 NO</td>
</tr>
<tr>
<td>(\sqrt) (\sqrt)</td>
<td>(\times) (\sqrt)</td>
<td></td>
<td>2 0 0 YES</td>
</tr>
<tr>
<td>(\times) (\sqrt)</td>
<td>(\sqrt) (\sqrt)</td>
<td></td>
<td>1 0 0 YES</td>
</tr>
<tr>
<td>(\sqrt) (\sqrt)</td>
<td>(\sqrt) (\sqrt)</td>
<td></td>
<td>2 0 0 YES</td>
</tr>
<tr>
<td>18</td>
<td>13</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>15</td>
<td>11</td>
<td>3</td>
<td>Maximum</td>
</tr>
</tbody>
</table>

Notes. \(\sqrt\) = \(\geq 4\) Given–New choices out of 6 tokens; \(\times\) = \(< 4\) Given–New choices \(YES = \geq 3\) \(\sqrt\)s out of 4 conditions; NO = \(< 3\) \(\sqrt\)s

According to the established criterion of choosing the Given–New order in at least 4 out of 6 tokens, 5 out of 15 (33%) of the YES/YES children consistently preferred the Given-New order, but none of the YES/NO or NO/NO children did.
6.6.2.3 Discussion and conclusion: L1-Korean children

The group results (Figure 6.14 for the NP Task and Figure 6.15 for the Pronoun Task) do not show any clear ordering preference in L1-Korean children; but when we examined individual (Given–New vs. New–Given) consistency, excluding split responses, the results (Table 6.16 for the given-recipient condition and Table 6.17 for the given-theme condition) show that in the given-recipient condition across the tasks, the ratio of individual consistency between Given–New [IO–DO] vs. New–Given [DO–IO] is 19:10 for the YES/YES group and 11:3 for the YES/NO group, both skewed toward Given–New [IO–DO]. In contrast, the NO/NO group’s consistent responses are all New–Given [DO–IO] (0:4). In the given-theme condition, which is supposed to be the critical one, the ratio of individual consistency between Given–New [DO–IO] vs. New–Given [IO–DO] is 11:7 for the YES/YES group, 3:10 for the YES/NO group, and 2:3 for the NO/NO group.

For the L1-Korean children, in the given-recipient condition (see Table 6.16), Given–New [IO–DO] \((k = 30)\) has more consistent responses than New–Given [DO–IO] \((k = 17)\). In the given-theme condition (see Table 6.17), where Given–New aligns with the scrambled order, New–Given [IO–DO] \((k = 20)\) has more consistent responses than Given–New [DO–IO] \((k = 16)\), although the contrast is smaller compared to that of the given-recipient condition. Overall, L1-Korean children show a preference for [IO–DO].

Let us now consider the (causal) relation between ToM and the Given-before-New Principle in L1-Korean children. Recall that to support this relation, (9d) out of the 4 logically possible outcomes, repeated below, should be ruled out.

\[
\begin{align*}
(9) & \quad a. \ [-\text{ToM}], [-\text{Given-before-New}] \\
& \quad b. \ [+\text{ToM}], [+\text{Given-before-New}] \\
& \quad c. \ [+\text{ToM}], [-\text{Given-before-New}] \\
& \quad d. \ [-\text{ToM}], [+\text{Given-before-New}] 
\end{align*}
\]

Using the same logic as in the L1-English child study, we consider only the YES/YES and NO/NO groups (see §6.5.2.3). Adherence to the Given-before-New Principle was observed in some children only from the YES/YES group (5 out of 15), outcomes which
thus conform to (9b) and (9c); there are no children from the NO/NO group who adhere to the *Given-before-New Principle*, which is consistent with outcome (9a) and thus not with outcome (9d). Therefore, the individual results from our L1-Korean-child data are consistent with the hypothesis of a causal relation between the knowledge of ToM and adherence to the *Given-before-New Principle*. However, the sample size ($n = 3$) of the NO/NO group for [–ToM] is, unfortunately, not large enough to draw firm conclusions.

6.6.3 Adult L2 Korean

6.6.3.1 Group results: L1 English-L2 Korean adults

L1-English adult L2ers of Korean were divided into 2 proficiency levels (see Table 5.12 in §5.7): (i) **Higher group** ($n = 19$) and (ii) **Lower group** ($n = 19$). As seen in Figure 6.16 for the NP Task and Figure 6.17 for the Pronoun Task, the 2 L2 groups patterned the same across conditions in both tasks. In the *given-recipient* condition, both the Higher L2 group and the Lower L2 group chose the *Given–New [IO-DO]* order significantly more often than the New-Given [DO-IO] order in both the NP Task (83%, $t(18) = 5.231, p = .001$; 81%, $t(18) = 5.105, p = .001$) and the Pronoun Task (75%, $t(18) = 4.379, p = .001$; 73%, $t(18) = 3.980, p = .001$). In the *given-theme* condition, on the other hand, both L2 groups chose the *New-Given [IO-DO]* order more often than the Given-New [DO-IO] order in both the NP Task and the Pronoun Task. Significant differences were found in the Lower L2 group in the NP Task (63%, $t(18) = -2.126, p = .048$) and in both L2 groups in the Pronoun Task (67%, $t(18) = -2.276, p = .035$; 68%, $t(18) = -2.737, p = .014$).
We conducted a two-way ANOVA on information status (given-recipient vs. given-theme) and group (L1 adults vs. Higher L2 vs. Lower L2). The results of the NP Task revealed that information status had a significant main effect ($F(1, 110) = 47.948, p < .001$); all 3 groups had higher average proportions of Given–New choices in the given-recipient condition than in the given-theme condition (86% vs. 68% for L1-Korean adults; 83% vs. 39.5% for the Higher L2ers; 81% vs. 37% for the Lower L2ers). The factor group also had a significant main effect ($F(2, 110) = 5.179, p < .01$). The
interaction of *information status* and *group* was marginal \( (F(2, 110) = 3.061, p = .051) \). In the *given-recipient* condition, both L1 adults and adult L2ers preferred Given–New orders, although the L2ers’ preference was not so strong as the L1 adults’. In contrast, in the *given-theme* condition, L1-Korean adults and L2ers displayed contrasting patterns such that L1 adults chose Given–New orders significantly more often than both the Higher L2 group and the Lower L2 group. However, the 2 L2 groups had virtually identical choice proportions across conditions, which reduced the interaction effect.

For the Pronoun Task, there were main effects both for *information status* \( (F(1, 110) = 52.841, p < .001) \) and for group \( (F(2, 110) = 11.087, p < .001) \). However, there was no interaction between *information status* and *group*. The differences between L1 adults and the Higher L2 group and between L1 adults and the Lower L2 group were significant, but not between the 2 L2 groups, who, again, had virtually the same patterns.

In sum, the results suggest that both the Higher L2 group and the Lower L2 group prefer the canonical \([IO-DO]\) order, which overrides the *Given-before-New Principle*.

### 6.6.3.2 Individual results: L1 English-L2 Korean adults

As there was no difference between the Higher L2 group \( (n = 19) \) and the Lower L2 group \( (n = 19) \), the 2 groups were combined into a *single group* \( (n = 38) \) for individual analysis. Table 6.19 presents the results of individual consistency of Given–New orders and individual adherence to the *Given-before-New Principle*. In addition, Table 6.20 summarizes the specific number of responses that are (i) Given–New consistency, (ii) New–Given consistency, and (iii) split in both (collapsed) conditions across the tasks.
Table 6.19. Individual Consistency of Given-New Orderings and Individual Adherence to Given-before-New: L2-Korean Adults

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L2-Korean adults (n = 38)</td>
</tr>
<tr>
<td><strong>given-recipient</strong> Given–New [IO–DO]</td>
<td><strong>given-theme</strong> Given–New [DO–IO]</td>
</tr>
<tr>
<td></td>
<td>NP Task Pronoun Task</td>
</tr>
<tr>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>√</td>
<td>x</td>
</tr>
<tr>
<td>√</td>
<td>x</td>
</tr>
<tr>
<td>other</td>
<td>other</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Maximum</td>
</tr>
</tbody>
</table>

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; x = < 4 Given–New choices
YES = ≥ 3 √s out of 4 conditions; NO = < 3√s


<table>
<thead>
<tr>
<th>given-recipient condition for NP Task &amp; Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
<tr>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>given-theme condition for NP Task &amp; Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
</tr>
<tr>
<td>38</td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New and 3 New–Given

232
The results show that adult L2ers had more consistency in the given-recipient condition, where the Given–New order aligns with the canonical order, than in the given-theme condition, where the Given–New order aligns with the scrambled order. Across the tasks, in the given-recipient condition, there were 57 consistent responses (75%) in favor of Given–New [IO–DO]; in the given-theme condition, there were only 20 individuals (26%) in favor of Given–New [DO–IO]. For the consistent New–Given orders across the tasks, there were 11 (14%) in the given-recipient condition and 42 (55%) in the given-theme condition. The high rate of [IO–DO] consistency, i.e., of Given–New [IO–DO] in the given-recipient condition (75%) and of New–Given [IO–DO] in the given-theme condition (55%), suggests that the L2ers have a syntactic bias for [IO–DO].

According to our criteria for individual adherence to the Given-before-New Principle—i.e., 3√ of 4 conditions—10 (26%) of 38 L2-Korean adults observed the principle: 5 from 19 Higher L2ers and 5 from 19 Lower L2ers.

6.6.3.3 Discussion and conclusion: L1 English-L2 Korean adults

Both the group results (Figures 6.16 and 6.17) and the individual consistency results (Table 6.19) suggest that (intermediate-to-advanced) L1-English adult L2ers of Korean generally display a syntactic bias for [IO–DO] in dative word alternations, irrespective of the Given-before-New Principle.

There are several factors involved in this bias. First, it is widely believed that [IO–DO] is the base order (see §2.3). Second, Choi (2008, 2009) found in her corpus analysis that [IO–DO] (83.9%) is far more frequent than [DO–IO] (16.1%) (see also Cho et al., 2002). Park (2008) likewise observed similarly skewed frequency rates between the two orders in her small corpus study using 12 dative verbs, as laid out in Table 6.21.122

---

122 The dative sentences were extracted in 2008, using the Web-based CETConc program (developed at Korea University), which is now unavailable on-line.

<table>
<thead>
<tr>
<th>Dative Verb</th>
<th>[IO–DO]</th>
<th>[DO–IO]</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>cwuta ‘give’</td>
<td>1,059</td>
<td>68</td>
<td>1,127</td>
</tr>
<tr>
<td>kacyeka/ota ‘bring’</td>
<td>18</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>kaluchita ‘teach’</td>
<td>89</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>kkulta ‘drag’</td>
<td>15</td>
<td>47</td>
<td>62</td>
</tr>
<tr>
<td>mwuta ‘ask’</td>
<td>42</td>
<td>9</td>
<td>51</td>
</tr>
<tr>
<td>palta ‘sell’</td>
<td>19</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>piccita ‘owe’</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>ponayta ‘send’</td>
<td>288</td>
<td>260</td>
<td>548</td>
</tr>
<tr>
<td>tangkita ‘pull’</td>
<td>9</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>tencita ‘throw’</td>
<td>193</td>
<td>63</td>
<td>256</td>
</tr>
<tr>
<td>teylyeka/ota ‘take’</td>
<td>14</td>
<td>70</td>
<td>84</td>
</tr>
<tr>
<td>yaksokhata ‘promise’</td>
<td>20</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,768 (76%)</td>
<td>558 (24%)</td>
<td>2,326 (100%)</td>
</tr>
</tbody>
</table>

Out of a total of 2,326 tokens in which both objects are overt, 1,768 (76%) have [IO–DO] order and 558 (24%) have [DO–IO] order. Although there was some variation across verbs, the canonical order was found much more frequently than the scrambled order. Additional evidence comes from Jackson’s (2008) study, reviewed above (see §2.5.2 and §6.6.1.3). Recall that the results from her on-line reading-for-comprehension experiment on the given-before-new advantage in canonical vs. scrambled orders in L1-Korean adults show that the [S–IO–DO] order can be used felicitously both with Given–New information structure and New–Given information structure, thereby arguing for [S–IO–DO] being the default; our native Korean adult data likewise support this. The majority of our L2 participants, too, choose the default, canonical order even when new information precedes given information.

123 The verbs kkulta 꼈다 ‘drag,’ tangkita 당기다 ‘pull,’ and telyeka/ota 테려가다/오다 ‘take’ behave differently from the other 9 verbs, favoring [DO–IO] over [IO–DO]. Two main factors are involved: animacy and length. While the other verbs have [animate IO–inanimate DO], these 3 verbs—especially, take—often have [animate DO–inanimate IO] (e.g., drag hundreds of people to war, drag us to a dream, pull me to his side, take one’s daughter to a men’s room, take my son to school. [English translations]). Also, these verbs typically have a shorter DO and a longer IO.
Another crucial factor, which was also discussed earlier (see §6.6.1.3), needs to be considered. In Korean, the possibility of having null arguments contingent on givenness comes into play: An argument whose givenness has already been established in the discourse context is often left unexpressed. This was illustrated with the examples in (16), repeated here.
(16) a. \[
\text{철수는 영어 선생님을 아주 좋아했어요. 선생님은 아름다운 목소리로 아주 쉽게 설명을 했기 때문에 철수는 영어 수업이 전혀 지루하지 않았어요. 선생님은 항상 친절했어요. 그래서 선생님이 다른 학교로 떠났을 때, 철수는 슬펐어요. 철수는 선생님이 너무 보고 싶었어요.}
\]

[Chelswu liked (his) English teacher very much. (The) teacher explained things in a way that is very easy to understand in a beautiful voice, so Chelswu never got bored in English class. (The) teacher was always kind (to him). So when (the) teacher left for another school, Chelswu was sad. Chelswu missed (the) teacher very much.]

Chelswu-nun (ku-senseuyngnim-eykey) phyencitul-ul ponaysseyo.
Chelswu-Top (that-teacher-Dat) letters-Acc sent
‘Chelswu sent (the teacher) letters.’

b. \[
\text{철수는 놀다가 집으로 돌아왔어요. 부엌으로 들어가자 식탁 위에 맛있소러운 사과 파이 두 개가 놓여있었어요. 철수는 엄마에게 물어 보았어요. “엄마, 왜 파이를 두 개나 만들었어요?” 엄마가 대답했어요. “하나는 우리가 먹고, 나머지 하나는 나누어 먹을 거란다.” 철수는 그 나머지 파이로 무엇을 해야할 지를 알았어요.}
\]

[Chelswu played and came back home. When Chelswu entered (the) kitchen, there were two apple pies looking delicious on (the) table. Chelswu asked (his) mom, “Mom, why did you bake two pies?” (His) mom answered, “We will eat one and give away the other.” Chelswu knew what to do with the extra pie.]

Chelswu-nun (ku-phiulul) chinkwutul-eykey kacyetacwuesselayo.
Chelswu-Top (that-pie-Acc) friends-Dat brought
‘Chelswu brought (the pie) to friends.’
As such, zero-anaphora is used to express the highest topicality in Korean (whereas pronouns are generally used to encode the highest topicality in English). Accordingly, in Korean, pronouns—the compound type—and definite lexical NPs are used to represent the same degree of topicality, which is the intermediate level, and indefinite lexical NPs are used to express the lowest topicality (see Figure 6.13 in §6.6.1.3.).

In her corpus study, Park (2008) also gauged the proportions of overt objects vs. null objects in Korean dative constructions. Using the same 12 dative verbs, she found that 84.9% of the dative sentences (13,044 out of a total of 15,370 dative tokens) have either one or both object arguments unexpressed. The details of the corpus results are summarized in Table 6.22.

Table 6.22. Frequency of one or both objects null vs. both objects overt in Korean Dative Constructions

<table>
<thead>
<tr>
<th>Dative Verb</th>
<th># of One or Both Objects</th>
<th># of Both Objects</th>
<th>Total # of Tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Null</td>
<td>Overt</td>
<td></td>
</tr>
<tr>
<td>cwutu ‘give’</td>
<td>2,888</td>
<td>1,127</td>
<td>4,015</td>
</tr>
<tr>
<td>kacyeota ‘bring’</td>
<td>558</td>
<td>19</td>
<td>577</td>
</tr>
<tr>
<td>kaluchita ‘teach’</td>
<td>776</td>
<td>100</td>
<td>876</td>
</tr>
<tr>
<td>kkulta ‘drag’</td>
<td>1,059</td>
<td>62</td>
<td>1,121</td>
</tr>
<tr>
<td>mwuta ‘ask’</td>
<td>2,713</td>
<td>51</td>
<td>2,764</td>
</tr>
<tr>
<td>palta ‘sell’</td>
<td>670</td>
<td>30</td>
<td>700</td>
</tr>
<tr>
<td>piccita ‘owe’</td>
<td>20</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>ponayta ‘send’</td>
<td>2,173</td>
<td>548</td>
<td>2,721</td>
</tr>
<tr>
<td>tangkita ‘pull’</td>
<td>217</td>
<td>22</td>
<td>239</td>
</tr>
<tr>
<td>tencita ‘throw’</td>
<td>627</td>
<td>256</td>
<td>883</td>
</tr>
<tr>
<td>teylyekata ‘take’</td>
<td>640</td>
<td>84</td>
<td>724</td>
</tr>
<tr>
<td>yaksokhata ‘promise’</td>
<td>703</td>
<td>25</td>
<td>728</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,044 (84.9%)</strong></td>
<td><strong>2,326 (15.1%)</strong></td>
<td><strong>15,370 (100%)</strong></td>
</tr>
</tbody>
</table>

The primary referential use of zero-anaphora as a means to express givenness is verified by this corpus study. If our adult L2ers are sensitive to the distribution of zero-anaphora
with respect to topicality in Korean, which is untested in the present study, they should
treat definite lexical NPs and compound-type pronouns on par, as our L1-Korean adults
did. And indeed the 2 L2 adult groups show virtually no difference in (non-)sensitivity to
givenness in the NP Task vs. the Pronoun Task (compare Figures 6.16 and 6.17).

In conclusion, a subset of intermediate-to-advanced adult L2ers of Korean (26% according to our criteria), 5 from the Higher L2 group and 5 from the Lower L2 group, comply with the Given-before-New Principle. Still, in the given-theme condition, when the infrequent Given–New [DO–IO] variant competes with the frequent New–Given [IO–DO] variant, the majority of the L2ers tend to choose the latter, i.e., the default.

6.6.4 Summary of the Korean studies

To summarize: Both the group results (Figure 6.10) and individual results (Table 6.15) show that L1-Korean adults overwhelmingly comply with the Given-before-New Principle. They preferred Given–New [IO–DO] over New–Given [DO–IO] in the given-recipient condition and Given–New [DO–IO] over New–Given [IO–DO] in the given-theme condition. The construction type (canonical order vs. scrambled order) had a main effect such that the native adults chose the scrambled order significantly more often than the canonical order when a given theme precedes a new recipient.

In contrast to native adults, L1-Korean children as a group did not show evident ordering preference across any conditions. Close inspection of the individual consistency data, excluding split responses, provided the ratio of Given–New to New–Given in each condition: In the given-recipient condition, Given–New [IO–DO] has twice as many consistent responses as New–Given [DO–IO]; in the given-theme condition, New–Given [IO–DO] (k = 20) has slightly more consistent responses than Given–New [DO–IO] (k = 16). Overall, L1-Korean children show a preference for canonical [IO–DO].

In addition, the causal relation between their knowledge of ToM and their adherence to the Given-before-New Principle was individually tested. Of 15 YES/YES children, 5 children showed adherence to the principle and 10 did not; of 3 NO/NO children, none showed adherence to the principle. Thus, a hypothesis that claims a causal relation between ToM and the Given-before-New Principle was in fact upheld in L1-Korean children, albeit based on a very small sample size (n = 3).
Finally, as for L1-English adult L2ers of Korean, both group results (Figure 6.16 for the NP Task and Figure 6.17 for the Pronoun Task) and individual results (Tables 6.19 and 6.20) show that both the Higher L2 group and the Lower L2 group significantly preferred Given–New [IO–DO] in the given-recipient condition; in the crucial given-theme condition, however, they (significantly) preferred New–Given [IO–DO]. The results suggest that for intermediate-to-advanced L2ers of Korean, although a small subset (26% of those with consistent responses) abide by the Given-before-New Principle, overall they have a strong syntactic bias for the canonical [IO–DO] order, which overrides the principle.

6.7 Child L2-English study

L1-Korean child L2ers of English (henceforth “L1 Korean-L2 English children”) were tested both in L1 Korean and in L2 English. There were originally 18 children in this group (refer to Table 5.12 in §5.7 and Table 6.7 in §6.4), but 2 of them did not accept both the PD and the DOD in any critical items in the AJT (recall that L2-English participants’ lexico-syntactic knowledge of the dative alternation was tested via the AJT (see §4.2). Accordingly, these 2 children were excluded, leaving only 16 children.

As mentioned in §4.3, unlike the monolingual L1-Korean children (n = 29) for the L1-Korean child study, who were recruited and tested at a day-care center in Korea, these L2 children were all individually recruited and tested in the U.S. Their performance on the 2 false-belief tasks, administered in their L1, resulted in the following: (i) 14 YES/YES children, who passed both tasks, and (ii) 2 YES/NO children who passed one of the tasks (see Table 6.7 in §6.4 for details). In addition, based on the results of the L2 proficiency test (see Table 5.12 in §5.7), they were split into (i) the Higher group (n = 10) and (ii) the Lower group (n = 6).

6.7.1 L2 children in L1 Korean

6.7.1.1 Group results in L1 Korean: L1 Korean-L2 English children

For the L1-Korean preference tasks, the YES/YES group (n = 14) and the YES/NO group (n = 2) were combined into a single group (n = 16) for statistical analysis because the small number of YES/NO children does not affect group results. As shown in
Figure 6.18 for the Korean NP Task and Figure 6.19 for the Korean Pronoun Task, in the given-recipient condition, these children preferred the Given–New [IO–DO] order over the New–Given [DO–IO] order in both tasks (60% for the NP Task and 65% for the Pronoun Task). Paired samples t-tests revealed that the difference was marginally significant in the NP Task ($t(15) = 2.076, p = .055$) and significant in the Pronoun Task ($t(15) = 3.217, p = .006$). However, in the given-theme condition, they showed no ordering preference in either task.

Figure 6.18. Preference by Condition in the NP Task: L2-English Children in the L1

Figure 6.19. Preference by Condition in the Pronoun Task: L2-English Children in the L1
A two-way ANOVA on the NP Task revealed a significant main effect of both information status \( (F(1, 68) = 7.297, p < .01) \) and group \( (F(1, 68) = 17.458, p < .001) \). Both L1-Korean adults and L1 Korean-L2 English children had more Given–New choices in the given-recipient condition than in the given-theme condition (86% vs. 68% for the adults; 60% vs. 49% for the children), and adults averaged higher than children in both conditions. In the Pronoun Task, there was a significant main effect of both information status \( (F(1, 68) = 17.671, p < .001) \) and group \( (F(1, 68) = 17.458, p < .001) \). However, there was no interaction between information status and group.

### 6.7.1.2 Individual results in L1 Korean: L1 Korean-L2 English children

L1 Korean-L2 English children had a high rate of split responses in Korean (their L1): Out of a possible maximum of 32 split responses in each condition across the tasks (16 children \( \times \) 2 tasks), 11 (34%) in the given-recipient condition and 16 (50%) in the given-theme condition were split responses.

We probed the data further, examining data by individual, using the individual consistency criterion of at least 4 out of 6 tokens. Tables 6.23 and 6.24 present the ratio of individual consistency of Given–New orderings to New–Given orderings. As shown in Table 6.23 for the given-recipient condition across the tasks, the ratio of consistency between Given–New vs. New–Given was 18:3 (16:3 for the YES/YES group; 2:0 for the YES/NO group). In the critical given-theme condition in Table 6.24, in contrast, the ratio was exactly even, 8:8 (7:7 for the YES/YES group; 1:1 for the YES/NO group).


<table>
<thead>
<tr>
<th></th>
<th>( N )</th>
<th>( N ) given-recipient condition for NP Task &amp; Pronoun Task</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>14</td>
<td>16</td>
<td>3</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>YES/NO</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td><strong>18</strong></td>
<td><strong>3</strong></td>
<td><strong>11</strong></td>
<td></td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New and 3 New–Given

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<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>given-theme condition for NP Task &amp; Pronoun Task</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES</td>
<td>14</td>
<td>7</td>
<td>7</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>YES/NO</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>8</td>
<td>8</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

Split Response = 3 Given–New and 3 New–Given

Table 6.25 summarizes the L1 Korean-L2 English children’s individual results.

Table 6.25. Individual Consistency of Given-New and Individual Adherence to Given-before-New Principle: L2-English Children in L1 Korean

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES/YES (n = 14)</td>
</tr>
<tr>
<td>x x</td>
<td>3</td>
</tr>
<tr>
<td>x √</td>
<td>3</td>
</tr>
<tr>
<td>√ x</td>
<td>1</td>
</tr>
<tr>
<td>√ other</td>
<td>3</td>
</tr>
<tr>
<td>√ √ x</td>
<td>1</td>
</tr>
<tr>
<td>√ √ √ x</td>
<td>2</td>
</tr>
<tr>
<td>√ √ √ √</td>
<td>1</td>
</tr>
<tr>
<td>9 9 4 4</td>
<td>4 YES</td>
</tr>
</tbody>
</table>

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; x = < 4 Given–New choices
YES = ≥ 3 √s out of 4 conditions; NO = < 3 √s

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Of a total of 14 YES/YES children, 4 (29%) consistently preferred the Given-New order. Neither YES/NO child showed adherence to the *Given-before-New Principle*.\(^\text{124}\)

As for the relation between ToM and the *Given-before-New Principle*, there were no NO/NO children and hence the crucial outcome—[–ToM], [+Given-before-New]—of (9d) cannot be tested. But in any case, as just stated, the YES/YES ([+ToM]) children show both adherence \(n = 4\) and non-adherence \(n = 10\) to the *Given-before-New Principle*, and the YES/NO children \(n = 2\), who have incomplete knowledge of ToM, do not adhere to it.

In the present study, we have two sets of L1-Korean child data, one from monolingual L1-Korean children (§6.6.2) and the other from L1 Korean-L2 English children. Since the latter had no NO/NO children, the individual consistency results from only the monolingual L1 children are relevant to testing the relation between ToM and the *Given-before-New Principle*. These monolingual children fall into all categories except the crucial (9d), although the sample size of [–ToM] is small \(n = 3\). Still, the monolingual L1-Korean child data can be viewed as suggestively compatible with the hypothesis of a causal relation between ToM and the *Given-before-New Principle*.

### 6.7.2 L2 children in L2 English

#### 6.7.2.1 Group results in L2 English: L1 Korean-L2 English children

The L1 Korean-L2 English children were divided into two proficiency levels: (i) the Higher group \(n = 10\) and (ii) the Lower group \(n = 6\). As with adult L2-English (§6.5.3.1), the data analysis of the 2 oral contextualized preference tasks for the child L2ers included, for each participant, only those critical items with the verbs that he/she allowed as both PD and DOD in the AJT (i.e., for the Higher L2 child group, a total 40 verb items; for the Lower L2 child group, a total of 13 verb items), as detailed in Table 6.26.

\(^{124}\) For the L1 Korean-L2 English children, the 4 YES/YES children who adhere to the *Given-before-New Principle* in their L1 consist of 2 9-year-olds and 2 10-year-olds, and the 2 YES/NO children who do not adhere to the principle are both 7-year-olds.
Table 6.26. Number of Verb Items on which both PD and DOD were Accepted in AJT: L2-English Children

<table>
<thead>
<tr>
<th></th>
<th>bring</th>
<th>give</th>
<th>mail</th>
<th>sell</th>
<th>send</th>
<th>show</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 adults (n = 20)</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>19</td>
<td>20</td>
<td>20</td>
<td>114 out of 120</td>
</tr>
<tr>
<td>Higher L2ers (n = 10)</td>
<td>5</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>40 out of 60</td>
</tr>
<tr>
<td>Lower L2ers (n = 6)</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>13 out of 36</td>
</tr>
</tbody>
</table>

Figure 6.20 presents the group L2-English child results for the NP Task.

Given the relatively small sample size of the Lower L2 group (n = 6), order preference was statistically tested only for the Higher L2 group (n = 10). In the given-theme condition of the NP Task, both the Higher L2 group and the Lower L2 group preferred the Given–New [NP PP] order (90%, t(9) = 6.532, p = .001; 77%, respectively). In contrast, in the given-recipient condition, both L2 proficiency groups preferred the New–Given [NP PP] order (72.5%, t(9) = -3.515, p = .007; 69%, respectively).

The L2-English children’s L2 data from the NP Task were analyzed in a two-way ANOVA for information status (given-theme vs. given-recipient) and group (L1 adults vs. Higher L2ers vs. Lower L2ers). The results were that information status had a significant effect (F(1, 328) = 41.436, p < .001); all 3 groups chose Given–New more often in the
given-theme condition than in the given-recipient condition (85% vs. 69% for L1 adults; 90% vs. 27.5% for Higher L2ers; 77% vs. 31% for Lower L2ers). The factor group also had a significant effect ($F(2, 328) = 8.411, p < .001$). There was also a significant interaction between information status and group ($F(2, 328) = 10.158, p < .001$).

As for the results of the Pronoun Task, presented in Figure 6.21, in the given-theme condition, the Higher L2 group chose Given–New [NP PP] 100% of the time, and the Lower L2 group also preferred the Given–New order, albeit at a lower rate (77%). In the given-recipient condition, the Higher L2 group showed no ordering preference, but the Lower L2 group preferred New–Given [NP PP] over Given–New [NP NP] (69%).

The two-way ANOVA statistical analysis revealed a significant effect of both information status ($F(1, 328) = 52.885, p < .001$) and group ($F(2, 328) = 17.914, p < .001$). Here again, all 3 groups chose Given–New more often in the given-theme condition than in the given-recipient condition. There was also a significant interaction effect between information status and group ($F(2, 328) = 6.900, p < .01$).

### 6.7.2.2 Individual results in L2 English: L1 Korean-L2 English children

The individual data analysis included, following the established criterion, only those child L2ers who correctly allowed both the PD and the DOD on at least 4 out of 6
verbs in the AJT (i.e., 7 out of 10 Higher L2 children; 1 out of 6 Lower L2 children), and this number, recall, determines the criterion of individual consistency (see §6.3): the same ordering choice (i.e., Given–New vs. New–Given) on (i) at least 4 out of 5 tokens; (ii) at least 4 out of 5 tokens; or (iii) at least 4 out of 5 tokens.

Table 6.27 shows the L1 Korean-L2 English children’s individual consistency in each condition and individual adherence to the Given-before-New Principle.

Table 6.27. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L2-English Children in L2 English

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher ( (n = 7) )</td>
</tr>
<tr>
<td><strong>Given–New [NP PP]</strong></td>
<td><strong>Given–New [NP NP]</strong></td>
</tr>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Notes. \( \sqrt{\text{tokens}} \geq 3 \) Given–New choices out of 4 tokens; \( \sqrt{\text{tokens}} \geq 4 \) Given–New choices out of 5 or 6 tokens; otherwise ×

YES = \( \sqrt{\text{conditions}} \geq 3 \) out of 4 conditions; NO = \( < 3 \sqrt{\text{conditions}} \)

The individual consistency analysis shows that the L2-English children preferred Given–New in the given-theme condition, where Given–New order aligns with [NP PP]; in contrast, in the crucial given-recipient condition, there is only 1 child in the Higher L2 group who consistently preferred Given–New, passing our criterion (i.e., 3 or more out of 4 conditions), thereby showing genuine adherence to the Given-before-New Principle.

Finally, on the basis of individual adherence (marked as YES in Table 6.25 for L1 Korean and in Table 6.27 for L2 English) and non-adherence (marked as NO) to the Given-before-New Principle, we make comparisons between L2 children with and without knowledge of this principle in their L1. The results are presented in Table 6.28.

The analysis of individual consistency in L2-English children is based on 8 child L2ers out of 16, who allowed both PD and DOD per individual verb on 4 verbs or more out of 6.

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125 The analysis of individual consistency in L2-English children is based on 8 child L2ers out of 16, who allowed both PD and DOD per individual verb on 4 verbs or more out of 6.
Table 6.28. L1 vs. L2 adherence (YES) vs. non-adherence (NO) to Given-before-New, by Individual

<table>
<thead>
<tr>
<th></th>
<th>L1 Korean</th>
<th>L2 English</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>NO</td>
<td>NO</td>
<td>11</td>
</tr>
<tr>
<td>(ii)</td>
<td>YES</td>
<td>NO</td>
<td>4</td>
</tr>
<tr>
<td>(iii)</td>
<td>NO</td>
<td>YES</td>
<td>1</td>
</tr>
<tr>
<td>(iv)</td>
<td>YES</td>
<td>YES</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

*Notes. YES indicating adherence = $\geq 3\sqrt{s}$ out of 4 conditions
NO indicating non-adherence = $< 3\sqrt{s}$

Out of the 16 L1 Korean-L2 English children, 4 passed the adherence criterion in their L1 (YES) but not in their L2 (NO); 1 passed in his L2, but not in his L1; 11 passed in neither their L1 nor their L2; and none passed in both their L1 and their L2.

6.7.3 Discussion and conclusion: L1 Korean-L2 English children

The group results (Figure 6.20 for the NP Task and Figure 6.21 for the Pronoun Task) indicate that L1 Korean-L2 English children as a group do not adhere to the *Given-before-New Principle* in L2 English. Both the Higher L2 group and the Lower L2 group showed preference for [NP PP] in both conditions of the NP Task. In the Pronoun Task, whereas the Lower L2 group preferred [NP PP] across conditions, the Higher L2 group showed a preference for [NP PP] only in the given-theme condition. The results of individual consistency (Table 6.27) show that only 1 child (14%) from the Higher L2 group ($n = 7$) adheres to the principle.

Let us now return to our L2 research question: *Do L2ers who have knowledge of the Given-before-New Principle in their L1 show adherence to it in L2?* In order to answer this question in regard to L2 children, one first has to ascertain whether they adhere to the principle in their L1 or not. The group results (Figures 6.18 and 6.19) and individual results (Tables 6.23, 6.24, and 6.25) together suggest that in L1 Korean, the L2 children had a strong preference for Given–New [IO–DO] over New–Given [DO –IO] in the given recipient condition, but no preference in the crucial given-theme condition. For
L2 English, as we have just seen, these L2 children in general show a preference for the PD, i.e., [NP PP].

Alternatively, individual adherence (marked as YES) and non-adherence (marked as NO) can be crosschecked between L1 Korean and L2 English (as in Table 6.28). The four logically possible outcomes are laid out in (18).

(18)  a. NO in L1, NO in L2
   b. YES in L1, NO in L2
   c. NO in L1, YES in L2
   d. YES in L1, YES in L2

If L2 children’s (non-)adherence to the Given-before-New Principle in their L2 is in some way dependent on their L1 (non-)adherence to this principle, then outcome (iii) should be ruled out (this is to say, in the absence of L1 attrition in the bilingual situation, the principle should emerge first in the L1). However, there is 1 child (6%) who does not adhere to the principle in his L1, but does adhere to it in his L2. This seems to indicate a (curious) dissociation between L1 vs. L2 adherence to the Given-before-New Principle. Yet, given the small sample size, it would be premature to make any conclusive remarks concerning the relation between L1 (non-)adherence and L2 (non-)adherence to the Given-before-New Principle in L2 children.

6.7.4 Summary

To summarize: L1 Korean-L2 English children \( n = 16 \) were tested in their L1 and L2. For L1 Korean, the L2 children showed a clear preference for the Given–New [IO–DO] order in the given-recipient condition, but no preference in the given-theme condition. For L2 English, they generally show a syntactic bias toward the [NP PP] variant, except for the Higher L2 children who in the given-recipient condition show no preference in the Pronoun Task. Individual consistency analysis showed that only 4 children adhere to the Given-before-New Principle in their L1 Korean, and only 1 child adheres to the principle in his L2 English. The children’s L1 vs. L2 adherence to the Given-before-New Principle was also individually crosschecked. The majority of the L2
children (11 out of 16) show non-adherence to the principle in both the L1 and the L2; 4 show L1 adherence only; and 1 shows L2 adherence only, this last finding indicating a very curious dissociation between L1 non-adherence and L2 adherence. However, the small number disallows us to draw conclusions.

6.8 Summary of the chapter

This chapter reported group results and individual results of the English studies and the Korean studies using the novel oral contextualized preference tasks—an NP Task and a Pronoun Task—involving 7 population groups: (i) L1-English adults; (ii) L1-English children; (iii) L1-Korean adult L2ers of English; (iv) L1-Korean adults; (v) L1-Korean children; (vi) L1-English adult L2ers of Korean; (vii) L1 Korean-L2 English children.

We found that both L1-English adults (§6.5.1) and L1-Korean adults (§6.6.1) overwhelmingly comply with the Given-before-New Principle, thereby validating our experimental paradigms, both in English and in Korean. L1-English children (§6.5.2), as a group, do not show native adult-like harmonic alignment of information structure in regard to word-order alternations, having a preference for [NP PP], i.e., the default PD. In this group, a causal relation between ToM and the Given-before-New Principle is not observed because the data yield counterevidence: 4 out of 5 [–ToM] children adhere to the principle. L1-Korean children (§6.6.2) also generally do not abide by the principle, again showing a preference for the default, i.e., the canonical [IO–DO] order. However, with regard to the causal relation between ToM and the Given-before-New Principle, none of the [–TOM] group (n = 3) observes the principle (contrary to what was found for L1-English NO/NO children). Yet, the sample sizes of both [–TOM] groups are too small to draw conclusions, especially since the results point in opposite directions for L1 English vs. L1 Korean.

As for L2 adults, intermediate-to-advanced L1-Korean adult L2ers of English (§6.5.3) show a syntactic bias toward the [NP PP] order (when tested on only those verbs for which they demonstrated—in the AJT—lexico-syntactic knowledge of the English dative alternation); genuine sensitivity to information structure shows up first with given pronominal referents, i.e., in the Pronoun Task (in the crucial given-recipient condition).
A closer investigation into individual consistency shows that 7 (54%) of 13 Higher L2ers and 3 (50%) of 6 Lower L2ers adhere to the *Given-before-New Principle*. Similarly, intermediate-to-advanced L1-English adult L2ers of Korean (§6.6.3) tend to exhibit a strong syntactic bias toward the [IO–DO] order (with virtually no difference between the NP Task and the Pronoun Task). Individually, 5 (26%) of 19 Higher L2ers and 5 (26%) of 19 Lower L2ers show adherence to the *Given-before-New Principle*. In sum, L2 adults who have knowledge of the *Given-before-New Principle* in their L1 generally show a syntactic bias toward the default—the PD in L2 English and the canonical [IO-DO] order in L2 Korean, albeit to a stronger degree in L2 Korean than in L2 English. In L2 English, about half of the L2 adults adhere to the givenness principle; in L2 Korean, about a quarter of the L2 adults comply with the principle.

Finally, as for child L2 acquisition, L1 Korean-L2 English children, especially the Lower L2 children, generally show a syntactic bias for, again, [NP PP]. The results of individual consistency reveal that only 1 L2 child (6% of the total 16 L2 children) shows adherence to *Given-before-New Principle* in his L2. Comparisons within L2 children in regard to (non-)adherence to the *Given-before-New Principle* in their L1 (Korean) vs. their L2 (English) yield this single case of adherence in the L2 but non-adherence in the L1. This seems to indicate a (curious) dissociation of the emergence of the *Given-before-New Principle* in the child’s two languages.
CHAPTER 7.
CROSS-COMPARISONS: DISCUSSION, CONCLUSIONS AND IMPLICATIONS

7.1 Introduction
This chapter compares different populations. The cross-comparisons are as follows: (i) adult L1 English ~ adult L1 Korean in §7.2.1, (ii) child L1 English ~ child L1 Korean in §7.2.2, (iii) child L1 Korean ~ L2-English children in L1 Korean in §7.2.3, (iv) adult L2 English ~ adult L2 Korean in §7.3.1, and (v) adult L2 English ~ child L2 English in §7.3.2. These comparisons are based on paired samples t-tests, some of which were conducted in the preceding chapter. The final two sections (§7.4 and §7.5) summarize the major findings and present implications.

7.2 L1 studies
7.2.1 Adult L1 English ~ Adult L1 Korean
The group results of L1-English adults and L1-Korean adults are presented in Table 7.1. Overall, the two native adult groups show overwhelming harmonic alignment of information structure, preferring Given–New orders in all conditions whether or not the Given–New order aligns with the default—i.e., the [NP PP] (PD) in the English dative alternation and the canonical [IO–DO] order in Korean dative constructions.

<table>
<thead>
<tr>
<th></th>
<th>L1-English Adults (n = 20)</th>
<th>L1-Korean Adults (n = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td>NP Task</td>
<td>86 ✓</td>
<td>71 ✓</td>
</tr>
<tr>
<td>Pronoun Task</td>
<td>99 ✓</td>
<td>82.5 ✓</td>
</tr>
</tbody>
</table>

Note. ✓ = statistically preferring Given–New over New–Given

126 This chapter does not report the details of the t-tests reported on in Chapter 6.
As for the statistical extent of [Given–New] choices in each condition, paired t-tests revealed that adult native English speakers choose (i) in the given-theme condition, [Given–New] PD significantly more often than [New–Given] DOD and (ii) in the given-recipient condition, [Given–New] DOD significantly more often than [New–Given] PD. Similarly, adult native Korean speakers choose (i) in the given-recipient condition, [Given–New] canonical [IO–DO] significantly more often than [New–Given] scrambled [DO–IO] and (ii) in the given-theme condition, [Given–New] scrambled [DO–IO] significantly more often than [New–Given] canonical [IO–DO]. Taken together, the convergence of the discourse effects on construction type in the comprehension of the dative word-order alternations provides empirical, crosslinguistic evidence in support of the *Given-before-New Principle*, which has been attested in the production of the dative alternation derived from corpus data (e.g., for English, Bresnan et al., 2007, Collins, 1995; for Korean, Choi, 2009). Our data contribute to a view that native adult comprehenders are sensitive to the givenness constraint such that they adhere to the *Given-before-New Principle* in the dative word-order alternations.

Moreover, our adult L1 data are also in accord with previous on-line studies (for English, Brown et al., 2012; Clifton & Frazier, 2004; for Korean, Jackson, 2008) for the restricted use of the non-default word order with only Given–New information structure and the felicitous use of the default word order with both Given–New and New–Given information structures. Recall that Clifton and Frazier (2004) found in their speeded acceptability judgment task (AJT) with L1 adults that for the PD, Given–New information structure does not influence reaction times or acceptance-rate accuracy, but for the DOD, New–Given information structure gives rise to significantly slower reaction times and lower acceptance-rate accuracy (see §2.5.1 and §6.5.1.3). Likewise, Brown et al. (2012) found in their self-paced reading study that L1 adults do not have difficulties in processing the PD even when new information precedes given information, but the DOD with New–Given information structure incurs a significant processing cost (see §2.5.1). Clifton and Frazier suggest that speakers/writers have a fundamental preference for the PD—*the default*, from which the preference in hearers/readers is derived; since speakers/writers frequently use the PD with New–Given information structure, hearers/readers do not have difficulty with it. In contrast, the DOD is largely limited to
Given–New orders in speakers’/writers’ production, which is reflected in hearers’/readers’ greater comprehension difficulties with the DOD used with New–Given information structure (in comparison to the DOD used with Given–New information structure).

For Korean dative constructions, Jackson (2008) found something similar in her on-line whole-sentence reading study: For canonical [S–IO–DO] sentences, Given–New information structure vs. New–Given information structure does not influence reading times, whereas for scrambled sentences, Given–New information structure is read significantly faster than New–Given information structure (see §2.5.2 and §6.6.1.3). We suggest that Clifton and Frazier’s (2004) account can be carried over to Korean dative constructions: The canonical order can be felicitously used for both Given–New and New–Given orders, while the scrambled order with New–Given information structures results in comprehension processing difficulties.

Completely in line with the above, our L1-English and L1-Korean adults indeed significantly disprefer, respectively, the DOD order and the scrambled dative order with New–Given information structure, both groups choosing the non-default only around 14% of the time in their respective NP Task. In contrast, the choice proportions of the PD and the canonical dative with New–Given information structure are significantly higher relative to their counterpart constructions with New–Given information structure, each group choosing in this case the default around 30% of the time in the NP Task.

In addition, our L1-adult studies provide evidence for givenness scales that are crosslinguistically different for English vs. Korean. In accordance with the English givenness scale in Figure 7.1, L1-English adults’ preference for Given–New is stronger in the Pronoun Task than in the NP Task across both conditions (99%127 > 86% in the given-theme condition; 82.5% > 71% in the given-recipient condition).

127 Recall that [NP Pronoun] is ungrammatical in the DOD (e.g., *Mary showed some friends it).
By contrast, L1-Korean adults show the same degree of sensitivity to Given–New in the NP Task vs. the Pronoun Task for the given-theme condition (87.5% vs. 86%) and for the given-recipient condition (66% vs. 68%). This is to say, a definite lexical NP and a compound-type pronoun are equivalent in terms of the degree of topicality, as illustrated in the Korean givenness scale in Figure 7.2 (see §6.6.1.3)

In sum, both L1-English adults and L1-Korean adults overwhelmingly prefer Given–New information structure in dative constructions regardless of whether this order aligns with the default variant or the non-default variant. Yet, preference is statistically stronger for the Given–New default variant than for the Given–New non-default variant. Furthermore, L1-English adults’ preference for Given–New is modulated by referent type, viz., pronoun vs. definite lexical NP: As the given-referent, a pronoun has a stronger effect than a definite lexical NP does. In contrast, no such referent-type effect occurs in L1-Korean adults’ Given–New preferences. These results together substantiate that adult natives demonstrate effects of discourse givenness in their comprehension of dative
word-order alternations, thereby providing crosslinguistic evidence in support of the
*Given-before-New Principle*.

### 7.2.2 Child L1 English ~ Child L1 Korean

Recall that based on their results of the 2 false-belief tasks, children were divided into
YES/YES children, who passed both tasks, YES/NO children, who passed one task, and
NO/NO children, who passed neither task. As summarized in Table 7.2, as groups, both
(monolingual) L1-English (YES/YES and YES/NO) children and (monolingual)
(YES/YES and YES/NO) L1-Korean children show no preference in many conditions of
the preference tasks. More specifically, these L1-English children show a preference for
the Given–New PD in the *given-theme* condition (in both tasks); in the *given-recipient*
condition, on the other hand, the YES/NO group has a significant preference for
New–Given PD in the NP Task. For L1-Korean children, the YES/YES group shows no
(statistical) preferences at all. In contrast, the YES/NO group exhibits a statistical
preference for *[IO–DO]* in the NP Task in both conditions (i.e., the Given–New order in
the *given-recipient* condition and the New–Given order in the *given-theme* condition),
while they show no (statistical) preference at all in the Pronoun Task.

<table>
<thead>
<tr>
<th>Condition</th>
<th>L1-English Children (n = 26)</th>
<th>L1-Korean Children (n = 26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td><strong>NP Task</strong></td>
<td>YES/YES n=9</td>
<td>74 ✓ 50</td>
</tr>
<tr>
<td></td>
<td>YES/NO n=17</td>
<td>79 ✓ 39</td>
</tr>
<tr>
<td><strong>Pronoun Task</strong></td>
<td>YES/YES n=9</td>
<td>83 ✓ 61</td>
</tr>
<tr>
<td></td>
<td>YES/NO n=17</td>
<td>88 ✓ 45</td>
</tr>
</tbody>
</table>

*Note.* ✓ = statistically preferring Given–New over New–Given

---

128 Recall that the NO/NO children in both groups were not included for statistical analysis because the sample sizes were too small (L1-English children: n = 5; L1-Korean children: n = 3).
To sum up: In the given-theme condition, these L1-English children prefer the Given–New default variant over the New–Given non-default variant, choosing it at least 74% of the time, but this strong ordering preference disappears in the critical given-recipient condition where the Given–New non-default variant competes with the New–Given default variant. By contrast, in these L1-Korean children, there is no distinct ordering preference at all across all the conditions, except for the given-recipient condition, in which the YES/NO group has a preference for [IO–DO]. All in all, neither of these L1-English and L1-Korean groups adheres to the Given-before-New Principle.

The difference between the 2 L1 child groups is in the condition where the default variant—[NP PP] in English, [IO–DO] in Korean—aligns with Given–New: L1-English children prefer the default, but L1-Korean children, more or less, do not. In order to try to trace the cause of the differing patterns, we compared the English experiments to the Korean experiments in terms of the number of mentions the discourse entity that becomes the experimental given referent has. If there is a direct connection between number of mentions of a discourse entity and degree of saliency, more mentions of a discourse entity should increase saliency of the given referent, which may impact children’s adherence to the givenness constraint. On average, there were more mentions of theme compared to recipient in the stories that preceded the test sentences in both our English and Korean experiments, as presented in Table 7.3.

Table 7.3. Number of Mentions of the Discourse Entity in Our English and Korean Experiments

<table>
<thead>
<tr>
<th></th>
<th>NP Task</th>
<th>Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td>English Mean</td>
<td>6.7     &gt; 5.7</td>
<td>4.8 &gt; 3.5</td>
</tr>
<tr>
<td>Range</td>
<td>5 – 10  &gt; 3 – 10</td>
<td>3 – 6 &gt; 2 – 7</td>
</tr>
<tr>
<td>Korean Mean</td>
<td>4.3     &gt; 3.3</td>
<td>4.3 &gt; 3.0</td>
</tr>
<tr>
<td>Range</td>
<td>3 – 6   &gt; 2 – 5</td>
<td>3 – 6 &gt; 2 – 4</td>
</tr>
</tbody>
</table>
For the English tasks, the number of mentions of theme ranges from 5 to 10 (mean = 6.7) in the NP Task and from 3 to 6 (mean = 4.8) in the Pronoun Task; the number of mentions of recipient ranges from 3 to 10 (mean = 5.7) in the NP Task and from 2 to 7 (mean = 3.5) in the Pronoun Task. For the Korean tasks, the range of mentions of theme is between 3 and 6 (mean = 4.3) in both the NP Task and the Pronoun Task; the range of mentions of recipient is between 2 and 5 (mean = 3.3) in the NP Task and between 2 and 4 (mean = 3.0) in the Pronoun Task. This general favoring of theme mentions over recipient mentions may have had differential consequences in the English experiments vs. the Korean experiments: For English, in compliance with the *Given-before-New Principle*, the given-theme corresponds to [NP THEME PP RECIPIENT], the default; by contrast, for Korean, in non-compliance with the principle, the given-theme corresponds to [DO THEME – IO RECIPIENT], the non-default. In other words, the Korean default [IO RECIPIENT – DO THEME] aligns with given recipient, but recipient mentions were relatively fewer than theme mentions. As such, for the relation between mentions of a referent and saliency, the relatively greater number of mentions of theme may have contributed to the L1-English children’s preference for the Given–New default [NP THEME PP RECIPIENT], and conversely, the relatively fewer mentions of recipient may have contributed to the L1-Korean children’s lack of preference for the Given–New default [IO RECIPIENT – DO THEME].

Another factor to consider is the structural complexity of the dative constructions. For instance, according to Bruening’s (2010a, b) asymmetric analysis of the two variants of the English dative alternation, the PD is arguably less syntactically complex than the DOD since only the latter has an additional Appl(licative) Phrase whose head introduces the NP RECIPIENT (see §2.2.3). L1-English children’s preference for Given–New PD in the given-theme condition might have to do with this syntactic asymmetry. In a similar vein, Kim (2008) argues that thanks to the DO scrambling over the IO, the [DO–IO] order in Korean is syntactically derived from, and hence syntactically more complex than, the underlying [IO–DO] order (see §2.3.1). Yet in this case, L1-Korean children fail to prefer the syntactically less complex (non-scrambled) variant even in the

129 However, this account based on relatively more theme mentions than recipient mentions runs into a problem in the English given-recipient condition of the Pronoun Task: YES/YES children prefer the Given–New non-default DOD, i.e., [NP RECIPIENT – NP THEME].
given-recipient condition, and it is still puzzling why L1-Korean children do not show such a preference.

It is noteworthy that L1 children show a high rate of split responses (as shown in the individual consistency analyses—see §6.5.2.2 and §6.6.2.2), which consequently contributes to lack of preferences in the group analyses. It is possible that the high rate of split responses in our experiments is somehow related to task demands. The experiment includes the NP Task and the Pronoun Task, each consisting of 24 test items, along with 3 practice items, totaling 27 items, each of which, moreover, required the participant to consider 2 sentences and then make a best-fit choice between them. Although we broke the experiment into 2 or more experimental sessions (3 to 4 sessions for children younger than age 6; 2 sessions for children age 6 and older), listening to 13 to 14 stories of context for comprehension per session and making a choice between the 2 alternative orders might be quite taxing for children. These characteristics of the experimental design and procedures might have contributed to the high rate of split responses in children. If this were the case, we would expect the children to do better on the first half of each session. Based on this logic, we compared the L1 children’s performance in the first half of each session to their performance in the second half of each session. The results revealed that both L1-English and L1-Korean children performed on par in each session half, thereby providing evidence that L1 children’s high rate of split responses is very unlikely to be due to task demands.

We probed further into individual consistency of Given–New, testing for individual adherence to the Given-before-New Principle. Recall that for L1 children, the individual consistency criterion (marked as √ vs. × in Table 7.4) is the same preference (i.e., Given–New vs. New–Given) in at least 4 (out of 6) tokens and the criterion for adherence to the Given-before-New Principle is preference for the Given–New order in at least 3 (out of 4) conditions (see §6.3). For the 31 L1-English children, 6 (67%) of 9 YES/YES children, 6 (35%) of 17 YES/NO children, and 4 (80%) of 5 NO/NO children consistently preferred the Given-New order. Yet for the 29 L1-Korean children, only 5 (33%) of 15 YES/YES children consistently preferred the Given-New order, and none of the YES/NO and NO/NO children did. Altogether, half of the L1-English children (52%) and a small subset of the L1-Korean children (17%) adhere to the Given-before-New
**Principle.** See Table 7.4, which presents the individual results of all the L1-English and L1-Korean children who adhere to the *Given-before-New Principle*.

Table 7.4. Individual Consistency of Given–New and Individual Adherence to
*Given-before-New: L1-English Children vs. L1-Korean Children*\(^{130}\)

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to <em>Given-before-New Principle</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>given-theme</em></td>
<td>L1-English Children ((n = 31))</td>
</tr>
<tr>
<td>Given–New [NP PP]</td>
<td>YES/YES ((n = 9))</td>
</tr>
<tr>
<td>Given–New [NP NP]</td>
<td>YES/YES ((n = 15))</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NP Task</th>
<th>Pronoun Task</th>
<th>NP Task</th>
<th>Pronoun Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
</tr>
<tr>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\times)</td>
<td>(\times)</td>
</tr>
<tr>
<td>(\times)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
</tr>
<tr>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
<td>(\checkmark)</td>
</tr>
</tbody>
</table>

---

**Total # adhering to Given–New**

L1-English Children: 6
L1-Korean Children: 5

--

Notes. \(\checkmark\) = \(\geq 4\) Given–New choices out of 6 *tokens*; \(\times\) = \(< 4\) Given–New choices adhering to Given–New = \(\geq 3\) \(\sqrt{s}\) out of 4 *conditions*

Let us now turn to our research question asking whether there is a causal relation between ToM and the *Given-before-New Principle* in L1 children. There are 4 possible outcomes: (i) \([-\text{ToM}], [-\text{Given-before-New}];\) (ii) \([+\text{ToM}], [+\text{Given-before-New}];\) (iii) \([+\text{ToM}], [-\text{Given-before-New}];\) (iv) \([-\text{ToM}], [+\text{Given-before-New}].\) Outcome (iv) should not occur if \([+\text{ToM}]\) is a prerequisite for adherence to *Given-before-New Principle*. First, for the L1-English children, consistent preference for the Given–New order is observed in a subset of children in all groups, YES/YES children, YES/NO

\(^{130}\) The detailed tables for all the children are presented in Chapter 6 (see Table 6.11 for L1-English children (§6.5.2.2) and Table 6.18 for L1-Korean children (§6.6.2.2)).
children, and NO/NO children. Second, for the (monolingual) L1-Korean children, in contrast, consistent preference for the Given–New order is found in the YES/YES group only, but among only a third of them. These two sets of our L1 child data provide mixed patterns regarding outcome (iv). While none of the 3 Korean NO/NO children falls into outcome (iv), 4 of the 5 NO/NO L1-English children do. As intriguing, if not puzzling, as these conflicting results are, in any case the very small number of [– ToM] children in each language group makes it inappropriate to conclude much of anything. In future research, we would fix this problem by targeting data collection from a much larger group of younger children who have not yet mastered ToM.

7.2.3 Child L1 Korean ~ L2-English Children in L1 Korean

In the preceding chapter, the L1-Korean results of the L2-English children \( (n = 16) \) were presented as a single group because the small sample size of the YES/NO children \( (n = 2) \) did not affect statistical results. In this section, these children are split into the YES/YES group \( (n = 14) \) and the YES/NO group \( (n = 2) \) in order to make cross-comparisons with the equivalent groups of monolingual L1-Korean children, i.e., the YES/YES group \( (n = 15) \) and the YES/NO group \( (n = 11) \).

As shown in Table 7.5, the L1-Korean data from both the monolingual L1-Korean children and the L1 Korean-L2 English children suggest that they do not adhere to the Given-before-New Principle. None of the groups shows a (significant) Given–New preference in the crucial given-theme condition. By contrast, the monolingual YES/NO group has a significant preference for New–Given [IO–DO] in the given-theme condition of the NP Task. For the Korean monolinguals, a significant preference for Given–New appears only in the YES/NO group in the given-recipient condition of only the NP Task (i.e., [IO–DO]). For the L2ers, on the other hand, it is only the YES/YES group that shows a significant preference for Given–New [IO–DO] in the given-recipient condition of only the Pronoun Task \( (t(13) = 3.045, p = .009) \).
Table 7.5. L1-Korean Children ~ L1 Korean-L2 English Children: Proportion (%) of Given–New Choices by Condition

<table>
<thead>
<tr>
<th></th>
<th>Monolingual L1-Korean Children (n = 26)</th>
<th>L1 Korean-L2 English Children in the L1 (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>given-recipient given-theme</td>
<td>given-recipient given-theme</td>
</tr>
<tr>
<td>NP</td>
<td>YES/YES n=15</td>
<td>YES/YES n=14</td>
</tr>
<tr>
<td>Task</td>
<td>56 48</td>
<td>61 50</td>
</tr>
<tr>
<td></td>
<td>YES/NO n=11</td>
<td>YES/NO n=2</td>
</tr>
<tr>
<td></td>
<td>67 √36</td>
<td>58 42</td>
</tr>
<tr>
<td>Pronoun Task</td>
<td>YES/YES n=15</td>
<td>YES/YES n=14</td>
</tr>
<tr>
<td></td>
<td>56 60</td>
<td>65 √49</td>
</tr>
<tr>
<td></td>
<td>YES/NO n=11</td>
<td>YES/NO n=2</td>
</tr>
<tr>
<td></td>
<td>58 47</td>
<td>58 58</td>
</tr>
</tbody>
</table>

Note. √ = statistically preferring Given–New over New–Given

As shown in Table 7.6 for individual consistency in L1 Korean using the criterion of the same preference (i.e., Given–New or New–Given) in at least 4 (out of 6) tokens, for monolingual L1-Korean children (n = 29), as we have already seen, 5 (33%) of 15 YES/YES children consistently preferred the Given–New order, and no YES/NO nor NO/NO child did. For L1 Korean-L2 English children (n = 16), consistency of Given–New was found in only 4 (29%) of 14 YES/YES children. All together, only small subsets of monolingual L1-Korean children (17%, i.e., 5/29) and L1 Korean-L2 English children (25%, i.e., 4/16) adhere to the Given-before-New Principle in L1 Korean.

Again, the 3 NO/NO monolingual L1-Korean children were excluded from statistical analyses because of the small sample size; none of the L1 Korean-L2 English children tested as NO/NO.

131
Table 7.6. Individual Consistency in Korean of Given–New and Individual Adherence to
Given-before-New: L1-Korean Children vs. L1 Korean-L2 English Children

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1-Korean Children (n = 29)</td>
</tr>
<tr>
<td></td>
<td>YES/YES (n = 15)</td>
</tr>
<tr>
<td></td>
<td>YES/NO (n = 11)</td>
</tr>
<tr>
<td></td>
<td>NO/NO (n = 3)</td>
</tr>
<tr>
<td>Given–New [IO–DO]</td>
<td></td>
</tr>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Total # adhering to Given–New</td>
<td>5  0  0</td>
</tr>
</tbody>
</table>

| Given–New [DO–IO]    |                                        |
| NP Task              | Pronoun Task                           |
| √                    | √                                      |
| ×                    | √                                      |
| √                    | √                                      |
| Total # adhering to Given–New | 4  0  - |

<table>
<thead>
<tr>
<th>L2-English Children (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES/YES (n = 14)</td>
</tr>
<tr>
<td>YES/NO (n = 2)</td>
</tr>
<tr>
<td>NO/NO (n = 0)</td>
</tr>
<tr>
<td>Given–New [IO–DO]</td>
</tr>
<tr>
<td>NP Task</td>
</tr>
<tr>
<td>√</td>
</tr>
<tr>
<td>√</td>
</tr>
<tr>
<td>√</td>
</tr>
<tr>
<td>Total # adhering to Given–New</td>
</tr>
</tbody>
</table>

| Given–New [DO–IO]            |
| NP Task                      |
| ×                            |
| √                            |
| √                            |

Notes. √ = ≥ 4 Given–New choices out of 6 tokens; × = < 4 Given–New choices adhering to Given–New = ≥ 3 √s out of 4 conditions

To sum up, both the group results and the individual consistency results indicate that L1-Korean children, whether they are monolingual or bilingual, have problems with adhering to the Given-before-New Principle in Korean.

For the sake of completeness, we revisit the relation between ToM and the Given-before-New Principle. The results from the two sets of data are straightforward: Adherers to the principle are only in the YES/YES ([+ToM]) group. For L1 Korean-L2 English children, however, none placed in the NO/NO group; so there is no way to test the causal relation in their L1 between ToM and the Given-before-New Principle.

---

This table reports only the children who adhere to the Given-before-New Principle. The detailed tables including all children are presented in Chapter 6 (Table 6.18 for monolingual L1-Korean children (§6.6.2.2) and Table 6.25 for L1 Korean-L2 English children (§6.7.1.2)).
7.3 L2 studies

7.3.1 Adult L2 English ~ Adult L2 Korean

Table 7.7 summarizes the group results of L1-Korean adult L2ers of English and L1-English adult L2ers of Korean. When the Given–New order aligns with the default, both L2 groups show a strong preference for the Given–New default—PD for English and [IO–DO] order for Korean—over New–Given non-default. By contrast, in the condition where the Given–New order aligns with the non-default, all L2 groups (significantly) prefer the default with the New–Given order, except in the English Pronoun Task, in which both L2 groups show a preference for the Given–New DOD, the Higher L2 group statistically so and the Lower L2 group only numerically.

Table 7.7. L2-English Adults ~ L2-Korean Adults: Proportion (%) of Given–New Choices by Condition

<table>
<thead>
<tr>
<th></th>
<th>L2-English Adults (n = 30)</th>
<th>L2-Korean Adults (n = 38)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td></td>
<td>[NP PP]</td>
<td>[NP NP]</td>
</tr>
<tr>
<td>NP Task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher</td>
<td>83 √</td>
<td>37</td>
</tr>
<tr>
<td>n=16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>81 √</td>
<td>32</td>
</tr>
<tr>
<td>n=14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pronoun Task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher</td>
<td>94 √</td>
<td>69 √</td>
</tr>
<tr>
<td>n=16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>92 √</td>
<td>62</td>
</tr>
<tr>
<td>n=14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. √ = statistically preferring Given–New over New–Given

The results of our bidirectional L2 adult studies suggest that intermediate-to-advanced L2ers show a strong syntactic bias toward the default—PD in English and [IO–DO] in Korean, when the given referent is a definite lexical NP. As discussed above (§6.6.1.3 and §7.2.1), the Korean Pronoun Task uses a compound-type pronoun as the given referent; however, a definite lexical NP and a compound-type pronoun are equivalent in terms of the degree of topicality. We thus categorize them into a single referential type: definite lexical NP (see Figure 7.2). In sum, we conclude from our bidirectional L2 studies that with a definite lexical NP as a given-referent, when the less basic construction instantiating Given–New information structure competes with the
more basic construction instantiating New–Given information structure, the majority of intermediate-to-advanced L2 adults tend to choose the latter, viz., \textit{the default}. This is to say, the default wins over the \textit{Given-before-New Principle}. In contrast, when the given referent is \textit{a pronoun}, intermediate-to-advanced L2-English adults are more likely to prefer Given–New order over New–Given order across conditions.

As for L2-English adults’ differential sensitivity to referent type (a lexical NP vs. a pronoun), two factors may be involved. First, it is likely that in compliance with the English givenness hierarchy (Figure 7.1), the higher topicality encoded in a pronoun, as compared to a definite lexical NP, promotes L2ers’ sensitivity to the givenness constraint. The second factor concerns (input) frequency: (i) Clifton and Frazier (2004) found in their reanalyses of Arnold et al.’s (2000) corpus and production studies that (New–Given) indefinite–definite [NP PP] is as frequent as (Given–New) definite–indefinite [NP NP]; (ii) Bresnan’s (2007) corpus analysis shows that in native-speaker usage, [Pronoun NP] is far more frequent than [NP NP] (1530 vs. 178) for Given–New information structure (i.e., with a given recipient). This frequency comes into play such that with a given recipient, L2-English (Higher and Lower) adults prefer the more frequent [Pronoun NP] in the Pronoun Task at much higher rates than the less frequent [NP NP] in the NP Task.

A closer look into individual consistency confirms the group results: Both L2 adult groups have more problems with the condition in which Given–New aligns with the non-default (as opposed to with the default), and L2-English adults show less sensitivity to givenness with a lexical NP (as opposed to a pronoun) as a given-referent. Recall that data analysis of the L2-English preference tasks included, for each L2er, only those critical items with the verbs that he/she allowed as both PD and DOD in the Acceptability Judgment Task. Therefore, the criterion of individual consistency in the L2-English studies is \textit{at least 3 same choices out of 4 tokens or at least 4 same choices out of either 5 or 6 tokens}. In contrast, our L2-Korean adult study follows the same criterion of individual consistency discussed previously for Korean: \textit{at least 4 same choices out of 6 tokens}. The criterion of adherence to the \textit{Given-before-New Principle} remains unchanged: Given–New preferences in \textit{at least 3 out of 4 conditions}. The results of the individual analyses for L2-English adults and L2-Korean adults are presented in Table 7.8.
Table 7.8. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L2-English Adults vs. L2-Korean Adults

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L2-English Adults (n = 19)</td>
</tr>
<tr>
<td></td>
<td>Higher (n = 13)</td>
</tr>
<tr>
<td></td>
<td>Lower (n = 6)</td>
</tr>
<tr>
<td>given-theme</td>
<td>given-recipient</td>
</tr>
<tr>
<td>NP Task</td>
<td>Pronoun Task</td>
</tr>
<tr>
<td></td>
<td>NP Task</td>
</tr>
<tr>
<td></td>
<td>Pronoun Task</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Total # adhering to Given–New</td>
<td>7 3</td>
</tr>
</tbody>
</table>

| given-recipient      | given-theme                             |
|                     | Given–New [IO–DO]                       |
|                     | Given–New [DO–IO]                       |
| NP Task              | Pronoun Task                           |
|                      | NP Task                                |
|                      | Pronoun Task                           |
| ×                    | √                                      | 0 1 |
| √                    | ×                                      | 0 2 |
| √                    | √                                      | 3 0 |
| √                    | √                                      | 2 2 |
| Total # adhering to Given–New | 5 5 |

**Notes.** For English, $\sqrt{\text{given–New}} \geq 3$ Given–New choices out of 4 tokens; 4 out of 5 tokens; 4 out of 6 tokens; otherwise $\times$.

For Korean, $\sqrt{\text{given–New}} \geq 4$ out of 6 tokens; otherwise $\times$

adhering to Given–New $= \geq 3 \sqrt{\text{s}}$ out of 4 conditions

For L2-English adults, 7 (54%) of 13 Higher L2ers and 3 (50%) of 6 Lower L2ers pass our adherence criteria; for L2-Korean adults, 5 (26%) of 19 Higher L2ers and 5 (26%) of 19 Lower L2ers adhere to the principle. All together, 10 (53%) of 19 L2-English adults and 10 (26%) of 38 L2-Korean adults adhere to the **Given-before-New Principle**.

Let us now turn to L2 adults’ syntactic bias toward the default, which was discussed in Chapter 6 in relation to input frequency, syntactic complexity, and felicitous

---

133 This table reports only the adult L2ers who adhere to the **Given-before-New Principle**. The detailed tables including all the L2 adults are presented in Chapter 6 (see Table 6.14 for L2-English adults (§6.5.3.2) and Table 6.19 for L2-Korean adults (§6.6.3.2)).

134 In so far as a compound-type pronoun is considered topicality-equivalent to a definite lexical NP in our Korean study, this results in only 2 conditions (given-theme vs. given-recipient), making it impossible to make 4-condition cross-comparisons between L2-Korean and L2-English.
use of the default. For **L2 English**, (New–Given) indefinite–definite [NP PP] is as frequent as (Given–New) definite–indefinite [NP NP] (Clifton & Frazier, 2004), and regarding the latter, Given–New [Pronoun NP] is far more frequent than [NP NP] with two lexical NPs (e.g., Bresnan, 2007).\textsuperscript{135} Furthermore, the DOD is arguably more syntactically complex than the PD (see §2.2.2). And last but not least, the PD can be felicitously used in both Given–New and New–Given information structure, as evidenced in both corpus and on-line studies, and is therefore the default (e.g., Brown et al., 2012; Clifton & Frazier, 2004). Likewise, for **L2 Korean**, corpus studies show that [IO–DO] is far more frequent than [DO–IO] (e.g., Choi, 2009; Park, 2008). Moreover, [IO–DO] is the underlying order, from which DO scrambling derives the more syntactically complex [DO–IO] order (e.g., Kim 2008; Sohn 1994). Finally, an on-line study provides evidence that [S–IO–DO] can be felicitously used in both Given–New and New–Given information structure (Jackson, 2008) and is thus the default.

In addition, mastery of the TL grammar under investigation is also related to L2ers’ syntactic bias toward the default. Recall that our L2-English participants were tested independently on their syntactic knowledge of the dative alternation via the AJT, which led to the conclusion that their bias for the PD is not due to lack of knowledge that the verbs in the preference tasks allow the DOD. By comparison, under the rationale that all Korean dative verbs allow both canonical and scrambled orders and thus scrambling with dative verbs is not problematic in intermediate-to-advanced L2ers, our L2-Korean adults were not tested for their syntactic knowledge of scrambling. Still, it is possible that their syntactic bias for [IO–DO] stems from them not knowing that Korean allows DO scrambling (to pre-IO position with the dative verbs used in the experiments). In future research, this possibility can be checked by independently testing L2ers’ mastery of such scrambling in Korean (dative sentences).

Finally, it is also important to consider our L2 adults’ demographic factors, not discussed so far, in order to appreciate L2ers’ (non-)adherence to the **Given-before-New Principle**. First, we examined the relationship between L2ers’ adherence to the principle

\textsuperscript{135} In comparing the frequency of the PD and the DOD, as noted in Chapter 6 (fn. 119), the PD is more **type-frequent** (only a subset of dative verbs enter into dative alternation) but the DOD is far more **token-frequent**. So, if input frequency helps in establishing a default in their L2 English, it is noteworthy that the L1-Korean adult L2ers are apparently more sensitive to type-frequency.
and their age of L2 onset (AO). The range of AO is 10–15 years ($M = 11.7$) in L2-English adults and 15–33 years ($M = 20$) in L2-Korean adults. Overall, our L2-English adults have an earlier AO than our L2-Korean adults. In both populations, however, no relationship between adherence to the principle and AO was found. We also explored the relationship between L2ers’ adherence to the principle and their length of residence (LoR) in a country in which the respective TL (English, Korean) is spoken. The range of LoR is 2;0–22;0 ($M = 3;8$) in L2-English adults and 0;0–13;0 ($M = 1;2$) in L2-Korean adults. Our L2-English adults have on average a longer LoR than our L2-Korean adults. Yet again, there was no correlation between Given–New choices and LoR.

Nevertheless, a closer, qualitative examination provides suggestive evidence that L2ers’ adherence to *Given-before-New Principle* is more likely to be associated with LoR. Of the L2-English adults, the only one who shows preference for Given–New across all 4 conditions has the longest LoR (22 years). Yet, at first blush, there seems to be a dissociation between adherence to the principle and LoR because, except for this longest case (22 years), the average LoR for L2-English adults is the same for those who adhere to the *Given-before-New Principle* ($M = 3;4$) and for those who do not ($M = 3;7$). Recall that there is one more subgroup of L2-English adults, those who were excluded from the data analysis of individual consistency, i.e., 11 L2-English adults whose accuracy in the AJT was below 4 out of the 6 verbs. The average LoR of this subgroup is 2;0, which is relatively shorter as compared to the other two subgroups—i.e., adherers and non-adherers to the *Given-before-New Principle*; this observation thus indicates that there is an association between LoR and *lexico-syntactic knowledge* of the dative alternation (with these particular 6 verbs). On the other hand, the average LoR equivalence between adherers and non-adherers might be understood as a delay in the emergence of the *Given-before-New Principle* in the latter group.

The relationship between adherence to the *Given-before-New Principle* and LoR seems to be straightforward in L2-Korean adults. The group of adherers ($M = 2;2$) has a relatively longer average LoR as compared to the group of non-adherers ($M = 0;8$). Out of 14 individuals whose LoR is 0, only one adheres to the principle, which thus provides another piece of evidence for there being an association between LoR and adherence to the *Given-before-New Principle*. 
In addition, we examined whether there is a relationship between adherence to the *Given-before-New Principle* and the number of mentions of the discourse entity (as we did with the L1 children—see §7.2.2). To review, the logic here is that the greater the number of mentions the discourse entity that becomes the experimental *given referent* has, the more salient it becomes, and the more salient it becomes, the more likely L2ers will comply with the *Given-before-New Principle*. As noted previously (see Table 7.3), there are more mentions of theme than recipient across conditions in the preference tasks, in English and Korean alike. The theme corresponds to the *default* *Given–New* 
\[ \text{NP}_{\text{THEME}} \text{PP}_{\text{RECIPIENT}} \] for English, but for Korean to the *non-default* *New–Given* 
\[ \text{DO}_{\text{THEME}} \text{IO}_{\text{RECIPIENT}} \]. In line with the frequency-of-mention asymmetry (theme over recipient), L2-English adults show a strong syntactic bias toward the default; however, against the frequency-of-mention asymmetry, L2-Korean adults still show a preference for the default \[ \text{IO}_{\text{RECIPIENT}} \text{–DO}_{\text{THEME}} \]. In sum, our intermediate-to-advanced L2-Korean adults’ word-order choices are not influenced by the frequency-of-mention asymmetry (theme over recipient).

Finally, in our cross-comparisons between L2-English adults and L2-Korean adults, another notable finding is that our intermediate-to-advanced L2-English adults prefer *Given–New* when the given referent is a *pronoun* and, furthermore, *half of them* (53%) observed the *Given-before-New Principle* (according to our criterion, preference for *Given–New* in *at least 3 (out of 4) conditions*). Our intermediate-to-advanced L2-Korean adults, on the other hand, generally fail to adhere to the principle. We note two possible factors involved in these differential results. First, our Korean Pronoun Task used a compound-type pronoun as a given referent, which, we have argued, is equivalent to a definite lexical NP in terms of topicality. Second, the dative-construction contrasts in our experiments concern word order, which is the most important means to express givenness in English. For Korean, however, another factor is crucial to investigating sensitivity to givenness, namely, the possibility of having *null arguments*. According to the scale of topicality in Korean (e.g., Hwang, 1983), the most continuous topic is encoded by a null argument (*zero-anaphora*). A topical referent whose givenness has already been established is often left unexpressed—e.g., the understood-IO recipient or the understood DO-theme (see (16) in §6.6.1.3). This was verified in Park’s (2008)
corpus-based analysis where 84.9% of the Korean dative sentences had either one or both arguments unexpressed (see Table 6.22). Korean zero-anaphora more or less corresponds to English pronouns in terms of the degree of topicality (see Figures 7.1 and 7.2). In this respect, in order to put the puzzle pieces together to try to unveil the possible observance of information structure in discourse on the part of (L1-English) adult L2ers of Korean, it is crucial to include null arguments in future research. Specifically, one needs to test whether (L1-English) adult L2ers of Korean, like Korean adult natives, use null arguments more often to indicate given referents than new referents and, simultaneously, use overt arguments more often to indicate new referents than given referents.

Another issue that has so far not been addressed is how suitable the English dative alternation is for an investigation into discourse givenness effects on word order. There are a number of morpho-syntactic and discourse (and prosodic) variables that come into play in this alternation, and it is thus extremely hard to tease apart givenness alone from the other variables. In future research, this problem can be remedied by using a different alternation phenomenon that is comparable in English and Korean, one in which word-order variants are not accompanied by any other morpho-syntactic changes, such as in (1) and (2).136

(1) a. I talked to John about Mary.
   b. I talked about Mary to John.

   I-Top John-Dat Mary-about talked
   ‘I talked to John about Mary.’

   I-Top Mary-about John-Dat talked
   ‘I talked about Mary to John.’

136 This suggestion comes from William O’Grady; the English sentences were provided by him.
7.3.2 Adult L2 English ~ Child L2 English

Table 7.9 presents group results of L2-English adults (Higher and Lower groups) and L2-English children (Higher and Lower groups); since the sample sizes of the Lower L2 adult group (n = 8) and the Higher L2 child group (n = 4) were too small for statistical analyses, their preferences are interpreted only numerically here.\(^{137}\) We can see that both L2-English adults and L2-English children show a strong preference in the given-theme condition for Given–New [NP PP] across tasks (for Higher L2 adults, 84\%, \(t(21) = 5.612, p = .000\); 96\%, \(t(21) = 10.583, p = .000\); for Lower L2 children, 83\%, \(t(11) = 4.342, p = .001\); 92\%, \(t(11) = 3.678, p = .004\)).

Table 7.9. L2-English Adults ~ L2-English Children: Proportion (%) of Given–New Choices by Condition

<table>
<thead>
<tr>
<th></th>
<th>L2-English Adults (n = 30)</th>
<th>L2-English Children (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher n=22</td>
<td>84 (√) 39</td>
<td>n=4 94 (√) 35</td>
</tr>
<tr>
<td>Lower n=8</td>
<td>74 (√) 22</td>
<td>n=12 83 (√) 25</td>
</tr>
<tr>
<td><strong>Pronoun</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher n=22</td>
<td>96 (√) 67 (√)</td>
<td>n=4 100 (√) 59</td>
</tr>
<tr>
<td>Lower n=8</td>
<td>85 (√) 63 (√)</td>
<td>n=12 92 (√) 44</td>
</tr>
</tbody>
</table>

Notes. √ = statistically preferring Given–New over New–Given
(√) = numerically preferring Given–New over New–Given (no statistics run due to small sample size)

In the given-recipient condition, in which Given–New aligns with [NP NP], however, both levels of both the L2 adults and the L2 children show the New–Given [NP PP]

\(^{137}\) Recall that L2ers’ TL proficiency was measured in terms of accuracy and complexity in the domains of morpho-syntax and the lexicon: (i) morpho-syntactic complexity; (ii) lexical diversity; (iii) morpho-syntactic and lexical accuracy. The three subscores were converted into standardized scores—\(z\)-scores—which were then combined into a single proficiency score. For the adult–child L2-English comparison here, the three subscores of L2 adults and L2 children were recomputed together, thereby yielding two comparable proficiency pairs: (i) the Higher L2 adult group \(\approx\) the Higher L2 child group and (ii) the Lower L2 adult group \(\approx\) the Lower L2 child group.
preference in the NP Task; in the Pronoun Task, by contrast, both levels of the L2 adults have a (significant) Given–New [NP NP] preference (for Higher L2 adults, 67%, \( t(21) = 2.961, p = .007 \)) but neither level of the L2 children does (although the Higher L2 child group does numerically prefer this Given–New order). In sum, the difference between L2 adults and L2 children lies in the Pronoun Task. The L2 children thus display a stronger syntactic bias toward the default than the L2 adults do.

Table 7.10 presents the results of individual consistency in L2-English adults and L2-English children.

Table 7.10. Individual Consistency of Given–New and Individual Adherence to Given-before-New: L2-English Adults vs. L2-English Children \(^{138}\)

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Adherence to Given-before-New Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L2-English Adults ( (n = 19) )</td>
</tr>
<tr>
<td></td>
<td>Higher ( (n = 17) )</td>
</tr>
<tr>
<td>NP Task Pronoun Task</td>
<td>NP Task Pronoun Task</td>
</tr>
<tr>
<td>( \sqrt{} )</td>
<td>( \sqrt{} )</td>
</tr>
<tr>
<td>( \sqrt{} )</td>
<td>( \sqrt{} )</td>
</tr>
<tr>
<td>( \sqrt{} )</td>
<td>( \sqrt{} )</td>
</tr>
<tr>
<td><strong>Total # adhering to Given–New</strong></td>
<td></td>
</tr>
</tbody>
</table>

L2-English Children \( (n = 8) \)

<table>
<thead>
<tr>
<th>Given–New [NP NP]</th>
<th>Higher ( (n = 3) )</th>
<th>Lower ( (n = 5) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP Task Pronoun Task</td>
<td>NP Task Pronoun Task</td>
<td>Higher Lower</td>
</tr>
<tr>
<td>( \sqrt{} )</td>
<td>( \sqrt{} )</td>
<td>( \times )</td>
</tr>
<tr>
<td><strong>Total # adhering to Given–New</strong></td>
<td></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

Notes. For English, \( \sqrt{\} \geq 3 \) Given–New choices out of 4 tokens; 4 out of 5 tokens; 4 out of 6 tokens; otherwise \( \times \) adhering to Given–New \( \geq 3 \) \( \sqrt{\} \)s out of 4 conditions.

For L2-English adults \( (n = 19) \), 7 (54%) of 13 Higher L2 adults and 3 (50%) of 6 Lower L2 adults adhere to the Given-before-New Principle. For L2-English children \( (n = 8) \),

\(^{138}\) This table reports only the L2rs of English who adhere to the Given-before-New Principle. The detailed tables including all individuals are presented in Chapter 6 (Table 6.14 for L2-English adults (§6.5.3.2) and Table 6.27 for L2-English children (§6.7.2.2)).
only 1 child (13%) (from, moreover, the YES/YES group), adheres to the principle. Intriguingly, however, this child does not adhere to the principle in his L1 Korean.

7.4 Conclusions

This dissertation addresses 4 overarching issues:

1. adherence to the Given-before-New Principle in L1 adults and L1 children
2. existence of a (causal) relationship between Theory of Mind (ToM) and adherence to the Given-before-New Principle in L1 children and L2 children
3. transferability of adherence to the Given-before-New Principle in L2 adults and L2 children
4. relationship within L2 children between L1 (non-)adherence and L2 (non-)adherence to the Given-before-New Principle

In researching these issues, the project accordingly sought to test the following research questions:

1. whether, for English and Korean, L1 children and L1 adults adhere to the Given-before-New Principle
2. whether ToM is a prerequisite to the Given-before-New Principle in L1-English and L1-Korean children as well as in L2-English children whose L1 is Korean
3. whether adult L1-Korean/English L2ers of English/Korean who adhere to the Given-before-New Principle in their L1 automatically adhere to it in their L2
4. whether there is an association between L1 and L2 (non-)adherence to the Given-before-New Principle in L2-English children whose L1 is Korean


As for L1 children’s adherence to the *Given-before-New Principle*, the results yield crosslinguistically differential findings. The results of individual consistency suggest that about half of the *L1-English children* (52%) adhere to the principle, but only a small subset of *L1-Korean children*, whether they are monolingual (17%) or bilingual (25%), do. Hardly any consistent pattern is found among the 3 sets of L1 data from our child participants. Unlike the converging pattern in L1 adults, our children exhibit wide variation of information structure in dative word-order alternations in their L1.

**The second issue:** The same sets of data from our children yield mixed results with regard to ToM being a prerequisite to the *Given-before-New Principle*. For *L1-English children*, the results of the individual analysis show that some YES/YES children adhere to the principle and some do not; similarly, 4 NO/NO children adhere to the principle and 1 does not. Recall that outcome [–ToM], [+Given-before-New] should not occur if ToM is a prerequisite to the principle. Still, we are reluctant to view these 4 cases of NO/NO children as conclusive evidence against the hypothesis of a causal link because the sample size is so small. If this scales up with more NO/NO children, knowledge of ToM could not be the explanation for the emergence of compliance with the *Given-before-New Principle*. For *L1-Korean children*, the results of the analysis by individuals show that adherence to the *Given-before-New Principle* is observed in some children only from the YES/YES group; no child from the NO/NO group (n = 3) adheres to the principle. The individual results from our L1-Korean child data are thus compatible with the causal link between ToM and the *Given-before-New Principle*, but again, the sample size of the NO/NO group is too small. Finally, for *L1 Korean-L2 English children on Korean*, individual analyses find that only 4 children, all from the YES/YES group (n = 14), adhere to the *Given-before-New Principle*; but in this population there
were no NO/NO children. Overall, then, the causal relation between ToM and the
*Given-before-New Principle* remains to be tested with more NO/NO children.

**The third issue:** The two sets of data from our L2 adults yield crosslinguistically
different results regarding the issue of transferability of adherence to the
*Given-before-New Principle* in L2 learners. For **L2-English adults**, the results show that
in the NP Task, both the Higher group and the Lower group prefer [NP PP] regardless of
information structure, but that in the Pronoun Task, both groups prefer Given–New
[NP PP] in the *given-theme* condition and Given–New [NP NP] in the *given-recipient*
condition. The individual results show that about half of the adult L2ers comply with the
*Given-before-New Principle* in L2-English. For **L2-Korean adults**, the results show that
both the Higher L2 group and the Lower L2 group prefer the canonical [IO–DO] order in
both conditions across both tasks, irrespective of the *Given-before-New Principle*.
Individually, only a small subset of adult L2ers (26% from each level) abides by the

Finally, the results of the **Korean child L2 learners of English** experiments reveal
that the Lower child L2 group prefers the PD across conditions in both the NP Task and
the Pronoun Task, while the Higher child L2 group prefers the PD in all conditions
except in the *given-recipient* condition in the Pronoun Task where the two variants are on
a par. The results of individual analysis show that there is only 1 child from the Higher
L2 group who adhere to the *Given-before-New Principle* in L2-English.

The 3 sets of L2 data—from L1-Korean adult L2ers of English, L1-English adult
L2ers of Korean, and L1-Korean child L2ers of English—lead us to conclude that
intermediate-to-advanced L2ers who have knowledge of the *Given-before-New Principle*
in their L1 do not transfer it to their L2.

**The fourth issue:** As for the comparison within L2 children for L1 vs. L2
(non-)adherence to the *Given-before-New Principle*, the results of the individual analysis
show that the majority of children (11 of 16) did not pass our criterion in either L1
Korean or L2 English, and that 4 children passed in their L1 but not in their L2. These
cases are not in conflict with there being an association between the emergence of L1
adherence to the *Given-before-New Principle* and its delayed emergence in the L2.
However, 1 child shows adherence to the principle in L2 English but not in L1 Korean, a curious L2 vs. L1 dissociation which could just be spurious.

In conclusion, our research indicates that both L1-English adults and L1-Korean adults clearly prefer Given–New information structure regardless of whether or not this order aligns with the default, viz. [NP PP] (PD) in English and [IO–DO] in Korean. These results thus show that adult native speakers demonstrate effects of discourse givenness in their comprehension of dative word-order alternations, thereby providing further crosslinguistic evidence in support of the Given-before-New Principle. In contrast, wide variation is found in children’s L1 patterns of information structure. Half of the L1-English children adhere to the Given-before-New Principle and only a small subset of the (monolingual and bilingual) L1-Korean children do. The 3 sets of L1 data from our children yield mixed results regarding the causal relation between ToM and the Given-before-New Principle. However, given the very small number of [–ToM] children, no conclusions are warranted. Our L2 adult studies suggest that when the given referent is a definite lexical NP, intermediate-to-advanced adult L2ers show a strong bias toward the default—the [NP PP] (PD) order in English and the [IO–DO] order in Korean. This can be explained in relation to input frequency, syntactic complexity, and felicitous use of the default.

**English:** First, the incidence of (New–Given) indefinite–definite [NP PP] is as frequent as (Given–New) definite–indefinite [NP NP] (Cliffton & Frazier, 2004) and the incidence of Given–New [NP NP] with two lexical NPs is less frequent than Given–New [Pronoun NP] (Bresnan, 2007). Second, the DOD is arguably syntactically more complex than the PD (e.g., Bruening, 2010a, b). Third, the PD, the default, can be used felicitously in a wide range of information-structure contexts (Cliffton & Frazier, 2004).

**Korean:** First, corpus studies show that [IO–DO] is far more frequent than [DO–IO] (e.g., Choi, 2009). Second, [DO–IO] is arguably syntactically more complex than [IO–DO] from which it is derived via scrambling (e.g., Kim 2008). Third, an on-line study evinces that [S–IO–DO] can be used felicitously in both Given–New and New–Given contexts (Jackson, 2008), thereby offering further support for [IO–DO] being the default.
In light of the above, we conclude from our (bidirectional) L2 studies that with a definite lexical NP as a given referent, when the less basic variant manifesting Given–New information structure competes with the more basic variant manifesting New–Given information structure, the majority of intermediate-to-advanced L2 adults and L2 children tend to choose the latter, i.e., the default. When the given referent is a pronoun, by contrast, only the intermediate-to-advanced L2 English adults are more likely to prefer the Given–New order over the New–Given order across conditions.

7.5. Implications

Our novel comprehension studies provide robust crosslinguistic evidence for L1 adult speakers’ adherence to the Given-before-New Principle, thereby strengthening the claim that this principle is universal. As overviewed in the introduction, the function of the Given-before-New Principle can be seen as the facilitation of, on the one hand, the production process for the speaker and, on the other hand, the comprehension process for the hearer. On speaker-oriented accounts, the Given–New ordering is used as a strategy by speakers in real-time production, in which information is processed incrementally; in the incremental process of formulating a sentence, the processing of given information that can be retrieved easily can be completed before subsequent new information is added (e.g., Branigan et al., 2008). On hearer-oriented accounts, it is easier for the hearer to link given information to its antecedent before new information is encountered (e.g., Clifton & Frazier, 2004). From our crosslinguistic evidence for L1 adults’ overwhelming adherence to the Given-before-New Principle, we draw the conclusion that, when all other things are equal, L1-English and L1-Korean adults’ receptive preferences in regard to dative word-order alternations are motivated by discourse-driven strategies.

By contrast, our L2 studies find that L2ers show a syntactic bias toward the default—[NP PP] in English and [IO–DO] in Korean—when the given referent is a definite lexical NP, which wins over the Given-before-New Principle. Not knowing whether the L2-English adults’ original syntactic bias for the default PD was perhaps because of incomplete lexico-syntactic knowledge of the particular dative-alternation verbs in our oral preference tasks, we independently tested participants’ lexico-syntactic knowledge of those 6 dative verbs in an acceptability judgment task. The L2 (adult and
child) AJT results ruled out lack of lexico-syntactic knowledge as a possible explanation for their non-adherence to the Given-before-New Principle.

We therefore conclude that L1-Korean adult and child L2ers of English and L1-English adult L2ers of Korean who have knowledge of the Given-before-New Principle in their L1 are unable to transfer it to their L2 and instead subsequently rely on the default in the respective target language. From this it follows that in their receptive preferences regarding dative word-order alternations, intermediate-to-advanced adult and child L2ers are prone to rely on structurally-driven strategies (or at least strategies driven by word order) more than discourse-driven strategies.
APPENDICES

Appendix A: Background Questionnaires

**Questionnaire for L1-English Adults and L1-Korean Adults**

Participant No: 
Date: 

Please answer all of the following questions. This information will be used only for this study.

1. Gender: Female □ Male □
2. Age: 
3. Birth date (only for native speakers of Korean): 
4. Enrollment status: Undergraduate □ Graduate □
5. Major at college: 

**Questionnaire for L1-English Children and L1-Korean Children**

× Filled out by the Experimenter

Participant No: 
Date: 

Please answer all of the following questions. This information will be used only for this study.

1. Are you a boy or a girl? boy □ girl □
2. How old are you? [_____]years and [_____]month(s)
Questionnaire for L2-English Adults

Participant No: ............................................ Date: ............................................

Gender:  Female □  Male □  Enrollment status: Undergraduate □  Graduate □

Birth date: ............................................ Age:[   ]years and [   ]month(s)

Please answer all of the following questions. This information will be used only for this study.

1. Major at college:  ____________________________________________

2. At what age did you first begin learning English? [   ]year(s) and [   ]month(s)

3. At what age did you come to the U.S.? [   ]year(s) and [   ]month(s)

4. How long have you lived in the U.S.? [   ]year(s) and [   ]month(s)

5. If you have lived in English-speaking countries besides the U.S. (e.g., Australia, Canada, England, etc.), specify the country and the length of stay.
   a) country: [   ]year(s) and [   ]month(s)
   b) country: [   ]year(s) and [   ]month(s)
Questionnaire for L2-Korean Adults

Participant No: ____________________________ Date: ____________________________

Gender: Female ☐ Male ☐ Enrollment status: Undergraduate ☐ Graduate ☐

Age: [   ] years and [   ] month(s)

Please answer all of the following questions. This information will be used only for this study.

1. Major at college: __________________________________________
2. Native country: __________________________________________
3. Native language: __________________________________________
4. At what age did you first begin learning Korean? [   ] year(s) and [   ] month(s)
5. Please specify the number of years and months you spent in Korea.
   [   ] year(s) and [   ] month(s)
Questionnaire for L2-English Children

※ Filled out by the Experimenter

Participant No: ____________________________________________________________
Date: __________________________________________________________________

Please answer all of the following questions. This information will be used only for this study.

1. Are you a boy or a girl? boy □ girl □

2. How old are you? [  ]Years and [  ]Month(s)

3. Birth date: ____________________________________________________________

4. Native country: _______________________________________________________

5. Native language: ______________________________________________________

6. At what age did you come to the U.S.? [  ]year(s) and [  ]month(s)

7. How long have you lived in the U.S.? [  ]year(s) and [  ]month(s)

8. At what age did you first begin learning English? [  ]year(s) and [  ]month(s)
### Appendix B: Participants’ Biodata

Table A. *L2-English Adults (L2EA): Biodata*

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Appendix C: English Oral Contextualized Preference Task—NP Task

English NP Task: Practice Items

1. Mary played in the dirt and then went home. Her mom said, “Mary, look at the mud on your hands! Come to the bathroom right now and wash your hands.”
   
   A: Mary washed her hands with soap.  
   B: With soap Mary washed her hands.

2. John was drawing a picture. He drew the sky, a mountain, a field, and a river. There were clouds in the sky, trees on the mountain, flowers and flying butterflies in the field, and fish in the river. After drawing, he began coloring the picture.
   
   A: John colored the sky in blue.  
   B: In blue John colored the sky.

3. Mary and her brother were playing in the yard. Mary threw a ball and her brother hit it very hard. It went into their neighbor’s yard. Mary ran to the yard to get the ball. Then she saw a dog. It was a very cute puppy.
   
   A: Mary patted the dog’s head with her hand.  
   B: With her hand Mary patted the dog’s head.

English NP Task: Experimental Items

1. John came home. When he entered the kitchen, he was happy to find two huge apple pies on the table. They were still warm and looked very delicious. Just then his mom came home. John asked, “Mom, what will we do with two pies?” His mom said, “We will eat one and give away the other.” John knew what to do with the extra pie.

   PD: John brought the pie to some friends.  
   DOD: John brought some friends the pie.

2. Mary’s family moved to a new neighborhood. One day she went out and got lost. She was very scared and almost cried. Just then she found a policeman passing by and asked for help. The kind policeman helped her to find her way home. Mary and her parents thought of a way to thank the policeman.

   PD: Mary brought some cookies to the policeman.  
   DOD: Mary brought the policeman some cookies.
3. John hates broccoli. One day his mom put broccoli in his lunch. When John opened his lunch, he saw the broccoli. There was a lot of broccoli. It looked terrible. John didn’t want to eat the broccoli. John thought of a way to get rid of the broccoli.

   PD: John gave the broccoli to some boys.
   DOD: John gave some boys the broccoli.

4. Yesterday Mary went out to play in the park. All of a sudden it started to rain. She was in trouble because she didn’t carry an umbrella with her. Just then a boy walked up to her and nicely shared his umbrella with her. They played in the park together. Before they left, she decided to thank the boy.

   PD: Mary gave some candy to the boy.
   DOD: Mary gave the boy some candy.

5. Mary traveled to Korea last summer. On the second day, she found a pretty doll in a gift shop. The doll had black hair and wore a green dress. Although it was expensive, she bought three dolls. On her way to the hotel, she found a post office and went inside. She had a good idea about what to do with the dolls.

   PD: Mary mailed the dolls to some friends.
   DOD: Mary mailed some friends the dolls.

6. Last Saturday John met a girl at a party. She was visiting her uncle and it was her uncle’s birthday party. She was a very bright and funny girl and made John laugh a lot. John and the girl played games together and became friends. Before they left, John and the girl agreed to keep in touch with each other.

   PD: John mailed some letters to the girl.
   DOD: John mailed the girl some letters.

7. Mary helps out in her father’s bakery. Yesterday the bakery was very busy and all the cakes disappeared very quickly. When Mary opened the refrigerator, she found one cake left. It was a chocolate cake with lots of fresh-looking strawberries on top. Mary took the cake out of the refrigerator and put it on the table.

   PD: Mary sold the cake to some boys.
   DOD: Mary sold some boys the cake.

8. John’s family had a big yard sale last Saturday. While John was preparing, the first customer walked into the yard. It was a little girl in a pink shirt and a pretty skirt, and she was holding a basketball in one hand. She looked around and became very excited to see the very cheap prices.

   PD: John sold some books to the girl.
   DOD: John sold the girl some books.
9. Mary went to Disneyland with her parents last winter. She found a pretty card with Mickey Mouse on it in a small gift shop. When she opened the card, it played a pretty song. She liked the card very much and she bought three cards.

PD: Mary sent the cards to some friends.
DOD: Mary sent some friends the cards.

10. John liked his English teacher. He liked her voice and the way she explained everything to him. She helped him have a good time in her class so he never got bored. She was always kind and nice to him. So when she left for another school, he was very sad. He missed her very much.

PD: John sent some letters to the teacher.
DOD: John sent the teacher some letters.

11. John started taking guitar lessons last week. So he ordered a guitar and it arrived three days later. It looked beautiful and sounded good. The guitar made him very happy, but he did not know whether it was really good. He wanted to check it. He put the guitar in its case and went to his guitar lesson.

PD: John showed the guitar to some friends.
DOD: John showed some friends the guitar.

12. Yesterday Mary went to a park near her house. She saw a boy playing alone in the dirt so she played with him. After a while, Mary got bored and wanted to do something else. She said, “I have an idea for something fun.” The boy looked at her with eyes full of excitement and said, “What’s that?”

PD: Mary showed some marbles to the boy.
DOD: Mary showed the boy some marbles.

**English NP Task: Filler Items**

1. John’s mom cooked chicken and potatoes for dinner. His mom said, “We have to wait until dad comes home so we can eat dinner together.” John was very hungry because he didn’t eat lunch. Then the phone rang. His mom answered the phone. While she was talking on the phone, John went to the dinner table.

   A: John ate the chicken.
   B: It was the chicken that John ate.
2. John was walking his dog. Just then he saw his friends Mary and Bill playing in the park. He ran to them calling their names. Mary turned around and said, “Hi,” but Bill was busy building a small sand castle.

A: John greeted Mary.
B: It was Mary that John greeted.

3. Mary likes milk so she drinks it every morning. This morning, her mom said, “We are out of milk.” They had only orange juice and apple juice. Her mom asked, “Which one do you want?” Mary didn’t like either of them but had to drink one of them with her breakfast. Finally she decided.

A: Mary drank orange juice.
B: It was orange juice that Mary drank.

4. John went to a sandwich shop for lunch. He wanted to eat both a cheese sandwich and a ham sandwich. But he had to choose only one because two sandwiches were too much food. It was not easy for him to choose one sandwich but he finally decided.

A: John chose a ham sandwich.
B: It was a ham sandwich that John chose.

5. Today was Mary’s birthday. Mary and her mom were in a pet store. Her mom said, “Would you like a puppy or a kitten as your present?” Mary was so excited. When she looked around, one of the puppies looked at her and seemed to smile at her. She liked it very much.

A: Mary took the puppy.
B: It was the puppy that Mary took.

6. John and Mary went to a movie yesterday. They bought a large popcorn and soda. John wanted to watch The Lion King, but Mary wanted to watch Beauty and the Beast. They didn’t agree on which movie to watch so they decided to watch both of them.

A: They watched The Lion King first.
B: It was The Lion King that they watched first.

7. John and Mary were playing at Mary’s house. After eating lunch together, they looked at Mary’s photo album. John found a funny picture of Mary. In the picture, Mary was chasing her small puppy. The puppy was carrying a huge sausage in its mouth.

A: John laughed loudly.
B: Loudly John laughed.
8. It was a warm summer evening. John and Mary went out on a picnic to a park by bicycle. They parked their bicycles and sat on a bench. They opened their picnic basket and took out sandwiches, apples and water. After they ate, John took out a guitar and played a beautiful song.

A: Mary sang beautifully.
B: Beautifully Mary sang.

9. It is Christmas Eve. John was so excited that he couldn’t sleep. He stayed up all night, thinking about what presents he would get from Santa Claus. In the morning he jumped out of bed and ran to the Christmas tree in the living room. He opened one of the boxes and found a robot.

A: John shouted excitedly.
B: Excitedly John shouted.

10. Mary and her brother were playing in the park. Then Mary’s friend came with her dog. The dog had very big, lovely eyes and was so cute. Mary wanted to touch it but couldn’t, because she was scared of dogs. Then her brother walked up to the dog and said, “Hi.”

A: Mary’s brother patted the dog’s head gently.
B: Gently Mary’s brother patted the dog’s head.

11. Last Christmas Eve, John’s father showed up in front of the house in a truck. In the truck there was a pony. John was so happy because he had always wanted a pony. He couldn’t believe it when his father said, “This is yours.” He was so happy and ran to his father.

A: John hugged his father tightly.
B: Tightly John hugged his father.

12. Mary woke up at ten o’clock in the morning. She was going to meet her friend John at eleven. They planned to go hiking together. She had to hurry up to be on time. She jumped out of bed. When she was about to leave, her mom said, “Mary, you should eat your breakfast.”

A: Mary ate breakfast quickly.
B: Quickly Mary ate breakfast.
Appendix D: English Oral Contextualized Preference Task—Pronoun Task

English Pronoun Task: Practice Items

1. John was playing with his puppy in the living room. He threw a small ball and the puppy caught it in the air. The puppy was so excited that it bumped into the table and the phone fell off of the table. John’s mom came out of the kitchen and said, “John, you know what to do.”

   A: John put the phone on the table.
   B: On the table John put the phone.

2. When Mary came home from school, there was nobody home. She was hungry and entered the kitchen. She saw a pie on the table. She knew that she should wait for her mom to come home. But the pie smelled so good that she couldn’t wait any longer. She ran to the table.

   A: Mary ate only a piece of pie.
   B: *Mary ate only a piece of pies.

3. John was playing with his dog in the house. Mom said, “John, don’t run in the house. You are too nosy. Don’t you see me talking on the phone?”

   A: John went out with his dog.
   B: With his dog John went out.

English Pronoun Task: Experimental Items

1. Mary is a teacher. She bought flour, eggs, butter, and chocolate. She baked a very big chocolate cake. She decorated the cake with fresh strawberries and cream. The cake looked very delicious. She cut the cake into small pieces and put the pieces of cake in pretty boxes.

   PD: Mary brought them to some students.
   DOD: *Mary brought some students them.

2. John heard a cat crying in a tree in the yard. So he climbed the tree to rescue the cat, but he couldn’t climb down by himself. Just then, a mailman came to his home to deliver the mail and found John in the tree. He helped out John and the cat. John and his parents wanted to thank the mailman.

   PD: John brought some pies to him.
   DOD: John brought him some pies.
3. Christmas was coming. Mary knitted five sweaters in all different colors. The sweaters had pretty yellow buttons and two big pockets. The sweaters also had a cute, pink bunny design on the front. She put the sweaters in pretty boxes with cards. Now the sweaters were ready for Christmas.

PD: Mary gave them to some girls.
DOD: *Mary gave some girls them.

4. Mary went to the park to walk her dog. After walking for a while, she sat on a bench and fell asleep in the sun. When she woke up, she saw that her dog was missing. Luckily, a boy playing nearby helped her to find her dog. Mary wanted to thank him.

PD: Mary gave some money to him.
DOD: Mary gave him some money.

5. John visited Disneyland last summer. He had a really good time. He took many photos. In some of the photos he joined the parade with Mickey Mouse and Donald Duck. In other photos he was waiting in line to go on a ride or he was shopping. He selected some of the best photos.

PD: John mailed them to some friends.
DOD: *John mailed some friends them.

6. Last summer Mary visited her friend John in Hawai‘i. They enjoyed swimming and snorkeling together at beautiful beaches during the day time and went to a fireworks show at night. She had a really good time with John. It was a great summer. After she came back home, she wanted to do something nice for him.

PD: Mary mailed some presents to him.
DOD: Mary mailed him some presents.

7. John has two computers, but both of them are old and very slow. He asked his mom to buy a new one. His mom said he would get a new computer for Christmas if he behaved well. Finally on Christmas he got a new computer. Now he doesn’t need his old computers.

PD: John sold them to some friends.
DOD: *John sold some friends them.

8. Mary’s family is going to move. Last weekend, they had a big moving sale. Mary was helping her parents with the sale. Just then a little boy walked into the yard. He was eating a strawberry ice cream. Mary let him look around for a while. Finally, the boy was ready to pay.

PD: Mary sold some toys to him.
DOD: Mary sold him some toys.
9. Christmas was coming. John did not want to buy Christmas cards this time. Instead, he decided to make cards himself. He made cards from some nice paper. On the cards, he drew Santa Claus with lots of presents and a snow man. After he finished the cards, he wrote, “Merry Christmas” in each of them.

PD: John sent them to some friends.
DOD: *John sent some friends them.

10. John lives with his parents in the city. Last summer he visited his uncle in the country and made friends with a girl living next door. They went fishing and swimming and played together all summer. After he came back to his home, he wanted to know how she was doing.

PD: John sent some letters to her.
DOD: *John sent her some letters.

11. Mary traveled to Spain with her family last summer. Sunday morning she went to a market for sightseeing and bought a pretty cup. It was green and said, “Made in Spain” on the bottom. One month later, she came back home. She pulled the pretty cup out of her bag.

PD: Mary showed it to some friends.
DOD: *Mary showed some friends it.

12. John went to a restaurant for dinner. A waiter found a table for him and asked him what he wanted to eat. John ate a big turkey sandwich with a bowl of chicken noodle soup. Everything was very delicious. When John finished eating, the waiter came to his table.

PD: The waiter showed some desserts to him.
DOD: The waiter showed him some desserts.

**English Pronoun Task: Filler Items**

1. Mary likes her cat very much. She feeds it, plays with it and takes care of it. Every morning the cat wakes Mary up, and when Mary comes home it welcomes her. One evening when she came home, her cat didn’t show up. She called the cat’s name. Mary was very worried.

A: Mary looked for her cat.
B: *Mary looked her cat.
2. It was a hot summer day. John’s mom had him take a cool shower. After that, he had some ice cream but it was still very hot. So they went to a pool. When they arrived at the pool, it started to rain. But the rain didn’t bother John at all.

A: John jumped into the pool
B: *John jumped the pool.

3. Mary went to a party last Friday. She was happy to see many of her friends there. She was having a good time, talking with her friends, and eating delicious foods. Then a band started to play music. It was her favorite music.

A: Mary listened to the music.
B: *Mary listened the music.

4. Mary was watching TV after doing her homework. Her mom was cooking fried chicken for dinner and Mary could smell it. Mary was very hungry and wanted to eat soon. Finally her mom said, “Dinner’s ready. Come eat dinner.” Mary ran to the table. Dinner was already on the table.

A: Mary sat at the table.
B: *Mary sat the table.

5. When John woke up in the morning, it had snowed a lot. It was very cold. He took a hot shower and drank hot coco. John was so excited that he couldn’t wait to go out. When John saw the deep snow, he knew what he should wear.

A: John put on long boots.
B: *John put long boots.

6. Mary got up early in the morning. She wanted to help her mom and dad. She asked her mom, “Mom, what can I do for you?” Her mom said, “Please clean your room.” After cleaning her room, she asked her dad, “Dad, what can I do for you?” Dad said, Oh I forgot my newspaper.”

A: Mary picked up the newspaper.
B: *Mary picked the newspaper.

7. John wanted to read many books during summer vacation. Yesterday he bought two books from a yard sale. One was a comic book and the other was a history book. Before going to bed, John wanted to read. He looked at the pictures in each of the books and decided which one he would read.

A: John chose the comic book.
B: It was the comic book that John chose.
8. Tomorrow will be Mary’s piano concert. Mary and her mom went shopping for a dress for Mary to wear at the concert. Mary liked two dresses, one pink and the other blue. She wanted to buy both of them, but her mom said, “You can only buy one.”

A: Mary chose the pink dress.
B: It was the pink dress that Mary chose.

9. John is from the US. John’s family visited his aunt in Korea last summer. John made many Korean friends but it was difficult to talk with them because he didn’t speak Korean well and they didn’t speak English well. When he returned home, he began to study.

A: John learned Korean.
B: It was Korean that John learned.

10. Mary and her friend John are studying together. Mary likes Math and John likes English. So, Mary helps John solve math problems and John helps Mary with English. Yesterday John was working on a math problem and couldn’t find the answer, so he asked Mary for help.

A: Mary solved the problem.
B: It was Mary who solved the problem.

11. John was learning from his dad how to ride a bicycle. John fell down many times but he didn’t give up. Finally he could ride the bicycle all by himself. His father was very proud of him. Later they went to an ice cream shop to celebrate.

A: John’s father bought ice cream.
B: It was John’s father who bought ice cream.

12. Mary likes apple pie a lot. When she gets lots of apples, she usually makes an apple pie. Yesterday she went to the apple farm and picked lots of apples. She made a pie with some of the apples, but with the other apples she made something else.

A: Mary made apple jam.
B: It was apple jam that Mary made.
Appendix E: Korean Oral Contextualized Preference Task—NP Task

Korean NP Task: Practice Items

1. 영희는 놀이터에서 흙장난을 하며 놀았어요. 집에 돌아왔을 때, 엄마가 영희의 손에 흙이 잔뜩 묻은 것을 보고는 말했어요. "영희야, 네 손에 흙이 잔뜩 묻었구나. 어서 손을 깨끗하게 씻거라."

   A: 영희는 손을 비누로 씻었어요.
   B: 영희는 비누로 손을 씻었어요.

2. 철수는 그림을 그렸어요. 하얀 도화지에 하늘, 산, 들판, 그리고 강을 그렸어요. 하늘에는 구름이, 산에는 나무가, 들판에는 꽃과 나비가, 그리고 강에는 물고기를 그렸어요. 다 그리고 나서 철수는 색을 칠했어요.

   A: 철수는 하늘을 파란색으로 칠했어요.
   B: 철수는 파란색으로 하늘을 칠했어요.

3. 영희와 남동생은 마당에서 놀았어요. 영희가 던진 공을 남동생이 세계 쳤어요. 공은 멀리 날아갔어요. 영희는 공을 잡으려고 달려갔어요. 바로 그때 영희는 아주 귀여운 개를 보았어요.

   A: 영희는 개의 머리를 손으로 쓰다듬었어요.
   B: 영희는 손으로 개의 머리를 쓰다듬었어요.

Korean NP Task: Experimental Items


   canonical: 철수는 친구들에게 그 파이를 가져다 주었어요.
   scrambled: 철수는 그 파이를 친구들에게 가져다 주었어요.
2. 어느날 영희는 집을 나섰다가 그만 길을 잃고 말았어요. 바로 그 때 영희는 한 경찰관 아저씨를 발견하고 달려가서 도와달라고 했어요. 친절한 경찰관 아저씨는 영희가 집을 찾도록 도와주었어요. 영희와 영희의 부모님은 그 경찰관 아저씨가 너무 고마웠어요.

canonical: 영희는 그 아저씨에게 쥬스를 가져다 주었어요.
scrambled: 영희는 쥬스를 그 아저씨에게 가져다 주었어요.

3. 오늘 점심 시간에 철수가 도시락을 열었더니 당근이 잔뜩 들어 있었어요. 철수는 당근을 아주 싫어했어요. 그러나 철수가 당근을 먹지 않고 남기면 엄마는 항상 야단을 했어요. 그래서 철수는 당근을 먹지 않고도 도시락을 비울 수 있는 방법을 생각해내었어요.

canonical: 철수는 친구들에게 그 당근들을 주었어요.
scrambled: 철수는 그 당근들을 친구들에게 주었어요.

4. 어제 영희는 공원으로 놀러 갔어요. 그런데 값자가 비가 내리기 시작했어요. 영희는 우산을 가져가지 않았기 때문에 비를 맞을 수밖에 없었어요. 바로 그때 한 남자애가 영희에게서 당근을 씹워 주었어요. 영희는 그 날짜가 너무 고마웠어요.

canonical: 영희는 그 남자애에게 사랑들을 주었어요.
scrambled: 영희는 사랑들을 그 남자애에게 주었어요.

5. 영희는 선물가게에 들렸다가 아주 예쁜 인형을 발견했어요. 그 인형은 검은색 머리에, 초록색 원피스를 입고 있었어요. 영희는 그 인형이 너무나 마음에 들어서 세 개나 샀어요. 영희는 집으로 돌아오다가 우체국을 발견하고 안으로 들어갔어요. 영희는 그 인형들로 무엇을 해야할지 좋은 생각이 떠올랐어요.

canonical: 영희는 친구들에게 그 인형들을 부쳤어요.
scrambled: 영희는 그 인형들을 친구들에게 부쳤어요.

6. 지난 토요일에 철수는 친구의 생일 파티에서 한 여자애를 만났어요. 그 여자애는 아주 명랑하고 재미있었어요. 철수는 시간가는 줄 모르고 그 여자애와 즐겁게 놀았어요. 파티가 끝나고 헤어질 때, 철수와 그 여자애는 계속 연락을 하기로 약속했어요.

canonical: 철수는 그 여자애에게 편지를를 부쳤어요.
scrambled: 철수는 편지를를 그 여자애에게 부쳤어요.
영희는 아빠의 빵집에서 일을 도와 드리는데, 오늘은 케익이 모두 일찍 끝났어요. 영희가 방장고를 열어보니, 케익이 돼 하나 남아 있었어요. 그 것은 심심한 딸기로 장식된 먹음직스러운 초코 케익이었어요. 영희는 그 케익을 꺼내서 테이블 위에 올려놓았어요.

canonical: 영희는 남자애들에게 그 케익을 팔았어요.
scrambled: 영희는 그 케익을 남자애들에게 팔았어요.

철수네 가족은 이사를 가게 되었어요. 철수의 부모님은 이사하기 전에 물건을 조금 팔기로 하였어요. 철수가 부모님을 돕고 있을 때, 한 여자애가 마당으로 들어왔어요. 그 여자애는 분홍색 셔츠에 예쁜 치마를 입고 있었는데, 한 손에는 농구공을 들고 있었어요. 그 여자애는 물건 값이 싸다는 것을 알고는 너무 기뻐했어요.

canonical: 철수는 그 여자애에게 책들을 팔았어요.
scrambled: 철수는 책들을 그 여자애에게 팔았어요.

크리스마스가 다가오고 있었어요. 영희는 선물 가게에서 귀여운 곰돌이 푸우가 그려진 예쁜 카드를 발견했어요. 영희가 카드를 펼치자 그 안에서 줄거울 노래가 흘러내왔어요. 영희는 그 카드가 아주 마음에 들어서 새로이나 샀어요.

canonical: 영희는 친구들에게 그 카드들을 보냈어요.
scrambled: 영희는 그 카드들을 친구들에게 보냈어요.

철수는 영어 선생님을 아주 좋아했어요. 선생님은 아름다운 목소리로 아주 쉽게 설명을 했기 때문에 철수는 영어 수업이 전혀 지루하지 않았어요. 선생님은 항상 친절했어요. 그래서 선생님이 다른 학교로 떠났을 때, 철수는 슬펐어요. 철수는 선생님이 너무 보고 싶었어요.

canonical: 철수는 그 선생님에게 편지를 보냈어요.
scrambled: 철수는 편지를 그 선생님에게 보냈어요.

철수는 지난 주부터 기타 수업을 받기 시작했어요. 그래서 철수는 새 기타를 하나 샀어요. 그 기타는 아주 귀사해 보였어요. 철수는 그 기타가 아주 마음에 들었지만, 정말 좋은 기타인지 확실히 보고 싶었어요. 그래서 철수는 그 기타를 가지고 수업에 갔어요.

canonical: 철수는 친구들에게 그 기타를 보여주었어요.
scrambled: 철수는 그 기타를 친구들에게 보여주었어요.
어제 영희는 집 근처 공원으로 놀러 갔어요. 공원에는 한 남자애가 황장난을 하면서 혼자 놀고 있었어요. 영희는 그 남자애와 어울려 함께 놀았어요. 얼마 후, 영희는 다른 놀이를 하고 싶어졌어요. 영희가 말했어요. "내게 재밌는 생각이 있어." 그러자 그 남자애는 신난 표정으로 "뭔데?"라고 물었어요.

영희는 그 남자애에게 구슬들을 보여주었어요.

한국어 NLP Task: Filler Items

1. 철수의 엄마는 저녁으로 닭고기와 감자를 요리했어요. 엄마가 말했어요. "기다렸다가 아빠가 오면 모두 함께 저녁을 먹자." 철수는 점심을 조금 먹었기 때문에 배가 고파요. 바로 그 때 전화벨이 울렸고, 엄마는 전화를 받으려 갔어요. 엄마가 전화를 하는 사이에 철수는 저녁이 차려진 식탁으로 갔어요.

A: 철수는 닭고기를 먹었어요.
B: 철수가 먹은 것은 닭고기였어요.

2. 철수는 강아지를 데리고 산책을 하고 있었어요. 바로 그 때 영희와 민수가 공원에서 놀고 있는 것을 보았어요. 철수는 그 친구들을 큰 소리로 부르면서 달려갔어요. 그러자 영희가 철수를 바라보며 인사를 했어요. 그러나 민수는 열심히 모래성을 만들고 있었어요.

A: 철수는 영희에게 다가갔어요.
B: 철수가 다가간 사람은 영희였어요.


A: 영희는 오렌지 주스를 마셨어요.
B: 영희가 마신 것은 오렌지 주스였어요.

4. 철수는 점심으로 샌드위치를 먹기로 했어요. 냉장고에는 치즈 샌드위치와 햄 샌드위치가 들어 있었어요. 철수는 두 개 다 먹고 싶었지만, 그러기에는 양이 너무 많았어요. 둘 중 하나를 선택하는 것은 결국 쉬운 일이 아니었지만 철수는 결정했어요.

A: 철수는 햄 샌드위치를 선택했어요.
B: 철수가 선택한 것은 햄 샌드위치였어요.
5. 어제는 영화의 생일이었어요. 영화와 엄마는 애완동물 가게에 갔어요. 엄마가 물었어요. “강아지와 고양이 중에 선물로 무엇을 받고 싶으니?” 그 말에 영화는 너무 신이 났어요. 영화가 주변을 둘러보았을 때, 강아지를 중 한 마리가 영화를 쳐다 보면서 미소를 지었어요. 영화는 그 강아지가 너무 마음에 들었어요.

A: 영화는 그 강아지를 선택했어요.
B: 영화가 선택한 것은 그 강아지였어요.


A: 그들은 먼저 애기사자들을 보았어요.
B: 그들이 먼저 본 것은 애기사자였어요.

7. 철수는 영화와 함께 몰라 떨었다. 함께 점심을 먹고 나서, 둘은 영화의 애완동물 가게를 보았어요. 철수는 주변을 보고 싶었고, 영화는 신데렐라를 보고 싶었어요. 둘은 무언가 영화를 보고 싶었다. 강아지들이 선물로 무엇을 받고 싶나요?

A: 철수는 사진을 자세히 보았어요.
B: 철수는 자세히 사진을 보았어요.

8. 어느 여름날 저녁이었어요. 철수와 영화는 저녁식사에 가고 공원으로 소풍을 갔어요. 둘은 애완동물을 애기사자와 사과에 몰리고 도시락을 만들었어요. 바구니에서 사과와 애기사자를 살펴보았어요. 재미있게 도시락을 만들고 나서 철수는 사진을 자세히 보았어요.

A: 영화는 도시락을 만들었어요.
B: 영화는 사진을 자세히 보았어요.

9. 크리스마스 이브였어요. 철수는 크리스마스 선물 생활에 마음이 설레어서 잠을 잘 수 없었어요. 크리스마스날 아침, 철수는 침대에서 일어나와 크리스마스 트리로 달라붙었어요. 철수는 선물 상자 중 하나를 열었는데 그 안에서 로봇이 나왔어요.

A: 철수는 로봇을 조심스럽게 꺼냈다.
B: 철수는 조심스럽게 로봇을 꺼냈다.
10. 영희와 남동생은 공원에서 놀고 있었어요. 바로 그 때 영희의 친구가 강아지를 데리고 나타났어요. 그 강아지는 사랑스러운 눈길로 영희를 쳐다보았어요. 그러나 영희는 원래 개를 무서워했기 때문에 가만히 서 있었어요. 그 때 남동생이 강아지에게 다가갔어요.

A: 영희의 남동생은 강아지를 부드럽게 쓰다듬었어요.
B: 영희의 남동생은 부드럽게 강아지를 쓰다듬었어요.

11. 크리스마스 이브 날 철수의 아빠가 마당에 트럭을 몰고 나타났어요. 트럭에는 작은 말 한 마리가 실려 있었어요. 철수는 말을 보자 너무 신이 났어요. 철수는 아빠가 “이 말은 널 위한 거란다.”라고 했을 때 도저히 믿을 수가 없었어요. 철수는 아빠에게로 달려갔어요.

A: 철수는 아빠를 꺼안았어요.
B: 철수는 꺼 아빠를 꺼안았어요.

12. 영희는 아침 열시에 일어났어요. 영희는 열한 시에 친구 철수와 만나 놀러가기로 약속이 되어 있었어요. 영희는 침대에서 뛰쳐나와 세수를 했어요. 영희가 가방을 챙겨서 막 집 밖으로 나가려고 할 때 엄마가 말했어요. “영희야 아침먹고 가야지.”

A: 영희는 아침을 빨리 먹었어요.
B: 영희는 빨리 아침을 먹었어요.
Appendix F: Korean Oral Contextualized Preference Task—Pronoun Task

Korean Pronoun Task: Practice Items

1. 철수는 거실에서 강아지를 놀고 있었어요. 철수가 던진 공을 강아지가 입으로 받아오는 놀이였어요. 강아지는 신이 나서 달려오다가 탁자에 부딪쳐서 탁자 위에 있던 전화기가 바닥으로 떨어졌어요. 그 때 엄마가 말했어요. “철수야, 전화기가 떨어졌어? 내가 해야할 일을 알지?”

   A: 철수는 전화기를 탁자위에 올려 놓았어요.
   B: 철수는 탁자위에 전화기를 올려 놓았어요.

2. 영희가 놀이터에서 집으로 돌아왔을 때, 집에는 아무도 없었어요. 영희가 부엌으로 들어가보니 식탁 위에 아주 큰 파이가 하나 놓여 있었어요. 영희는 엄마에게 먼저 물어봐야 한다는 것을 알고 있었지만, 파이 냄새가 너무나 좋어서 도저히 참을 수가 없었어요. 영희는 식탁으로 다가갔어요.

   A: 영희는 파이를 한 조각만 먹었어요.
   B: 영희는 파이를 한 조각들만 먹었어요.

3. 철수는 집안에서 강아지를 놀고 있었어요. 그 때 엄마가 말했어요. “철수야, 집 안에서는 뛰지 말라고 했잖니. 너무 시끄럽고나. 엄마가 지금 전화하고 있는 중이잖니.”

   A: 철수는 강아지와 함께 밖으로 나갔어요.
   B: 철수는 밖으로 강아지와 함께 나갔어요.

Korean Pronoun Task: Experimental Items

1. 영희는 케익을 만들기로 했어요. 밀가루, 달걀, 버터, 그리고 초코렛을 잘 섞은 다음 초코 케익을 만들었어요. 케익에는 신선한 딸기를 들 appendString은 다른 케익에는 아름답게 떠 올렸어요. 그 케익에서는 아주 달콤한 냄새가 날아오르는 냄새가 느껴졌어요. 영희는 그 케익을 여러 조각으로 자른 다음에 빵 상자에 넣었어요.

   canonical: 영희는 친구들에게 그 것들을 가져다 주었어요.
   scrambled: 영희는 그것들을 친구들에게 가져다 주었어요.
2. 철수는 마당에 있는 나무에서 고양이 옹골소리를 들었어요. 철수는 그 고양이를 구하려고 나무 위로 올라갔어요. 그런데 혼자서 내려올 수 없었어요. 바로 그때 우체부 아저씨가 나무 위에 있는 철수를 발견하고 철수와 고양이를 나무에서 내려 주었어요. 철수와 부모님은 그 우체부 아저씨가 너무 고마웠어요.

canonical: 철수는 그분에게 주스를 가져다 주었어요.
scrambled: 철수는 주스를 그분에게 가져다 주었어요.

3. 크리스마스가 다가오고 있었어요. 영희는 스웨터 다섯 개를 모두 다른 색깔로 샀어요. 스웨터 앞에는 노란 단추와 예쁜 분홍색 토끼를 달았어요. 영희는 완성된 스웨터를 카드와 함께 예쁜 상자에 넣었어요. 그렇게 영희의 크리스마스 준비는 끝났어요.

canonical: 영희는 친구들에게 그것을 주었어요.
scrambled: 영희는 그것을 친구들에게 주었어요.

4. 영희는 강아지를 데리고 공원으로 산책을 갔어요. 공원에 도착한 후 영희는 의자에 앉아서 따뜻한 햇볕을 풀며 잔잔 휴식을 했어요. 종종 빠져나오니 강아지가 보이지 않았어요. 다행히도 근처에서 놀고 있던 한 남자애가 영희가 강아지를 찾는 것을 도와주었어요. 영희는 그 남자애가 너무 고마웠어요.

canonical: 영희는 그애에게 사탕을 주었어요.
scrambled: 영희는 사탕을 그애에게 주었어요.

5. 철수는 지난 여름 놀이공원에 놀러 갔어요. 철수는 그 곳에서 아주 즐거운 시간을 보냈어요. 철수는 집으로 돌아온 후, 놀이공원에서 찍었던 사진을 꺼내 보았어요. 미키마우스랑 도날드와 함께 찍은 사진도 있고, 놀이기구를 타려고 줄을 서서 기다리는 사진도 있고, 쇼핑을 하는 사진도 있었어요. 철수는 그 중에서 가장 잘 나온 사진 몇장을 골랐어요.

canonical: 철수는 친구들에게 그것을 보냈어요.
scrambled: 철수는 그것을 친구들에게 보냈어요.

6. 영희는 지난 여름 하와이에 있는 할머니댁에 놀러 갔어요. 그 곳에서 영희는 이곳에 살던 한 남자애랑 친구가 되었어요. 영희는 그 남자애랑 수영도하고, 불꽃놀이도 구경했어요. 영희는 그 남자애랑 여름내내 즐겁게 지냈어요. 여행이 끝나고 집으로 돌아온 영희는 그 남자애가 보고 싶었어요.

canonical: 영희는 그애에게 선물을 보냈어요.
scrambled: 영희는 선물을 그애에게 보냈어요.
7. 철수는 컴퓨터가 두 개나 있어요. 그러나 그 컴퓨터는 모두 오래된 것들이라서 철수는 새 컴퓨터가 가지고 싶었어요. 엄마는 철수가 착한 일을 많이 하면 크리스마스에 새 것을 사주겠다고 했어요. 드디어 크리스마스 날, 철수는 새 컴퓨터를 선물로 받았어요. 이제 철수는 오래된 컴퓨터들이 필요없게 되었어요.

canonical: 철수는 친구들에게 그것을 팔았어요.
scrambled: 철수는 그것을 친구들에게 팔았어요.

8. 영희네 가족은 이사를 가게 되었어요. 영희의 부모님은 이사하기 전에 필요없는 물건들을 팔기로 했어요. 영희는 부모님이 물건을 파는 것을 도와드리고 있었어요. 그 때 한 남자애가 마당으로 들어왔어요. 그 남자애는 딸기를 아이스크림을 먹으면서 한참 동안 물건을 둘러보았어요. 마침내 그 남자애가 계산을 하려고 영희에게 다가왔어요.

canonical: 영희는 그애에게 장난감들을 팔았어요.
scrambled: 영희는 장난감들을 그애에게 팔았어요.

9. 크리스마스가 몇 일 앞으로 다가왔어요. 철수는 이번에는 카드를 사는 대신, 직접 만들어 보러 했어요. 철수는 먼저 카드를 만들 예쁜 종이를 샀어요. 종이 위에는 선물 봉투를 둔 산타 할아버지와 하얀 눈사람을 그려 넣었어요. 철수는 마지막으로 카드에다가 “즐거운 크리스마스”라고 적었어요.

canonical: 철수는 친구들에게 그것을 보냈어요.
scrambled: 철수는 그것을 친구들에게 보냈어요.

10. 철수네 가족은 도시에 살고 있어요. 지난 여름 철수는 시골에 계산 할머니댁에 돌아갔어요. 철수는 그 곳에서 엽진에 살던 여자애랑 친구가 되었어요. 철수는 그 여자애랑 함께 수영도 하고, 낚시도 다니면서 즐겁게 지냈어요. 집으로 돌아온 후, 철수는 그 여자애가 여름에 지내는지 궁금했어요.

canonical: 철수는 그애에게 편지들을 보냈어요.
scrambled: 철수는 편지들을 그애에게 보냈어요.

11. 영희는 지난 일요일 부모님과 함께 시장 구경을 갔어요. 영희는 그 곳에서 아주 마음에 드는 옷을 하나 발견했어요. 그 옷은 초록색이었는데 아주 가벼워졌어요. 영희는 엄마에게 줄래서 그 옷을 샀어요. 집으로 돌아온 후, 영희는 설래이는 마음으로 가방에서 그 옷을 꺼냈어요.

canonical: 영희는 친구들에게 그것을 보여주었어요.
scrambled: 영희는 그것을 친구들에게 보여주었어요.
철수는 어제 야빠의 식당에서 일을 도와드렸어요. 점심 때 한 남자애가 식당으로 들어왔어요. 철수는 그 남자애를 식탁으로 안내한 후에 무엇을 먹고 싶은지 물어보았어요. 그 남자애는 아주 큰 샌드위치와 주스 한 잔을 시켰어요. 철수는 그 남자애가 음식을 다 먹자 그 식탁으로 다가갔어요.

canonical: 철수는 그애에게 계산서를 보여주었어요.
scrambled: 철수는 그애에게 계산서를 보여주었어요.

Korean Pronoun Task: Filler Items

1. 영화에에는 고양이가 한 마리 있어요. 영화는 고양이를 먹이고, 써기고, 돌보았어요. 고양이는 영화를 잘 따랐어요. 영화가 집에 돌아오면 고양이는 문까지 달려와 영화를 반겨주곤 했어요. 오늘 오후 영화가 집에 돌아왔을 때 고양이가 보이지 않았어요.

   A: 영화는 고양이를 찾아보았어요.
   B: 고양이를 찾아보았어요.

2. 아주 더운 여름 날이었어요. 철수는 찬 물로 씻은 후 아이스크림을 먹었지만 여전히 더웠어요. 철수는 엄마와 함께 야외 수영장에 갔어요. 수영장에 도착하자 갑자기 날씨가 흐려지더니 비가 내리기 시작했어요. 비가 내려도 철수는 상관하지 않았어요.

   A: 철수는 수영장으로 뛰어들었어요.
   B: 수영장으로 뛰어들었어요.

3. 영화는 어제 친구의 생일 파티에 갔어요. 영화는 그 곳에서 친구들도 많이 만나고 맛있는 음식도 많이 먹었어요. 영화가 친구들과 어울려 이야기를 나누고 있을 때, 노래가 흘러나왔어요. 그 것은 영화가 가장 좋아하는 노래였어요.

   A: 영화는 그 노래를 들었어요.
   B: 그 노래를 들었어요.

4. 영화는 책을 읽고 있는데, 부엌에서 고소한 냄새가 납니다. 엄마가 저녁으로 닭튀김을 만들고 있는 중이었어요. 영화는 배가 고파지만 엄마가 부를 때까지 기다렸어요. 마침내 엄마가 영화를 불러주었어요. 영화는 식탁으로 달려갔어요. 저녁은 이미 식탁 위에 차려져 있었어요.

   A: 영화는 식탁에 앉았어요.
   B: 식탁에 앉았어요.
5. 철수가 아침에 일어났을 때, 밖은 운동 하얀 눈으로 덮여 있었어요. 날씨가 추워서 철수는 따뜻한 코코아를 한 잔 마셨어요. 철수는 밖에 나가 눈 속에서 눈
생각에 너무 신이 떨어요. 밖에 잔뜩 쌓인 눈을 보느라, 철수는 신고 나갈 신발을 결정했어요.

A: 철수는 부츠를 신었어요.
B: 부츠를 신었어요.

6. 영희는 부모님을 돕고 싶었어요. 영희는 아침 일찍 일어나서 먼저 엄마에게 몰래 보았어요. "엄마, 월드와드릴까요?" 엄마가 말했어요. "방 청소를
해주세요!" 영희는 방을 청소하고 나서 아빠에게 몰래 보았어요. "아빠, 월드
도와드릴까요?" 아빠가 말했어요. "신문을 읽고 삽은데 영희가 신문을 찾아오지
않겠어요?"

A: 영희는 신문을 찾아가려 갔어요.
B: 신문을 찾아가려 갔어요.

7. 철수는 어제 책을 두 권 샀어요. 한 권은 만화책이었고, 다른 한 권은
동화책이었어요. 철수는 잠자기 전에 책을 읽고 싶었어요. 그래서 새로 산 책 두
권을 모두 펼쳐서 그림을 살펴본 다음 무엇을 읽을지를 결정했어요.

A: 철수는 동화책을 골랐어요.
B: 철수가 고른 것은 동화책이었어요.

8. 영화의 피아노 연주회가 하루 앞으로 다가왔어요. 영화는 엄마와 함께
연주회에서 입을 웃을 사려 갔어요. 영화는 두 개의 웃을 골랐어요. 하나는
분홍색이었고, 다른 하나는 파란색이었어요. 영화는 둘 다 사고 싶었지만
엄마가 둘 중 하나만 고르라고 말했어요.

A: 영화는 분홍색 옷을 선택했어요.
B: 영화가 선택한 것은 분홍색 옷이었어요.

9. 철수는 지난 여름에 가족과 함께 미국에 놀러갔어요. 그 곳에서 철수는 미국
친구들을 많이 사귀었어요. 그러나 철수는 미국말을 잘 하지 못하고, 미국
친구들은 한국말을 잘 하지 못했기 때문에 서로 이야기하기가 힘들었어요.
철수는 한국으로 돌아오자마자 공부를 시작했어요.

A: 철수는 미국말을 배웠어요.
B: 철수가 배운 것은 미국말이었어요.
10. 영희와 철수는 매일 함께 공부를 해요. 영희는 산수를 좋아하고 철수는 국어를 좋아해요. 오늘도 영희와 철수는 함께 공부를 하고 있었어요. 철수는 산수 문제가 너무 어려워서 혼자 풀 수 없었어요. 그래서 철수는 영희에게 도와달라고 했어요.

A: 영희가 그 문제를 풀었어요.
B: 그 문제를 풀 것은 영희였어요.

11. 철수는 자전거를 배우려고 아빠와 함께 공원으로 갔어요. 철수가 자전거에 타자 아빠가 뒤에서 잡아 주었어요. 철수는 여러 번 넘어졌지만 포기하지 않았어요. 드디어 철수는 혼자 자전거를 탈 수 있게 되었어요. 아빠는 철수가 너무 자랑스러웠어요. 철수와 아빠는 철수가 자전거를 탈 수 있게 된 것을 축하하기 위해서 아이스크림 가게로 갈았어요.

A: 철수의 아빠가 아이스크림을 샀어요.
B: 아이스크림을 산 사람은 철수의 아빠였어요.

12. 영희는 사과 파이를 아주 좋아해요. 사과가 많으면 영희는 언제나 사과 파이를 만들어요. 영희는 오늘 과수원에 가서 사과를 아주 많이 쌓았어요. 사과 파이를 만들고도 사과가 많이 남았어요. 영희는 남은 사과로 무엇을 만들지 생각해보았어요.

A: 영희는 사과잼을 만들었어요.
B: 영희가 만든 것은 사과잼이었어요.
Appendix G: Acceptability Judgment Task (AJT)

AJT: Practice Items

1. Pig: Hey, Monkey. Where are you going?
   Monkey: I’m going to the party. Do you want to join me?
   A: * Pig and Monkey walks together to the party.
   B: * Pig and Monkey walking together to the party.

2. Monkey: Hey, Pig. Let’s go see a movie.
   Pig: I’m sorry, I can’t. I have to finish my homework.
   A: *Monkey and Pig didn’t saw the movie.
   B: Monkey and Pig didn’t see the movie.

3. Pig: It’s a sunny day! Let’s go out and play.
   Monkey: Yea! I have a baseball.
   A: On the playground Pig and Monkey played baseball.
   B: Pig and Monkey played baseball on the playground.

AJT: Experimental Items

1. Monkey: Wow, these cookies are really delicious. I wish my mom were here and could eat some.
   Pig: Oh, you are such a good boy. I left an extra one for your mom.
   PD: Monkey brought the cookie to his mom.
   DOD: Monkey brought his mom the cookie.

2. Pig: I’m hungry. I wish I had a sandwich.
   Monkey: Oh, I have an extra one. Do you want it?
   PD: Monkey gave the sandwich to Pig.
   DOD: Monkey gave Pig the sandwich.

3. Monkey: Hey, Pig. I’m going to the post office. Is there anything I can do for you?
   Pig: Oh, that’s great! I have a letter for my friend.
   PD: Monkey mailed the letter to the friend.
   DOD: Monkey mailed the friend the letter.
4. Pig: Wow, what a fancy bike you have! It’s a pretty color.  
   Monkey: I don’t ride this one anymore. Do you want to buy it?  

   PD: Monkey sold the bike to Pig.  
   DOD: Monkey sold Pig the bike.

5. Monkey: Christmas is coming. What do you want for Christmas?  
   Pig: It is a secret. I will only let Santa Claus know.  

   PD: Pig sent the letter to Santa Claus.  
   DOD: Pig sent Santa Claus the letter.

6. Pig: How was your trip to Disneyland last summer?  
   Monkey: It was fantastic! I took a lot of pictures.  

   PD: Monkey showed the pictures to Pig.  
   DOD: Monkey showed Pig the pictures.

**AJT: Filler Items**

1. Monkey: Pig, thank you for coming to my birthday party. After eating, let’s go to the swimming pool.  
   Pig: Sounds good! Monkey, does everyone else know about your plan?  

   A: Monkey announced the plan to everyone.  
   B: *Monkey announced everyone the plan.

2. Pig: I think I just saw our teacher driving.  
   Monkey: What does the car look like?  

   A: Pig described the car to Monkey.  
   B: *Pig described Monkey the car.

3. Monkey: I tried to watch the football game for half an hour. But I still don’t understand what’s happening!  
   Pig: I know the rules. Do you want to learn them?  

   A: Pig explained the rules to Monkey.  
   B: *Pig explained Monkey the rules.

4. Pig: Hey, Monkey. Here comes a pretty girl. Do you know her?  
   Monkey: Yes, I know her. She is one of my best friends.  

   A: Monkey introduced Pig to the girl.  
   B: *Monkey introduced the girl Pig.
5. **Monkey:** Hey, Pig. It is so noisy here! I cannot hear you clearly.
**Pig:** All right! I will speak louder this time.

A: Pig shouted the answer to Monkey.
B: *Pig shouted Monkey the answer.

6. **Pig:** Hey, Monkey. Do you want to hear a secret?
**Monkey:** Sure. What is it?

A: Pig whispered the secret to Monkey.
B: *Pig whispered Monkey the secret.

7. **Pig:** Monkey, what time is it now? We’ll be late for school.
**Monkey:** Don’t worry too much. The bus will come soon.

A: *Finally the bus was arrived.
B: *Finally the bus arrived the bus stop.

8. **Monkey:** I like rainy days. It’s fun to play in the puddles.
**Pig:** Be careful! The street is very slippery.

A: *Monkey was fell on the street.
B: *Monkey fell the street.

9. **Monkey:** Hey, Pig. Look at the puppy. It’s so cute, isn’t it?
**Pig:** Where?

A: *The puppy disappeared a tree.
B: The puppy disappeared behind a tree.

10. **Pig:** What are you doing here?
**Monkey:** I’m waiting for my dad.

A: *Monkey’s dad appeared the corner.
B: Monkey’s dad appeared.

11. **Monkey:** Oh, boy. Look at you, Pig. You are all wet from the rain.
**Pig:** I forgot my umbrella.

A: Monkey dried Pig’s clothes.
B: Pig’s clothes dried in an hour.
12. Pig: It’s very hot today. Monkey, where is the lemonade?
   Monkey: Oh no! I left it on the table outside.
   A: The sun melted the ice in the lemonade.
   B: The ice in the lemonade melted.

13. Pig: Hey, Monkey. What are you doing?
   Monkey: I’m moving these books. Would you help me?
   A: Pig and Monkey piled the books on the table.
   B: Pig and Monkey piled the table with the books.

14. Pig: It’s so hot! Monkey, let’s go swimming.
   Monkey: Let me take care of these flowers first.
   A: Monkey sprayed water onto the flowers.
   B: Monkey sprayed the flowers with water.

15. Monkey: We have milk, juice and coke. What do you want to drink?
   Pig: A glass of milk, please.
   A: *Monkey filled water into the glass.
   B: *Monkey filled the glass with water.

16. Pig: Hey, Monkey. Please help me put these apples into the car.
   Monkey: Sure!
   A: *Pig and Monkey loaded the car with apples.
   B: *Pig and Monkey loaded the apples into the car.

17. Pig: I cannot remove this stain on the table.
   Monkey: I have an idea about how to hide it.
   A: Monkey covered the stain with a tablecloth.
   B: *Monkey covered a tablecloth onto the stain.

18. Monkey: Yea! We finished packing. Now we are ready for a picnic.
   Pig: Oh, I forgot water.
   A: Pig poured water into a pitcher.
   B: *Pig poured a pitcher with water.
## Appendix H: Individual Proficiency Results *(Per Group)*

Table A. *Proficiency Data from L1-English Adults (abbreviated as L1EA)*

<table>
<thead>
<tr>
<th>L1 Adult</th>
<th>T-units</th>
<th>Verbal Density</th>
<th>Lexical Diversity</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T-units</td>
<td>z-score</td>
<td>T-units</td>
</tr>
<tr>
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<tr>
<td>L1EA2</td>
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<td>2.969</td>
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<tr>
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Table B. Proficiency Data from L1-English Children (abbreviated as L1EC)

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<th>L1 Child</th>
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<th>Verbal Density</th>
<th>Lexical Diversity</th>
<th>Accuracy</th>
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<td></td>
<td>Verbs/T-units</td>
<td>z-score</td>
<td>V/N</td>
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<tr>
<td>L1EC2</td>
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<td>-0.07</td>
<td>6.040</td>
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<tr>
<td>L1EC3</td>
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<th>Accuracy</th>
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<th>Prof. Level</th>
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<td>-0.01</td>
<td>6.983</td>
<td>0.563</td>
<td>-0.33</td>
</tr>
<tr>
<td>L2KA37</td>
<td>16</td>
<td>1.313</td>
<td>-0.63</td>
<td>5.384</td>
<td>0.750</td>
<td>0.94</td>
</tr>
<tr>
<td>L2KA38</td>
<td>25</td>
<td>1.360</td>
<td>-0.39</td>
<td>7.089</td>
<td>0.840</td>
<td>1.55</td>
</tr>
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</table>
Appendix I: Individual Proficiency Results *(L2-English Adults and Children Combined)*

Table A. *Proficiency Data from L1 Korean-L2 English Adults (L2EA)*

<table>
<thead>
<tr>
<th>L2 Adult</th>
<th>n = 30</th>
<th>Verbal Density z-score</th>
<th>Lexical Diversity z-score</th>
<th>Accuracy z-score</th>
<th>Prof. Score</th>
<th>Prof. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2EA1</td>
<td>0.526</td>
<td>-0.245</td>
<td>0.493</td>
<td>0.774</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA2</td>
<td>1.132</td>
<td>1.411</td>
<td>-0.923</td>
<td>1.619</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA3</td>
<td>2.227</td>
<td>0.397</td>
<td>-0.286</td>
<td>2.338</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA4</td>
<td>0.165</td>
<td>0.134</td>
<td>0.139</td>
<td>0.438</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA5</td>
<td>0.085</td>
<td>0.193</td>
<td>-1.594</td>
<td>-1.317</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>L2EA6</td>
<td>1.760</td>
<td>1.195</td>
<td>0.074</td>
<td>3.029</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA7</td>
<td>-1.355</td>
<td>-0.248</td>
<td>1.371</td>
<td>-0.231</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>L2EA8</td>
<td>-0.469</td>
<td>0.626</td>
<td>0.199</td>
<td>0.355</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA9</td>
<td>-1.192</td>
<td>0.406</td>
<td>-1.242</td>
<td>-2.029</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>L2EA10</td>
<td>0.762</td>
<td>0.930</td>
<td>-0.127</td>
<td>1.565</td>
<td>High</td>
<td></td>
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<tr>
<td>L2EA11</td>
<td>-0.342</td>
<td>0.251</td>
<td>0.210</td>
<td>0.119</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA12</td>
<td>-1.081</td>
<td>-0.364</td>
<td>-1.058</td>
<td>-2.503</td>
<td>Low</td>
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</tr>
<tr>
<td>L2EA13</td>
<td>1.539</td>
<td>0.977</td>
<td>-0.640</td>
<td>1.877</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA14</td>
<td>0.846</td>
<td>1.069</td>
<td>0.923</td>
<td>2.838</td>
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<td></td>
</tr>
<tr>
<td>L2EA15</td>
<td>0.222</td>
<td>0.808</td>
<td>-1.058</td>
<td>-0.028</td>
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</tr>
<tr>
<td>L2EA16</td>
<td>0.729</td>
<td>1.611</td>
<td>-1.263</td>
<td>1.076</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>L2EA17</td>
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<td>0.791</td>
<td>0.127</td>
<td>1.784</td>
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</tr>
<tr>
<td>L2EA18</td>
<td>1.684</td>
<td>0.422</td>
<td>-1.904</td>
<td>0.202</td>
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<tr>
<td>L2EA19</td>
<td>1.120</td>
<td>-0.965</td>
<td>1.117</td>
<td>1.271</td>
<td>High</td>
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<tr>
<td>L2EA20</td>
<td>-0.239</td>
<td>0.000</td>
<td>0.169</td>
<td>-0.069</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>L2EA21</td>
<td>0.273</td>
<td>0.062</td>
<td>-0.498</td>
<td>-0.163</td>
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<td></td>
</tr>
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<td>L2EA22</td>
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<td>2.283</td>
<td>0.650</td>
<td>3.657</td>
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<td></td>
</tr>
<tr>
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<td>-0.634</td>
<td>0.352</td>
<td>0.154</td>
<td>High</td>
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<td>L2EA24</td>
<td>2.308</td>
<td>2.116</td>
<td>0.670</td>
<td>5.095</td>
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<tr>
<td>L2EA25</td>
<td>-0.585</td>
<td>1.281</td>
<td>0.352</td>
<td>1.047</td>
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<tr>
<td>L2EA26</td>
<td>-0.53</td>
<td>0.543</td>
<td>0.511</td>
<td>1.001</td>
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</tr>
<tr>
<td>L2EA27</td>
<td>-0.473</td>
<td>0.485</td>
<td>1.133</td>
<td>1.145</td>
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</tr>
<tr>
<td>L2EA28</td>
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<td>0.427</td>
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</tr>
<tr>
<td>L2EA29</td>
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<td>0.496</td>
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</tr>
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<td>L2EA30</td>
<td>-1.225</td>
<td>0.496</td>
<td>1.371</td>
<td>0.643</td>
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</table>
Table B. Proficiency Data from L1 Korean-L2 English Children (L2EC)

<table>
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<tr>
<th>L2 Child</th>
<th>Verbal Density z-score</th>
<th>Lexical Diversity z-score</th>
<th>Accuracy z-score</th>
<th>Prof. Score</th>
<th>Prof. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2EC1</td>
<td>-1.169</td>
<td>-0.950</td>
<td>1.262</td>
<td>-0.857</td>
<td>Low</td>
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<tr>
<td>L2EC2</td>
<td>-0.053</td>
<td>-0.429</td>
<td>1.234</td>
<td>0.753</td>
<td>High</td>
</tr>
<tr>
<td>L2EC3</td>
<td>-0.747</td>
<td>-1.612</td>
<td>-1.433</td>
<td>-3.792</td>
<td>Low</td>
</tr>
<tr>
<td>L2EC4</td>
<td>-0.631</td>
<td>-0.861</td>
<td>0.777</td>
<td>-0.716</td>
<td>Low</td>
</tr>
<tr>
<td>L2EC5</td>
<td>-1.656</td>
<td>-1.322</td>
<td>0.450</td>
<td>-2.528</td>
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<tr>
<td>L2EC6</td>
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<td>-1.055</td>
<td>-2.296</td>
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<td>L2EC7</td>
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<td>L2EC8</td>
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<td>-3.490</td>
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<td>L2EC9</td>
<td>-0.239</td>
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<td>-1.288</td>
<td>-1.452</td>
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</tr>
<tr>
<td>L2EC10</td>
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<td>-1.918</td>
<td>-0.773</td>
<td>-4.889</td>
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</tr>
<tr>
<td>L2EC11</td>
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</tr>
<tr>
<td>L2EC13</td>
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<td>0.033</td>
<td>0.670</td>
<td>0.977</td>
<td>High</td>
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</tr>
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<td>L2EC15</td>
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<td>-1.737</td>
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<td>-1.066</td>
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<td>0.553</td>
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<td>0.098</td>
<td>0.947</td>
<td>0.819</td>
<td>High</td>
</tr>
</tbody>
</table>


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