The role of first language influence in the learning of second language grammar:

The case of *his/her* in English

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ABSTRACT

The present study addresses the potential role of crosslinguistic influence (e.g., Luk & Shirai, 2009) on the development of second language (L2) grammar acquisition (e.g., Goldschneider & DeKeyser, 2001). White (1998) developed an 8-stage framework for the acquisition of possessive determiners (PDs) *his* and *her* in English (Spada & Lightbown, 1999; White et al., 2007), which captured common stages of development as learners progressed towards mastery of this feature. To date, however, studies have involved Romance speakers only, for whom difficulties may result from incongruencies in the gender agreement rule for PDs between their first language (L1) and L2 English. In French, for example, the PD is determined by the grammatical gender of the possessed (e.g., Il [masc.] parle à *sa mère* [fem.]/*son père* [masc.]) rather than that of the possessor, as in English (e.g., *He* [masc.] speaks to *his* [masc.] mother/father). We investigated whether White's (1998) framework similarly captures development for L1 Taiwanese Mandarin (TM), a language which does not have 1) PDs, or 2) grammatical gender. Fifty-seven participants (aged 8 to 12) completed: (1) a grammaticality judgment task, (2) an oral picture-description task, and (3) a stimulated recall of (1). Results of a cross-sectional analysis suggest that L1 TM follow the broad three-category progression of White's framework, including the phase during which learners struggle with using the correct PD in kin-different contexts (e.g., a father and his daughter), although this was more evident in production than comprehension (see also, Pozzan & Antón-Méndez, 2017). However, participants did not appear to require the full set of sub-stages of the framework. In particular, L1-influenced forms were used in lieu of *his/her* (e.g., *she/she's* father). Overall, our findings suggest that there are both universal as well as L1-particular factors influencing learners on their path to acquisition of a grammatical feature in the L2.

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I would like to begin by acknowledging that the land on which we gather is the traditional and unceded territory of the Kanien'keha:ka (Mohawk), a place which has long served as a site of meeting and exchange amongst nations.

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Lastly, I dedicate this thesis to my father, Alain Lapierre. *Comme tu serais fier de ta pitchounette aujourd'hui*.

Contribution of Authors

As the first author of the manuscript version of this thesis, Cynthia Lapierre was responsible for conceptualizing, designing, piloting, and conducting the study. This included adapting some of the instruments, collecting and analyzing the data, and writing the final research report. Dr. Laura Collins provided guidance at all stages of this project, providing particular support in the study design, data analysis, and interpretation of the findings.

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Chapter One

When it comes to my experience with second language (L2) grammar acquisition, I think of my *Intro to Spanish* undergraduate course at Laurentian University. "Ahora vamos a conjugar el verbo *hablar* en el pretérito. ¿Listos? Habl**é**, habl**aste**, habl**ó**, habl**amos**, habl**asteis**, habl**aron**." (Let's conjugate the verb *to speak* in the simple past tense. Ready?). What began as hours of rote memorization for quizzes is now a distant memory as I conjugate those verbs with the ease and fluency of a proficient speaker. According to certain classmates, the reason I was "good at Spanish" was because of its similarities with my first language (L1), French. Although I could easily map similarities between these two languages in terms of vocabulary, I did not see how French helped me learn those inflectional endings in Spanish, which were different from French. It became clear to me that people tended to assume that similarities between languages, such as being from the same language family, are helpful in language learning. I did not know it then, but this was my first research question about the relationship between morpheme acquisition and L1 influence.

As part of a final project for one of my first graduate courses in Applied Linguistics, we collected and analyzed data to investigate English learners' comprehension and production of the possessive determiners (PDs) *his* and *her*. The widely accepted developmental framework for the acquisition of *his/her* was created with L1 Francophone learners of L2 English (see White, 1998) and found to also be generalizable to two other Romance language backgrounds, Spanish and Catalán (White, Muñoz, & Collins, 2007). This framework divides acquisition into eight different stages, grouped into three broad categories: pre-emergence, emergence, and post-emergence.

Studies using this framework suggest that L1 Romance learners' difficulty with PDs is partly due to incongruencies of the gender agreement rule for *his/her* between their L1 French and L2 English. In French, for example, the PD is determined by the grammatical gender of the object possessed: Il [masc.] parle à PD-FEM *mère* / PD-MASC *père,* and not on the gender of the possessor, as is the case in English (*He* [masc.] speaks to PD-MASC mother/father). PD studies to date have found that kin-different contexts (e.g., a father and his daughter) are especially tricky because L1 Romance learners tend to produce PDs that agree locally; that is, they agree with the head noun in the noun phrase (e.g., She speaks to PD-MASC *father*), as is done in their L1. The stages of development, therefore, are descriptive of the L1-L2 incongruencies that may be causing difficulty for L1 Romance learners as they acquire these PDs.

In groups, my colleagues and I discussed our hypotheses on whether White's (1998) developmental stages would similarly capture how learners from other L1 backgrounds acquire *his/her*. To participate in this discussion, I relied on my experience as an English as a second language (ESL) teacher in South Korea and Taiwan. Unlike Romance languages, Korean and Taiwanese Mandarin do not have grammatical gender or the PD form. Instead of PDs, possession is marked by suffixing an invariant (i.e., not gender-dependent) bound morpheme to the possessor. For example, Taiwanese Mandarin (TM) marks possession by suffixing 的 (*de*) to the possessor. Whether the subject is a person (e.g., Felix) or a pronoun (e.g., he), possession is marked the same way: Felix 的 book; he 的 book. Moreover, 的 (*de*) is often dropped in speech. My prediction, based on observations when I taught in Taiwan, was that L1 TM learners would have less difficulty with PDs than L1 Romance learners do. More specifically, if Taiwanese

learners are also being influenced by their L1, lower proficiency learners might produce L1-influenced forms, such as “He is reading *he* book”, before producing the target PD form “He is reading *his* book”. In other words, if incongruencies in the gender agreement rule for PDs between the L1 and L2 are the culprit, then the only issue for L1 TM learners, hypothetically, would be the gender-dependent PD form itself.

For this final project, however, only L1 Francophones were available to participate and I was unable to investigate my hypothesis. Luckily, about a year later, I was able to recruit four L1 Mandarin Chinese participants as part of a pilot study for a course on crosslinguistic influence. These participants were university students from China currently studying in their L2 French at the Université de Montréal (UdeM); they were high-intermediate L2 speakers of French and intermediate L3 speakers of English. The results of the oral production task, however, did not provide evidence for my hypothesis about the possible use of L1-influenced forms, perhaps because they were too proficient in English. An interesting finding was that, like L1 Romance learners, there was a tendency to produce PDs that agreed in the noun phrase, which could not be mapped to L1 Mandarin influence, a tendency also observed in advanced L2 English learners from the same L1 background (Pozzan & Antón-Méndez, 2017). I was intrigued to know whether their tendency to produce PDs that agreed in the noun phrase might be reflective of universal tendencies to do so. Across languages that mark possession with PDs, the PD most commonly agrees locally in the noun phrase, unlike English (see Corbett, 2006). Another possible explanation for this tendency could be mapped to L2 recency effects. That is, their L2 French might have been influencing their PD agreement choice in L3 English (see Cenoz, 2001). As I began to write my thesis proposal, it

became clear that I needed to return to my second home, Taiwan, to collect data from learners of various proficiency levels in English, and no knowledge of Romance languages, to confirm this hypothesis.

The rest, as they say, is history.

Chapter Two

The language that learners construct during their development in a second language (L2) has long been of interest to scholars in the field of second language acquisition (SLA). One of the most interesting findings from the study of learner language is the existence of developmental sequences: stages characterized by different language behaviours that learners manifest while acquiring a grammatical feature. Developmental sequences have been found for a variety of grammatical features, such as question formation (Pienemann, Johnston, & Bridley, 1988), negation (Hyltenstam, 1977), relative clauses (Keenan & Comrie, 1977), and morpheme acquisition (Goldschneider & DeKeyser, 2001). Findings from these studies extend to learners of different first language (L1) backgrounds, although most of them have English as the target language. Similarities between L1 and L2 acquisition have also been documented. For example, overgeneralization of the irregular past tense in English (e.g., *comed* instead of *came*) has been observed in both young L1 learners and L2 learners of different ages (Maratsos, 2000). While some developmental sequences lack a theoretical explanation because they are data-derived (e.g., morpheme acquisition orders), many of these sequences are based on psycholinguistic learning processes; more specifically, the order of acquisition is characterized by increased complexity of grammatical manipulation. In the developmental sequence for question formation (Pienemann, 1998), for example, learners first learn what is characterized as the simpler task of using a fronting strategy: placing question markers (e.g., *what*, *do*) in front of declarative statements (e.g., *What* you are doing?) before moving on to the more complex task of using inversion (e.g., What *are you* doing?).

While developmental sequences have been observed in L2 learners from various L1 backgrounds, there is also evidence of L1-specific influence. In a study investigating L1 influence in morpheme acquisition, Luk and Shirai (2009) found that learners acquired the morpheme that is similar in their L1 earlier than predicted by the developmental framework, whereas the morpheme which is absent in their L1 was acquired later. Furthermore, findings suggest that the L1 can affect learners' rate of development by slowing down acquisition. In their study investigating how L1 Francophones progress with question formation, Spada and Lightbown (1999) found that the influence of L1 French led to the addition of a sub-stage within this developmental sequence: L1 Francophone learners would accept inversion with pronouns as grammatical (e.g., Where *do you* live?) but not inversion with nouns (e.g., Why *birds can* fly?), concurrent with patterns in their L1 French. Finally, a number of other factors may also affect development, such as universal constraints and processes across languages that influence L1 and L2 acquisition; psychological perceptions of transferability; the inherent complexity of the feature; and the learner's proficiency in the L2. All of these must also be considered (see Odlin, 2003). Overall, developmental sequences are useful for highlighting similar processes and challenges, while keeping in mind that the influence from a variety of factors results in learner language that is highly variable (Ellis, 2015).

One area where similar acquisitional patterns have been observed is the developmental sequence for possessive determiners *his/her* (White, 1998), a framework which outlines L1 Francophone learners' acquisition of this grammatical feature. The generalizability of these patterns has also been found in two other L1 backgrounds, Spanish and Catalán (White, Muñoz, & Collins, 2007), both of which, like French, are in

the Romance language family. To determine whether White's (1998) findings are indicative of L1 (i.e., Romance-specific) influence or shared developmental patterns across different L1 backgrounds, the framework must be tested in L1 populations outside of the Romance language family. In response to the call for replication studies in the field of SLA (Larson-Hall & Plonsky, 2015; Instruments and Materials for Research into Second Languages, n.d.), this paper revisits *his/her* acquisition in one such population: young L1 Taiwanese Mandarin (henceforth, TM) learners of English.

In previous studies, the instruments were used in pre-post test designs in which the impact of instruction on the learning of PDs was measured. The current study used a cross-sectional design to investigate learners' acquisitional patterns for PDs to determine whether the framework similarly captures their development. This inquiry is consistent with calls for research on the degree to which there are L1-particular (e.g., Spada & Lightbown, 1999; Luk & Shirai, 2009) and universal patterns (i.e., similar patterns across L1 backgrounds) (e.g., Pienemann et al., 1988; Goldschneider & DeKeyser, 2001) that learners go through on their path to acquisition of a grammatical feature. This study is, therefore, a partial replication as it replicates aspects of the original study using adapted versions of their instruments and procedures (see White et al., 2007).

The next section begins by describing White's (1998) developmental sequence for *his/her* in English, followed by an overview of PD acquisition findings, and how the present study will apply the PD framework with a different L1 population to compare acquisitional patterns with those of L1 Romance backgrounds.

The Developmental Sequence for *His/Her* in English

White (1998) fine-tuned the developmental framework for the acquisition of PDs *his/her*, based on earlier work investigating oral production of this feature (see Felix, 1981; Felix & Hahn, 1985; Lightbown & Spada, 1990; Martens, 1988; Zobl, 1984, 1985). These studies all investigated PD acquisition with L1 Francophone learners. Similar to other developmental sequences, complexity of grammatical manipulation increases as learners progress through the stages. White's framework divides acquisition into eight different sub-stages, grouped into three broad stages of PD acquisition: pre-emergence, emergence, and post-emergence (see Table 1 in the forthcoming discussion).

Pre-emergence (Stages 1 and 2)

Stage 1 is characterized by simplification and overgeneralization processes where learners either do not produce *his/her*, or they opt for the definite article in their place (Martens, 1988; Zobl, 1985). At Stage 2, learners overgeneralize the PD form *your* for all persons, genders, and numbers.

Emergence (Stages 3 and 4)

The emergence stage is characterized by the appearance of PDs in learners' oral production. More specifically, one or both PDs *his* and *her* occur (see Stage 3) with a tendency to overgeneralize one form over the other, often the masculine form (see Stage 4; Zobl, 1984, 1985).

Post-emergence (Stages 5 – 8)

The final four sub-stages of White's (1998) framework fall within the post-emergence stage. At Stage 5, learners can produce *his/her* correctly with inanimate objects but not in kin-different contexts (i.e., when the object possessed has natural

gender). Once learners have figured out the gender agreement for one PD (Stage 6) and then both (Stage 7) in kin-different contexts, the final difficulty is using PDs in reference to body parts (Stage 8). At the end of the framework, learners achieve error-free use of *his/her* in all contexts (i.e., inanimate object, kin-different, and body parts).

Finally, it is important to note that progress through the PD framework emphasizes development rather than mastery. As Spada and Lightbown explain: " developmental stages are not like closed rooms. Learners do not leave one behind when they enter another" (Lightbown & Spada, 2013, p. 56). In other words, although learners may be assigned to a post-emergent stage, PD errors characteristic of lower stages may persist in the language they produce.

Table 1

Developmental Sequence in the Acquisition of the English Agreement Rule for His/Her by French-speaking Learners (adapted from Spada et al., 2005; White, 1998)

Pre-emergence	
Stage 1	**Avoidance of *his* and *her* and/or use of definite article** The little boy play with bicycle. He have band-aid on *the* arm, *the* leg, *the* stomach.
Stage 2	**Use of *your* for all persons, genders, and numbers** This boy cry in the arm of *your* mother. There's one girl talk with *your* dad.
Emergence	
Stage 3	**Emergence of either or both *his/her*** A little boy do a cycle ride and he fall. He have a pain on back and butt. He said the situation at *her* mom.
Stage 4	**Preference for *his* or *her*** Then mother is dressing *her* little boy, and she put *her* clothes, *her* pant, *her* coat, and then she finish. The girl making *hisself* beautiful. She put the make-up on *his* hand, on *his* head, and *his* father is surprise.
Post-emergence	
Stage 5	**Differentiated use of *his* and *her*, but not in kin-different contexts (marked with *)** The girl fell on *her* bicycle. She look **his* father and cry. The dad put **her* little girl on *his* shoulder, and after, on *his* back.

Stage 6	**Differentiated use of *his* and *her*; agreement rule applied to kin-different gender for either *his* or *her*** The mother dress **her* boy. She put *his* pants and *his* sweater. He's all dressed and he say at **her* mother he go to the bathroom.
Stage 7	**Differentiated use of *his* and *her* to criterion; agreement rule applied to kin-different gender for both *his* and *her*** The little girl fell the floor, and after she go see *her* father, and he pick up *his* girl in *the* arms.
Stage 8	**Error-free application of agreement rule to *his* and *her* in all contexts, including body parts** The little girl with *her* dad play together. And the dad take *his* girl on *his* arms.

L1 Influence in PD Acquisition

Although the PD forms for the three Romance languages in which White's (1998) framework has been tested are not identical, they follow the same gender agreement rule: a rule that is incongruent with that of English. English PDs agree in gender with the possessor whereas Romance PDs agree in gender with the object possessed:

English: *She* [fem.] speaks to PD-FEM father.

Romance languages:
French: Elle [fem.] parle à PD-MASC *père.*
Spanish: Ella [fem.] habla con PD-MASC *padre.*
Catalán: Ella [fem.] parla amb PD-MASC *pare.*

The difficulty with *his/her* has been partly attributed to incongruencies in the agreement rule for PDs between a L1 Romance language and L2 English (Ammar, 2008; Collins, Trofimovich, White, Cardoso, & Horst, 2009; Spada & Lightbown, 1999; White, 1998; White & Ranta, 2002; White et al., 2007). More specifically, kin-different contexts (e.g., a *father* [masc.] and his *daughter* [fem.]) have been found to be especially tricky where L1 Romance learners have a tendency to produce PDs that agree locally in the noun phrase (e.g., She is talking to PD-MASC *father*), as they do in their L1 (e.g., French: Elle parle à PD-MASC *père*). This difficulty is characteristic of post-emergence Stages 5 and 6 in White's (1998) PD framework. What remains unclear from these findings is what is causing the difficulty for learners who are not producing PDs (i.e., pre-emergent) and those who are beginning to (i.e., emergent). If the difficulty with the gender agreement rule in kin-different contexts in post-emergence may be partly attributed to L1-L2 incongruencies, does L1 also play a role in the pre-emergent and emergent stages of PD acquisition?

Potential Areas of L1 Influence in PD Acquisition

Pre-emergence. The strategies of simplification (i.e., not producing PDs) and overgeneralization (i.e., using the definite article or the PD *your* in all contexts) used by L1 Romance learners would appear to be consistent with interlanguage behaviour in general (see Ortega, 2009). However, one possible explanation for such strategies may reflect L1 influence: L1 Romance learners may be producing something (i.e., an article or *your*) where a PD is required, as is done in their L1. What remains unclear is whether the strategies outlined above apply to L1 backgrounds where articles or PDs are not required in such contexts. In Taiwanese Mandarin, for example, *wash your hands* is simply 洗手 (wash hands). Therefore, if learners' utterances are following patterns in their L1, it is possible that errors of omission will be greater for some L1 backgrounds, such as TM.

Emergence. Although it seems a natural progression to move out of the pre-emergent stage where PDs are not produced to a stage where PDs emerge, it is unclear whether the tendency to overgeneralize the masculine PD *his* reflects L1-influenced behaviour. In Romance languages, a default gender assignment strategy is used: The masculine form is the default with nouns denoting a group of referents that include more than one gender (e.g., *Ils* [masc.] sont heureux - They are happy) and in contexts where the gender is unknown (e.g., Où est *le* [masc.] docteur? – Where is the doctor?) (see Corbett, 2006). In order to determine whether this preference is L1 Romance-specific, investigating PD production with learners from an L1 background that does not have gender-dependent PDs will reveal whether the default use of *his* is an L1 Romance-influenced strategy.

Post-emergence. Herein lies the difficulty for L1 Romance learners: the tendency to agree locally in the noun phrase in kin-different contexts (e.g., She speaks to *his father*), concurrent with the PD agreement rule in their L1 (e.g., Elle parle à *son père*). This difficulty, mapped to L1-L2 incongruencies, represents the core of this framework as outlined by the sub-stages that make up post-emergence. Another potential area for L1 influence was documented by Zobl (1984); he observed that L1 Francophones, although they had reached a high level of proficiency with PDs, continued to use the definite article with body parts, which resembles their L1 construction: Elle se lave *les* mains (She [se – reflexive pronoun] washes the hands).

Because White's (1998) PD framework was conceived of and tested with L1 Romance language learners only, the unanswered question is whether this is a L1 Romance learner sequence, or whether it could also account for learners from other language backgrounds. In order to isolate L1 influence (i.e., L1-L2 incongruencies in the gender agreement rule in kin-different contexts), the ideal testing ground is a L1 background that does not have gender-dependent PDs to either support or refute that the tendency to agree locally is L1-influenced. Further, strategies for the absence of PDs in pre-emergence, and how they appear in emergence, will shed light on whether the current framework is generalizable to other L1 backgrounds. In other words, do other L1 backgrounds use the definite article or overgeneralize *your*, as L1 Romance learners do? Is there a tendency to prefer *his* over *her* in emergence? Finally, if L1 Romance learners' difficulty with the gender agreement rule for PDs results from incongruencies between their L1 and the L2, how are learners who use a different possessive construction that is not gender-dependent affected as they acquire the gender agreement rule for *his/her*?

The L1 Hypothesis: Local Agreement and Modality

To further investigate whether L1 is the culprit viz. the difficulty with *his/her* in kin-different contexts, Pozzan and Antón-Méndez (2017) investigated the production and comprehension profiles of high-intermediate/advanced proficiency adult Mandarin Chinese L2 learners of English. Mandarin marks possession by suffixing the invariant (i.e., not gender-dependent) bound morpheme 的 (*de*) to the possessor. Whether the subject is a person (e.g., Felix) or a pronoun (e.g., he), possession is marked the same way: Felix 的 book; he 的 book. In English, however, the bound morpheme *'s* cannot be suffixed to a pronoun; instead, Felix*'s* book becomes *his* book. In this case, English uses another grammatical way of marking possession, possessive determiners, which do not exist in Mandarin. This L1 background was an ideal background language because: a) it is not a Romance language, and b) it does not have gender-dependent PDs. Therefore, if a tendency to agree locally occurred, it could not be the result of transfer from the L1 given that their L1 does not have gender-dependent PDs. Results revealed that the L1 Mandarin learners exhibited a tendency for local agreement, supporting the hypothesis that gender agreement errors result from a generalized tendency to establish agreement in the noun phrase. In light of this finding, it appears that incongruencies between the L1-L2 gender agreement rule for PDs may not be the only influence at play.

Pozzan and Antón-Méndez (2017) also investigated the extent to which difficulty with PDs surfaced across modalities; that is, whether errors with PD gender agreement in oral production tasks represent their morphological awareness of this feature as a whole, or if such errors are a production-specific issue. Recall that the PD framework (White, 1998) represents oral production of this feature exclusively. According to Konopka and

Brown-Schmidt (2014), it is a logical possibility that the interference of the upcoming planning unit (i.e., the noun phrase) can interfere with the planning of the upcoming unit (i.e., the PD), in production exclusively. In written materials, the information about the possessor is presented first (e.g., Who is the boy talking to? *He* is talking to *his*…). In production, however, the conditions are not the same. As a speaker is planning an utterance online, the features of the upcoming object possessed are being prepared for in the planning of the noun phrase. In other words, the speaker is focusing on what is to come: [masculine antecedent + verb] to *his mother*. As a result, the different conditions between written tasks and production may partly explain why the tendency to agree locally appears to be production-specific. According to the findings of their Mandarin participants' comprehension profiles (i.e., those measuring morphological awareness) juxtaposed with those of their production profiles, Pozzan and Antón-Méndez (2017) found that the local bias tendency was production-specific and did not reflect their grammatical knowledge of the agreement rule for PDs. These findings add to our knowledge of how learners progress with PD acquisition by suggesting that the tendency for local agreement may not be L1 Romance-specific and that productive knowledge of PDs may not reflect their overall understanding of the gender agreement rule for this feature.

The Present Study

At this time, it is unclear whether White's (1998) developmental framework captures the acquisitional patterns of L1 backgrounds outside the Romance family. According to Pozzan and Antón-Méndez (2017), the tendency to agree locally in the noun phrase, characteristic of White's post-emergence stage, also appears to be not solely

attributable to L1-L2 incongruencies in the gender agreement rule. Their study, however, did not consider White's (1998) developmental sequence. As such, further investigation with lower proficiency learners is needed to determine how pervasive this tendency may be, and whether PD-related strategies in other stages are consistent with White's (1998) framework. This will also shed light on whether L1 affects the rate of development for certain L1 backgrounds more than others. Moreover, research is needed to confirm Pozzan and Antón-Méndez's (2017) suggestion that the difficulty with *his/her* may be production-specific; that is, learners may be in the process of transforming declarative or procedural knowledge into automatized knowledge (DeKeyser, 2014; Segalowitz, 2003). Further investigation of grammatical knowledge and productive knowledge is needed to determine whether this discrepancy between modalities is specific to learners in post-emergence, or if it is also manifested in lower stages of development.

Our study had one overarching research question: Does the developmental sequence for PDs *his/her* (White, 1998), validated for French, Spanish, and Catalán L1 speakers, also account for the acquisitional patterns of L1 Taiwanese Mandarin speakers of L2 English?

More specifically, do we observe that L1 TM learners go through a pre-emergence stage characterized by simplification (i.e., do not use PDs) and overgeneralization strategies (i.e., use *the* or *your*), an emergence stage characterized by a tendency to prefer one PD over the other (i.e., the masculine form), and a post-emergence stage in which the tendency to produce PDs that agree locally (i.e., in the noun phrase) in kin-different contexts gradually gets sorted out, followed by use with body parts? Moreover, within each of these three broad developmental categories, do we see sub-

stages that are congruent with those outlined by White (1998), or does having a L1 with a different possessive construction result in a different developmental pattern? Finally, does their productive knowledge of *his/her* reflect their comprehension of this feature?

Methodology

This study followed a cross-sectional design. We recruited L1 Taiwanese Mandarin (TM) speakers at different levels of proficiency to investigate their morphological awareness and productive knowledge of PDs *his/her*. Results provided a snapshot of how L1 TM learners of L2 English might progress with this grammatical feature over time.

Data Collection

Site. Participants were recruited at two private English as a second language (ESL) schools in Hsinchu City, Taiwan, one elementary (henceforth, Site 1) and one middle school (henceforth, Site 2). ESL teachers in these private English schools are native speakers of English from countries such as Canada, the United States, Australia, the United Kingdom, and South Africa. In Taiwanese public schools, ESL classes alternate between teachers from these countries and a local L2 English-speaking ESL teacher.

Recruitment. The first author visited both sites on several occasions over a one-month period to recruit participants for this study. She had previously been an ESL teacher at Site 1 and had worked as a substitute teacher at Site 2. A local Taiwanese teacher was also present to translate all information given by the researcher in Taiwanese Mandarin. A language background questionnaire (LBQ) confirmed that no participant

had knowledge of any additional language which has gendered pronouns and gender-dependent PDs (Appendix A). All participants who returned signed consent forms (one parental and one child-participant) and a completed LBQ were given a small gift regardless of whether they were selected to participate in the study.

Participants. A total of 61 participants were included for testing. Of these, 57 participants were retained for the study (26 female, 31 male; *N* Site 1= 38, *N* Site 2 = 19); four were excluded due to insufficient language produced (*N* = 1) or experimenter error (*N* = 3). Participants were 8 to 12 years of age (*M* = 9.91). Years of ESL instruction ranged from 1 to 9 years (*M* = 5.94). Language backgrounds included 1) monolingual Taiwanese Mandarin (*N* = 14), 2) bilingual TM and Taiwanese or Hakka (*N* = 33), and 3) trilingual TM, Taiwanese, and Hakka or Japanese (*N* = 10). These languages all mark possession with the same construction (i.e., suffixing an invariant bound morpheme to the possessor); as a result, they are expected to face the same challenges with PDs in terms of the linguistic repertoire that is available to them.

Instruments

The three instruments used were adapted from White, Muñoz, and Collins (2007). These were chosen in line with our goal to replicate aspects of the original study using adapted versions of their instruments and procedures to validate White's (1998) framework with a different L1 background.

Grammaticality Judgment Task

The original measure consisted of a passage correction task where participants read an illustrated story containing both PD and distractor errors. Participants were instructed to put an X on each error and write their correction above it; they were informed that there was a maximum of one error per sentence, but they did not know the total number or kind of errors there were in the text. Participants in previous studies were 11 to 14 years old enrolled in an intensive ESL program. For the present study, some of the participants had fewer years of ESL instruction and a lower proficiency in L2 English. In order to render the task more level-appropriate, the grammaticality judgment task (GJT) was adapted into a paper-and-pencil multiple-choice test. Further, a vocabulary profile analysis of the task text was completed using Cobb's (n.d.) *Compleat Lexical Tutor v.8.3* software. This analysis determined that 95.8% of all items, including written instructions, were within K-bands 1 and 2, or the 2,000 most frequent words in English, an appropriate range for lower proficiency learners to understand the text (Nation, 2006).

The GJT used in this study consisted of 40 items, 24 of which targeted PDs (see Table 2). The remaining 16 items were distractors. There were 8 PD items (*her* = 4, *his* = 4) for each of the three following PD categories: 1) inanimate object (e.g., Felix's friends are coming to *his party*), 2) kin-different context (e.g., *Her father* helped her buy it), and 3) body parts (e.g., He is waving *his hand*). Each cloze item for PDs had a choice of 4 possible items in randomized order: *his*, *her*, and two distractors: *a, an*, *the*, *your*, or *my*.

Table 2
Distribution of PD items on the GJT

PD	inanimate object	kin-different	body part
his	4	4	4
her	4	4	4

Participants varied in the time they required to complete the GJT, ranging from 10 to 30 minutes. The researcher explained that the sentences told a story about a boy named Felix; this was done to avoid possible confusion with the gender of the character. Participants were encouraged ask questions if they did not know a word, a situation which occurred rarely and with lower proficiency learners exclusively. When necessary, the translation of individual lexical items was provided (e.g., Participant: What is ears? Researcher/Taiwanese assistant: 耳朵 Ěrduǒ). A sample item from the GJT is provided below:

Picture #3

11. Bob and _____ sister Julie are going to the party, too.	a. his b. the c. my d. her

Picture-description Task

The second measure consisted of a series of six cartoons that provide contexts for producing PDs in the three aforementioned categories: inanimate object, kin-different contexts, and body parts. These cartoons, used previously by White (1998), present family situations in which there was a child and one or more parents. This was a free production task (Ellis, 2002) in that, although the situations in the cartoons create contexts for the use of *his/her*, participants may or may not produce them (J. White, personal communication). Vocabulary items (e.g., father, leg, Band-Aid) were provided on the cartoons in both English and the students' L1 (traditional Mandarin characters), as was also done in a previous PD study, to avoid limited production due to lexical gaps.

For this task, participants met with the researcher one-on-one. Responses were recorded using the QuickTime Player audio recorder software on a Macbook Air, and later transcribed on the same device. Participants varied in the time they required to describe the six cartoons, ranging from 5 to 9 minutes. In cases where the participant produced little, following the procedure outlined in previous PD studies, the researcher elicited responses that would create a PD context (e.g., Who is father angry with? Expected response: *His* daughter).

Stimulated Recall Task

Once the picture-description task was completed, participants were required to comment on a subset of their answers from the GJT. The stimulated recall was done after the picture-description task to avoid priming the use of PDs in oral production. This final task allowed us to further investigate participants' comprehension of the gender

agreement rule for English PDs. The researcher opened the participant's booklet to ask about six PD items, *his* and *her* for each of the three categories, which participants may or may not have answered correctly. Participants were asked to explain the reasoning behind the choices they made; i.e., how did they decide that it was *his* and not *her*. Participants' comments were audio-recorded and transcribed. Participants varied in the time they required to explain their PD choices on the GJT, ranging from 2 to 5 minutes.

Procedure

Participants completed all three tasks in a single 40-minute session in the following order: 1) the grammaticality judgment task, 2) the picture-description task, and 3) the stimulated recall task. Once data collection was completed for the site, the first author met with all of the participants to explain the focus of the study.

Consistent with other PD studies, oral production of *his/her* for the picture-description task was used to assign participants to a PD stage within White's (1998) framework. Stage assignment would reveal whether the L1-Romance sequence similarly captures the acquisitional patterns of L1 TM learners' PD acquisition. Next, PD accuracy scores on the GJT allowed us to measure participants' morphological awareness of PDs, which were later used in conjunction with a second measure, the results of the stimulated recall. This allowed us to compare participants' comprehension (i.e., morphological awareness) and production profiles viz. the gender agreement rule for PDs. Moreover, this comparison allowed us to further investigate whether the difficulty with *his/her* is production-specific, and whether the discrepancy between PD grammatical knowledge and production is also exhibited in the stages that precede post-emergence.

Analyses and Results

Our main research question was: Does the developmental sequence for PDs *his/her* (White, 1998), validated for French, Spanish, and Catalán L1 speakers, also account for the acquisitional patterns of L1 Taiwanese Mandarin speakers of L2 English? In the following sections, we present the analysis and results of PD stage assignment for our participants.

Stage Assignment

Participants' oral production of PDs on the picture-description task was analyzed to assign participants to a stage in the PD developmental framework. Following White et al. (2007), this was done in four steps.

1) **Obligatory PD contexts.** All utterances requiring the use of *his* or *her*, regardless of whether or not a PD was given (e.g., He's talking to [PD] mom), were considered.

2) **Category of possessed entity**. For all identified obligatory PD contexts, possessed objects were classified according to the following possible categories: inanimate object, kin-same, kin-different, and body parts.

3) **Form produced and accuracy.** Participants' utterances were coded according to i) the form produced: PD *his* or *her*, articles (definite and indefinite), possessive –s, or no form, and ii) accuracy of *his* or *her* when used. The use of the L1-influenced forms *he/he's* or *she/she's* in place of *his* or *her* respectively had not been reported in previous research. For the purposes of this analysis, these instances were credited for accurate gender agreement and coded as PDs because,

although the form was incorrect, the function was that of a PD (e.g., She is talking to *she* father). In addition, based on evidence of comprehension of the gender agreement rule for PDs (to be discussed later), participants likely were aware that a possessive marker was required in the context, but produced forms consistent with the possessive construction in their L1. It is possible that *he's* may have been a pronunciation error for *his*, however, all other words with a short vowel /I/ was pronounced correctly (e.g., fish, sit, is). Therefore, we coded *he's* as a L1-influenced form and not as an error of pronunciation.

4) **PD stage assignment.** Finally, consistent with previous PD studies, assignment to a stage within White's (1998) framework required four correct uses, regardless of the number of incorrect utterances. Assignment to a PD stage was marked as *Emergent* if two or three correct instances of that stage occurred.

Inter-rater reliability for the coding was assessed as follows. First, rater 1 (the first author) initially coded a subset of the transcripts for each step outlined above. Next, a second rater verified the initial coding. Once 100% agreement was reached on this subset, rater 1 coded the remaining transcripts.

Obligatory PD contexts. Raters 1 and 2 followed a protocol (Appendix B) for identifying contexts which required the use of *his/her*. Raters initially coded ten (N=10) of the 57 transcripts of the picture-description task: two participants from each age group (i.e., from 8 to 12 years of age). To select transcripts, participant codes were entered into a random number generator (http://www.randomizer.org/). The total number of PD contexts for all selected transcripts (N = 10) were summed for a total of 224 PD contexts.

The raters agreed on 87% (187 out of 214) PD contexts. Disagreements were resolved by discussion and revising the protocol. Then, raters 1 and 2 coded four ($N = 4$) additional transcripts with 92% (96 out of 104 PD contexts) agreement. Disagreements were due to incorrect PD context assignment (e.g., erroneously identifying a PD context in the subject position: [His] *Mom* is angry); these were identified and corrected in consultation between both raters until 100% agreement was achieved. Once PD contexts were identified, the raters coded the forms produced in these contexts, as described in the next section.

PD category, form produced, and accuracy. Raters 1 and 2 coded what form participants produced in obligatory PD contexts, which included PDs (including L1-influenced forms), articles (definite and indefinite), possessive –s, and no form. Coding was done for 10 participants: the same randomly selected transcripts coded for obligatory PD contexts outlined above. Answers were also coded 1) by category of the possessed entity (i.e., inanimate object, kin-same, kin-different, and body parts), and 2) for grammatical accuracy (agreement with the possessor). Inter-rater reliability was calculated by finding the average agreement for each transcript, followed by calculating the overall average of agreement for 10 transcripts. The raters agreed on 96% of the 616 assigned PD codes. Disagreements were due to incorrect or missing codes; these were identified and corrected in consultation between both raters until 100% agreement was achieved. Once all PD contexts were identified and the forms produced therein coded, the raters were able to assign participants to their respective PD stage following White's (1998) criteria.

PD stage assignment. Raters 1 and 2 assigned a subset of the participants (*N* = 20) to a stage following White's (1998) developmental sequence for the acquisition of *his/her* (Table 1). In cases where the participants corrected themselves, the last PD produced was considered (e.g., He is talking to her *his* mother). Inter-rater reliability was calculated by finding the overall average of agreement. The raters agreed on 95% of the 20 PD stage assignments. There was only one disagreement, which was corrected in consultation between both raters, resulting in 100% agreement. Once PD stages were identified, the distribution allowed us to group participants according their productive knowledge of PDs.

Results

The distribution of stage assignment for our participants (*N* = 57) is presented in Table 3 below. Note that no participant was assigned to sub-stages 2, 5, or 6 following White's (1998) criteria for these stages.

Table 3

Distribution of Stage Assignment Following White (1998)

Developmental Stage	Developmental Sub-stage	Total *N* of Participants	Total *N* of Emergent Participants
Pre-emergent	Stage 1	14	0
	Stage 2	0	0
Emergent	Stage 3	6	4
	Stage 4	10	0
Post-emergent	Stage 5	0	0
	Stage 6	0	0

Table 3

Distribution of Stage Assignment Following White (1998)

Stage 7	22	14
Stage 8	5	5

Pre-emergent. The pre-emergent group consisted of 14 participants out of the 57 who participated in this study (mean age = 8.43, SD = 1.09; mean years of study = 3.54, SD = 1.75). As shown in Table 4 above, all 14 participants were classified as Stage 1, the simplification stage where either no PD or the definite article is used. None were assigned to Stage 2; that is, none overgeneralized the PD *your* in production. Although the majority of their responses matched the descriptions for Stage 1, Figure 1 illustrates that other strategies were also used in the place of PDs, namely using the indefinite article or the possessive –s construction. This group more frequently produced 1) no form where a PD is needed, followed by using 2) the definite article, 3) the indefinite article, and 4) the possessive –s.

Emergent. The emergent group consisted of 16 participants (mean age = 9.81, SD = 1.38; mean years of study = 6.38, SD = 1.93). Overall, they used PDs in 45% of the obligatory contexts they produced in the picture-description task. Note that grammatical accuracy was not considered at this stage. Of the six participants in Stage 3, four produced fewer than four PDs in obligatory contexts. Only two were true Stage 3, meaning they produced four or more PDs. Of the ten participants at Stage 4, who show a preference for one PD over the other, eight preferred the masculine form *his* over the feminine form *her*. However, this preference may be skewed; participants tended to focus

on the child as the subject or main character. Four of the six cartoons featured a male child; as a result, this may partly explain the higher production of *his*. This group produced, in order of frequency: 1) more PDs overall in obligatory PD contexts, 2) no form, 3) the definite article, 4) the indefinite article, and 5) possessive –s (see Figure 1). This pattern is consistent with that of the pre-emergent group.

Post-emergent. The post-emergent group consisted of 27 participants (mean age = 10.74, SD = .98; mean years of study = 7.11, SD = 1.87). As previously mentioned, none of the participants in this group were assigned to Stages 5 or 6, where learners are able to correctly use PDs with inanimate objects, but continue to struggle with the gender agreement rule in kin-different contexts and with body parts. Twenty-two of these participants were assigned to Stage 7, characterized by correct use of PDs in differentiated uses (inanimate objects and kin-same) and kin-different contexts, but not with body parts. Of these 22, 14 were assigned as Emergent, meaning they produced four or more correct instances of only one PD in kin-different contexts. The remaining five were assigned to Stage 8, all of whom were assigned as Emergent viz. their use of PDs with body parts (i.e., more than one but fewer than four correct uses). Like the emergent group, this group most frequently produced PDs in obligatory PD contexts at nearly 66%. After PDs, however, this group more frequently produced the definite article compared to other groups who more frequently produced no form. The indefinite article and possessive –s were produced with the least frequency (Figure 1). Due to limited contexts for using PDs with body parts, we did not further investigate whether this group, like L1 Romance, produces the definite article in such contexts.

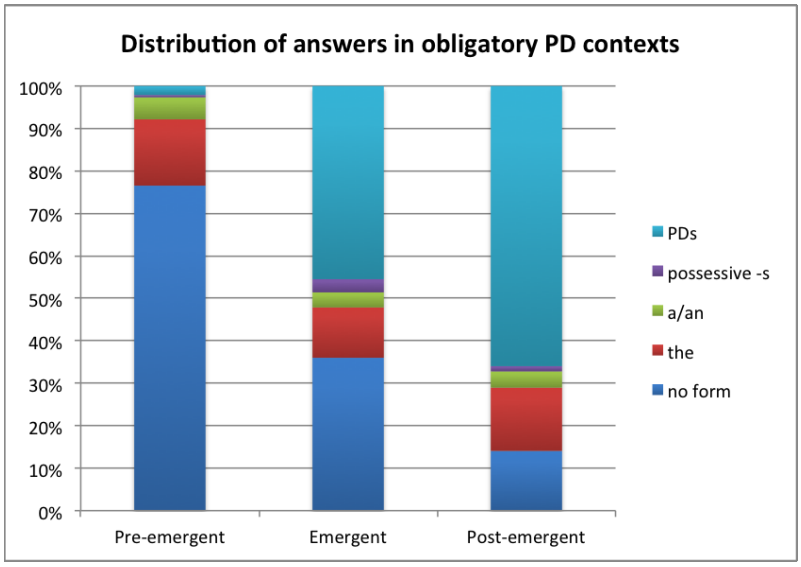

Figure 1. Distribution of Answers from the Picture-description Task

To determine whether there was a tendency to produce PDs that agree locally in the noun phrase, accuracy scores (N = 27) were calculated for kin-different contexts only. Of the 376 kin-different PD contexts, 235 (62.5%) were grammatical, meaning that 141 (37.5%) incorrectly agreed in the noun phrase.

L1-influenced Forms

Thirteen out of 57 participants produced what appeared to be L1-influenced forms (pre-emergent = 2, emergent = 6, post-emergent = 5). Recall that possession in TM is marked by suffixing a bound morpheme to the pronoun: he-*de* friend. Further, it is acceptable to drop the bound morpheme in speech: *he* friend. Participants who produced L1-influenced forms either 1) transferred the bound morpheme construction by producing *he's* or *she's* instead of a PD, or 2) dropped the morpheme by only supplying the pronoun, *he* or *she*. A total of 36 L1-influenced forms were produced: 20 were *he/she* and

16 were *he's/she's*. All 36 of these correctly agreed in gender with the possessor. An example for all four L1-influenced forms is provided below.

Researcher's Question	Participant's Answer
R: Where did the girl put make-up?	Emergent: On *she* face.
R: What is happening in this picture?	Post-emergent: *She's* son say put the gum in the pocket.
R: Why is father angry?	Emergent: *He* daughter don't like fish.
R: Who is the son talking to?	Post-emergent: He talk to he *he's* mom say, "I fell down".

Morphological Awareness and Productive Knowledge

Next, we compared participants' morphological awareness and productive knowledge of PDs to determine whether there was a discrepancy between the two; that is, does participants' oral production of PDs reflect their grammatical knowledge of this feature? Morphological awareness of PDs was measured in two ways: the PD accuracy score on the GJT and the coded responses on the stimulated recall.

Grammaticality Judgment Task

GJT scores were obtained by counting the number of correct answers out of a possible 24 and converting these into percentage accuracy scores. Table 4 shows each group's mean GJT score and range. As the table shows, the minimum scores vary by

group, but there were participants in all three groups that were 100% accurate (refer to Figure 2). To determine whether the GJT is an accurate predictor of PD stage assignment, a Spearman correlation was performed these two factors (homogeneity of variance not met). The correlation was moderate, $r(55) = .561$, $p < .001$, suggesting that the GJT accounts for about half of the variance in PD stage assignment. However, the large overlap across the groups' scores suggests that the GJT score does not reliably reflect participant's productive knowledge of PDs.

Table 4
Distribution of Mean GJT Scores

Developmental Stage	*N* of Participants	GJT Range	Mean GJT /24 (%)
Pre-emergent	14	2-24	14.14 (58.93%)
Emergent	16	7-24	18.25 (76.04%)
Post-emergent	27	12-24	22.08 (92%)

Note. The following acronym is used: Grammaticality Judgment Task (GJT).

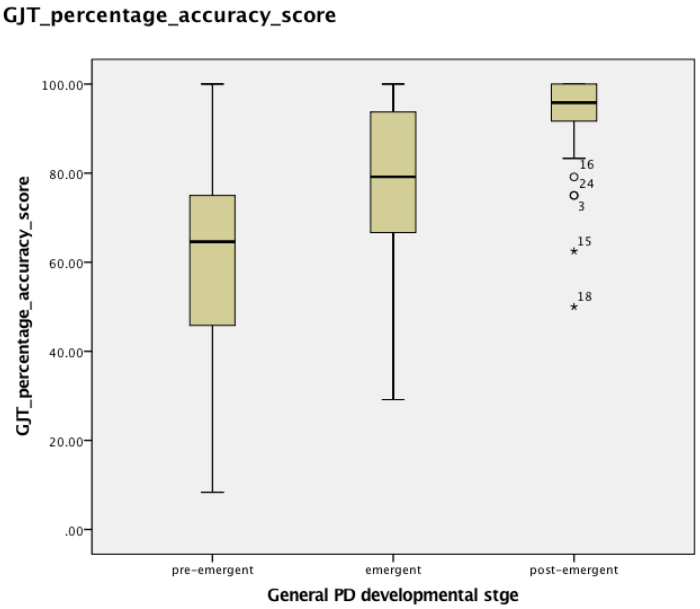

Figure 2 Distribution and Range of GJT Scores Across Groups

Stimulated Recall Task

Previous studies analyzed participants' responses in the stimulated recall and subsequently assigned them to one of four meta-comment levels. Following this meta-comment profile (see White et al., 2007), participants' grammatical knowledge (i.e., morphological awareness) of the gender agreement rule progresses from 1) providing wrong or irrelevant information about the PD, 2) to operating with the L1 Romance rule (i.e., agreement in the noun phrase), 3) to providing mainly correct information that includes reference to gender distinction, and 4) to giving error-free explanation of the PD gender agreement rule, including reference to the 'rule of thumb' learned as part of the instructional treatment.

Because our study did not include an instructional treatment (i.e., no 'rule of thumb' on PD agreement was learned) and our L1 population does not have gender-

dependent PDs (i.e., no incongruent gender agreement rule), we did not classify our participants' responses following this meta-comment profile. Instead, comments were coded according to whether the participant 1) provided nothing (e.g., I don't know) or irrelevant information not pertaining to the agreement rule for PDs, 2) agreed in the noun phrase, and 3) agreed with the possessor. Participants explained their reasoning for six responses on the GJT (items 1, 4, 7, 8, 16, and 25): one *his* and one *her* with two inanimate objects, two kin-different contexts, and two body parts.

Results

Fifty-four of the 57 participants were able to offer some explanations for their responses (excluding two pre-emergent and one emergent participant). Out of these, 33 correctly attributed their PD choice to the gender of the possessor for all six items. Table 5 shows the distribution of responses for each group. All groups most often based their PD choice on 1) the gender of the possessor, followed by 2) providing incorrect or irrelevant information, and least often by 3) agreeing with the gender of the possessed entity in the noun phrase. However, agreement with the possessor accounted for an increasing proportion of correct responses as learners progress through the stages. In cases where participants erroneously agreed in the noun phrase, these most frequently occurred in kin-different contexts. Finally, cases in which learners corrected their response on the GJT were negligible. Below are some example responses for each of these categories from three different participants:

1) "Because is *she* father. That is *not a boy*" (agrees with possessor gender)

2) "Is mother say, *my baby girl*" (no/irrelevant information)

3) "Because sister is *girl*" (agrees with the possessed)

Results of stage assignment, the GJT, and stimulated recall suggest that there is a discrepancy between grammatical knowledge and productive knowledge of PDs. In the following section, we will further detail the implications of these results and revisit White's (1998) framework in light of our findings.

Table 5
Distribution of Responses on the Stimulated Recall Task

Developmental Stage	*N* of Participants	*N* with a Perfect Score	Total Responses	Incorrect Information	Agreement: Noun Phrase	Agreement: Possessor (%)
Pre-emergent	12	3	66	17	6 (KD = 5)	43 (65%)
Emergent	15	8	88	11	8 (KD = 3)	69 (78%)
Post-emergent	27	22	162	8	3 (KD = 2)	151 (93%)

Note. A perfect score is an answer that refers to/agrees with the possessor for all six items. Incorrect information includes explanations that were irrelevant. The acronym KD refers specifically to kin-different contexts.

Discussion

Our main research question was: Does the developmental sequence for PDs *his/her* (White, 1998), validated for French, Spanish, and Catalán L1 speakers, also account for the acquisitional patterns of L1 Taiwanese Mandarin speakers of L2 English? Results of stage assignment according to the picture-description task show that participants progressed through White's (1998) framework following the broad developmental stages of pre-emergence, emergence, and post-emergence. However, none of the 57 participants exhibited behaviour consistent with Stages 2 (pre-emergence), or with Stages 5 and 6 (post-emergence). In addition, the sub-stage descriptors did not fully capture some of the strategies used by the L1 TM participants. Such strategies included providing the indefinite article, the possessive –s construction, and creating L1-influenced forms (*he/he's* and *she/she's*). As for the local agreement issue characteristic of post-emergence, our participants also tended to agree in the noun phrase in more than a third (37.5%) of the kin-different contexts they produced, which cannot be attributed to L1 influence. This provides further evidence for Pozzan and Antón-Méndez's (2017) Generalized Local Bias Hypothesis, where L1-L2 incongruencies in the gender agreement rule for PDs are not solely responsible for this tendency. Further, our findings suggest that L1 TM learners may figure out the gender agreement rule quickly whereas, for L1 Romance learners, the agreement rule appears to take longer. One possible reason for this difficulty may be that L1 Romance learners are battling 1) L1 influence viz. the gender agreement rule for English PDs, and 2) a crosslinguistic tendency to produce PDs that agree in the noun phrase, where L1 TM are only working out the L2 rule.

The moderate correlation between participants' GJT score and PD stage appears to contradict Pozzan and Antón-Méndez's (2017) findings of a discrepancy between modalities with respect to PD knowledge/use. A closer look at GJT scores and results of the stimulated recall, however, suggests that all groups had some morphological awareness of PD gender agreement. More specifically, all groups scored above 50% on the GJT and correctly attributed their PD choice to the possessor, including in kin-different contexts. Interestingly, this was also the case for pre-emergent learners who did not produce any PDs in the picture-description task, indicating that their morphological awareness of PDs is better than their oral production would suggest.

In the following section, we will detail the implications of our findings by juxtaposing them with those of previous PD studies. We also suggest modifications to the current PD framework in light of these findings.

Revisiting White's (1998) PD Framework

In Table 6, we suggest some modifications to White's (1998) framework in light of our findings and those of Pozzan and Antón-Méndez (2017).

Pre-emergence. The term *avoidance* has been replaced with *absence*. This change is made in line with research which suggests that predictions of avoidance cannot be made based on L1-L2 similarities and differences alone. This term has become controversial because, in order to claim avoidance, it must be established that the participant knew enough about the structure to be able to avoid it (see Kamimoto, Shimura, & Kellerman, 1992). Other factors to be considered include universal constraints and processes; learners' psychological judgment of transferability; their

current proficiency level in the L2; and the inherent complexity of the target L2 form (see Odlin, 2003). According to our participants' oral production, it is possible that some may be avoiding the use of PDs while, for others who produced limited utterances (e.g., one-word answers), this may be more reflective of their low proficiency in the target language in general.

We found that the definite article was not the only strategy used in place of PDs. The indefinite article (a/an) and the possessive –s construction have both been added to the description of learners at the pre-emergent level, to include patterns of development in our findings. Examples from our oral data transcriptions are provided for these modifications. We also highlight that the use of the PD *your* for all persons, genders, and numbers is characteristic of L1 Romance learners at this developmental stage. One possible explanation for L1 TM learners not overgeneralizing *your* is that, in both written and spoken TM, the possessive construction (i.e., suffixing *de* to the possessor) is not needed in some contexts; for example, *wash your hands* is simply 洗手 (wash hands) in TM. It is possible that this is an error of omission which could be mapped to a difference in their L1 TM, where a PD is not required in such contexts.

Emergence. Our findings support the stages of development for emergent learners, as outlined by White (1998). Moreover, our findings support the documented preference for the masculine form found in previous PD studies (e.g., Zobl, 1984, 1985; Spada & Lightbown, 1999; White et al., 2007). Evidence of L1 influence was also present at this stage, as reflected by the production of PD-like forms *he/she* and *he's/she's*, which have been included in the modifications we propose below. Six out of the 16 participants in the emergent group produced utterances reflecting this L1-like form

(e.g., *He see* he *mom and hug she)*. Interestingly, although the form is incorrect, the PD-like form they produced always correctly agreed in gender with the possessor. This may suggest that participants at this stage are emergent in terms of producing PDs where required as well as the PD form itself, the latter of which could be attributed to L1 influence.

Post-emergence. The overarching issue, according to all research on PD acquisition to date, is the tendency to agree locally in kin-different contexts (e.g., She is talking to PD-MASC *father*) as was found with L1 Romance (e.g., White et al., 2007) and L1 Mandarin Chinese/Taiwanese Mandarin learners (Pozzan & Antón-Méndez, 2017/the present study). It is also important to note that issues with the PD agreement rule may be production-specific; these errors may not reflect L2 users' explicit knowledge of the PD gender agreement rule. It is possible that, in oral production specifically, the features of the upcoming object in the noun phrase might be interfering with the planning of the PD (Konopka & Brown-Schmidt, 2014). Another possible explanation, consistent with Skill Acquisition Theory (DeKeyser, 2014), is that participants in this study have explicit knowledge of the agreement rule, but perhaps due to insufficient practice (perhaps a result of the schools' preference for teacher-fronted approaches and lack of oral assessments), they have not yet automatized it.

Even when learners had reasonable control over PDs, there was still some evidence of L1-influenced behaviour. Overall, L1 influence was present for five out of the 27 post-emergent participants. Although the L1-influenced forms they produced were not target-like, they all agreed with the possessor's gender, including in kin-different contexts. Their GJT and stimulated recall responses provide further evidence that this

creation performed the function of the required PD in their utterance. Finally, it is well documented that learners may produce features reflective of lower stages of development while acquiring a target feature (see Kellerman, 1985). In other words, although these participants were assigned to post-emergent stages, some of the errors produced may reflect those characteristic of lower stages. For example, they may sporadically use an L1-influenced form instead of the required PD form (see Stages 3-4) even though they have been assigned to a post-emergent stage (i.e., Stages 5-8).

Table 6

Revisiting the Current Developmental Sequence for the Acquisition of His/Her

White (1998)	*Suggested Modifications*
Pre-emergence	
Stage 1: Avoidance of *his* and *her* and/or use of definite article The little boy play with bicycle. He have band-aid on *the* arm, *the* leg, *the* stomach. **Stage 2: Use of *your* for all persons, genders, and numbers** This boy cry in the arm of *your* mother. There's one girl talk with *your* dad.	**Absence of determiners** Son play *with bicycle*. **Use of** **a) definite article, b) indefinite article, c) possessive -s** a) He have Band-Aid on *the* arm, *the* leg, *the* stomach. b) The boy is riding *a* bike and he is just fall down. c) The *girl's* father help she. **Use of *your* for all persons, genders, and numbers (characteristic of L1 Romance learners)** This boy cry in the arm of *your* mother.
Emergence	
Stage 3: Emergence of either or both *his/her* A little boy do a cycle ride and he fall. He have a pain on back and butt. He said the situation at *her* mom. **Stage 4: Preference for *his* or *her*** Then mother is dressing *her* little boy, and she put *her* clothes, *her* pant, *her* coat, and then she finish. The girl making *hisself* beautiful. She put the make-up on *his* hand, on *his* head, and *his* father is surprise.	**Emergence of either or both *his/her*, as well as L1-influenced forms (*he* or *he's; she* or *she's*)** *She* son say he want to the bathroom. He do help *he's* boy. **Preference for *his* or *her*, tendency to prefer *his*, as well as L1-influenced forms (*he* or *he's; she* or *she's*)** She talk to *his* mother and *his* father say *his* face is so dirty.

Post-emergence

Stage 5: Differentiated use of *his* and *her*, but not in kin-different contexts (marked with *)
The girl fell on *her* bicycle. She look **his* father and cry.
The dad put **her* little girl on *his* shoulder, and after, on *his* back.

Stage 6: Differentiated use of *his* and *her*; agreement rule applied to kin-different gender for either *his or her*
The mother dress **her* boy. She put *his* pants and *his* sweater.
He's all dressed and he say at **her* mother he go to the bathroom.

Stage 7: Differentiated use of *his* and *her* to criterion; agreement rule applied to kin-different gender for both *his/her*
The little girl fell the floor, and after she go see *her* father, and he pick up *his* girl in *the* arms.

Error-free application of agreement rule to *his* and *her* in all contexts, including body parts
The little girl with *her* dad play together. And the dad take *his* girl on *his* arms.

Issues working out the agreement rule:

- **General tendency to agree in the noun phrase: *kin-different contexts (e.g., father and daughter)**
  She has a gift and *his father* helped her buy it.
  He fell down and go and find *her mother*.

- **L1 effects:**
  L1 Romance: Producing definite article with body parts
  L1 Mandarin: Producing L1-influenced forms
  (i.e., correct agreement but incorrect form)

- **Note: Agreement issues may be production-specific**
  (i.e., not reflect comprehension of agreement rule)

Conclusions

The present study found that White's (1998) three-category framework of pre-emergence, emergence, and post-emergence for the acquisition of English PDs captured L1 TM's learning trajectory. However, some minor adjustments to sub-stages within each category were made to highlight similarities and differences between L1 backgrounds investigated thus far (e.g., tendency to agree in the noun phrase, L1-influenced PD-like forms). Although a cross-sectional study cannot reveal rate of acquisition, the findings suggest that L1 TM learners may not require as many steps towards mastery of PDs as L1 Romance learners do. Our findings also suggest that PD errors are more pervasive in production, as revealed by the results of the GJT and stimulated recall measuring their morphological awareness of the PD gender agreement rule. Finally, by modifying and including PD findings from a L1 outside of the Romance family, this will provide language learners and educators with more generalizable PD developmental patterns as well as highlight possible L1-specific intricacies that may appear in learners' utterances.

Limitations. There are some limitations of the research, however, that need to be acknowledged. Regarding the instruments, PD stage assignment revealed that the picture-description task provided too few contexts for PD production with body parts. As a result, we could not investigate whether L1 TM learners, like L1 Romance learners, also tend to use the definite article in place of PDs with body parts. To address this, future studies could develop a protocol to elicit an equal number of contexts across categories (i.e., inanimate object, kin-different, and body parts), or target PD use with body parts exclusively. Another limitation of the picture-description stimuli arose; there was a tendency to focus on the child as the subject (i.e., main character) of the cartoon. A total

of four of the six cartoons featured a male child; as a result, there were far more *his* produced than *her,* which may be giving the false illusion of a preference for the masculine form.

Future Research

Replication studies. Further investigation of the effects of the L1 on L2 developmental sequences is needed. One such study could replicate the present study with other L1 backgrounds that mark possession as Mandarin does, such as Korean or Japanese, to confirm our findings. That is, do L1 Korean or Japanese learners also produce a L1-influenced PD-like form as the L1 TM did? It would also be interesting to compare the acquisitional patterns of a L1 background that marks possession as English does. Arabic, for example, has the same gender agreement rule for PDs as English: PDs agree with the natural gender of the possessor. Therefore, future studies could investigate whether Arabic learners also struggle with PD gender agreement in kin-different contexts as other L1 backgrounds do. Such studies would add to our knowledge of how L1 may influence PD acquisition, and whether the general tendency to produce PDs that agree locally is characteristic of all L2 English learners, regardless of shared or contrastive agreement rules between their L1 and the L2.

Pedagogical interventions. Most PD studies to date have involved a pedagogical intervention where learners were given a 'rule of thumb' for English PD agreement (e.g., Spada et al., 2005; White, 1998; White & Ranta, 2002; White et al., 2007). First, learners were given a rule of thumb (Ask yourself 'whose X is it?). Next, their attention was directed to the contrast between the gender agreement rule between their L1 (either French, Spanish, or Catalán) and that of English. Learners applied this rule in a series of

cloze tasks where they were instructed to identify and draw an arrow to the possessor. Finally, they had to provide the rationale for their PD choice to a partner, which was later addressed in a whole class discussion and feedback session for this task. While our findings are not sufficient to make concrete pedagogical recommendations, they do offer some direction for future research. One such pedagogical intervention for L1 TM learners would involve contrasting the possessive construction between their L1 (an invariant bound morpheme) and English gender-dependent PDs. Morever, a pedagogical intervention would need to address the discrepancy between comprehension and productive knowledge of PDs. One such approach could instruct learners to emphasize the subject and corresponding PD in their utterances during production (e.g., HE is talking to HIS mother). Finally, raising awareness about the challenging kin-different contexts, this might help alert participants to careful PD selection in their utterances.

Chapter Three

This chapter begins with a brief summary of the findings and conclusions presented in Chapter Two to set the scene for future directions in this area of study.

General Conclusions

As discussed in Chapter Two, our main finding was that White's (1998) L1 Romance-tested developmental framework for the acquisition of PDs *his/her* in English partially captures how L1 Taiwanese Mandarin (TM) learners progress with this feature. More specifically, results show that they followed the three-category framework (i.e., pre-emergence, emergence, and post-emergence), though patterns within the more detailed sub-stages did not fully reflect those of this particular L1 group. Notably, the effect of L1 influence was present as reflected by participants' use of a L1-influenced PD-like form (*he/he's* or *she/she's*) in lieu of PDs *his/her*. Further, our results lend support to previous findings suggesting that 1) the difficulty with the gender agreement rule for PDs may be production-specific (i.e., not reflect comprehension), and 2) that the tendency to agree locally in kin-different contexts (e.g., a *father* and his *daughter*) is not solely attributable to L1-L2 incongruencies in the PD gender agreement rule (see Pozzan & Antón-Méndez, 2017). In other words, this tendency may reflect L2 learning processes that affect all L1 backgrounds. In the following section, we discuss areas of future research that would add to our understanding of how L2 learners progress in their acquisition of *his/her* in English.

Future Research

First, the present study did not account for differences in social or instructional contexts between different L1 groups investigated so far in PD studies (e.g., White et al.,

2007; Pozzan & Antón-Méndez, 2017) to further investigate if these contexts lend to different results (see Watson-Gegeo, 2004; Lantolf, 2005). The participants in this study received mostly teacher-fronted instruction and were accustomed to written assessments measuring explicit knowledge rather than communicative use of English. Future studies could therefore compare findings from teacher-fronted and student-centered instructional contexts to see whether the discrepancy between comprehension and productive profiles is also exhibited in such groups.

Modality. Previous findings suggest that the difficulty with PDs is production-specific, an issue which merits more attention. Studies comparing L2 English learners' (Mandarin Chinese and Taiwanese Mandarin, respectively) have found a mismatch between learners' explicit and productive knowledge of the gender agreement rule for *his/her*. To the best of our knowledge, participants to date from L1 Romance and L1 Mandarin varieties backgrounds have been classroom-instructed learners of L2 English. To further investigate this production-level difficulty, future studies could explore how naturalistic learners of L2 English fare. Social context has been found to affect learning (Watson & Gegeo, 2004; Lantolf, 2005) and so should be considered in answering this question.

The Generalized Local Bias Hypothesis. PD studies to date have documented a tendency where learners produce PDs that agree with the head noun in the noun phrase, specifically in kin-different contexts (e.g., *He* is cooking fish for PD-FEM *daughter*). During data collection for this study, an interesting pattern emerged viz. the high frequency of self-corrections during the oral picture-description task. That is, learners would produce utterances such as, "The girl is talking to *his her* father". Learners varied

in their self-corrections; for example, some would repeat the sentence and correct the PD (e.g., The girl is talking to *his* father uh talking to *her* father), whereas others corrections were so quick that *his-her* sounded like one word. It is possible that learners may be in the process of transforming declarative or procedural knowledge into automatized knowledge (DeKeyser, 2014; Segalowitz, 2003). Future studies could measure both the distance and the time of self-corrections in participants' utterances and add to our knowledge of strategies used in L2 acquisition.

Target languages. Finally, a great deal of the research on developmental sequences has had English as the target language. To further investigate L2 acquisition, future studies could investigate and create developmental sequences for grammatical features in a variety of target languages. Such sequences would add to our understanding of how L2 acquisition progresses, and how universal constraints and L1 influence might affect development.

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Appendix A: **Language Background Questionnaire 語言背景問卷**

Participant's name 參與者名字**: _____**

I. Personal Data 個人資料
Age 年齡**: _____** **Country** 國家**: _____**

Birthday 生日**: (year, month, day) (**年**,**月**,**日**) _____/____/____**

II. Linguistic History 語言史

1. What is your <u>first</u> language? 你的第一語言是什麼**?** **_____**

2. What other languages do you speak? 你會說什麼其他語言？

language 語言**: _____ language** 語言**: _____**

language 語言**: _____ language** 語言**: _____**

3. Which country are your parents from? 你的父母來自什麼國家**?**

Mother 母親**: _____ Father** 父親**: _____**

4. What languages do you speak with your family? 你與家人說什麼語言**?**

Mother 母親**: _____Father** 父親**: _____**

Grandmothers 祖母**: _____ Grandfathers** 祖父**: _____**

Sister(s) and brother(s) 兄弟姊妹**: _____**

III. English Learning History 英語學習史

How long have you been studying English? **_____ years** 年
你學習英語多久了**?**

How many English classes do you have per week?
_____
你每週上幾堂英文課**?**

How long are these classes (minutes, hours)?
_____
那些課程時間多長**?(**分，小時**)?**

Appendix B: Obligatory PD Contexts Protocol

1) Identifying PD contexts:

A. not PD contexts:
i) 1st mention (e.g., In this picture, I see the mother ...)
ii) subject position (e.g., The son is talking to ...)
iii) recasts (e.g., R: This is the daughter. P: Daughter.)
iv) reading the prompts (usually first sentence)

B. PD contexts:

i) fragments/one-word answers (e.g., Mother/Talk mother/Is a mother.)

ii) absence of PD (e.g., He talk to mother.)

iii) use of L1-influenced form (e.g., She is talking to she/she's father.)

iv) use of article instead of PD (a/an/the) (e.g., A/The father is angry.)

v) PD supplied

vi) prompted corrections
(e.g., P: Father. R: Can you say it in a sentence? P: She is talking to the father. = 2 contexts)

2) Instructions:

i) One sentence could contain more than one PD context; please count each separately.
e.g., The girl is putting make-up on her face and his daddy is angry and mommy is cry. (3 total)

ii) If the participant produces a list:
a) She is talking to his mother and father = 1 context
b) On his arms legs, and belly = 1 context
c) On belly, and the arms and legs = 2 contexts

iii) In the Word file with the transcripts, please highlight or **bold** the PD contexts you find.

iv) Finally, please **count and write the total number** of PD contexts you have identified in the box provided at the end of each participant's transcript.

v) We will do a few of these together to ensure that there are no questions about the protocol or procedure.

vi) R = researcher; P = participant, (…) = pause or no response