

LEXICAL INTERFERENCE IN NON-NATIVE RESOLUTION OF POSSESSIVES?

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ABSTRACT

Research on non-native pronoun resolution has predominantly been concerned with (i) ‘ordinary’ 3rd person pronouns/anaphors like En. *he, she, they* or *himself, herself, themselves*, (ii) language pairs involving English as the native (L1) or the foreign (L2) language, and (iii) the role that binding constraints and syntactic structure in general play in L2 versus L1 processing. The present paper – a follow-up study to Pitz et al. (2017) – deviates from this trend in all three respects: We investigate how L1-Norwegian learners of L2-German interpret the two German possessive pronouns/determiners *sein* (≈ *his*) and *ihr* (≈ *her* or *their*), arguing that lexical divergence between the possessive systems, and in particular the formal similarity between binding-neutral L2-German *sein* and the L1-Norwegian reflexive possessive *sin*, may enhance or interfere with L2 comprehension, depending on the structural conditions.

In Section 2 we briefly present the two possessive systems. Section 3 summarizes relevant research on pronoun resolution, with a special view to possessives. Sections 4–6 present a pilot study on L1-Norwegian learners’ grammaticality judgments of *sein* and *ihr* in simple sentences (Sect. 5) and a forced-choice resolution experiment involving a group of L1-Norwegian learners with a background two or three years’ teaching of L2-German at high-school level and a control group of native speakers of German (Sect. 6). The final Section 7 provides a summary and concluding discussion of our findings.

[1] INTRODUCTION


Possessives – e.g. determiner-like pronominal items like English *his, her, its, their*, or French *son, leur* and German *sein, ihr* – vary in interesting ways across even quite closely related languages (Gunkel et al. 2017: 672–719). They consequently pose different kinds of challenges to L2 acquisition, depending on the

specific L1/L2 pair (see Sect. 3.2 below).¹ The present paper – a follow-up study to Pitz et al. (2017) – is concerned with the pair L1-Norwegian/L2-German, focusing on L1-Norwegian learners' comprehension of the German 3rd person possessives *sein** and *ihr**, each of which may correspond to either the reflexive possessive *si** or an irreflexive possessive in Norwegian.² In addition to being neutral with respect to reflexivity like *sein**, *ihr** is ambiguous between (possessor) singular fem. and plural. Our study aims at testing (i) in how far the similarity between *sein** and *si** may enhance or disturb L1-Norwegian learners' interpretation of L2-German *sein** under conditions where a reflexive reading from a grammatical point of view is either demanded or excluded, and (ii) how they resolve *ihr** under similar conditions, given the fact that a summative plural interpretation (in the sense of Kamp & Reyle 1993: 341-342) is also possible.

The paper is organized as follows: In Section 2 we give a brief contrastive presentation of the systems of pronominal possessives in the two languages. Section 3 summarizes relevant empirical research on pronoun and anaphor resolution, with a special view to non-native resolution and differences between possessives versus 'ordinary' pronouns. Section 4 presents the objectives and general assumption underlying two experiments that aim at testing how Norwegian 1st year students of L2-German master the abovementioned one-to-many correspondence between possessive items in L2 grammaticality judgment (Sect. 5) and offline resolution (Sect. 6). Finally, in Section 7, we summarize the results and present some ideas for further research.

[2] CONTRASTIVE BACKGROUND

The distribution of the German 3rd person possessives *sein** and *ihr** is determined by grammatical properties of their antecedent (*possessor*) DP: *sein** demands a singular masculine or neuter possessor DP, otherwise – i.e. with singular feminine and with plural antecedents – *ihr** is used. Some examples are given in (1)–(3).

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- (1) a. [*Peter*]_{masc.sg.} hat *sein* Haus verkauft.
 'Peter has sold his house.'
- b. [*Das Kind*]_{neut.sg.} hat *sein*-e Mütze verloren.
 'The child has lost its cap.'

[1] In line with a widespread practice, we use the term L2 for a language that a person starts learning after childhood and after having acquired the core properties of his/her native language(s). For native speakers of Norwegian, German will normally be at least the second foreign language (L3), following after English.

[2] The star is meant to indicate that the lexical items in question are inflected in context. That is, *sein**, *ihr** and *si** each represent a set of inflected forms (morphological words).


- (2) a. [*Lisa*]_{fem.sg.} hat *ihr-en* Wagen verkauft.
 ‘Lisa has sold her car.’
 b. [*Die Wand*]_{fem.sg.} hat *ihr-e* Farbe verloren.
 ‘The wall has lost its colour.’
- (3) a. [*Die Nachbarn*]_{pl.} haben *ihr-e* Pferde verkauft.
 ‘The neighbours have sold their horses.’
 b. [*Die Wände*]_{pl.} haben *ihr-e* Farbe verloren.
 ‘The walls have lost their colour.’

The examples illustrate the typical adnominal function of German possessives. In this use, possessives act like determiners: They are confined to the initial – functional head – position of their host DP, they inflect like determiners, agreeing with their head (*possessee*) noun with respect to number, gender and case; and they make their host DP semantically definite – like, e.g. English possessives (Gunkel et al. 2017: 672–719, Fabricius-Hansen et al. 2017: 12–14).


In Norwegian (*bokmål*), adnominal possessives have two positional options: They may occur DP-initially, as in German and English, making the DP semantically definite despite the indefinite form of the head noun; mostly, though, they are post-nominal, triggering overt definiteness marking of the preceding head noun (phrase).

Leaving differences of the inflectional systems aside, it is with respect to the nature of the possessive items and the conditions determining their use that the Norwegian and the German system of possessives differ most conspicuously (Fabricius-Hansen et al. 2017). Thus, Norwegian has a specific *reflexive* possessive *si** which, roughly speaking, must be used when the possessive is *locally bound*, i.e. c-commanded by an antecedent inside the local clause (typically the clause subject).³ Like the 3rd person reflexive pronoun *seg* (German *sich*; ‘his-/herself, themselves’), *si** is neutral with respect to semantic/ grammatical number and gender of its antecedent; and like articles, *si** is inflected, agreeing in number and gender with its head noun. Examples are seen in (4)–(6), the Norwegian counterparts of (1)–(3): *sin*, *si*, *sitt*, *sine* are the singular masc./commune, singular feminine, singular neuter and plural forms of *si**, respectively, agreeing in number and (singular) gender with the head noun, which, when preceding the possessive, exhibits corresponding forms of the definite article.

[3] Principle A in Chomsky’s (1981) Binding Theory.


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- (4) a. [*Petter*]_{masc.sg.} har solgt [hus-et *si-tt*] / [*si-tt* hus].
 ‘Peter has sold his house.’
 b. [*Barnet*]_{neut.sg.} har mistet [lua *si*] / [*si-n* lue]
 ‘The child has lost its cap.’
- (5) a. [*Lisa*]_{fem.sg.} har solgt [bil-en *si-n*] / [*si-n* bil].
 ‘Lisa has sold her car.’
 b. [*Veggen*]_{comm.sg.} har mistet [farg-en *si-n*] / [*si-n* farge]
 ‘The wall has lost its colour.’
- (6) a. [*Naboene*]_{pl.} har solgt [hest-ene *si-ne*] / [*si-ne* hest-er]
 ‘The neighbours have sold their horses.’
 b. [*Veggene*]_{pl.} har mistet [farg-en *si-n*] / [*si-n* farge]
 ‘The walls have lost their colour.’

With non-local possessors, Norwegian uses genitive forms (*hans* ‘his’, *hennes* ‘her’, *dens/dets* ‘its’ and *deres* ‘their’) of 3rd person non-reflexive – or more precisely: *irreflexive* – pronouns as possessives.⁴ As with German *sein** and *ihr**, the choice between these items depends solely on properties of the possessor DP/referent, albeit with respect to more syntactic-semantic dimensions (Fabricius-Hansen et al. 2017: 14–16). Thus, *hans* and *hennes* are used with singular human male and female possessors, corresponding to English *his* and *her* respectively; *dens* and *dets* with singular non-human possessors, corresponding to English *its* but differing in grammatical gender (commune vs. neuter); and *deres* demands a plural possessor, like English *their*. Examples with post-nominal *hans*, *hennes* and *deres* are given in (7); for *dens* and *dets*, which tend to be avoided in present day colloquial Norwegian, we refer the reader to Fabricius-Hansen et al. (2017).


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- (7) a. Mens [*Jon*] var borte, passet Anna katt-ene *hans*.
 ‘While John was away, Anna cared for his cats.’
 b. Mens [*Anna*] var borte, brukte Jon bil-en *hennes*.
 ‘While Anna was away, John used her car.’
 c. Mens [*barna*] var borte, malte Jon romm-et *deres*.
 ‘While the children were away, John painted their room.’

[4] That is, these possessives obey Chomsky’s (1981) Binding Principle B.

By contrast, the German possessives *sein** and *ihr** may be locally bound, as in (1)–(3) above, or not, as in (8) below, i.e. they are neutral with respect to binding conditions (reflexivity); and the choice between them depends solely on the grammatical gender and number of the possessor DP. – Note that in (8b, c), *ihr** also has a plural reading (‘their’); see below.

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- (8) a. Während [*Johan*] weg war, pflegte Anna *sein*-e Katzen.
 ‘While John was away, Anna cared for his cats.’
 b. Während [*Anna*] weg war, benutzte Johan *ihr*-en Wagen.
 ‘While Anna was away, John used her car.’
 c. Während [*die Kinder*] weg waren, malte Johan *ihr* Zimmer.
 ‘While the children were away, John painted their room.’

In suitable contexts, then, the German possessives may be ambiguous between a reflexive (locally bound) and non-reflexive (non-locally bound) interpretation, like English possessives. This is the case with *sein* in (9) below, which may be bound by the singular masc. subject (*Paul*) of its own clause (reflexive use, local binding) or refer to the singular masc. DP *Peter* occurring in the preceding clause (non-reflexive use, non-local ‘binding’);⁵ that is, the host DP *sein* *Auto* ‘his car’ may refer to either Paul’s or Peter’s car.

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- (9) Während *Peter* verreist war, reparierte *Paul sein* Auto.
 ‘While Peter was away, Paul repaired his car.’

Likewise, *ihr* in (10) may be understood reflexively, referring to Lisa, or non-reflexively, referring to Anna. Moreover, *ihr* in (10) – and *ihren* in (8b) – may receive a possessor plural reading (‘their’), referring to the set made up by the two different singular referents introduced in the context: Lisa + Anna in (10) and Anna + Peter in (8b). In other words, the car in (10) may belong to Lisa (full short arrow), Anna (full long arrow) or the two together (dashed arrows). Henceforth, we shall use the term *summative plural* interpretation for cases like these, where the plural possessor is not introduced by a single plural DP, as in (3) and (8c), but ‘construed over’ two or more separate, non-coordinated DPs occurring in the context (see Kamp & Reyle 1993: 341–342).

[5] In the latter case, the possessive in fact is co-referent with rather than bound by its antecedent in the strict, technical sense of the term.

- (10) Während *Anna* verreist war, reparierte *Lisa* *ihr* Auto.
 ‘While Anna was away, Lisa repaired her/their car.’
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Ambiguities like the ones illustrated by full arrows in (9) and (10) do not arise in Norwegian – at least not in simple clauses like those discussed here:⁶ Co-reference between the possessive (*si**) in the main clause and the subject of the subordinate clause is blocked in (11a-c) (Binding Principle A); conversely, *hans* ‘his’, *hennes* ‘her’ and *deres* ‘their’ in (12a-c) cannot refer to the subject of their own clause (Binding Principle B). Note however that *deres* in (12c) also allows for a summative plural interpretation, combining the referents of the two (plural) possessor ‘candidates’ into one (dashed arrows).

- (11) a. Mens *Jon* var borte, fikset *Paul* bil-en *si*-n.
 ‘While John was away, Paul fixed his (own) car.’
 b. Mens *Anna* var borte, fikset *Lisa* bil-en *si*-n.
 ‘While Anna was away, Lisa fixed her (own) car.’
 c. Mens *barna* var borte, planla *foreldrene* ferie-en *si*-n.
 ‘While the children were away, the parents planned their (own) holiday.’
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- (12) a. Mens *Jon* var borte, fikset Paul bil-en *hans*.
 ‘While John was away, Paul fixed his (Peter’s) car.’
 b. Mens *Anna* var borte, fikset Lisa bil-en *hennes*.
 c. Mens *barna* var borte, planla foreldrene ferie-en *deres*.
 ‘While the children were away, the parents planned their (the
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[6] In fact, things are not that neat in actual use. So-called long-distance binding is not ruled out, and on the whole, the principles governing the choice between *si** and the irreflexive possessives are somewhat blurred, varying across dialects, sociolects and medium (spoken and written language); see e.g. Fabricius-Hansen et al. (2017: 20–22) and references therein. In addition, even under hard-core conditions, ‘errors’ are not infrequent, in particular with plural possessors, i.e., *deres* occurring instead of ‘correct’ *si** or vice versa.

children's or the children's and the parents' joint) holiday.'

In short, given a +human possessor DP, whose grammatical gender reflects the natural gender of its referent: Then *sein** (+sing. male/masc.) is equivalent to *si** (+refl[exive]) or *hans* (-refl, +sing. male), depending on \pm local binding; and *ihr**, being compatible with sing. fem. and plural possessors, is equivalent to *si** (+refl), *hennes* (-refl, +sing. fem.) or *deres** (-refl, +plural); cf. Figure 1.



FIGURE 1: German \rightarrow Norwegian lexical divergence in 3rd person possessives with human possessor

As historical cognates, German *sein** and Norwegian *si** exhibit a morpho-phonological similarity observed in many other lexical pairs, as for instance the 1st and 2nd pers. singular possessives *mein*/mi** 'my' and *dein*/di** 'your (sing.)'. Lexical divergence, then, makes *sein** if not a downright 'false' so an 'unreliable friend' viewed from the perspective of L1-Norwegian users of L2-German: it may or may not be equivalent to its cognate *si**.⁷ German *ihr**, on the other hand, bears no resemblance to any of its three lexical counterparts within the system of Norwegian possessives; in addition to being neutral with respect to binding conditions/reflexivity, however, *ihr** exhibits a gender-number ambiguity without parallel in the Norwegian system.

Studies conducted by Bie-Lorentzen (2012) and Pitz et al. (2017) have shown that the lack of isomorphism between the two possessive systems, as would be expected, causes problems for not very advanced Norwegian learners of L2-German when translating between the two languages, whether into or from L2. The experiments presented in Sections 4–6 aim at shedding some light on how they cope with the abovementioned divergence and unreliable morpho-phonological similarity in offline comprehension and grammaticality judgments of L2-German possessives.

[7] According to Jarvis (2009: 107) 'false friends' may be defined as 'cross-linguistic word pairs that are (1) formally the same or similar and (2) semantically similar or dissimilar (but not the same)'.

[3] EMPIRICAL RESEARCH ON PRONOUN RESOLUTION

[3.1] 3rd person pronouns in general

The referential interpretation of 3rd person pronouns and other anaphoric expressions – *pronoun* or *anaphoric resolution* – is a well-established topic in theoretical linguistics (see e.g. Geurts 2011 for an overview) as well as experimental psycholinguistic investigations, a central question being how different kinds of constraints on pronouns (including reflexives) interact in native and non-native production and comprehension of pronouns (see e.g. Nicol & Swinney 1989; Garrod 1998; Garrod & Terras 2000; Garnham 2000; Badecker & Straub 2002; Kennison 2003; Sturt 2003; 2013; Koornneef 2008; Arnold 2010; Cunnings & Felser 2013; Chow et al. 2014; Jäger et al. 2015; Patil et al. 2016; and, concerning non-native processing, e.g. Clahsen & Felser 2006a, b; Roberts et al. 2008; Felser & Cunnings 2012; Cunnings & Felser 2013; Patterson et al. 2014; Colonna et al. 2014; Schimke et al. 2015; 2018; Drummer & Felser 2018; Felser 2019; Schulz et al. 2019).⁸ By and large, however, possessives have got little attention (see Sect. 3.2).

A key issue in the psycholinguistic discussion is the status of structure-sensitive – binding – constraints as opposed to other possible constraints on pronouns, including feature agreement between pronoun and antecedent. Do binding constraints act as a filter in native comprehension in the sense that salient but structurally inaccessible (inappropriate, illicit) antecedent candidates are immediately discarded as antecedents whether or not they match the pronoun in relevant (gender, number, ...) features (see e.g. Nicol & Swinney 1989; Sturt 2003)? Or is a parallel cue-based resolution mechanism more plausible – a processing strategy in which ‘multiple weighted constraints (including constraints on binding) simultaneously influence the net activation of a candidate during preselection stages of antecedent evaluation’ (Badecker & Straub 2002: 748)? According to Badecker & Straub (2002), Jäger et al. (2015), Patil et al. (2016), among others, evidence on the whole seems to favor models of the latter kind.

Another question concerns resolution preferences when the context offers more than one accessible and feature-matching antecedent candidate for the anaphor, i.e. when the pronoun is referentially ambiguous. Under such conditions, local resolution (binding by Principle A) is assumed to be the preferred

[8] Note that we use the terms pronoun and anaphor in a wide sense, covering both reflexive and non-reflexive items. According to the theory of Government and Binding (Chomsky 1981), however, *pronouns* by definition are subject to Binding Condition B, *anaphors* to Condition A. In this tradition, then, lexical reflexives like *him-/herself* and German *sich* ‘him-/herself, themselves’) are anaphors, while *he/him, she/her* etc. are pronouns; see e.g. Badecker & Straub (2002).

choice – if structurally warranted, as for instance with *sein*/ihr** in (9)/(10) (Fox 1998; Heim & Kratzer 1998; Patterson et al. 2014). In any case, however, the interpretation in the end relies heavily on semantic, pragmatic and discourse-related cues, including the possibility of anaphoric competitors to the pronoun in question (see e.g. Bosch et al. 2007; Roberts et al. 2008; Arnold 2010; Baumann et al. 2014; Colonna et al. 2014; Schimke et al. 2015; 2018; Bader & Portele 2019; Schulz et al. 2019).

As for non-native pronoun resolution, it is still an open question to what extent learners of a foreign language can acquire the resolution strategies and obtain the efficiency exhibited by native speakers. Studies presented by Clahsen & Felser (2006a), Felser et al. (2009), Felser & Cunnings (2012) and Patterson et al. (2014) indicate that L2-learners, even at an advanced level, more often consider (during processing) or even prefer (in the final interpretation) structurally inaccessible DPs as antecedents than do native comprehenders. Apparently, then, structure-sensitive constraints (Binding Principles A vs. B) do not play the same decisive role in non-native as in native pronoun resolution. Possibly, structural processing is impoverished in L2 comprehension in general. This is suggested in Clahsen & Felser (2006a), Felser & Cunnings (2012) and Clahsen & Felser (2006b). However, as documented e.g. by Gast & Haas (2008) and Patterson et al. (2014) (and as we shall see below), properties of L1 – transfer in a more or less strict sense – may also play a role. Taking stock, Felser (2019) argues that trying to reduce L1/L2 processing differences to a single cause might seem misguided.

What is called for instead is a more careful investigation of how different types of constraint and information sources interact during L2 comprehension, taking into account what linguistic cues need to be extracted from the input or need to be re-accessed in order for a given constraint to be applied. This should provide us with a more nuanced picture of how the relative weighting or timing of constraints or information sources might differ in L2 in comparison to L1 processing.

(Felser 2019: 59)

It should be added that studies on pronoun resolution predominantly concern cases where the so-called antecedent is indeed an antecedent, as in (1)–(15), linearly preceding the pronoun – that is, *anaphoric* pronouns in yet another sense of that term (cf. fn. 8). Resolution of *cataphoric* pronouns, which linearly precede their ‘antecedent’, has been studied less intensively; but see Gompel & Liversedge (2003), Pablos et al. (2015), Drummers & Felser (2018) and further

references there. Online cataphoric resolution involves waiting or looking forward for – perhaps predicting – a feature-matching DP that semantic-pragmatically fits into the pronoun’s context. However, in order for co-reference to be established between the two, they must belong to the same sentence; and according to Chomsky’s (1981) Binding Condition C, the candidate DP may not be structurally bound by the pronoun. Thus Principle C prevents the main clause subject *he* in (13a) from being resolved to the subordinate clause subject (*the lord*). On the other hand, as part of a DP, *his* in (13b) does not c-command *the lord*, nor can the subordinate clause subject *he* in (14a,b) bind a DP within the following main clause; consequently, co-reference with *the lord* is possible in these three cases.

- (13) a. **He**_{*i*/**j*} got depressed when *the lord*_{*j*} married the duchess.
 b. **His**_{*i*/*j*} butler got depressed when *the lord*_{*j*} married the duchess.
 (Drummer & Felser 2018: 98; indices added)
- (14) a. When **he**_{*i*/*j*} was depressed, *the lord*_{*j*} invited the duchess for a drink
 b. When **he**_{*i*/*j*} was depressed, the duchess invited *the lord*_{*j*} for a drink
 (Drummer & Felser 2018: 98; indices added)

Experiments conducted by Drummer & Felser (2018) indicate that condition C plays the same role in native and non-native (Russian/German bilingual) comprehension but ‘does not prevent inaccessible antecedents from being considered during the initial bonding stage’, its application apparently being more ‘bottom-up driven than previously thought’ (Drummer & Felser 2018: 112).

[3.2] 3rd person possessives

Studies on the resolution of possessive pronouns are surprisingly scarce in view of the fact that possessives represent somewhat different processing challenges from ordinary personal pronouns:⁹

First, since possessives are determiners or modifiers in DPs, binding constraints work differently under cataphoric conditions than they do for ordinary pronouns; cf. Drummer & Felser (2018) and Section 3.1 above.

Second, the two pronominal subsystems – ordinary and possessive 3rd person pronouns – are not always isomorphic, as in Norwegian, but may differ in number of items and the nature or distribution of constraints. This is the case

[9] For native resolution see e.g. Kennison (2003) on (*him*), *his* and *her*, Jäger et al. (2015: Sect. 4) on the Swedish possessives *sin* and *hans*, and Drummer & Felser (2018) on the interpretation of cataphoric pronouns and possessives in subject DPs.

in German, which has a number- and gender-neutral 3rd person reflexive pronoun *sich* ‘him-/her-/itself, themselves’ in addition to the three number/gender-specified (irreflexive) personal pronouns (*er* ‘he’, *es* ‘it’, *sie* ‘she/they’) on the one hand and on the other hand only two possessive items (*sein** and *ihr**), which are specified for possessor number/gender but unspecified for reflexivity (Binding Conditions A vs. B); see Sect. 1.2. English is another case in point (Kennison 2003: 337), cf. *Peter_i knows himself_{i/*j}* and *Peter_i knows him_{j/*i}* vs. *Peter_i knows his_{i/j} wife*; and in French (as in other Romance languages), possessives differ from non-possessive anaphors by being underspecified not only for reflexivity but also for antecedent gender (see e.g. Helland 2017; Lago et al. 2018).

Third, in many languages, including German and e.g. French but with English as a prominent exception, adnominal possessives exhibit feature (number, gender, case, ...) agreement with the head noun of their host DP (the possessee), in addition to being specified for antecedent features. Beside searching for an antecedent (the possessor), then, comprehenders must ‘keep an eye’ on the possessee noun (phrase) too, checking for the relevant features; as pointed out by Lago et al. (2018), however, possessee agreement is probably a bigger problem in production than in comprehension.¹⁰

As far as challenges to L2 acquisition are concerned, then, the grammar of adnominal possessives opens up for more variation across L1/L2 pairs than ordinary pronouns – including the relative order of possessive and possessee (cf. Sect. 1.2 above). And (the few) empirical/experimental studies on L2 production and/or comprehension of possessives indicate that even quite advanced L2 learners’ performance may be influenced by their L1 possessive system in ways and to a degree that, at least in part, reflect cross-linguistic (dis)similarities in the different dimensions of possessive variation.

Santesteban et al. (2010), Foucart et al. (2011) and Antón-Méndez (2011), for instance, found that L1 speakers of a Romance language, where possessives encode gender agreement with the possessee alone, quite often use L2-English *his* and *her* in agreement with the possessee rather than the intended antecedent (e.g. producing *Peter loves her sister* when meaning ‘Peter_i loves his_i sister’), while native speakers of Greek or Dutch master the distribution of *his* and *her* like L1-English speakers, in accordance with the fact that possessives in their L1 encode gender agreement with the possessor, like English.¹¹

[10] In addition to the factors mentioned above, the relational meaning potential of possessives, which varies somewhat across languages (cf. e.g. Baron et al. 2001; McGregor 2009; Gunkel et al. 2017: 672–719), may be a complicating factor.

[11] Pozzan & Antón-Méndez (2017) explain corresponding agreement errors made under elicited production by L1 Mandarin learners’ of L2 English as resulting from a general tendency to establish local (pos-

As for non-native comprehension of possessives, Lago et al. (2018) investigated whether multilingual speakers with either L1-English/L2-Spanish or L1-Spanish/L2-English differ in their sensitivity to possessor agreement violations in German as an ‘additional’ non-native language (‘La’), depending on whether possessor gender agreement is present in their L1 (English) or not (Spanish). Using context-free German sentences like (15a-d) in a speeded acceptability judgment and an implicit reading experiment, they found that (i) the L1-Spanish participants, as expected, showed less sensitivity than the L1-English group towards possessor-possessive mismatch as displayed in (15c-d);¹² (ii) high L2 proficiency may have helped L1-Spanish/L2-English in La-German but did not influence the performance of L1-English/L2-Spanish participants; (iii) contrary to their expectations, gender mismatch between possessive and possessee (*Mutter* ‘mother’), as displayed in (15b,c) did not affect the L1-Spanish learners’ performance in any significant way.¹³

- (15) a. *Frau Schmidt* küsste *ihre Mutter* bei dem letzten Familientreffen.
 ‘Ms. Schmidt kissed her mother at the last family reunion.’
 b. *Herr Schmidt* küsste *seine Mutter* bei dem ... Familientreffen.
 ‘Ms. Schmidt ... his mother ...’
 c. *Frau Schmidt* küsste *seine Mutter* bei dem ... Familientreffen.
 ‘Ms. Schmidt ... his mother ...’
 d. *Herr Schmidt* küsste *ihre Mutter* bei dem ... Familientreffen.
 ‘Ms. Schmidt ... her mother ...’

Lago et al. (2018) conclude that both the L1 grammar and the grammar of a L2 may influence multilinguals’ comprehension of possessives in La and that when an agreement constraint is absent in L1, comprehenders have more difficulty deploying it in La.

The observation that L2 learners have difficulties deploying L2 constraints on possessives that are not present in their L1 is corroborated by Helland (2017), Pitz et al. (2017) and Saad et al. (2019) with respect to the structure-sensitive binding constraints (Condition A vs. B) that characterize reflexive vs. irreflexive possessive markers.

sessive-possessee) agreement. But this hypothesis cannot account for the abovementioned difference between L1-Romance and L1-Dutch or Greek learners’ performance; cf. Lago et al. (2018).

[12] Note that (15c) and (15d) are ungrammatical only under a locally bound/ reflexive reading of the possessive.

[13] It might have played a role that the Spanish 3rd person (singular) possessive *su* ‘his, her’, in contrast to 1st and 2nd person possessives, is in fact neutral with respect to possessee gender; see the discussion in Lago et al. (2018).

Saad et al. (2019) investigated how well multilingual speakers whose first (majority) language (Austronesian Alor Malay) has binding-neutral 3rd person possessive marking master the distinction between reflexive and irreflexive 3rd person possessive marking in their second (minority) language (Indonesian Abui). They found that (pre-)adolescents did not fully master the distinction, whether in production or comprehension, and that the tendency was to over-generalize the irreflexive prefix to reflexive contexts rather than the other way around, arguably because the former, being less restricted, is considerably more frequent in natural discourse.¹⁴ Notably, possessive marking in L1-Malay bears no morpho-phonological resemblance to either the reflexive or the irreflexive possessive marking in L2-Abui.

Turning to Norwegian versus German (Bie-Lorentzen 2012; Pitz et al. 2017) or French (Helland 2017), things become more complicated since (i) possessive systems in Norwegian and German or French differ with respect to feature-agreement constraints in addition to the structure-sensitive binding constraint, and (ii) in particular because the Norwegian reflexive *s*-possessive (*sin/si/sitt/sine*) is an ‘unreliable friend’ of its binding-neutral *s*-cognates in German (*sein**; see Sect. 1.2) and French (*son/sa/ses*; Helland 2017). Consequently, incorrectly assigning a non-local antecedent to L2 *si**, whether in production or comprehension, may be due to more or less shallow (negative) transfer – priming – from L1-German *sein** (or L1-French *s**) rather than insufficient mastering of the binding constraints on the L2-Norwegian possessives.¹⁵ Likewise, when L1-Norwegian learners of L2-German understand German *sein** as locally bound (reflexive) under conditions that grammatically preclude such an interpretation, or erroneously use *sein** instead of *ihr** under local binding, this may be due to interference from *si** rather than insufficient mastering of agreement constraints or nominal gender in German.

The results of translation tests (L1→L2 and L2→L1) conducted by Bie-Lorentzen (2012) and Pitz et al. (2017) indicate that the cross-linguistic divergence of *sein** into *si** and *hans, hennes, deres* and the divergence of *si** into *sein** and *ihr**, as expected, constitute an obstacle for L1-German learners of L2-Norwegian and L1-Norwegian learners of L2-German, respectively, and that ‘[i]n both cases, there seemed to be a tendency to translate on the basis of the L1 system although morpho-phonological priming cannot be ruled out’ (Pitz et al. 2017: 69). The study presented below, however, is the first to investigate L1-Norwegian learners’ comprehension of the L2-German possessives *sein** and *ihr** in tasks that do not involve translation.

[14] It may be asked whether the forced choice task intended to test comprehension is indeed a comprehension task rather than some kind of restricted elicitation task.

[15] See e.g. Jarvis (2009); ZhaoHong & Tarone (2014); and Yu & Odlin (2016) on the notion of transfer.

[4] THE PRESENT STUDY: AIM AND GENERAL ASSUMPTION

We have seen that the German possessives *sein** and *ihr** (with a +human antecedent) pose at least three potential challenges to Norwegian learners:

- (i) They are unspecified with respect to binding conditions and consequently may exhibit a type of referential (reflexive/non-reflexive) ambiguity that, at least under ‘hard-core’ conditions (see fn. 6), is excluded for Norwegian possessives (Sect. 1.2).
- (ii) Being binding-neutral but morpho-phonologically similar, *sein** is an ‘unreliable friend’ of the Norwegian reflexive possessive *si** (cf. Fig. 1)
- (iii) Beyond being binding-neutral, *ihr** is ambiguous between (possessor) singular fem. and plural (cf. Fig. 1).

Our study focuses on Norwegian learners’ interpretation of *sein** and *ihr** under conditions where *sein** according to the rules of German grammar in the given (empty) context either must be or cannot be locally bound, as for instance in (1)–(2) and (8) respectively; and likewise for *ihr** if understood as singular. That is, leaving locality-ambiguities caused by (i) aside, we are specifically interested in the possible effects of (ii) and (iii) on Norwegian speakers’ grammaticality judgments and, in particular, (off-line) comprehension of L2 *sein** and *ihr**. The learners we are concerned with are 1st year L1-Norwegian university students of German who have had two or three years’ non-immersed teaching of German as a foreign language at high school level, corresponding to level B1 and B2 respectively of the CEFR (Common European Framework of Reference for Languages). They all had English as their first foreign language.

Due to (ii) and in line with Pitz et al. (2017), we assume that Norwegian learners of L2-German at this level of proficiency tend to associate *sein** more strongly with *si** than with *hans*. Consequently, they should be more prone to wrongly understand and judge unambiguously non-locally bound *sein** as locally bound ($\approx si^*$) than to understand and judge unambiguously locally bound *sein** as non-locally bound ($\approx hans$). This is one of the main assumptions underlying the experiments presented in Sections 5 and 6.

Due to (iii), we expect the pattern of interpretation and grammaticality judgment among Norwegian learners – and native speakers of German as well – to be more diffuse/ less skewed for *ihr** than for *sein**.

As for the inherent reflexive/non-reflexive ambiguity of *ihr**, Pitz et al. (2017) speculate that the morpho-phonological dissimilarity between *ihr** and its reflexive Norwegian counterpart *si**, which contrasts with the *sein*/si** pair,

may ‘push’ the Norwegian learners towards associating *ihr** more strongly with its irreflexive Norwegian counterparts *hennes* (sing. fem.) and *deres* (plur.) than with *si**. In that case, they would be expected to misinterpret and judge unambiguously locally bound *ihr** as non-locally bound (\approx *hennes* or *deres*) more often than the other way around – and more often than would be expected for *sein**. It may be asked, however, whether the effect is counteracted by a default preference for the local candidate under locality-ambiguous conditions (cf. Sect. 3.1).

The singular/plural ambiguity of *ihr** is restricted to contexts that offer a structurally accessible singular female and an accessible plural possessor candidate as well, as in (8c), or two or more singular candidates that can be cumulated into a plural possessor and at least one of which is female, as in (8b) and (10). Under both conditions pragmatics undoubtedly will play a major role in the resolution process. It seems plausible, however, that unless there are very good semantic-pragmatic reasons for the opposite, *ihr** will preferably be resolved to a singular female possessor candidate if the alternative is a summative plural interpretation. Our resolution test (Sect. 6) also addresses this assumption.

[5] PILOT STUDY ON GRAMMATICALITY JUDGMENT

As a pilot study we conducted a rather simple grammaticality judgment experiment with Norwegian students of German.

[5.1] Test design

Materials

The test comprised a list of 24 test sentences with possessive pronouns, interspersed with 26 distractors containing different types of determiners. The test items were context-free one-clause sentences containing an occurrence of *sein** or *ihr** as part of a complement DP. The subject being the only antecedent candidate in the sentence, the possessive should be understood as locally bound and under that reading be judged grammatical or ungrammatical depending on whether it matches or mismatches the subject with respect to number and gender. Examples of the relevant variations are given in (16) and (17), distractors are exemplified in (18). There were 12 items with *sein**, 6 grammatical and 6 ungrammatical, and 12 items with *ihr*, 4 of each type illustrated in (17), i.e. 8 grammatical and 4 ungrammatical.¹⁶

[16] It is an interesting question – which we did not pursue – how native speakers of German would judge or react to the ‘ungrammatical’ items.

- | | | | |
|------|----|---|---------------------------------|
| (16) | a. | Der Opa begleitet <i>seinen</i> Enkel zum Kindergarten.
'Grandpa escorts his grandson to the kindergarden.' | <i>sein</i> * match
(gender) |
| | b. | *Die Studentin findet <i>seinen</i> Platz nicht.
'The (female) student doesn't find his place.' | <i>sein</i> * mism.
(gender) |
| | c. | *Die Berliner sind stolz auf <i>seine</i> Stadt.
'The Berliners are proud of their town.' | <i>sein</i> * mism.
(number) |
| (17) | a. | Katrin hat Diskussionen mit <i>ihren</i> Kollegen.
'Katrin has discussions with her colleagues.' | <i>ihr</i> * match
(gender) |
| | b. | *Der Nachbar erzählt nie von <i>ihrem</i> Job.
'The (male) neighbor never talks about her job.' | <i>ihr</i> * mism.
(gender) |
| | c. | Alle Kinder sind mit <i>ihren</i> Eltern angekommen.
'All (the) children arrived with their parents.' | <i>ihr</i> * match
(number) |
| (18) | a. | Paul verbringt <i>die</i> meiste Zeit in der Bibliothek.
'Paul spends most of the time (lit: the most time) in the library.' | |
| | b. | *Kristine bestellt immer <i>die</i> teuerste Gericht.
'Kristine always orders the most expensive food.' | |

We did not conduct a vocabulary test. However, in the formulation of test items and fillers, an attempt was made to keep both the vocabulary and the type of constructions at an everyday conversational level, i.e. a level one could expect the students to have reached.

Participants

The participants were 41 Norwegian students at the end of their first term of German studies at university level. Their L1 was Norwegian and they largely had the same background concerning German, i.e. German at high school level.

Task

The test sentences were presented in a classroom setting on paper, with the task formulated in German on the top of the page: Determine the grammaticality of the italicized determiners and pronouns in the following examples. The answer alternatives were given in Norwegian – *riktig/ feil/ vet ikke* ('[grammatically] correct/ [grammatically] incorrect/ don't know') – in boxes underneath each sentence. To avoid misunderstandings and prevent disturbing questions, the participants were instructed orally to read the sentence once without dwelling on the example, i.e. to make their judgment without analyzing, and then go on to the next sentence. They were told explicitly not to focus on in-

flectional endings but to interpret the sentence in the given (empty) context. The time allotted to the whole test was 30 minutes, thus a little more than 30 seconds for each sentence.

[5.2] *Hypotheses*

In accordance with the assumptions outlined in Sect. 4 we had the following hypotheses:

- H1-1 The grammaticality of *sein** is more often judged incorrectly under the (ungrammatical) mismatch than under the (grammatical) match condition.
- H1-2 Under the match condition, the grammaticality of *ihr** is more often judged incorrectly than the grammaticality of *sein**.
- H1-3 Under the mismatch condition, the grammaticality of *sein** is more often judged incorrectly than the grammaticality of *ihr**.

H1-1 relates to fact that *sein** is neutral with respect to binding but morphophonologically similar to the Norwegian reflexive possessive *si**; cf. (ii) in Sect. 4. The similarity is expected to enhance a correct judgment of the match cases, where a reflexive interpretation of *sein** is indeed grammatically licensed, but may conversely prevent the learners from realizing that *sein** cannot correctly refer to a non-matching local subject.

The rationale behind H1-2 and H1-3 is that as far as *ihr** is concerned, there is no cross-linguistic similarity to trigger comparable – positive or negative – effects on the judgment. That is, everything else being equal we would expect the ratio between correct and incorrect judgments to differ less across conditions than with *sein**.

[5.3] *Results*

We measured the results in terms of what we shall call the *error rate*, i.e. the frequency (percentage) of positively wrong judgments relative to the total number of judgments that are either correct or wrong, excluding missing and don't-know judgments, i.e. uncertain responses. Under the *uncertainty rate* we understand the frequency of the latter relative to the total number of judgments, i.e. the number of items of the relevant type multiplied by the number of responding participants. The results are presented in Table 1.

As far as H1-1 is concerned, there were altogether 192 correct, 40 wrong and 14 uncertain judgments for grammatically correct, number-gender-matching *sein**, i.e., items of type (16a). This yields an error rate of 17.2%. The uncertainty rate was 5.7%. Under the mismatch condition, i.e. with ungrammatical *sein**, the

error rate was significantly higher (27.1% vs. 17.2%), $\chi^2(1, N = 461) = 5.9, p = .015$. The uncertainty rates did not differ significantly (6.9% vs. 5.7%), $\chi^2(1, N = 492) = 0.14, p = .71$. All in all then, H1-1 may be considered corroborated.

Possessive	Condition (Item type)	Judgments						Error rate	
		Total n	Correct n	Correct %	Wrong n	Wrong %	Uncertain n		Uncertain %
<i>sein*</i>	Match (16a)	246	192	78.0	40	16.3	14	5.7	17.2%
	Mismatch (16b,c)	246	167	67.9	62	25.2	17	6.9	27.1%
<i>ihr*</i>	Match (17a,c)	328	228	69.5	82	25.0	18	5.5	26.5%
	Mismatch (17b)	164	83	50.6	64	39.0	17	10.4	43.5%

TABLE1: Results of grammaticality judgment test

With grammatically correct, number-gender-matching *ihr**, i.e. items of type (17a, c), there were 228 correct, 82 wrong and 18 undecided judgments, giving an error rate of 26.5% and an uncertainty rate of 5.5%. Compared to the error rate for *sein** under the match condition, *ihr** fared significantly worse (26.5% vs. 17.2%), $\chi^2(1, N = 542) = 5.9, p = .015$, thus weakly corroborating H1-2.

As for the ungrammatical *ihr** items of the type illustrated in (17b), the results show a an error rate of 43.5% and an uncertainty rate of 10.3%. In other words, under the mismatch condition the error rate for *ihr** is considerably higher than under the match condition – and significantly higher than for *sein** (43.5% vs. 27.1%), $\chi^2(1, N = 376) = 10.2, p = .014$. H1-3, then, is not corroborated.

[5.4] Discussion

Our results may be summarized as follows:

- (i) The error rate is higher for *ihr** than for *sein** under the match as well as the mismatch condition. This may indicate that as far as grammaticality judgment is concerned, *ihr** on the whole represents a more difficult case than *sein**.
- (ii) For both *sein** and *ihr** the error rates are higher under mismatch than under match. Evidently, it is easier to correctly judge the grammaticality of a possessive occurring in a locally bound position when the possessive matches than when it does not match its (intended) local binder.
- (iii) As far as our unreliable friends *sein** and Norwegian *si** are concerned, their similarity may have enhanced correct judgment of

*sein** (as compared to *ihr**) under the match condition, where the reflexive interpretation inherent to *si** is in fact grammatically licensed for *sein** ('positive transfer'). Under the mismatch condition, the reflexive reading of *sein** is not grammatically licensed while *si** would still be correct in Norwegian. However, we cannot tell whether or to what degree the poorer result under mismatch is due specifically to interference ('negative transfer') from *si** rather than a generally lower ability to correctly judge ungrammatical possessives or structures in L2; cf. (ii).

- (iv) The fact that *ihr** seems to present a more difficult case could be ascribed to several factors. First, although the informants were told not to focus on morphological endings, it is impossible to tell in how far their judgments actually were influenced by the latter. Expressions such as *ihr Studium*, *ihr Pensum* might appear odd without a morphological ending. Furthermore, the form *ihr* is homophonous with the singular dative form of the number-ambiguous 3rd person pronoun *sie* 'she/they'. Thus, the combination of *ihr* and a neutral noun, as for instance *ihr Studium*, might seem wrong altogether. In addition, some test persons may have associated *ihr** with irreflexive *hennes* or *deres*, disregarding the possibility of a reflexive interpretation (cf. Sect. 4).

Some of the uncertainties concerning the judgments might have been resolved by following up the test with an interview. Still, we consider the results to give some indication of the type of problems facing Norwegian learners in relation to L2-German possessives. While there appear to be numerous challenges concerning *ihr**, the results for *sein** are compatible with our assumption of transfer from L1-Norwegian.

[6] RESOLUTION EXPERIMENT

[6.1] Preliminaries

Whereas the previous section was concerned with L1-Norwegian participants' grammaticality judgments on locally bound occurrences of *ihr** and *sein**, the test presented in this section investigates their ability to identify the possessor under unambiguously local or non-local binding of the possessive (in the somewhat sloppy sense of the term binding; see fn. 5). Our main assumption concerning *sein** still encompasses the notion of transfer – or so-called cross-linguistic influence (CLI) – in that we expect the L1-Norwegian participants to

wrongly understand non-locally bound *sein** reflexively, in the sense of locally bound *si**, rather than to interpret locally bound *sein** as non-locally bound (ir-reflexive) *hans*. For the correct/incorrect judgment of *ihr** we presented in Sect. 5.4 a list of factors that might interfere; the one of importance to interpretation is the assumed association with the irreflexive Norwegian possessive *hennes* (singular) or *deres* (plural) even in cases of local binding. A related matter, suited for comparison with native speakers, is the Norwegian learners' interpretation of *ihr** as either singular or (summative) plural.

[6.2] Test design

Material

The test material comprises a set of 32 *experimental items* interspersed with 32 fillers. Each experimental item is a context-free complex sentence consisting of a main clause and a subordinate adverbial clause (with *während* 'while') in that order; both clause subjects are singular gender-specific proper names but differ in gender; and one of the clauses contains a 3rd person possessive as part of a complement DP.¹⁷

The experimental items come in eight types, representing every combination of three binary conditions:

- (i) POSSESSIVE: *sein**, demanding a male singular possessor, vs. *ihr**, demanding a female singular or a plural possessor;
- (ii) MATCH/BINDING: The setup ensures that the possessive either matches or mismatches the subject of its own clause – the local subject – in (singular) gender. If the two match, a locally bound, i.e. reflexive, interpretation of the possessive is warranted (*Local Match/Binding*), since there is no pre-context; if not, the possessive will match the clause-external subject (*Non-local Match/Binding*), thus demanding a non-reflexive interpretation – cataphoric (forward-looking) or anaphoric (in the restricted sense of backward-looking, see Sect. 3.1) depending on its position in the sentence; cf. (iii).
- (iii) POSITION: The possessive either occurs in the first, main clause (*PossC1*) or in the second, subordinate clause (*PossC2*).

[17] The design is inspired by the offline comprehension experiment described in Pitz et al. (2017: 58–69), which concerned L1-German speakers' comprehension of the L2-Norwegian possessives *si** and *hans*. However, the order of subordinate and main clause is reversed; and the experimental items are context-free, primarily because a pre-context introducing the competing possessor candidates would blur the distinction between anaphoric and cataphoric use of the possessive.

Examples (19)–(22) illustrate the eight combinations, each of which is represented by four experimental items. Note, though, that the conditions were not manipulated within items (sentence contexts) but varied across the set of 32 individual experimental items.

- sein** *Local Match/Binding*
- (19) a.. *Jakob* legt das Gemüse in *sein*en Korb, während Siri an der Kasse wartet. PossC1
 ‘*Jakob* puts the vegetables in *his* basket while Siri is waiting at the checkout’
- b. Brigitte räumt die Wohnung auf, während *Daniel* an *seiner* Abhandlung arbeitet. PossC2
 ‘*Birgitte* tidies the apartment while *Daniel* works on *his* thesis.’
- Non-local Match/Binding*
- (20) a. Siri legt das Gemüse in *sein*en Korb, während *Jakob* an der Kasse wartet. PossC1
(cataphoric)
 ‘*Siri* puts the vegetables in *his* basket while *Jakob* is waiting at the checkout.’
- b. *Daniel* räumt die Wohnung auf, während Brigitte an *seiner* Abhandlung arbeitet. PossC2
(anaphoric)
 ‘*Daniel* tidies the apartment while Brigitte works on *his* thesis.’
- ihr** *Local Match/Binding*
- (21) a. *Siri* legt das Gemüse in *ihr*en Korb, während Jakob an der Kasse wartet. PossC1
 ‘*Siri* puts the vegetables in *her* basket while Jakob is waiting at the checkout.’
- b. Daniel räumt die Wohnung auf, während *Brigitte* an *ihrer* Abhandlung arbeitet. PossC2
 ‘*Daniel* tidies the apartment while *Brigitte* works on *her* thesis.’
- Non-local Match/Binding*
- (22) a. Jakob legt das Gemüse in *ihr*en Korb, während *Siri* an der Kasse wartet. PossC1
(cataphoric)
 ‘*Jakob* puts the vegetables in *her* basket while *Siri* is waiting at the checkout.’
- b. *Brigitte* räumt die Wohnung auf, während Daniel an *ihrer* Abhandlung arbeitet. PossC2
(anaphoric)

‘Brigitte tidies the apartment while Daniel works on *her* thesis.’

Note also that under all conditions, *ihr** in principle is ambiguous between a singular (locally or non-locally bound) reading and a summative plural interpretation (‘their’), referring to the two subject DPs.

The 32 fillers served to test reading comprehension at a general level and to distract the participants from the possessives. They all consisted of two clauses – mostly a main and a *während*-clause – with proper name subjects differing in gender; and the majority contained the locally bound (reflexive) pronoun *sich* or a non-locally bound 3rd person personal pronoun referring to the non-local subject; cf. (23). The rest were of the contrasting type illustrated in (24).

- (23) a. Siri füllt eine Thermoskanne mit Tee, während *Peter sich* ein Käsebrot macht.
 ‘Siri fills a thermos with tea while *Peter* makes *himself* a sandwich.’
 b. Weil Anna *ihm* Schokolade geschenkt hatte, brachte *Magnus* Nüsse vom Supermarkt mit.
 ‘Because Anna gave *him* chocolate, *Magnus* brought nuts from the supermarket’
 c. *Oskar* wäscht zwei Äpfel, während *Luise ihm* ein Lachsbrötchen macht.
 ‘Oscar washes two apples while *Luise* makes *him* a salmon sandwich’
- (24) Ella ist 48 Jahre alt, während Hans gerade 47 geworden ist.
 ‘Ella is 48 years old while Hans recently turned 47.’

With some exceptions among the fillers, the vocabulary and syntactic complexity of the test items were adapted to the proficiency level of the L2-participants.

Participants

31 Norwegian learners of L2-German (*L2 group*) and a control group of 16 native speakers of German (*L1 group*) participated in the experiment. As in our pilot study (Sect. 5), the Norwegian participants were students of introductory-level German courses at Norwegian universities at the time of testing; 18 (group *L2-a*) had had two years’ and 13 (group *L2-b*) three years’ teaching of German at high school level. The L1-participants were exchange students from a German-speaking country, with an average age of 26 years. The majority of the participants were female.

Participant group	Proficiency in German	Age	
		n	range
L2	Norwegian 1 st year students of German at Norwegian university	31	19–30
L2-a	with 2 year's German at high-school	18	19–25
L2-b	with 3 year's German at high-school	13	19–30
L1	Native speakers of German	16	19–49

TABLE 2: Participants in the resolution experiment

Procedure

The test items (experimental items and fillers) were shown on a computer screen to one participant at a time, being presented one by one in random order. All participants were confronted with all 64 items. For each item, they had to press a button to indicate that they had finished reading. Having done so, they were prompted to answer a wh-question in German relating to the content of the item. With experimental items they were asked to identify the referent of the possessive pronoun, i.e. the ‘possessor’ of the entity denoted by the DP containing the possessive. The answer was given by pressing a specific button: **M** for the male referent, **F** for the female referent and **B** (‘both’) for the (summative) plural referent. For instance, (19a) is followed by (25), the correct response being M. For each participant, the reading time and the reaction time – the time taken to submit an answer – were recorded. Only a single answer was permitted per question; in the case of *ihr**, then, the participants had to choose between a female singular and a plural interpretation. In other words: the coreference resolution task presented to the participants involved *forced choice interpretation*.

(25) *Wem gehört der Korb?* (‘Who owns the basket?’)
 Press F for Siri Press M for Jakob Press B for Both

[6.3] Hypotheses and questions

Our central hypotheses concern the possible effects of POSSESSIVE, MATCH/BINDING and LANGUAGE (L2- vs. L1-German) on the resolution of *sein** and *ihr** in complex sentences of the kind specified in the previous section:

- H2-1 On average, the Norwegian learners resolve the possessives correctly less often than the German-speaking control group.

- H2-2 Specifically the Norwegian learners more often resolve the possessives incorrectly under Non-local than under Local Match/Binding, the difference being more substantial for *sein** than for *ihr**.
- H2-3 The Norwegian learners resolve *sein** to the subject of its own clause (i.e. reflexively) significantly more often than they do with *ihr**.

We also wanted to see (i) whether POSITION might have an effect on the two groups' resolution performance, and (ii) whether there might be a general preference for resolving *ihr** to the accessible singular female (F button) rather than understanding the possessive as a summative plural (B button).

Throughout, it should be borne in mind that since the items with *ihr** in principle allow both a singular and a plural interpretation while there is only one correct answer (the M button) to the *sein** items, the chances of answering correctly when choosing randomly are twice as high for *ihr** as for *sein** items. Accordingly, we would expect the proportion of questions answered correctly to be generally higher for *ihr** than for *sein**.

In the analysis, a χ^2 -test was used to test combinations of conditions against each other in 2x2 contingency tables with one dimension representing the given condition and the other the number of successfully and unsuccessfully answered items. Every condition was tested across the other conditions, with primary focus on POSSESSIVE (*sein** vs. *ihr**), MATCH/BINDING and LANGUAGE.

[6.4] Results

Overview (H2-1)

All participants responded adequately to all 32 experimental items, yielding a total of 512 responses from the L1 and 992 from the L2 group.

Table 3 (for L1) and Table 4 (for L2) show how the responses are distributed over the three given options – M[ale referent], F[emale referent] and B[oth, i.e. the two referents together] – across the different item types (combinations of conditions; see Sect. 6.2). Numbers/ percentages of grammatically licensed ('correct') resolutions are blue, numbers/ percentages of grammatically illicit ('wrong') resolutions in italics and red.

Note that, abstracting from the plural option for *ihr**, the condition Local Match/Binding demands a reflexive interpretation of the possessive, whether the latter occurs in the first or second clause of the complex sentence (PossC1 vs. PossC2). With Non-local Match/Binding, on the other hand, the possessive is non-reflexive and *cataphoric* (PossC1) or *anaphoric* (PossC2); see Section 6.2.

Condition	Resolution/ Response						Total 100%	Success rate	
	M		F		B				
	n	%	n	%	n	%			
<i>sein*</i>	Local	115	90 %	4	3 %	9	7 %	128	90 %
	PossC1	57	89 %	1	2 %	6	9 %	64	89%
	PossC2	58	91 %	3	5 %	3	5 %	64	91%
	Non-Loc.	112	88 %	13	10 %	3	2 %	128	88 %
	PossC1	51	80 %	10	5 %	3	16 %	64	80 %
	PossC2	61	95 %	3	5 %	0	0 %	64	95 %
	Total	227	89 %	17	7 %	12	5 %	256	89%
<i>ihr*</i>	Local	2	2 %	121	95 %	5	4 %	128	99 %
	PossC1	0	0 %	60	94 %	4	6 %	64	100 %
	PossC2	2	3 %	61	95 %	1	2 %	64	97 %
	Non-loc.	4	3 %	88	69 %	36	28 %	128	97 %
	PossC1	3	5 %	35	55 %	26	41 %	64	95 %
	PossC2	1	2 %	53	83 %	10	16 %	64	98 %
	Total	6	2 %	209	82 %	41	16 %	256	98 %
Poss Total	233	45 %	226	44 %	53	10 %	512	93 %	

TABLE 3: Overview of L1 resolution results. *Local* and *Non-loc.* short for *Local Match/Binding* and *Non-local Match/Binding*, respectively.

The two tables also show the *success rate* (henceforth also: *SR*), i.e. the number of correct responses as percentage of the total number of responses under the given condition. Note that the success rate is based on M-responses in relation to *sein** but on the sum of F- and B-responses in relation to *ihr*.

With an overall SR of 78%, (Table 4, bottom right), the L2-learners evidently were less successful in resolving the possessive correctly than was the L1-control group (general SR 98%, Tab. 3, bottom right). A χ^2 -test showed the difference to be significant: $\chi^2(1, N = 1504) = 61.6, p < .001$. This finding is in accordance with hypothesis H2-1 (Sect. 6.3)

Condition	Resolution/ Response						Total (100%)	Success rate	
	M		F		B				
	n	%	n	%	n	%			
<i>sein*</i>	Local	223	90 %	10	4 %	15	6 %	248	90 %
	PossC1	109	88 %	7	6 %	8	6 %	124	88 %
	PossC2	114	92 %	3	2 %	7	6 %	124	92 %
	Non-loc.	105	42 %	125	50 %	18	7 %	248	42 %
	PossC1	50	40 %	61	49 %	13	10 %	124	40 %
	PossC2	55	44 %	64	44 %	5	4 %	124	44 %
	Total	328	66 %	135	27 %	33	7 %	496	66 %
<i>ihr*</i>	Local	13	5 %	162	65 %	73	29 %	248	95 %
	PossC1	7	6 %	81	65 %	36	29 %	124	94 %
	PossC2	6	5 %	81	65 %	37	30 %	124	95 %
	Non-loc.	50	20 %	91	37 %	107	43 %	248	80 %
	PossC1	29	23 %	28	23 %	67	54 %	124	77 %
	PossC2	21	17 %	63	51 %	40	32 %	124	83 %
	Total	63	13 %	253	51 %	180	36 %	496	87 %
Poss Total	391	39 %	388	39 %	213	21 %	992	78 %	

TABLE 4: Overview of L2 resolution results; *Local* and *Non-loc.* short for *Local Match/Binding* and *Non-local Match/Binding*, respectively

*sein** versus *ihr** and effects of MATCH/BINDING (H2-2 and H2-3)

As seen in Table 4 and, more easily, in Table 5 (bottom row), the L2-group performed significantly better with *ihr** (SR 87%) than with *sein** (SR 66%).

Condition	Success rate					
	<i>sein*</i>		<i>ihr*</i>		Total	
	L2	L1	L2	L1	L2	L1
1 Local Match/Binding	90%	90%	95%	98%	92%	94%
1a PossC1	88%	89%	94%	98%	91%	95%
1b PossC2	92%	91%	95%	100%	94%	94%
2 Non-Local Match/Binding	42%	88%	80%	97%	61%	92%
2a PossC1 (cataphoric)	40%	80%	77%	95%	58%	88%
2b PossC2 (anaphoric)	44%	95%	83%	97%	64%	97%
3 Total	66%	89%	87%	98%	77%	93%

TABLE 5: L2 (dark red) vs. L1 success rates for *sein** and *ihr**

The difference between the two success rates is substantial ($\chi^2(1, N = 992) = 61.0, p < .001$), in contrast to the weaker but still significant trend observed in the L1-group, where the success rates were 98% (*ihr**) and 89% (*sein**), respectively ($\chi^2(1, N = 512) = 14.8, p < .001$); Table 5, bottom.

Table 5 (rows 1 vs. 2) also shows that the Norwegian learners master possessive resolution better under Local Match/Binding, as in (26), than under Non-local Match/Binding, as in (27). The difference is highly significant for *sein** (SR 90% vs. 42%, $\chi^2(1, N = 496) = 123.2, p < .001$). For *ihr**, the effect is less pronounced (SR 95% vs. 80%) but still significant ($\chi^2(1, N = 496) = 23.6, p < .001$). The findings are in accordance with H2-2, showing a significant interaction between POSSESSIVE and MATCH/BINDING.

- (26) a. Brigitte wartet an der Kasse, während *Daniel* Gemüse in *sein*en Korb legt.
 ‘Brigitte is waiting at the checkout while *Daniel* puts vegetables in *his* basket.’
 b. Daniel wartet an der Kasse, während *Brigitte* Gemüse in *ihr*en Korb legt.
- (27) a. *Daniel* wartet an der Kasse, während Brigitte Gemüse in *sein*en Korb legt.
 b. *Brigitte* wartet an der Kasse, während Daniel Gemüse in *ihr*en Korb legt.

Under Local Match/Binding, the Norwegian comprehenders in fact perform native-like, achieving a success rate of 90% with *sein** and 95% with *ihr** (Tab.5, row 1). Under Non-local Match/Binding (Tab. 5, row 2), their SR for *ihr** is still quite high – with 80% almost twice as high as for *sein** (42%) – but significantly lower than the control group’s 97% ($\chi^2(1, N = 256) = 18.6, p < .001$).

By contrast, MATCH/BINDING (Local vs. Non-local) had no significant effect on the L1-comprehenders’ performance for either *sein** (SR 90% vs. 88%, $\chi^2(1, N = 256) = 0.16, p = 0.69$) or *ihr** (SR 98% vs. 97%, Fischer’s Exact test $p = 0.68$). That is, the interaction between POSSESSIVE and MATCH/BINDING is conditioned by LANGUAGE as predicted by H2-2.

Note, however, that while the L1-participants with very few exceptions resolve *ihr** in accordance with the rules of German grammar, whether the possessive is locally bound or not, their 89% success rate for *sein** deviates significantly from the 100% one would expect ($p < .001$ according to Fischer’s Exact test). It is difficult to say what may have caused the various wrong answers – apart from lack of attention (fatigue) or a preference for top-down reading

based on pragmatic expectations rather than linguistic form.¹⁸ Notably, though, it is the non-local cataphoric condition that causes most problems, exhibiting a success rate of only 80%; cf. Table 5, row 2b. We return to the cataphoricity issue below and in Section 5.5.

H2-3 predicts that the Norwegian learners – rightly or wrongly – understand *sein** reflexively, i.e. as referring to the local subject, significantly more often than they do with *ihr** (Sect. 6.3). Under our experimental set-up (see Sect. 6.2) a reflexive (i.e. local) interpretation is warranted for half of the experimental items: the 16 items showing Local Match/Binding. A reflexive interpretation of *sein** amounts to correctly responding with M (*Daniel*) in cases like (26a) (Local Match/Binding) and incorrectly responding with F (*Brigitte*) in cases like (27a) (Non-local Match/Binding); and the other way around for *ihr**, i.e. choosing F (*Brigitte*) under Local Match/Binding (26b) and M (*Daniel*) under Non-local Match/Binding (27b).

The data presented in Table 4 above show that 90% (n = 223) of the 248 L2-resolutions of *sein** under Local Match/Binding were correctly reflexive/local. Of the 248 L2-resolutions of *sein** under Non-local Match/Binding, 50% (n = 125) were incorrectly reflexive/local. The corresponding figures for *ihr** are 65% (n = 162) and 20% (n = 50), respectively. Under both conditions, the reflexivity difference between the two possessives is significant: $\chi^2(1, N = 478) = 106.6, p < .001$ and $\chi^2(1, N = 496) = 12.4, p < .001$, respectively. (Note, incidentally, that the L1-participants also under Non-local Match/Binding strongly prefer the reflexive (female) singular to the non-reflexive plural interpretation; see below and Tab. 3 above).

Obviously, the lower frequency of reflexive/local L2-resolutions of *ihr** may have to do with the fact that the summative plural interpretation is a licensed alternative to the female singular. Thus if we leave the B responses out of the counting for both possessives, their reflexivity rates (*sein** 93%, *ihr** 96%) do not differ significantly under Local Match/Binding, where the reflexive/local resolution is correct. Under Non-Local Match/Binding, however, *ihr** still exhibits a significantly lower rate of (incorrectly) reflexive/local resolutions than *sein**: 35% (50/141) vs. 54% (125/230), $\chi^2(1, N = 371) = 11.8, p < .001$. Altogether, then, we may consider H2-3 corroborated.

*Effects of POSITION and the singular-plural ambiguity of ihr**

In our experimental items, the possessive either occurs in the second clause (PossC2), as in (26)–(27) above, or in the first clause (PossC1), as in (28)–(29) be-

[18] L1 speakers may also have been unfamiliar with a proper name like *Siri* (female in Norwegian).

low. Under Non-local Match/Binding, PossC1 and PossC2 amount to cataphoric (29) and anaphoric (27) use of the possessive, respectively.

- (28) a. *Jakob* legt das Gemüse in *sein*en Korb, während Siri an der Kasse wartet.
 ‘Jakob puts the vegetables in his basket while Siri is waiting at the checkout.’
 b. *Siri* legt das Gemüse in *ihr*en Korb, während Jakob an der Kasse wartet.
- (29) a. Siri legt das Gemüse in *sein*en Korb, während *Jakob* an der Kasse wartet.
 b. Jakob legt das Gemüse in *ihr*en Korb, während *Siri* an der Kasse wartet.

As shown in Table 5 above, the success rates in both the L2- and the L1-group are somewhat higher with PossC2 than with PossC1 under Local Match/Binding (rows 1a vs. 1b) than under Non-local Match/Binding (rows 2a vs. 2b). On the whole, however, the differences are too small to be significant. The greatest numerical contrast is found for L1 with respect to cataphoric vs. anaphoric *sein** (SR 80% vs. 95%), Fischer’s Exact test: $p = .14$.

Turning to the question of how the L1 and L2 participants performed with respect to the singular-plural ambiguity of *ihr** (Sect. 4), Table 6 shows the distribution of (female) singular (F) and summative plural (B) resolutions in relation to the total number of grammatically licensed (F or B) resolutions of *ihr**.

		Correct resolutions/ responses for <i>ihr</i> *									
		L1					L2				
Condition		F		B		F+B	F		B		F+B
		n	%	n	%	(100%)	n	%	n	%	(100%)
1	Local	121	96%	5	4%	126	162	69%	73	31%	235
1a	PossC1	60	94%	4	6%	64	81	69%	36	31%	117
1b	PossC2	61	98%	1	2%	62	81	69%	37	31%	118
2	Non-loc.	88	71%	36	29%	124	91	46%	107	54%	198
2a	Cataphoric	35	57%	26	43%	61	28	29%	67	71%	95
2b	Anaphoric	53	84%	10	6%	63	63	61%	40	39%	103
Total		209	84%	41	16%	250	253	58%	180	42%	433

TABLE 6: L1 vs. L2 distribution of fem. sing. (F) versus summative plural (B) resolutions of *ihr**: F responses as percentage of correct (F or B) resolutions of *ihr**.
Local: Local Match/Binding, *Non-loc.*: Non-local Match/Binding

As can be seen, the L1-participants clearly prefer the F response unless *ihr** is used cataphorically. By contrast, the L2-participants show a only moderate bias towards the female singular resolution (69%, $\chi^2(1, N = 471) = 16.7, p < .001$) under Local Match/Binding, where it amounts to a reflexive interpretation. Under the anaphoric condition, where the matching female singular candidate occurs in the preceding clause, the 61% bias towards that candidate is insignificant because of the lower number of correct (F+B) responses ($\chi^2(1, N = 207) = 2.2, p = .14$). Under the cataphoric condition, however, only 29% of the resolutions fell on the female singular candidate; that is, here the preference is significantly inverted to the summative plural option (71%, $\chi^2(1, N = 191) = 7.6, p < .01$).

In short: with the exception of the cataphoric condition, where the possessive precedes the only matching singular candidate, the structure of our experimental items generally favours resolving *ihr** to the only accessible female singular candidate rather than to the sum of both candidates, in particular among the L1-participants.

From the results presented in tables 5 and 6 we conclude that POSITION – whether the possessive occurs in the first or the second clause of the experimental structure – has an effect only in combination with Non-local Match/Binding.

Effects of L2-proficiency

As would be expected, the L2-participants with three years' German at high-school level (L2-b, $n = 18$) performed better in most relevant respects than the group with only two years' high-school German (L2-a, $n = 13$). Specifically, their SR for *sein** was significantly higher (72% vs. 62%, $\chi^2(1, N = 496) = 5.3, p = 0.02$), while the difference was insignificant with *ihr** (90% vs. 85%, $\chi^2(1, N = 496) = 1.8, p = 0.18$); cf. Table 7. The contrast between the two levels is most marked for *sein** under Non-local Match/Binding, where L2-a responded correctly with a frequency of only 35% against 53% in L2-b ($\chi^2(1, N = 248) = 7.4, p < 0.01$).

Condition	Success rate					
	L2-a			L2-b		
	<i>sein*</i>	<i>ihr*</i>	Total	<i>sein*</i>	<i>ihr*</i>	Total
Local Match/Binding	89%	94%	92%	91%	95%	93%
Non-local Match/Binding	35%	76%	56%	53%	85%	69%
Total	62%	85%	74%	72%	90%	81%

TABLE 7: L2-a vs. L2-b success rates for *sein** and *ihr** across MATCH/BINDING

It may be added that the plural interpretation of *ihr** (B response), which may indicate uncertainty, also has a higher relative frequency among the L2-a participants than in the L2-b group, in particular under the cataphoric condition.

[6.5] *Summary and discussion*

First, our three central hypotheses (Sect. 6.3) were all supported: In accordance with **H2-1**, the Norwegian learners of L2-German altogether were less successful in resolving the possessives correctly than the L1-German control group. However, their performance varied considerably across conditions. Like the L1-group, they achieved higher success rates with *ihr** than with *sein** across conditions – not surprisingly in view of the fact that the *ihr** items have two correct resolution options against only one with *sein**. Different from the L1-group, however, they had significantly lower success rates when the possessive referred to the subject of the preceding or following clause (Non-local Match/Binding) than when a reflexive interpretation was licensed (Local Match/Binding); and in accordance with **H2-2**, the contrast was significantly more marked for *sein** than for *ihr**; see Table 5. More specifically: Under Non-local Match/Binding, *sein** showed a significantly higher rate of (incorrectly) reflexive/local resolutions than *ihr** (see Sect. 6.4 for details). Thus, **H2-3** too is supported.

Second, the L1-group preferred the female singular to the summative plural interpretation of *ihr**, the preference being very pronounced under Local Match/Binding, somewhat less so under the anaphoric and insignificant under the cataphoric condition (Table 6). Singular was preferred by the L2-group, too, but the bias was less marked and under the cataphoric condition the plural resolution prevailed (Table 6). Now, since plural is a generally acceptable interpretation of *ihr** in our experimental items, it may be chosen so as to avoid deciding between the local and the non-local singular candidate. This would explain why it has a higher frequency in the L2 than in the L1 responses.

Third, POSITION had a substantial effect on the resolution only under Non-local Match/Binding, i.e. when the possessive according to the rules of German grammar cannot be understood reflexively: In both the L2- and the L1-group, the cataphoric structure triggered more plural resolutions of *ihr** than the anaphoric structure (Tab. 6); and the L1-group showed a lower success rate with cataphoric than with anaphoric *sein** (Tab. 5). In view of the possible fallback function of the summative plural, these findings indicate that our cataphoric condition represents a resolution challenge (even) to native speakers of German.¹⁹ The L2-participants, too, perform worse with cataphoric than with ana-

[19] In fact, some L1-participants commented on cataphoric (*sein**-) items as being ‘incorrect’.

phoric *sein** but their success rate in the latter case is already very low (Tab. 5).²⁰

Note here that the experimental items all consisted of a main and a subordinate clause in that order, with the possessive occurring in either the first or the second clause (Sect. 6.2). Consequently, our anaphoric and cataphoric conditions differ in two respects: The anaphoric possessive e.g. in (30) refers back from a subordinated to a matrix clause DP while the cataphoric possessive in (31) refers forward from the matrix to the subordinate clause. And as mentioned in Section 3.1, cataphoricity of that kind is more severely constrained than forward dependencies from a subordinate clause to its matrix clause. On this background, the abovementioned results may not be too surprising.

- (30) a. *Daniel* wartet an der Kasse, während Brigitte Gemüse in *seinen* Korb legt.
 b. *Brigitte* wartet an der Kasse, während Daniel Gemüse in *ihren* Korb legt
- (31) a. Brigitte legt Gemüse in *seinen* Korb, während *Daniel* an der Kasse wartet.
 b. Daniel legt Gemüse in *ihren* Korb, während *Brigitte* an der Kasse wartet.

Accordingly, one would expect a more successful performance when the cataphoric dependency goes from a preposed subordinate clause to its matrix clause, i.e. under conditions that license cataphoric use of ordinary pronouns (see Sect. 3.1). A natural follow-up to our resolution test, then, would be based on experimental items that differ from the present ones with respect to the order of subordinate and main clause but otherwise follow the same pattern of variation (see Sect. 6.2), i.e. pairs like (32) and (33) for anaphoric vs. cataphoric use of the possessive.²¹

- (32) a. Während *Daniel* an der Kasse wartet, legt Brigitte Gemüse in *seinen* Korb.
 b. Während *Brigitte* an der Kasse wartet, legt Daniel Gemüse in *ihren* Korb.

[20] Drummer & Felser (2018: 98) assume that '[r]esolving cataphoric dependencies might be particularly challenging for non-native [...] speakers because they may have more difficulties anticipating upcoming referents compared to native (L1) speakers'. Evidently, nothing in our L2-group's performance under the cataphoric condition contradicts that assumption.

[21] We originally intended to include these variations in our experiment but for practical reasons had to give up the idea.

- (33) a. Während Brigitte Gemüse in *seinem* Korb legt, wartet *Daniel* an der Kasse.
 b. Während Daniel Gemüse in *ihrer* Korb legt, wartet *Brigitte* an der Kasse.

Fourth, concerning L2-PROFICIENCY/LEVEL, we found a significant difference in success rates between L2-learners with 2 years of high-school German (group L2-a) and those with 3 years' training (group L2-b). This indicates the fruitfulness of formal training both with regards to mastery of possessive systems that are in very nuanced ways different from one's L1 and with regards to handling the negative cognacy effects of false friends.

[7] CONCLUSION AND OUTLOOK

The primary objective of our enterprise was to find out how L1-Norwegian learners of L2-German at a low or moderate level of proficiency (see Sect. 5.1 and 6.2) cope with the 3rd person possessives *sein** and *ihr** in comprehension, given the lexical divergence holding between the two binding-neutral German possessives on the one hand and their respective binding-sensitive counterparts in Norwegian on the other hand and, in particular, the morpho-phonological similarity between *sein** and the Norwegian reflexive possessive *si** (see Sections 1 and 3).

As far as *sein** is concerned, our results seem to corroborate the assumption that the Norwegian L2-learners due to the *sein**/*si** similarity are more biased towards a reflexive interpretation than warranted by the general preference for locality that has been observed in prior research on pronoun resolution (see Sect. 3.1): While our non-native comprehenders by and large resolved unambiguously reflexive, i.e. locally bound occurrences of *sein** correctly, almost half of their resolutions of anaphoric or cataphoric *sein** were erroneously reflexive; in comparison, the German-speaking control group did not have serious resolution problems under either condition (Sect. 6.4; Tables 3, 4 and 5). Also, the (Norwegian) participants in the grammaticality judgment test had a higher error rate when *sein** did not than when it did match the subject of its local clause, i.e. its intended local binder (see 5.3-4). Being unspecified for possessor number and gender, the Norwegian reflexive possessive *si** would be grammatically licensed not only when *sein** matches but also when it does not match the subject of its local clause in gender, i.e. under the conditions where our L2-groups significantly often incorrectly chose a reflexive interpretation or erroneously judged sentences containing a mismatching *sein** to be correct. It seems reasonable, then, to ascribe the non-native resolution failures and misjudg-

ments of *sein** to interference from the unreliable possessive L1-friend *si** rather than to a general preference for local binding.²²

In line with this explanation, the L1-Norwegian comprehension of L2-German *ihr** offers quite a different picture: Under conditions licensing a reflexive (female singular) interpretation of *ihr**, our L2-comprehenders showed only a modest (65%) preference for that option – in contrast to the L1-group; and when the local subject did not match the possessive, their rate of (erroneous) reflexive resolutions was considerably lower for *ihr** than for *sein** even when we disregard the summative plural alternative (Sect. 6.4, Table 4). In addition, the L2-learners generally had more difficulties judging the grammaticality of *ihr** correctly than they had with *sein** (Sect. 5.3-4). Altogether these findings may indicate that our L2-learners, as suggested in Section 4, tend to lexically associate *ihr** with the irreflexive Norwegian possessives *hennes* ‘her’ and *deres* ‘their’ rather than with the reflexive *si** but that corresponding interference effects on L2-comprehension to a certain degree are levelled out by a general preference for local resolutions – and the context-dependent possibility of a (summative) plural interpretation.

The more general lesson to be drawn from our observations could be that L1/L2-specific relations of divergence and morpho-phonological similarity at the lexical level, at least at non-advanced stages of L2-learning, might play a more important role in non-native resolution of pronouns than has hitherto been acknowledged.

It might be objected that our study for various reasons does not allow any far-reaching conclusions. The number of experimental items is rather restricted in both experiments; some of the items in the resolution experiment are pragmatically biased towards one or the other licensed interpretation; the number of L1-participants is too small; and the experimental procedures may not have been optimal. Still, we find the results interesting enough to warrant follow-up studies in different directions, in part along the lines suggested in Section 6.5 but also – and perhaps most importantly – investigations into L1-Norwegian learners’ online processing of L2-German possessives compared to ordinary 3rd person pronouns (cf. Sect. 3.2 and Pitz et al. 2017: 58–69) and their resolution preferences under locality-ambiguous conditions, where the referential issue cannot be settled by grammatical cues (cf. Sect. 4).

[22] Note here that the clause subjects in our comprehension experiments were gender-specific proper nouns, making insufficient command of grammatical gender or agreement rules in German a less plausible explanation.

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