Agreeing That Agreement Isn't the Problem

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1   Introduction

Much recent work in Universal Grammar (UG)-based studies of second language acquisition (L2A) has focused on ascertaining whether or not functional categories and uninterpretable functional features from the UG lexicon are available to post-puberty second language (L2) learners (L2ers). These categories and features, which form the syntactic 'glue' for creating well-formed utterances and which trigger morphological agreement, are available to first language (L1) learners in a fashion such that all normally developing children uniformly arrive at a correct analysis of the L1 target grammar. L2 learners, on the other hand, seldom reach native-like performance levels in the target language. In particular it has been shown that L2 learners show difficulties producing inflectional morphology, even at very advanced stages of acquisition and despite considerable L2 input (Franceschina, 2001; Lardiere, 2007; White, 2003a). One recent hypothesis that attempts to explain the source of these difficulties holds that L2ers' problems with inflectional morphology in the target language stem from an inability to acquire new UG functional features post-puberty. That is, incorrect morphology in the L2 is said to reflect an underlying deficit in a learner's mental representation of the target language's syntax (the Representational Deficit Hypothesis, RDH) (Franceschina, 2001, 2005; Hawkins & Chan, 1997; Hawkins & Franceschina, 2004; Hawkins & Hattori, 2006).

This paper examines the RDH in light of new data collected from an advanced L1 English speaker of L2 German, "Tom". Tom, who despite many years of formal instruction in German and long-term immersion in a German speaking environment, shows significant problems with inflectional morphology in the nominal domain. Specifically, grammatical gender and case morphology are selectively impaired, while other areas of morphosyntax show near native-like accuracy. However, I argue that these problems cannot be explained by a syntactic representational deficit. I maintain instead that Tom has acquired a target-like syntax for nominals, as his productions show near perfect accuracy on concord within the DP. Errors reflect problems acquiring and spelling out interpretable features corresponding to case and gender. In presenting these arguments, the paper will be structured as follows: first I will present an overview of approaches to the morphology-syntax interface and morphological deficits in L2A, second I will present relevant linguistic background on the speaker's L1 and L2, finally I present the current study, including data, results, discussion, and conclusions.

2   Background
2.1   The morphology-syntax interface in L2A

As mentioned above, there are many scholars who hold that there is a close relationship between syntax and inflectional morphology in L2A. For these theoreticians a learner's problems with inflectional morphology are caused by missing or defective syntactic features that trigger morphological agreement. For example, early approaches to missing inflection in the verbal domain argued that absent or incorrect agreement morphology on verbs in the initial state of L2A reflected either missing functional projections such as IP and CP (Vainikka & Young-Scholten, 1996) or unvalued "inert" features in the IP projection (Eubank, 1996). Following a popular conception of UG at the time (Vikner, 1997), this approach assumed there to be a relatively direct mapping between abstract features triggering agreement and movement on the one hand, and their corresponding overt forms on the other. Moreover, it should be noted that the lack of functional projections and inertness of

agreement features posited by Vainikka and Young-Scholten and Eubank was a temporary state of affairs for the L2 learner, as they assumed that even late L2ers have full access to UG.

More recently a similar, albeit somewhat more pessimistic, view about the relationship between inflectional morphology and syntax has surfaced in the literature in the form of the RDH. However, rather than dealing solely with the initial state of L2A, the RDH makes strong claims about the possible outcomes of L2A. Like the above approaches, the RDH argues that there is a strong relationship between inflectional morphology and syntax in L2A; for proponents of the RDH, less than native-like accuracy on inflectional morphology reflects missing syntactic features. The approaches diverge in that the RDH holds that formal syntactic features, specifically parameterized semantically uninterpretable features (*u*Features) that are not instantiated in a speaker's L1 will be unacquirable post-puberty. The RDH thereby attempts to explain often-observed critical period effects (i.e., lack of native-like attainment) via a lack of access to *u*Features from the UG lexicon (see Smith & Tsimpli, 1995; Tsimpli & Roussou, 1991 for similar proposals).

Based in more recent Minimalism (Chomsky, 2001), the RDH assumes that morphosyntactic agreement is triggered by *u*Features which enter a syntactic derivation unvalued. Unvalued features must be valued by a corresponding semantically interpretable feature in the course of a derivation: *u*Features act as Probes which seek out the closest corresponding interpretable feature in the expression's c-command domain. When an appropriate matching feature has been found, the *u*Feature takes on the value of the interpretable feature via the computational mechanism Agree and the derivation may proceed. The effects of Agree will then be visible in the final linguistic expression as inflectional morphology. Thus, as the RDH proposes, if L2ers are restricted to the set of *u*Features provided by their L1, their L2 grammars will also be restricted to only those agreement phenomena that appear in their L1. Although the RDH holds that the core syntactic computational mechanisms Merge and Agree carry over into the L2 grammar, *u*Features not present in the L1 will be absent from the interlanguage grammar at all stages and agreement dependent on these features is subject to selective, permanent fossilization and is therefore unlearnable.

The RDH has been used to explain a range of morphosyntactic problems that L2ers experience, such as L1 Chinese speakers' problems realizing past tense morphology in L2 English (Hawkins & Liszka, 2003) and L1 Chinese and Japanese speakers' problems with overt WH-movement in L2 English (Hawkins & Chan, 1997; Hawkins & Hattori, 2006). Relevant to the current study is work done by Franceschina (2001; 2005) and Hawkins and Franceschina (H&F) (2004) on the L2 acquisition of gender concord within the DP. In her work Franceschina shows that even highly advanced L2ers whose L1s do not have grammatical gender show difficulties acquiring gender concord in L2 Spanish. She concludes that her subjects can acquire interpretable gender features (i.e., gender features inherent to nouns (N) in the lexicon), but that her subjects' problems realizing gender on determiners (D) and adjectives (A) results from missing uninterpretable *u*Gender features on D and A heads. For Franceschina gender is acquirable, though without the relevant uninterpretable features, L2 learners will never be able to acquire gender *agreement*. H&F (2004) present a slightly different account of L2ers' problems with grammatical gender, though they too place the burden on missing *u*Gender features. In examining the problems L1 English speakers have with D-N concord, they argue that English speakers' lack of *u*Gender features on determiners makes them insensitive to the cues that determiners provide in learning inherent gender on nouns. They go on to claim that L1 English speakers can only learn nouns' genders to the extent that a noun's form provides probabilistic cues to its gender. For H&F, as in Franceschina's solo work, L1 English speakers' problems producing determiners that correctly match a noun's gender feature result from a missing uninterpretable feature in the D^0 head of the DP projection. The crucial commonality between the approaches is the claim that *u*Gender features will be missing from L1 English speakers' grammars at all stages and that gender agreement will be defective. The data to be presented in this study, however, show that Tom has no difficulties realizing gender concord in complex DPs during spontaneous speech, despite showing trouble learning nouns' correct gender features. I argue that these data are problematic for RDH-type approaches to defective morphology and conclude that it is not agreement *per se* that is difficult for Tom. Rather, Tom shows problems specifying nouns for inherent features in the L2 lexicon (cf. Bruhn De Garavito & White, 2002; Carroll, 1989; White et al., 2004). But first I will give some background on the nominal agreement systems in German and English, as the focus of the current study is the acquisition of German nominal agreement by an L1 English speaker.

2.2   *Nominal agreement in German and English*

German shows a complex system of nominal agreement, which represents a formidable learning task for any L2er. A full explanation of the agreement system is beyond the scope of this paper (the reader is directed to a descriptive grammar of German, e.g., Durrell, 2006), though this section will present an overview of some relevant phenomena. DPs in German show concord for gender (masculine, feminine, neuter), number (singular, plural) and case (nominative, accusative, dative, genitive). That is, determiners, attributive adjectives, and nouns within a DP must match for all three features. Predicate adjectives, however, show no agreement. There is a high level of syncretism in German nominal agreement, as one form may spell out a range of different feature matrices. Furthermore, all three features are generally carried in one fusional morpheme. While gender marking does not appear directly on the noun, it is visible on determiners and adjectives via the nominative singular suffixes –*r*, -*e*, and –*s* for masculine, feminine, and neuter, respectively. These affixes can appear on definite determiners, giving the phonological shapes of the determiners *der*, *die*, and *das*; adjectives following nominative singular definite determiners of all genders always inflect with –*e* (the so-called 'strong' declension). Alternately, when there is an indefinite determiner followed by an adjective or attributive adjective with no preceding determiner, the gender affix (-*r*, -*e*, or -*s*) appears on the adjective (the 'weak' declension). In some cases a noun's grammatical gender may coincide with the natural gender of the referent, as in the forms *der Mann* "the-MASC man" and *die Frau* "the-FEM woman;" however, in most cases gender assignment is fully arbitrary (as in the classic example *das Mädchen* "the-NEUT girl") and must be learned anew for each noun. Gender is then an inherent feature of nouns (the controller of agreement), which becomes visible through agreement on determiners and adjectives (the targets of agreement) (Carroll, 1989; Carstens, 2000; Corbett, 2006). Although gender may not be semantically determined by features of a referent, it can be determined by derivational morphology in German. For examples, nouns formed by the nominalizing suffixes -*heit*, -*keit*, -*schaft*, and –*ung* are always feminine, while gerunds and diminutives suffixed with -*chen* or -*lein* are always neuter. German also shows a number of probabilistic semantic and phonological correlations with particular genders, though a discussion of all of these is beyond the scope of this paper (see Mills, 1986 for a review of studies about morphological determination of gender and a series of studies about the psychological status of phonological and semantic correlations with gender in German). For the purposes of the current study it should be noted that derivational suffixes like those mentioned above (-*ung*, -*heit*, -*schaft*, etc) provide L2ers deterministic cues to a noun's gender, which should facilitate learning that word's inherent gender feature (cf. probabilistic phonological cues noted above that Hawkins and Franceschina, 2004 argue facilitate acquisition of a noun's gender when a speaker's L1 lacks *u*Gender features).

Number is visible both on nouns, via one of many plural markers, and on determiners and adjectives via the suffix –*e*, seen on attributive adjectives not preceded by a determiner, the definite determiner *die*, quantifiers, and possessive determiners. In these last three instances, when a determiner or quantifier of a certain class precedes an adjective, the adjective then inflects with –*en* (again, the 'strong' declension); adjectives following weak declension determiners and quantifiers inflect with -*e*. Additionally, gender distinctions are neutralized in plural DPs. Case assignment adds yet another layer of complexity to the system. The above described declensions refer exclusively to nominative case; German also shows overt marking on determiners and adjectives for accusative, dative, and genitive cases, while some nouns additionally show suffixes for these cases. Again, the reader is referred to a descriptive grammar of German for a full account; individual examples will be discussed and explained below as necessary.

Assuming a Minimalist architecture of human language, I take gender, number, and case concord in German to be triggered by uninterpretable *u*Gender, *u*Number, and *u*Case features, respectively, which must be valued by a corresponding interpretable feature via Agree. I adopt a system for concord along the lines proposed by Carstens (2000). I assume that interpretable number and gender are features inherent to the noun[1], while case is inherent to an external case assigner (e.g., V, *v*, P, or T) (Woolford, 2006); the *u*Case features on the DP receiving their value by entering an Agree relationship with one of these heads. I further assume that all three uninterpretable features are carried on D heads,

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[1] Carstens assumes that number is inherent to a NumberP, which dominates *n*P/NP. However, nothing crucial hinges on this for the present analysis.

giving rise to determiner agreement; however, since only attributive adjectives, and not predicative adjectives, in German show agreement, I assume that the three uninterpretable features are positional in nature, located in the specifiers of projections within the nominal expression (e.g., Spec-NP/*n*P/NumP). Attributive adjectives acquire agreement by being merged into a position carrying these features.

In comparison to German, nominal morphology in English is descriptively much simpler. Nouns show overt inflection for number (singular/plural) and determiners show some evidence for number agreement as well (e.g., *this/these*, null plural indefinite determiner, etc). I therefore assume that English nouns carry inherent number features which are matched against uninterpretable counterparts on D heads. Adjectives, however, show no overt marking for number, which leads to the assumption that adjectives (or the specifiers of projections within the English DP) do not carry *u*Number features. Case is not overtly marked on full DPs in English, though following Chomsky (2001) I assume that English DPs do carry *u*Case features (abstract case), which makes DPs active as controllers of phi-feature agreement with the functional heads T and *v*. Additionally, full DPs in English show no evidence for gender agreement, and I therefore presume that English lacks both interpretable and uninterpretable gender features. Table 1, below, summarizes my assumptions about the feature compositions of DPs in German and English:

Table 1 Uninterpretable feature compositions for German and English nominals

Feature	German	English
*u*Gender	✓	X
*u*Number	✓	On D only
*u*Case	✓	✓

Thus, according to the RDH, one would expect an L1 English speaker of L2 German to show few difficulties with case agreement in German, as transfer of the *u*Case feature from English would facilitate acquisition of case in German. Since *u*Gender is completely missing in English and since *u*Number is only contained on D heads, the RDH predicts learners to have trouble realizing concord for number and gender throughout the DP. That is, even if learners can acquire inherent gender of nouns, agreement between elements within the DP should be defective; learners should additionally show difficulty realizing number morphology on attributive adjectives. However, I argue in the following section that Tom's data show the opposite situation. Tom has no difficulty with matching features within the DP for gender and number, but instead shows great difficulty acquiring interpretable gender and with the overt realization of case morphology.

3   The study

3.1   Subject, data collection, and methods

At the time of recording, the participant, whom we will call Tom, was a 33-year-old male living in Germany. He had lived in Germany for a total of six years, the last five of which were continuous and uninterrupted. Also, before moving to Germany, Tom had taken a total of five years of formal instruction in German, one year in his last year at an American high school and four years during university study, one of which took place during a study abroad year in Germany. Tom is a journalist, employed with a major German and English language publication. He claims to read several German-language newspapers and news magazines daily and claims that the only television he watches is in German. Via his formal instruction, it can be assumed that Tom has been exposed to formal, prescriptive aspects of German grammar, and via his long immersion in a German-speaking environment and daily use of the language, it can be assumed that he has had ample exposure to German spoken and written in context.

Data were collected in an informal interview. Conversation topics included Tom's language learning background, reflections on learning German and living in Germany, as well as other more mundane topics, such as hobbies, food, and politics. The discussion was recorded as an mp3 file on an Apple G4 Powerbook via the computer's internal microphone and subsequently transcribed. A native German speaker then verified transcriptions; any points of disagreement between the transcriber and verifier were excluded from analysis. There were two disagreements; however, one involved a word

not pertinent to the current analysis. One DP was excluded on these grounds. The interview produced 32 minutes of recording, which included 463 total utterances by Tom (clauses or single DP responses to questions). Finite clauses were coded for suppliance of verbal agreement, type (main, subordinate, relative), and accuracy on word order (V2, V-final in relevant contexts; see below). DPs were coded separately. Only DPs with a lexical noun preceded by either an adjective or determiner (or both) were counted in the subsequent statistics since bare nouns carry no visible agreement information. Additionally, high-frequency adverbial DPs and PPs were excluded from analysis. Those that were excluded include *zur Zeit* "right now", *zum Beizspiel* "for example", *am Wochenende* "this weekend" or "weekends", and *jeden Tag* "every day". Given that these expressions are high frequency and formulaic, they may be stored in the lexicon as chunks and their morphology therefore may not reflect active morphosyntactic agreement. DPs were then coded for a number of features, including presence of and type of determiner, number (singular or plural context), target gender for singular DPs, presence of a deterministic morphological cue for gender of the head noun (see discussion above), and target case. Accuracy was categorized as target-like (1) or non-target-like (0) on determiners and adjectives individually. Complex DPs (those with both determiners and adjectives) were also marked for presence or absence of concord (that is, did agreement-showing elements agree with each other). Finally, errors were categorized as gender, case, or number errors (or some combination of the above) according to the classification rubric used by Szagun (2004). Pronouns were coded separately for a number of variables including gender, target case, case used, and accuracy on gender and case. A total of 454 clauses, 253 DPs, and 440 pronouns were retained for analysis.

3.2   Predictions

If, as held by the RDH, morphological problems in L2 speech reflect underlying feature deficits resulting from an inability to acquire uninterpretable features not found in a speaker's L1, one would expect Tom to show difficulties realizing concord in his L2 German speech. As summarized in section 2.2 and Table 1, Tom's L1 lacks the uninterpretable features necessary for gender and number concord within the DP. Following the discussion by Franceschina (2001; 2005) one would expect Tom to have few difficulties acquiring interpretable gender features on nouns, while feature matching between multiple elements within the DP should be impossible. Alternately, following H&F (2004), it could be the case that deterministic morphological cues will aid Tom's acquisition of gender. In this case one would predict that Tom will be more accurate on gender for nouns with morphological cues to gender (see section 2.2 on these morphological cues); however, concord between multiple elements within the DP should still be problematic under this approach. Additionally, Tom should show no problems realizing number morphology on determiners, while number morphology on adjectives should be either missing or incorrect. Finally, since Tom's L1 contains both interpretable and uninterpretable case, case should be relatively unimpaired in Tom's L2 speech.

What would faulty DP concord look like in L2 German speech? Two possibilities come to mind, and are portrayed in the hypothetical examples, below.

(1) *ein*   *gut*   *Buch*
    a-NOM-NEUT   good-$\varnothing$ book-NOM-NEUT
    cf. correct: *ein gutes Buch*

(2) *ein*   *gute*   *Buch*
    a-NOM-NEUT   good-NOM-FEM/PL   book-NOM-NEUT

First, if probing agreement features are missing from functional projections within the DP, there are no triggers for agreement and we would expect a high number of bare attributive adjectives, as exemplified in (1). Alternately, if agreement is truly the issue, we might expect to see random applications of morphology and therefore feature mismatches within a single DP. For example, we would expect that a neuter-marked determiner might precede a masculine or feminine-marked adjective, as exemplified in (2).

3.3 Results

Before discussing Tom's accuracy on DP morphology, I will give a picture of Tom's general competence and morphosyntactic accuracy in German. Table 2 summarizes these results.

Table 2 General morphosyntactic accuracy

Grammatical structure	Target-like accuracy
Verbal agreement	100% (454/454)
Verb-second (V2)	96.2% (100/104)
Verb-final	94.1% (96/102)

As can be seen above, Tom is perfectly target-like in producing tense and agreement morphology on verbs. All of the 454 finite clauses analyzed showed target production of the required agreement markers. In the 1st person singular paradigm Tom occasionally dropped the agreement marker –*e*; however, this is common in colloquial speech and was therefore not counted as an error. Additionally, Tom shows near perfect accuracy in production of V2 structures and in producing verb-final word order in subordinate clauses. In the corpus there were 104 total contexts when a non-subject XP appeared in sentence-initial position, making subject-verb inversion obligatory (this is the diagnostic for V2 used here), and there were 102 total subordinate clauses produced, making verb-final word order obligatory (as opposed to matrix clause SVO order). Tom produced the correct word order for these structures 96.2% and 94.1% of the time, respectively. It should be noted that these two structures, V2 and V-final, represent the final stages of acquisition of German word order, as observed in the ZISA studies and in Pienemann's (1998) processability hierarchy. Thus, quantitatively we can deduce that Tom has reached a very high level of morphosyntactic competence, evidenced by his accuracy on verb morphology (tense and agreement) and word order. Qualitatively it can be said that Tom speaks with ease and fluency about a range of complex and abstract topics, including politics and literature, and has command of an extensive vocabulary. I will therefore categorize Tom as a highly advanced learner of German.

When one examines Tom's production of DP morphology, however, the picture does not look quite so rosy. Table 3 shows Tom's accuracy on targets which show agreement in the DP and Table 4 shows Tom's accuracy on DP morphology organized by the DP's target case.

Table 3 Accuracy by target type

Target type	Accuracy
Determiners	62.2% (140/225)
Adjectives	54.6% (53/97)

Table 4 Accuracy by DPs target case

Target case	Accuracy
Nominative	83.6% (51/61)
Accusative	80.7% (88/109)
Dative	18.8% (15/80)

As can be seen above, Tom performs significantly worse on DP morphology as a whole than on verb morphology. A chi-square test shows that the verbal-DP distinction is significant ($p<.001$)[2]. The data in Table 4 show that it is the realization of dative case in particular that is difficult for Tom. Tom produced 80 DPs in contexts that require dative morphology;[3] however, only 15 of these showed target-like morphology. A special contrast chi-square test with a Bonferroni correction for Type I error (α=.025) showed that there is no significant difference in Tom's performance on nominative and accusative cases ($p>.025$), but that there is a significant difference between nominative and accusative combined versus dative ($p<.001$). Dative case morphology thus seems to represent a special learning problem for Tom. However, the numbers here conflate the features of number, gender, and case into a single binary distinction: target-like or non-target-like. Below I break down Tom's results by feature.

Turning first to number features, recall that when number is marked as plural, gender is neutralized in German. Also, nominative is the default 'citation' form for nouns in German, and plural

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[2] All subsequent *p*-values represent results from chi-square tests for independence.
[3] There are several prepositions in German that require genitive complements prescriptively (e.g., *während* 'during'); however, in colloquial speech dative case is most often used in these instances. In these cases I have conflated statistics on both dative and genitive contexts into the category dative. Suppliance of either dative or genitive morphology in these cases was considered correct.

DPs receive no special marking for accusative case; plural accusative forms are homophonous with nominative forms. Dative plural, on the other hand, receives special marking. Keeping this in mind, we see that Tom performs at near ceiling on plural morphology on agreement carrying elements in the DP in nominative and accusative cases, but significantly worse in the dative case.

Table 5 Performance on plural DP morphology by target type and case[4]

Target type	Nominative	Accusative	Dative
Determiners	100.0% (14/14)	90.0% (18/20)	6.3% (1/16)
Adjectives	100.0% (7/7)	95.5% (21/22)	0% (0/15)

By examining Tom's use of number morphology on determiners and adjectives in the nominative and accusative cases, we see that it is not number marking *per se* that is difficult for him. Again, special contrasts show that performance is not significantly different on nominative versus accusative ($p>.025$), but that dative is significantly worse than nominative and accusative combined ($p<.001$) for both determiners and adjectives. In the accusative case there were two DPs that showed number mismatches between the head noun and prenominal modifiers. These two DPs show properties that could allow them to be considered speech errors rather than grammatical errors (cf., Levelt, 1989); but a discussion of these is beyond the scope of this paper and is left for future work.

As opposed to errors in nominative and accusative, errors in the dative case are numerous and always involve substitution of the nominative form (as a default) for the correct dative form, as in the following examples.

(3) *von   die   Wörter*
     of   the-NOM-PL   words-NOM-PL
     (cf. correct *von den Wörtern*)

(4) *mit   die   deutsche   Kollegen*
     with the-NOM-PL German-NOM-PL colleagues-NOM-PL
     (cf. correct *mit den deutschen Kollegen*)

The above examples show a distinct lack of dative morphology on all elements in the DP. The prepositions that head the two phrases (*von* and *mit*) unambiguously assign dative case; however, Tom has produced forms that are unambiguously not dative, as the determiner *die* never appears in any dative paradigm. In each of his dative plural errors, he has produced forms corresponding to the nominative (and homophonous accusative) agreement paradigms. Thus, by exploiting the neutralization of gender in plural contexts, we have isolated number and dative case features: number marking in Tom's data is near native-like, while marking of dative case is nearly absent. I address the acquisition of case in more depth below.

Turning to gender marking on singular DPs, we see that Tom performs well above chance, but not yet native-like. Using Szagun's (2004) rubric for determining correctness of gender assignment, an analysis of the data shows that Tom produces determiners and adjectives correctly marked for the head noun's gender 81.0% of the time. That is, in 145 of 179 singular DPs, Tom marked any agreement-taking prenominal modifiers for the correct grammatical gender. Accuracy on gender assignment was not significantly different when the DP contained a definite article (*der, die, das,* or any of their case-marked analogues) versus other determiner types ($p>.05$) and did not show any differences between target cases: gender assignment was equally accurate for DPs in nominative, accusative, and dative contexts ($p>.05$). Thus, it is safe to assume that this rubric accurately reflects gender assignment (as opposed to gender agreement (c.f., Sabourin, 2003)) and is not influenced by other contextual factors, such as gender's conflation with case morphology in singular forms. Consistent with previous research, Tom also showed evidence for a default gender (c.f., Bruhn De Garavito & White, 2002; Hawkins & Franceschina, 2004; Sabourin, Stowe & de Haan, 2006; Unsworth, to appear; White et al.,

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[4] During the interview Tom produced 154 DPs of the form D+N (i.e., no adjective), 27 DPs of the form A+N (no determiner), and 72 of the form D+A+N. In these tables, where statistics from determiners and adjectives are reported, statistics for determiners include all determiners and statistics for adjectives include all adjectives, conflating across DP type.

2004). Of the 34 incorrectly gender-marked DPs produced by Tom, 29 showed default feminine marking. That is, Tom produced Ds and As marked for feminine agreement, even when the phrase's head noun's target gender was masculine or neuter. This default use of feminine is also reflected in Tom's accuracy in correctly marking feminine DPs as feminine (95.5%), as opposed to accuracy on masculine (50.0%) and neuter (76.8%). Also, recall that German nouns may contain deterministic morphological cues to the word's inherent gender. Interestingly, Tom correctly assigned gender to nouns without such cues (83.1%, 113/136) more often than to nouns with cues (76.2%, 32/42), although this difference was not significant (p>.05). It therefore seems the case that Tom has difficulties assigning the correct inherent gender feature to nouns and does not show sensitivity to morphological cues to a noun's gender.

Finally, I turn to case. Recall from above that Tom showed difficulties producing dative morphology in plural DPs. In examining performance on singular DPs to which Tom has assigned the correct gender, we see similar results to those seen on plural DPs.

Table 6 Accuracy on case morphology on singular DPs with correct gender assignment

Target Type	Nominative	Accusative	Dative
Determiners	100% (34/34)	96.6% (57/59)	32.0% (16/50)
Adjectives	100% (6/6)	94.1% (16/17)	18.2% (2/11)

Case is a significant factor in predicting accuracy for both Ds and As (p<.001). Again, special contrasts show no difference between nominative and accusative (p>.025), but a reliable difference between those combined and dative (p<.001) for both determiners and adjectives. However, as with plural DPs, accusative case is not marked across the board on singular DPs. In the singular paradigm, only masculine agreement shows overt marking for accusative; thus, it's unclear whether Tom has actually acquired accusative morphology, as his high performance number may be an artifact of the homophony with nominative for neuter and feminine genders. Since masculine is the only gender that shows differential marking for nominative, accusative, and dative cases, a discussion of Tom's performance on masculine DPs seems warranted. Unfortunately, because of Tom's trouble correctly assigning masculine features to nouns (50%, as mentioned above) there are very few tokens and the picture of his accuracy is less than clear. Tom produced 34 total singular DPs with a target masculine gender. Only 17 of these did he produce with masculine morphology. Of these 17, 11 were produced in nominative contexts, three in accusative contexts, and three in dative contexts. Two of the three accusative DPs showed correct case morphology; only one of the three dative DPs showed correct case morphology. It seems as though non-nominative case marking is difficult for Tom, though due to the small number of correctly masculine-marked, non-nominative DPs in the corpus, clear conclusions cannot be made.

It is interesting to note that the only dative DPs Tom produced received their dative case as complements of dative prepositions. It is possible that it is the idiosyncratic (interpretable) dative feature of the preposition that is difficult for Tom to acquire and not dative as a morphological case, as Tom produced no inherent dative DPs (i.e., dative complements of V) or double object constructions with full DPs (where dative would be assigned by a dative/applicative *v* head). However, this is unlikely to be the case, as a brief look at Tom's accuracy on pronoun case shows that Tom is 100% accurate (7/7) in producing dative pronouns in dative PPs.[5] That is, Tom always correctly produces dative pronouns in the exact same syntactic contexts where dative marking on DPs is nearly absent. Thus, there is strong evidence that Tom has acquired the dative feature inherent to dative case-assigning prepositions and that the abstract interpretable feature corresponding to dative is active in his grammar, but that he merely has trouble spelling out this feature on full DPs.

3.4 Discussion

As shown above, Tom's production data shows that he has a number of selective deficits in his knowledge of German morphology. Particularly, Tom has difficulty realizing dative morphology and correctly assigning gender to nouns. Number marking, however, is unproblematic for him. But given

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[5] Tom was also 100% accurate in producing dative pronouns in double object constructions (6/6); however, a full discussion of Tom's use of case on pronouns is left for future work.

the discussion above, it is unclear whether Tom's difficulties reflect a lack of acquisition of uninterpretable features, as the RDH would hold, or problems spelling out the associated interpretable features. In this section I make both theoretical and empirical arguments to the effect that Tom's mental representation of German contains the relevant uninterpretable features, and, crucially, that Tom has no difficulties realizing concord in German.

First, as per the discussion in section 2.2, it is a fairly standard assumption that English DPs (as with DPs in all languages) carry uCase features. Case features license a DP in the syntax and make it active as a controller of phi-feature agreement with functional heads (Chomsky, 2001). Thus, the RDH cannot explain the difficulties that Tom has realizing dative morphology. If, as the RDH holds, morphological deficits are related to missing uninterpretable features and assuming, as the RDH does, that uninterpretable features transfer from the L1 to the L2, by all accounts Tom's German grammar contains uCase features on his DPs. Tom would have transferred his uCase feature from his L1 to his L2. The presence of this uCase feature is also evidenced by Tom's perfect performance on agreement between subject DPs and phi features in TP, visible as subject-verb agreement morphology. If case features were missing, subject DPs would be rendered inactive as agreement controllers. It could be the case, however, that Tom has failed to acquire the interpretable counterpart of dative case, carried on case assigners like V, P, or v. However, this also seems unlikely to be the case, as English also has an interpretable dative feature, albeit an abstract one that lacks a distinct morphological spellout (see McFadden, 2004; Woolford, 2006 for recent discussions of the relationship between dative case and argument structure cross-linguistically). Additionally, as noted above, Tom produces dative pronouns with 100% accuracy in the exact same syntactic contexts as those where dative marking is absent on full DPs. Tom's problems with dative are therefore more likely to stem from post-syntactic feature-form mapping problems or surface transfer of morphological marking, of the type described by Lardiere (2000) and Sabourin, et al (2006), rather than from a missing abstract feature or from a problem within the syntactic module itself.

It also seems to be the case that Tom has fully acquired uninterpretable number features that trigger agreement on attributive adjectives. Recall that specifier projections within the DP in English into which adjectives are merged lack uNum features required for number agreement in German. Based on the data presented in Table 5 above, we can conclude that Tom shows near native-like accuracy producing number agreement on attributive adjectives. Such an outcome is problematic for, though not wholly inconsistent with, the RDH, as Tom would have had to acquire (or appropriate) an uninterpretable feature in a position not present in his L1. Franceschina (2001) notes that her subject is considerably more accurate on number (7% of total errors) marking than on gender marking (93% of total errors), even on adjectives. She concludes that Martin can use his English uNum feature from English D on Spanish adjectival heads to trigger agreement there, so it is possible under the RDH that Tom could have adopted a similar strategy. However, in her data Franceschina shows that the proportion of number errors on adjectives is much higher than on articles, demonstratives, and pronouns (22.6% of errors, versus 5.8%, 0.0%, and 2.3%, respectively), though she does not discuss why number would be more difficult for Martin on adjectives (where his L1 does not overtly encode that feature) as opposed to determiners and pronouns (where his L1 does overtly encode that feature). In terms of the present study, Tom's data allow us to simply conclude that it is in principle possible to show target-like performance on agreement marking despite the L1 missing a feature in some phrasal position needed for the L2 and despite superficial L1-L2 differences.

In terms of the acquisition of gender features, the predictions of the RDH are not borne out either. Inherent gender features are diacritics of nouns held in the lexicon which are only visible via agreement with prenominal modifiers. Under Franceschina's theory, Tom should have little difficulty acquiring these inherent features. Following discussion in Carroll (1989), Franceschina (2005), and Sabourin (2003), one would expect that the correct assignment of a gender feature to a noun in the lexicon would be visible via correct marking on a definite article preceding that noun; gender agreement on the other hand would be visible as correct gender marking on other types of determiners and adjectives. But as shown above, Tom showed no differences in accuracy on definite articles versus other targets of gender agreement. Since accuracy rates were similar across target types, it appears that it is the value of the inherent gender feature that Tom has difficulty with (i.e., knowing whether a noun has an abstract masculine, neuter, or feminine feature) – not the corresponding uGender feature that triggers agreement on determiners and adjectives.

Furthermore, recall that H&F (2004) predicted that individual nouns could contain cues that would facilitate acquisition of gender features. In their original discussion, H&F held probabilistic phonological cues that many French and Spanish nouns provide would trigger acquisition of inherent gender. German contains many such probabilistic phonological and semantic cues (Mills, 1986), but interestingly German also provides fully deterministic gender cues via derivational morphology (as discussed in 2.2). Since these cues are much stronger than the probabilistic cues discussed by H&F, they provide an interesting test case for this hypothesis. This prediction was not borne out in the present data, however. As shown above, on nouns showing deterministic gender cues, Tom did no better than on nouns containing no such cues. This supports the hypothesis that it is the inherent gender feature that is problematic for L2 learners rather than agreement as such. However, as Bruhn de Garavito and White (2002) point out, it is very difficult to distinguish gender marking (gender feature attribution to nouns in the lexicon) from gender agreement (realizing a noun's abstract gender feature overtly on determiners and attributive adjectives) since the former is only visible through the latter. There is therefore no a priori way of knowing whether Tom knows the correct gender features for the nouns he produces. Bruhn de Garavito and White suggest that errors where determiners and adjectives which are inflected for gender agree with each other, but where they both disagree with the target gender of the noun, may indicate that the learner has assigned a gender feature to the noun in the lexicon, but has simply assigned the wrong gender and that agreement is nonetheless intact. Since nearly all D-A-N strings Tom produced in this corpus show D-A agreement (see discussion below for more details), it is possible that he assigns gender features to nouns in the lexicon, but simply sometimes assigns the wrong one. I suggest, however, that this analysis is incorrect. Based on the presence of a default gender in Tom's productions, it seems more likely Tom has either failed to assign gender features to nouns in the lexicon (Carroll, 1989; White et al., 2004) or that he has difficulty accessing the gender feature during grammatical encoding (Bock & Levelt, 1994; Levelt, 1989). If Tom were specifying nouns for gender features, it's unclear why he would consistently incorrectly map the input in a one-way fashion during lexical acquisition. That is, there doesn't seem to be a reason why Tom would consistently misanalyze masculine and neuter morphology as feminine, and never vice versa. Rather, I suggest that when Tom tries to produce a DP and cannot readily access the head noun's gender feature, he resorts to a default agreement paradigm which looks superficially like feminine agreement, but which is actually underspecified for features (Blevins, 2000; Clahsen et al., 2001; Prévost & White, 2000; Tanner, 2007). One possibility for ascertaining what gender Tom may have assigned to nouns in the lexicon is through an off line gender assignment task like that used by Franceschina (2005); this remains an area for future research.

Finally, recall the prediction that Tom should have difficulty realizing concord in DPs with multiple targets of agreement (i.e., D-A$^+$-N). If agreement-triggering uFeatures are truly missing we should expect to see bare adjectives or mismatching agreement within a single DP. Even a brief look at the data shows that this is simply not the case in Tom's productions. Instances of the first prediction (cf., (1), above) are completely absent from the data. Of the 98 attributive adjectives produced by Tom during the interview, none was bare. That is, every prenominal adjective in the data shows agreement morphology, indicating that adjectives are active probes in Tom's grammar and actively seek agreement. This does not mean, however, that the agreement morphology is always correct. As discussed thus far, Tom has difficulty realizing dative case and acquiring inherent gender features of nouns. Furthermore, when examining feature matching between multiple elements in the DP (cf., prediction (2)), we see that Tom has no difficulty. During the course of the interview Tom produced 72 complex D-A-N strings, giving 72 opportunities to show concord. Of these, 70 accurately showed concord. This means that even when Tom showed an error spelling out case or resorted to a default gender when the correct inherent gender feature was unavailable from the lexicon, he nonetheless correctly matched features between multiple elements within the DP. The two phrases that did not show correct concord were the only two overtly genitive-marked DPs in the corpus. I present one of these DPs below.

(5) *während*   *des*   *ganze*   *Studiums*
    during   the-GEN-NEUT   entire-?   course of study-GEN-NEUT
    (cf., correct *während des ganzen Studiums*)

In (5) we see that Tom has correctly inflected the determiner and noun for genitive case and neuter gender; however, the adjective shows the underspecified morphological ending –*e* (see Clahsen et al., 2001 for an explanation of the features of German morphological formatives and underspecification of the affix -e). The other genitive DP showed an identical error: correct marking on the determiner and noun, but affixation of –*e* to the adjective. Given this consistency, it may be the case that Tom has not acquired the correct overt forms for genitive concord in the lexicon and abstract agreement may still be intact here. Further research is needed to verify this.

Example (6) below shows an instance of correct concord, where Tom has assigned the correct gender feature to the head noun, while example (7) shows an instance where Tom has selected the wrong gender for the noun, yet matched all prenominal elements for features.

(6) *eine*   *sehr*   *kleine*   *Mannschaft*
     a-NOM-FEM   very   small-NOM-FEM   team-NOM-FEM

(7) eine   *neue*   *Status*
     a-ACC-FEM   new-ACC-FEM   status-ACC-MASC
     (cf., correct *einen neuen Status*)

One might suggest that (7) is an example of non-concord; however, since nouns contain no overt marker for gender there is no *a priori* way of knowing what gender Tom has assigned to the noun *Status* in his lexicon or, in the case that he had assigned the correct feature, if the feature was available when it was selected for insertion into the syntactic structure (see Prévost & White, 2000 for relevant comments). It could therefore be the case that Tom has assigned *Status* the feature [FEM] and produced correct concord. Alternately Tom could have assigned no gender feature to *Status* in the lexicon (Carroll, 1989), but if we assume that prenominals carry probing *u*Features for concord in his grammar, Tom must assign a default gender and agreement paradigm to unspecified nouns as they enter a derivation, since bare or mismatching forms would be illicit given his grammar. The crucial point here is that concord requires feature matching between elements within a DP. In the situation where the controller of agreement shows no markers for its agreement features, the best diagnostic for feature matching is examination of other elements in the DP that do show agreement. In nearly all such cases, Tom has not only inflected all determiners and attributive adjectives, but also correctly matched features between all overtly agreement-marked DP elements. The data therefore indicate that Tom has acquired the *u*Features that trigger concord.

4   Conclusion

By means of a case study, I have argued in the preceding pages that DP concord is acquirable by L1 speakers of English, a language that lacks DP concord. Tom shows success matching agreement features for elements within a DP, though he seems to have trouble acquiring inherent features of agreement-controlling nouns and properly spelling out case morphology, particularly dative. These facts are problematic for the Representational Deficit Hypothesis, which holds that inherent features of lexical items remain acquirable throughout life, but agreement-triggering uninterpretable features are unacquirable post-puberty. Rather, the results of this case study support models of L2 acquisition which hold that uninterpretable features from the UG lexicon are available to post-puberty learners (Schwartz & Sprouse, 1996; White, 2003b) and that concord is acquirable (that is, the uninterpretable features that trigger concord, White et al., 2004). However, Tom's persistent problems with nominal morphology are consistent with previous studies which have argued that gender features of nouns are difficult to acquire (Carroll, 1989; White et al., 2004) and that learners may have difficulty with the overt spell out of abstract morphosyntactic features (Lardiere, 2000; 2007; Prévost & White, 2000).

While the above data represent a promising start in the study of an advanced L2 speaker's mental grammar, there remains much data yet to analyze. The data presented here reflect an initial pilot interview that lasted 32 minutes. 13 months after the initial interview I conducted a second interview that lasted approximately 42 minutes. The data from this interview have yet to be analyzed. Not only will these new data allow any conclusions derived from the above data to be interpreted more robustly, they will also provide a window into any developmental changes that are still taking place in Tom's

grammar of German. Additionally, if, as I have argued, Tom's grammar very closely approximates that of the target language, his frequent errors still lack an explanation. Specifically, assuming that English has an abstract dative value for case, Tom's problems realizing dative in German defy explanation. Therefore a fruitful area of inquiry would be an investigation of possibilities for transfer or fossilization in the speech production mechanism, which is presumably shared by both languages. That is, it should be possible to glean information about cognition of an L2 not only from competence-oriented models of knowledge representation (i.e., Minimalism), but also from performance models of knowledge operationalization (De Bot, 1992; Kormos, 2006; Levelt, 1989).

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