

ORIGINAL ARTICLE

A comparison of L2 and L1 speakers' production of adverb positions in the Cardiff variety of Welsh

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Abstract: The grammaticality of adverb positions varies by language. Consequently, L2 and L1 speakers may differ from each other in their acquisition of adverb positions. Given that L2 Welsh speakers outnumber L1 Welsh speakers in Wales, differences in acquisition may change which adverb positions occur in contemporary Welsh. This study compares which adverb positions L2 and L1 speakers produce in the spoken data from Cardiff in the *CorCenCC* corpus (Knight et al., 2020) in order to identify any differences in acquisition. Comparisons of L2 and L1 English speakers find that L2 speakers consistently acquire novel adverb positions yet they frequently use ungrammatical adverb positions. They also do not acquire additional constraints on adverb positions. This study largely reinforces these findings. First, L2 Welsh speakers produce every adverb position that L1 speakers produce. Secondly, although the definiteness constraint that Borsley et al. (2009: 50) describe is not productive in the sample of Cardiff Welsh speakers, L1 speakers exhibit a heaviness constraint on V-Adv-O that L2 speakers do not. Therefore, L1 transfer neither inhibits the acquisition of adverb positions nor facilitates the acquisition of additional constraints. However, unlike L2 English speakers, L2 Welsh speakers do not produce ungrammatical adverb positions. This likely derives from the lack of transferable adverb positions between Welsh and English rather than a lack of transfer. Therefore, this sample of Cardiff Welsh reinforces the crosslinguistic consistency of L2 speakers' acquisition of adverb positions. It also suggests that L2 Welsh speakers most likely diverge from L1 speakers in the contexts in which they use adverb positions rather than the adverb positions that they use.

Keywords: second language acquisition; adverbs; syntax; Welsh; corpus study

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1. Introduction

As part of the revitalisation of the Welsh language, the Welsh government has emphasised how English-speaking monolinguals may acquire Welsh, as Williams (2014) summarises. Consequently,

according to the 2018-19 National Survey for Wales (Welsh Government, 2020: 5), 57% of Welsh speakers acquired Welsh as their L2. Much of the literature on the Welsh language concerns how the L2 and L1 varieties of Welsh diverge from each other and how this may influence the contemporary use of Welsh. Robert (2009) and Binks and Thomas (2019) identify phonetic, semantic, lexical, morphological, and pragmatic differences between L2 and L1 Welsh speakers. However, the extent to which L2 speakers diverge from L1 speakers in syntax remains understudied. The present study aims to address this gap by comparing L2 and L1 Welsh speakers' production of a syntactic construction. Specifically, it investigates which "adverb positions" L2 and L1 speakers consider to be grammatical. Adverb positions are the positions in which adverbs occur relative to obligatory clausal elements. For example, in (1), the adverb follows all obligatory clausal elements and, in (2), the adverb intervenes between the subject and the lexical verb: S-Adv-V.

1. Catrin draws the cat **happily**.
2. Catrin **happily** draws the cat.

The grammaticality of adverb positions may vary between languages. In French, adverbs typically cannot occur in S-Adv-V, as (3) illustrates.

3. *Antoine **probablement** confond le poèm avec un autre. (Schifano, 2018: 63)
Antoine probably confuse._{3SG.PRES} the poem with an other
"Antoine is probably confusing the poem with another."

Authors like White (1991), Osborne (2008), Lardiere (2018), and Larsson et al. (2020) compare L2 and L1 speakers' grammaticality judgements and production of adverb positions. However, these authors investigate L2 and L1 speakers of SVO languages whereas Welsh is a VSO language. It remains to be seen whether their findings recur when a speaker's L2 and L1 use different word orders. Therefore, this study replicates the methodology of Osborne (2008) and Larsson et al. (2020) with Welsh-English multilinguals. A corpus study is conducted with the spoken data from Cardiff in the *CorCenCC* corpus (Knight et al., 2020) in order to compare the production of adverb positions between 30 L2 Welsh speakers and 17 L1 Welsh speakers. This allows the investigation into structural constraints on the formation of adverb positions in each variety. Although Cinque (1999) emphasises the role of semantics in adverbial syntax, for the purposes of studying structural constraints, this study does not address semantic constraints on the selection of adverb positions.

Having presented the premise and aims of this study, the next section outlines the structural constraints on adverb positions in Welsh that this study investigates. In §3, investigations into the L2 acquisition of similar constraints in English are reviewed and the research questions and hypotheses of this study are presented as informed by their findings. §4 presents the design of the corpus study and §5 outlines the results. In §6, these results are used to evaluate structural constraints on adverb positions in the L2 and L1 varieties of Welsh in Cardiff. Finally, in §7, the study concludes with the implications of its findings on the L2 acquisition of adverb positions and on the adverbial syntax of Welsh.

2. Adverb positions in Welsh

In order to investigate the grammaticality of adverb positions between L2 and L1 speakers, it is

necessary to outline the adverb positions of Welsh. There has been no extensive analysis of adverb positions in contemporary Welsh. However, King (2003), Borsley and Jones (2005), Roberts (2005), and Borsley et al. (2009) discuss adverbial constructions and they highlight several constraints on the adverbial syntax of Welsh that are reviewed in this section.

In order to discuss adverb positions in Welsh, it is important to distinguish “synthetic” and “periphrastic” constructions (Borsley et al., 2009: 38). These involve different word orders and (4, 5) illustrate the potential adverb positions in each construction. In synthetic constructions, the lexical verb is finite and occurs clause-initially, which produces VSO word order, like in (4).

4. (Adv) V (Adv) S (Adv) O (Adv)
 Cafodd hi damwain
Have.3SG.PST 3SG.FEM accident
 “She had an accident.”

In periphrastic constructions, the initial verb is a finite auxiliary verb and the lexical verb is a nonfinite “verbnoun” (Deuchar, 2005: 255) that obligatorily follows an aspectual particle. This produces AuxSAspVO word order, like in (5).

5. (Adv) Aux (Adv) S (Adv) Asp (Adv) V (Adv) O (Adv)
 Mae Non yn licio cwrw
AUX.3SG.PRES Non PROG like.INF beer
 “Non likes beer.”

In King (2003), Borsley and Jones (2005), Roberts (2005), and Borsley et al.’s (2009) analyses of Welsh grammar, they discuss the grammaticality of several of these potential adverb positions. First, (6, 7) illustrate that adverbs may follow VSO or AuxSAspVO.

6. Mae Dafydd yn licio cwrw yn fawr iawn. (Adapted from Borsley
AUX.3SG.PRES Dafydd PROG like.INF beer ADV.PRT big very and Jones, 2005: 97)
 “Dafydd likes beer very much.”

7. Awn ni eto mis nesaf. (King, 2003: 256)
Go.IPL.FUT IPL again month next
 “We’ll go again next month.”

In this study, these positions are referred to as “clause-final” because the adverb follows all obligatory clausal elements. However, optional phrases may also follow the adverb, like in (7). King (2003: 262–263) also identifies that an “afterthought” category of adverbs may occur clause-finally or clause-initially. However, he elaborates that certain afterthought adverbs like *efallai* “maybe” must precede a subordinate clause if they occur clause-initially, like in (8).

8. **Efallai** fod e ‘n sâl, King (2003: 263)
Perhaps COMP 3SG.MASC PRED ill
 “Perhaps he is ill.”

None of the authors that are discussed in this section examine clause-initial adverb positions beyond the context of afterthought adverbs. However, Cinque (1999) observes that clause-initial ad-

verb positions are likely ubiquitous crosslinguistically, which suggests that they are grammatical in Welsh for most adverb categories.

Regarding clause-medial adverb positions, (10, 11) illustrate that Welsh adverbs may precede or follow the subject in periphrastic constructions.

10. Mae 'r bws **eisoes** wedi gadael (Borsley et al., 2009: 50)
AUX.3SG.PRES the bus already PERF leave.INF
“The bus has already left.”

11. Mae **wastad** lefrith yn y ffrij. (Roberts, 2005: 10)
AUX.3SG.PRES always milk in the fridge.
“There’s always milk in the fridge.”

However, Roberts (2005: 10) and Borsley et al. (2009: 50) contend that Welsh adverbs may only precede an indefinite subject. Borsley et al. (2009: 50) compare (11) with (12) in which *yfory* “tomorrow” cannot precede the definite subject.

12. *Gwelith **yfory** Emrys ddraig. (Borsley et al., 2009: 50)
see.FUT.3SG tomorrow Emrys dragon
“Emrys will see a dragon tomorrow.”

Note that (11) is a periphrastic construction and (12) is a synthetic construction. By equating (11, 12), Borsley et al. (2009) suggest that adverbs may precede or follow the subject regardless of construction and that additional constraints like the definiteness constraint apply regardless of construction.

Of the six potential clause-medial adverb positions, two do not appear in any example sentence in King (2003), Borsley and Jones (2005), Roberts (2005), or Borsley et al. (2009): S-Adv-O or V-Adv-O. Although this suggests that they are ungrammatical, it does not confirm it. However, in Cinque (1999) and Schifano’s (2018) crosslinguistic observations of adverb positions, they contend that clause-medial adverb positions do not co-exist in a language with equal markedness. For instance, S-Adv-V is grammatical in English where V-Adv-O is not. In French, the converse is true, as (2, 3, 13, 14) illustrate.

2. Catrin **happily** draws the cat.

13. *Catrin draws **happily** the cat.

3. *Antoine **probablement** confond le poèm avec un autre. (Schifano, 2018: 63)
Antoine probably confuse.3SG.PRES the poem with an other
“Antoine is probably confusing the poem with another.”

14. Antoine confond **probablement** le poèm avec un autre. (Schifano, 2018: 63)
Antoine confuse.3SG.PRES probably the poem with an other
“Antoine is probably confusing the poem with another.”

Cinque (1999: 33) concedes that further research must confirm the mutual exclusivity of clause-medial adverb positions outside of SVO languages. This weakens the applicability of their

findings to Welsh. However, having considered the literature, the adverbial syntax of Welsh is expected to employ clause-initial and clause-final adverb positions, a definiteness constraint on adverb positions relative to the subject, and an exclusivity constraint on adverb positions that precede the object.

3. The L2 acquisition of adverb positions

The majority of clause-medial adverb positions and the definiteness constraint that were outlined in §2 are not present in English. Therefore, L2 Welsh speakers must acquire these structural constraints. Whether an author believes L2 and L1 acquisition to be fundamentally distinct like Lardiere (2018) or a product of context like Cook (2016), it is largely uncontroversial that L2 and L1 speakers acquire different varieties of a language. This section reviews four investigations into the L2 acquisition of adverb positions in English. These inform the hypotheses of this study for how L2 Welsh speakers acquire adverb positions, which are presented at the end of this section.

White (1991) and Lardiere (2018) compare L2 and L1 English speakers' grammaticality judgments of adverb positions. White investigates French L2 speakers of English and Lardiere investigates a Hokkien and Mandarin L2 speaker of English. S-Adv-O is typically ungrammatical in French whereas it is grammatical in Hokkien and Mandarin. However, in both studies, L2 speakers consistently judge S-Adv-O to be grammatical in English. A speaker's L1 does not obviously inhibit their acquisition of adverb positions. L2 speakers more frequently diverge from L1 speakers in their acceptance of V-Adv-O, which is ungrammatical in English. French L2 speakers of English frequently accept V-Adv-O like they would accept it in French. White argues that L2 speakers require more positive evidence to confirm the ungrammaticality of a familiar adverb position than to confirm the grammaticality of an unfamiliar adverb position. However, Hokkien and Mandarin speakers would not typically use V-Adv-O in their L1. Therefore, Lardiere (2018: 43) attributes the L2 speaker's acceptance of V-Adv-O to misanalysis of the object instead. Lardiere notes that in (16), adverbs may intervene between the verb and an optional prepositional phrase but, in (17), adverbs cannot intervene between the verb and an optional direct object.

16. The child walked **slowly** (to school).

17. The child ate **slowly** (*her lunch).

After explicit instruction, the L2 speaker in Lardiere (2018) consistently distinguishes (16, 17) and rejects V-Adv-O. However, the L2 speakers in White (1991) continue to accept V-Adv-O in spite of explicit instruction. Together, White and Lardiere's findings suggest that L1 transfer motivates the persistent use of V-Adv-O. Both authors also highlight that L2 speakers violate the exclusivity constraint on S-Adv-O and V-Adv-O that Cinque (1999) observes in English, French, and Mandarin. This suggests that L2 speakers do not acquire additional constraints on adverb positions as consistently as they acquire novel adverb positions and that the presence of a constraint in their L1 does not facilitate the acquisition of that constraint in their L2.

Whereas White (1991) and Lardiere (2018) investigate L2 speakers' knowledge of adverb positions in English, Osborne (2008) and Larsson et al. (2020) investigate L2 speakers' production of adverb positions in English in their corpus studies. They find that L2 speakers consistently produce S-Adv-O yet they use V-Adv-O significantly more frequently than L1 speakers. V-Adv-O is

grammatical in many of the L1 languages of the L2 speakers that Osborne and Larsson et al. study. Therefore, Osborne and Larsson et al.'s findings reinforce that L1 transfer inhibits which adverb positions L2 speakers reject more than which adverb positions L2 speakers accept. Osborne also addresses L2 speakers' acquisition of additional constraints on adverb positions. Although infrequently, L1 English speakers also produce V-Adv-O and instances of V-Adv-O significantly correlate with a "heavy" object: an object that comprises of numerous phrases (Osborne, 2008: 136). Osborne contends that this heaviness constraint licenses V-Adv-O in English. This explains the grammaticality of (18) in contrast to (19).

18. I recited **quite elegantly** [_{NP} the letter [_{CP} that my sister from Swansea sent me]].

19. *I recited **quite elegantly** [_{NP} the letter].

This does not violate the exclusivity constraint on S-Adv-O and V-Adv-O because V-Adv-O is marked whereas S-Adv-O is unmarked. Despite the frequency of V-Adv-O in the L2 dataset, Osborne (2008: 136) finds no significant relationship between V-Adv-O and the heaviness of the object in the L2 dataset. This simultaneously reinforces that L2 speakers transfer the unmarked grammaticality of V-Adv-O in their L1 into English and that L2 English speakers do not acquire additional constraints like the heaviness constraint or the exclusivity constraint.

3.1. Research questions and hypotheses

Having reviewed four comparisons of adverb positions between L2 and L1 English speakers, this section returns to the central question of this study: do L2 and L1 Welsh speakers consider the same adverb positions to be grammatical? In order to address this, this study investigates whether L2 Welsh speakers significantly differ from L1 Welsh speakers in which adverb positions they produce. White (1991), Osborne (2008), Lardiere (2018), and Larsson et al. (2020) observe that L2 speakers consistently acquire novel adverb positions. However, each study also observes that L2 speakers frequently accept adverb positions that L1 speakers do not. Furthermore, despite the consistency with which L2 speakers acquire novel adverb positions, L2 speakers do not exhibit additional constraints on adverb positions regardless of the presence of that constraint in their L1. However, if L2 English speakers' use of V-Adv-O derives from transfer, the incongruity of structure between Welsh and English may prevent L2 Welsh speakers' use of ungrammatical adverb positions. The possibility remains that this incongruity of structure may also inhibit L2 Welsh speakers' acquisition of adverb positions. However, if the findings of the four studies that are discussed are applicable to a VSO language, the hypotheses of this study are the following:

1. L2 speakers will produce every adverb position that L1 speakers produce.
2. L2 speakers will not produce more adverb positions than L1 speakers.
3. L2 speakers will not exhibit additional constraints on adverb positions that L1 speakers exhibit.

4. Materials and methodology

Having outlined the research questions and hypotheses of this study, this section presents the design of the corpus study that investigates the production of adverb positions in L2 and L1 varie-

ties of Welsh. The methodology largely replicates that of Osborne (2008) and Larsson et al. (2020). This facilitates a statistical analysis through which the significance of the L2/L1 distinction and two structural variables on the frequency of each adverb position is determined. This also facilitates a comparison of the L2 acquisition of adverb positions between the VSO language in this study and the SVO language in Osborne and Larsson et al.'s studies.

4.1. Corpus

The frequency of each adverb position is measured in the unscripted spoken data from the Welsh-language corpus *CorCenCC* (Knight et al., 2020). Exclusively analysing unscripted spoken data minimises variation in register and spontaneity. The spoken data of *CorCenCC* comprises of over 2.8 million words, which makes it the largest spoken Welsh-language corpus available. Knight et al. (2020) sourced their data from pre-organised events and from crowdfunding between July 2016 and September 2020. *CorCenCC* contributors optionally supplied metadata through a questionnaire. This includes whether they identify as a “learner”, which is taken to mean ‘L2 speaker’ in this study. The results from the L2 and L1 datasets are presented separately in order to compare them. The metadata sourced from the questionnaire is occasionally incomplete or erroneously labelled. If it cannot be reliably identified whether a contributor identifies as a learner, they are excluded from analysis. Contributors also supplied their county of origin. Exclusively analysing the Welsh spoken data from Cardiff controls for regional variation. Cardiff was selected because of the number of contributions and L2 contributors. In total, the dataset comprises of 47 Welsh speakers: 30 L2 speakers and 17 L1 speakers.

4.2. Methods

Every word in *CorCenCC* is transcribed and tagged with its lemma and part-of-speech. This facilitates the measurement of the frequency in which adverbs occur in each adverb position. §2 outlines every potential adverb position in periphrastic and synthetic constructions. **Table 1** presents the 11 adverb positions that this study measures.

The subject, object, and auxiliary verb may be omitted in Welsh. Because this obfuscates the position of adverbs relative to obligatory elements, this study delimits adverb positions relative to overt obligatory elements. However, in synthetic constructions, every instance of a verb and one argument is considered to be V-Adv-S because distinguishing V-Adv-S and V-Adv-O would be liable to misinterpretation. Clause-initial and -final adverbs are not distinguished by which clausal elements they precede or follow respectively because omitted elements do not obscure their position.

Regarding the structures that this study examines, constructions are not distinguished by mood or polarity if mood or polarity do not affect the word order. Conversely, constructions that violate the

Table 1. Potential adverb positions in periphrastic and synthetic constructions

Periphrastic	Synthetic
Clause-Initial	Clause-Initial
Aux-Adv-S	V-Adv-S
Aux-Adv-Asp	S-Adv-O
S-Adv-Asp	Clause-Final
Asp-Adv-V	
V-Adv-O	
Clause-Final	

canonical periphrastic or synthetic word orders are excluded. Adverbs are also excluded from analysis if they comprise part of a distinct grammatical construction. For example, *ddim* “not”, *erioed* “(n)ever”, and *byth* “(n)ever” must intervene between the subject and the aspectual particle in standard negation, like in (20). This does not reflect the typical range of adverb positions that this study investigates.

20. Dydy Gwyn **ddim/byth** yn cysgu. (Adapted from Borsley and Jones, 2005: 96).
AUX.NEG.3SG.PRES Gwyn NEG/never PROG sleep-INF
“Gwyn is not sleeping.”

Finally, the frequencies of each adverb position are tabulated with each dataset. The significance of any discrepancies in the use of an adverb position between L2 and L1 speakers is determined with χ^2 -tests. This study also investigates two variables in order to determine the presence of additional constraints on adverb positions. First, for each instance of Aux-Adv-S, S-Adv-Asp, V-Adv-S, and S-Adv-O, the definiteness of the subject is recorded. Secondly, although Borsley et al. (2009) do not identify a heaviness constraint in Welsh, Osborne (2008) observes it in English. In order to investigate the transfer of additional constraints, this study tests for the heaviness constraint in Welsh. Therefore, for each instance of V-Adv-O, S-Adv-O, and O-Adv, the heaviness of the object is recorded. For the purposes of this study, an object is “heavy” if it contains a prepositional phrase or a relative clause. The frequency of each relevant adverb position is tabulated with the definiteness of the subject and the heaviness of the object respectively in order to determine the significance of these relationships with χ^2 -tests. Note that for each of the χ^2 -tests that are conducted, if any variable has fewer than 5 tokens, Yate’s Correction is applied in order to minimise the influence of outliers. In summary, this corpus study allows the investigation into whether the use of adverb positions and the presence of additional constraints significantly varies between the sample of L2 and L1 Welsh speakers in Cardiff.

5. Results

This section presents the results of the corpus study. First, it presents the frequency of adverb positions in periphrastic and synthetic constructions between the L2 and L1 datasets and it highlights any significant discrepancies in use. Secondly, it presents the significance of the definiteness of the subject and the heaviness of the object in each dataset with additional reference to a grammaticality judgement when there are too few tokens to calculate significance. Frequency is presented as a number of tokens and a percentage.

5.1. Adverb positions

In Osborne (2008) and Larsson et al.’s (2020) corpus studies, L2 speakers produce ungrammatical adverb positions that are grammatical in their L1. Because of the structural incongruity between Welsh and English, in §3.1, the second hypothesis predicts that L2 Welsh speakers do not use more adverb positions than L1 speakers. Regarding periphrastic constructions, **Table 2** presents the frequency of each of the seven potential adverb positions across both datasets.

Table 2 shows that adverbs frequently occur clause-initially and -finally in both datasets, like in (21, 22).

Table 2. Frequency of adverb positions in periphrastic constructions in the L2 and L1 datasets

	L2	L1	Total
Clause-Initial	112 26.23%	117 33.52%	229 29.51%
Aux-Adv-S	1 0.23%	0 0.00%	1 0.13%
Aux-Adv-Asp	12 2.81%	5 1.43%	17 2.19%
S-Adv-Asp	36 8.43%	35 10.03%	71 9.15%
Asp-Adv-V	19 4.45%	10 2.87%	29 3.74%
V-Adv-O	1 0.23%	11 3.15%	12 1.55%
Clause-Final	246 57.61%	171 49.00%	417 53.74%
Total	427 100.00%	349 100.00%	776 100.00%

21. **Yfory** bydd y cymdeithas Cymraeg Kenya yn cwrdd (lla_gw_170228_001)
Tomorrow AUX.3SG.FUT *the society Welsh Kenya* PROG *meet.* INF
 “Tomorrow, the Welsh society of Kenya will meet.”

22. Mae ‘n glawio ‘n aml. (lla_gw_170228_001)
AUX.3SG.PRES PROG *rain.* INF ADV.PRT *often*
 “It rains often.”

Adverbs also precede and follow the aspectual particle, like in (23, 24).

23. [...] eu bod nhw **jyst** yn gofyn cwestiynau (lla_gw_170517_001)
 [...] 3PL.GEN COMP 3PL *just* PROG *ask.* INF *questions*
 “[...] that they just ask questions.”

24. Dw i ‘n **jyst** dod lan (lla_gw_170228_001)
AUX.1SG.PRES 1SG PROG *just* *come.* INF *down*
 “I’m just coming down.”

However, there are two adverb positions in periphrastic constructions that seldom occur in one of the datasets. First, Aux-Adv-S only occurs once in the L2 dataset, in (25), and it does not occur in the L1 dataset. Secondly, V-Adv-O only occurs once in the L2 dataset, in (26), yet it occurs 11 times in the L1 dataset.

25. Mae **jyst** yr holl peth yn aneglur (lla_gw_170221_001_1)
AUX.3SG.PRES *just* *the whole thing* PRED *unclear*
 “The whole thing is just unclear.”

26. Fi wedi gweld **hefyd** ferswin yr Jungle Book (lla_gw_170221_001_1)
ISG PERF see.INF too version the Jungle Book
 “I’ve seen that version of the Jungle Book too.”

A χ^2 -test was performed with the frequency of each clause-medial adverb position in periphrastic constructions and each dataset. With Yate’s Correction, it indicates that the relationship between these variables is highly significant ($n = 130$, $df = 4$, $\chi^2 = 19.52$, $p < 0.001$). However, when V-Adv-O is included in the test and Aux-Adv-Asp is excluded, the relationship remains significant ($n = 129$, $df = 3$, $\chi^2 = 13.84$, $p = 0.003$). Conversely, when Aux-Adv-Asp is included and V-Adv-O is excluded, the relationship is no longer significant ($n = 118$, $df = 3$, $\chi^2 = 5.52$, $p = 0.137$). Therefore, L2 and L1 speakers likely significantly differ in their use of V-Adv-O but not in their use of Aux-Adv-Asp.

Regarding synthetic constructions, **Table 3** presents the frequency of each of the four potential adverb positions between the datasets.

As in periphrastic constructions, Table 3 illustrates that adverbs may occur clause-initially or -finally in synthetic constructions in both datasets, like in (27).

27. **Unwaith** cerddais i **adre.** (lla_gw_170221_001_1)
Once walk.ISG.PST ISG homeward
 “Once I walked home.”

However, in the L2 dataset, adverbs do not occur clause-medially. In the L1 dataset, V-Adv-S also does not occur and S-Adv-O only occurs once, in (28).

28. Planna di **yna** ein cawrn (lla_gw_170228_001)
Plant-HAB.2SG 2SG there IPL.GEN love
 “You’ll plant **there** our love.”

A χ^2 -test was performed with the frequency of each adverb position in synthetic constructions and each dataset. V-Adv-S was omitted from analysis owing to its lack of tokens. With Yate’s Correction, it indicates that their relationship is not significant ($n = 89$, $df = 2$, $\chi^2 = 3.48$, $p = 0.176$). Therefore, χ^2 -tests only indicate one significant difference in adverb positions between the L2 and L1 datasets in the production of V-Adv-O.

Table 3. Frequency of adverb positions in synthetic constructions in the L2 and L1 datasets

	L2	L1	Total
Clause-Initial	12 26.09%	7 15.91%	19 21.35%
V-Adv-S	0 0.00%	0 0.00%	0 0.00%
S-Adv-O	0 0.00%	1 2.27%	1 1.12%
Clause-Final	33 71.74%	36 81.82%	69 77.53%
Total	45 100.00%	44 100.00%	89 100.00%

5.2. Additional constraints

Roberts (2005: 10) and Borsley et al. (2007: 50) contend that Welsh adverbs may precede the subject if the subject is indefinite. This study had intended to investigate the significance of the definiteness of the subject on adverb positions relative to the subject. However, Aux-Adv-S, V-Adv-S, and S-Adv-O do not occur more than once each, which limits comparison. The one instance of Aux-Adv-S in the L2 dataset in (25) involves a definite subject, which violates the proposed definiteness constraint.

25. Mae **jyst** yr holl peth yn aneglur (lla_gw_170221_001_1)
AUX.3SG.PRES **jyst** *the whole thing* PRED *unclear*
 “The whole thing is just unclear.”

The one instance of S-Adv-O in the L1 dataset in (28) also involves a definite subject, which does not violate the proposed constraint.

28. Planna di **yna** Ein cawrn (lla_gw_170228_001)
Plant-HAB.2SG 2SG **there** IPL.GEN *love*
 “You’ll plant **there** our love.”

However, χ^2 -tests indicate that the one instance of Aux-Adv-S and S-Adv-O are not significant. Likewise, (26, 29) may be outliers that do not reflect L2 and L1 speakers’ use of the definiteness constraint.

In order to supplement the lack of data from the corpus study, this study also tested an L1 Welsh speaker’s grammaticality judgements of sentences where the definiteness constraint theoretically applies. The L1 speaker is a 60-year-old from north Wales. He speaks a different dialect to the Welsh speakers in Cardiff. However, the author’s access to L1 Welsh speakers is limited and neither Roberts (2005) nor Borsley et al. (2009) claim that the constraint is region-dependent. Therefore, his judgements may still inform the discussion of the definiteness constraint in this study. The L1 speaker was presented with the two example sentences that Borsley et al. (2009: 50) use to justify the definiteness constraint as well as each sentence’s alternative adverb position. The L1 speaker judges (11, 12, 29, 30) as follows.

11. ?Mae **wastad** lefrith yn y ffrij. (Roberts, 2005: 10)
AUX.3SG.PRES **always** *milk in the fridge.*
 “There’s always milk in the fridge.”

29. Mae lefrith **wastad** yn y ffrij.
AUX.3SG.PRES *milk* **always** *in the fridge.*
 “There’s always milk in the fridge.”

12. *Gwelith **yfory** Emrys ddraig. (Borsley et al., 2009: 5)
see.FUT.3SG **tomorrow** *Emrys dragon*
 “Emrys will see a dragon tomorrow.”

30. *Gwelith Emrys **yfory** ddraig.
see.FUT.3SG Emrys tomorrow dragon
 “Emrys will see a dragon tomorrow.”

The L1 speaker considers (29) to be “correct” and he judges (11) to be “incorrect but [he has] heard it being used and it makes clear sense”. He does not conform to the definiteness constraint but he may recognise it. However, he rejects both (12, 30). This mirrors the absence of clause-medial adverb positions in Table 3 but it contradicts Borsley et al.’s (2009: 50) claim that the ungrammaticality of (12) derives from the definiteness constraint. The infrequency of adverb tokens in the dataset and the author’s limited access to L1 Welsh speakers limits the strength of this evidence. However, overall, the L2 and L1 datasets resemble each other in this dearth of evidence.

The second additional variable that this study investigates is the significance of the heaviness of the object on V-Adv-O, S-Adv-O, and O-Adv. Although S-Adv-O only occurs once in total and V-Adv-O only occurs once in the L2 dataset, V-Adv-O occurs 11 times in the L1 dataset. This allows the calculation of the significance of the heaviness constraint in periphrastic constructions in the L1 dataset. In the L1 dataset, 63.64% of instances of V-Adv-O involve a heavy object, like the relative clause in (31).

31. Da ni ‘n gallu gweld **yn amlwg** (lla_gw_170302_001)
AUX.3PL.PRES 3PL PROG able.INF see.INF ADV.PRT obviously
 [sydd yn rhan o gymuned wleidyddol]
COMP PRED part of community political
 “We are able to see obviously [who is part of a political community].”

Furthermore, **Table 4** illustrates that V-Adv-O more frequently occurs with heavy objects than O-Adv. A χ^2 -test was performed with the frequency of both adverb positions and the heaviness of the object. With Yate’s Correction, it indicates that their relationship is highly significant ($n = 49$, $df = 1$, $\chi^2 = 14.13$, $p < 0.001$). The lack of tokens means that the significance of the heaviness of the object cannot be calculated in the L2 dataset or in synthetic constructions. However, this lack of tokens reveals a discrepancy between the L2 and L1 datasets in periphrastic constructions.

6. Discussion

Having presented the results of the corpus study, first, this section evaluates which adverb positions and constraints vary in grammaticality between L2 and L1 Welsh speakers. Secondly, it discusses whether these findings conform to the hypotheses in §3.1.1, which facilitates the evaluation

Table 4. The frequency of V-Adv-O and O-Adv and the heaviness of the object in the L1 dataset

	Heavy	Light	Total
V-Adv-O	11 <i>55.00</i>	1 <i>3.45</i>	12 <i>24.49</i>
O-Adv	9 <i>45.00</i>	28 <i>96.55</i>	37 <i>75.51</i>
Total	20 <i>100.00</i>	29 <i>100.00</i>	49 <i>100.00</i>

of whether L2 Welsh speakers significantly differ from L1 Welsh speakers in which adverb positions they acquire.

Regarding the production of adverb positions, in §5, there are three discrepancies between the datasets. S-Adv-O and Aux-Adv-Asp both occur once in the L1 and L2 datasets respectively yet they do not occur in the other dataset. Initially, this may suggest that these adverb positions vary in grammaticality between L2 and L1 speakers. However, first, χ^2 -tests indicate that L2 and L1 speakers do not significantly differ from each other in their production of adverb positions in synthetic constructions. Secondly, although L2 and L1 speakers significantly differ from each other in their production of clause-medial adverb positions in periphrastic constructions, this relationship remains significant if Aux-Adv-Asp is excluded from analysis. L2 and L1 speakers likely do not significantly differ in their production of S-Adv-O or Aux-Adv-Asp. Therefore, either (25, 28) are outliers and each adverb position is ungrammatical for both L2 and L1 speakers or both L2 and L1 speakers would produce each adverb position in a larger dataset.

25. Mae **jyst** yr holl peth yn aneglur (lla_gw_170221_001_1)
AUX.3SG.PRES **jyst** the whole thing PRED unclear
 “The whole thing is just unclear.”

28. Planna di **yna** ein cawrn (lla_gw_170228_001)
Plant-HAB.2SG 2SG **there** IPL.GEN love
 “You’ll plant **there** our love.”

Adverbs seldom occur clause-medially in synthetic constructions and grammaticality judgements, which initially suggests that S-Adv-O and V-Adv-O are both ungrammatical. However, the grammaticality judgements specifically reject *yfory* “tomorrow” in S-Adv-O and V-Adv-O. Schifano (2018) observes that the grammaticality of clause-medial adverb positions depends on the semantics of the adverb in Romance languages. For instance, in Spanish, *siempre* “always” may occur in V-Adv-O but not in S-Adv-O. The converse is true for *probablemente* “probably”, as (32, 33) illustrate.

32. Sergio (***siempre**) confunde (**siempre**) este poema. (Schifano, 2018: 67)
Sergio **always** confuse.3SG.PRES **always** this Poem
 “Sergio is always confusing this poem.”

33. Sergio (**probablemente**) confunde (***probablemente**) este poema. (Schifano, 2018: 67)
Sergio **probably** confuse.3SG.PRES **probably** this poem
 “Sergio is probably confusing this poem.”

Therefore, S-Adv-O may be grammatical for other adverbs. However, overall, L2 and L1 speakers resemble each other’s production of both S-Adv-O and Aux-Adv-Asp regardless of their grammaticality.

The third discrepancy is that V-Adv-O occurs once in the L2 dataset yet it occurs 11 times in the L1 dataset. χ^2 -tests determine that L2 and L1 speakers significantly differ from each other in the production of adverb positions in periphrastic constructions. Furthermore, this relationship becomes insignificant if V-Adv-O is excluded from analysis. L2 and L1 speakers likely significantly differ

from each other in their use of V-Adv-O. Therefore, (26) may be an outlier and V-Adv-O may be ungrammatical in L2 varieties of Welsh.

26. Fi wedi gweld **hefyd** ferswin yr Jungle Book (lla_gw_170221_001_1)
ISG PERF see.INF too version the Jungle Book
“I’ve seen that version of the Jungle Book too.”

Alternatively, V-Adv-O may occur more frequently in a larger sample. Regardless, in this study, V-Adv-O is the only adverb position that significantly differs in production between the L2 and L1 datasets.

These findings largely conform to the first two hypotheses of this study. First, seeing that L2 English speakers consistently acquire S-Adv-O in White (1991), Osborne (2008), Lardiere (2018), and Larsson et al. (2020), the hypotheses in §3.1 predict that L2 speakers would produce every adverb position that L1 speakers produce. Although S-Adv-O occurs in the L1 dataset but not in the L2 dataset, this difference is not significant. Therefore, L2 speakers likely acquire each grammatical adverb position in Welsh. This suggests that the incongruity between SVO and VSO languages does not inhibit the acquisition of adverb positions. However, although V-Adv-O occurs once in the L2 dataset, it is significantly less frequent than in the L1 dataset. If it is ungrammatical in the L2 variety of Welsh, this would deviate from the first hypothesis as well as Osborne and Larsson et al.’s findings that L2 speakers consistently produce adverb positions that are ungrammatical in their L1. Furthermore, L2 and L1 Welsh speakers produce every other adverb position at similar frequencies. In order to account for the discrepancies between these findings, an alternative explanation for the infrequency of V-Adv-O is proposed in the discussion of additional constraints after the discussion of the second hypothesis.

The second hypothesis predicted that L2 speakers would not use more adverb positions than L1 speakers. This hypothesis deviates from L2 English speakers’ use of V-Adv-O in White (1991), Osborne (2008), and Larsson et al. (2020). However, in these three studies, V-Adv-O is grammatical in the multilinguals’ L1 whereas in Lardiere (2018) and in this study, it is not. L2 speakers use V-Adv-O more persistently if V-Adv-O is present in their L1. Therefore, L2 speakers’ use of ungrammatical adverb positions likely derives from L1 transfer. The adverb positions that do not occur in Welsh are not grammatical in English. Therefore, English transfer would not motivate L2 Welsh speakers to produce ungrammatical adverb positions. Likewise, L2 and L1 speakers in this study do not significantly differ from each other in which adverb positions they do not produce. Clause-medial adverb positions in synthetic constructions and Aux-Adv-S seldom occur in both datasets, which conforms to the second hypothesis.

Finally, regarding the third hypothesis, White (1991) and Osborne (2008) argue that L2 speakers do not acquire the clause-medial exclusivity constraint or the heaviness constraint. Therefore, the third hypothesis predicts that L2 Welsh speakers would not acquire additional constraints on adverb positions. First, this study investigates L2 and L1 speakers’ production of the definiteness constraint that Borsley et al. (2009: 50) describe. However, in both datasets, Aux-Adv-S, V-Adv-S, and S-Adv-O seldom occur. The Welsh speakers in the present dataset do not productively distinguish adverb positions relative to the subject. The fact that the L1 informant in this study recognises yet rejects (11, 12, 31) supports the idea that the definiteness constraint is present in Welsh, which Borsley et al. describe, yet it is not ubiquitous, which explains its absence in the present dataset.

11. ?Mae **wastad** lefrith yn y ffrij. (Roberts, 2005: 10)
AUX.3SG.PRES **always** milk in the fridge.
 “There’s always milk in the fridge.”
12. *Gwelith **yfory** Emrys ddraig. (Borsley et al., 2009: 5)
see.FUT.3SG **tomorrow** Emrys dragon
 “Emrys will see a dragon tomorrow.”
31. *Gwelith Emrys **yfory** ddraig.
see.FUT.3SG Emrys **tomorrow** dragon
 “Emrys will see a dragon tomorrow.”

The definiteness constraint may not be present in every dialect of Welsh. Therefore, it would not be present in Cardiff or in the variety that the L1 informant speaks. Alternatively, it may depend on the adverb. Although the L1 speaker rejects *yfory* “tomorrow” and *wastad* “always”, the constraint may become apparent in a larger sample with other adverbs. Regarding L2 speakers’ acquisition of this constraint, L2 speakers violate the definiteness constraint in the one instance of Aux-Adv-S and L1 speakers conform to the constraint in the one instance of S-Adv-O. However, the lack of evidence for the definiteness constraint indicates that it is unproductive in both datasets.

However, this study also investigates the heaviness constraint in Welsh. S-Adv-O does not occur more than once in either dataset, which suggests that a heaviness constraint is not productive in synthetic constructions in either variety. This conforms to the absence of clause-medial adverb positions in synthetic constructions. However, in periphrastic constructions, V-Adv-O significantly correlates with heavy objects as it does in Osborne (2008). This also conforms to the clause-medial exclusivity constraint that Cinque (1999) and Schifano (2018) observe. In Welsh and in English, V-Adv-O is likely marked while adverbs more freely intervene between the subject and the lexical verb. Furthermore, like in Osborne (2008), the correlation between V-Adv-O and the heaviness of the object is not present in the L2 dataset. This reinforces the idea that L2 speakers do not acquire additional constraints on adverb positions.

Now that a potential heaviness constraint on V-Adv-O in Welsh and its absence in the L2 dataset has been identified, another explanation for the significant infrequency of V-Adv-O in the L1 dataset becomes possible. In Osborne (2008), L2 speakers produce V-Adv-O yet they do not exhibit the heaviness constraint. Therefore, Osborne argues that L1 transfer motivates L2 speakers’ production of V-Adv-O. V-Adv-O is not grammatical in English, however. The heaviness constraint licenses V-Adv-O in the L1 variety of Welsh yet, without the heaviness constraint and without L1 transfer, L2 speakers have no motivation to produce V-Adv-O. Therefore, the significant infrequency of V-Adv-O in the L2 dataset likely reflects differences in L2 speakers’ acquisition of additional constraints rather than differences in their acquisition of adverb positions. This conforms to the first and third hypotheses. It is of further importance that both Welsh and English L1 speakers exhibit the heaviness constraint in the present dataset and in Osborne (2008) respectively. However, L2 Welsh speakers do not obviously transfer the heaviness constraint from English into Welsh. This mirrors White (1991) and Osborne’s findings that L2 speakers do not exhibit the mutual exclusivity of clause-medial adverb positions despite the presence of that constraint in their L1. Therefore, although L1 transfer may motivate the use of ungrammatical adverb positions if the L2 has a structur-

ally-equivalent adverb position, it does not facilitate the acquisition of additional constraints. Consequently, L2 Welsh speakers likely do not differ from L1 speakers in which adverb positions they acquire yet they diverge in their use of those adverb positions.

7. Conclusion

This study has compared the frequency of adverb positions between L2 and L1 Welsh speakers from Cardiff in the *CorCenCC* corpus in order to identify structural constraints on the adverb positions of each variety. This section concludes with the main implications of the findings of this study on the L2 acquisition of adverb positions in a VSO language and on the adverbial syntax of Welsh.

The findings of this study largely reinforce those from previous investigations into the L2 acquisition of adverb positions. L2 speakers of Welsh and English consistently produce the same adverb positions as L1 speakers. Therefore, the structural congruity between L2 and L1 languages neither facilitates nor inhibits the acquisition of novel adverb positions and these patterns likely recur across L2 speakers regardless of language. However, L2 English speakers produce ungrammatical adverb positions whereas L2 Welsh speakers do not. An examination of structurally incongruous languages suggests that L1 transfer may motivate the use of ungrammatical adverb positions but, without L1 transfer, L2 speakers only acquire grammatical adverb positions. Finally, following White (1991) and Osborne (2008), this study concludes that L2 speakers likely do not acquire additional constraints on adverb positions like the heaviness constraint and the exclusivity constraint. The presence of the heaviness constraint in both Welsh and English provides more evidence that L1 transfer neither motivates the use of additional constraints nor facilitates their acquisition. However, the applicability of these findings for both Welsh and VSO languages at large is limited by the sample of Cardiff Welsh in this study. First, the infrequency of adverb tokens limits the ability to discern outliers. Secondly, the findings do not reflect regional variation or further sociolinguistic variation that may determine some of the patterns that are attributed to L2 and L1 varieties of Welsh. Thirdly, although Osborne and Larsson et al.'s corpus studies largely reflect the findings of White and Lardiere's grammaticality judgements, the corpus study cannot precisely determine which adverb positions L2 and L1 speakers consider to be grammatical.

Finally, by comparing L2 and L1 speakers' production of adverb positions, this study also tests for the presence of constraints on the adverbial syntax of Cardiff Welsh. First, the definiteness constraint that Borsley et al. (2009: 50) describe is not productive in the present dataset. Therefore, the constraint is likely restricted by region or semantics. Further grammaticality judgements are necessary to confirm this. Secondly, a potential heaviness constraint on V-Adv-O is identified and clause-medial adverb positions are likely to be restricted in synthetic constructions, if not ungrammatical. The constraint on clause-medial adverb positions in synthetic constructions recurs more strongly in the present dataset than either the definiteness constraint or the heaviness constraint. This study must be replicated with other dialects of Welsh in order to investigate how widespread these constraints are in larger datasets and across Wales. Regarding Cardiff Welsh, however, the L2-majority speaker population likely does not affect which adverb positions are produced yet L2 speakers diverge from L1 speakers in the contexts in which these adverb positions are used.

Conflict of interest

The author declared no conflict of interest.

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