

Roy Andreas Hagen

# English infixation in Norwegian L2 speakers

Master's thesis in Language Studies with Teacher Education

Supervisor: Andrew Weir

Co-supervisor: Dave Kush

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Faculty of Humanities  
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# Abstract

This thesis examines if Norwegian L2 English speakers can correctly judge expletive infixations, swearwords inside other words, such as the natural *fan-fuckin-tastic* and the unnatural *fa-fuckin-ntastic*. Several authors have attempted to formulate a standard rule which describes this process, with a subsequent evolution and simplification as the underlying process is connected to word stress patterns, stress levels and the theory of metrical phonology. We will also see if we can determine where this rule comes from, and if it is a rule which is specific to the production of expletive infixations or if the process is generally conditioned by the prosody of the English language.

Data was gathered from 120 Norwegian participants and 20 English participants who answered an introductory questionnaire for control data and was then sent to one of four randomised word order questionnaires for judging 32 words divided into four categories by their predicted acceptability, using individual 7-point Likert scale tasks. Word ratings were then z-scored.

The results show that Norwegians do possess the ability to correctly judge the words by their predicted acceptability, and that this ability is not connected to level of education, number of hours spent speaking or writing English per week, nor the frequency of swearword usage. Instead, it is reasonable to connect this ability to the general English proficiency which almost all Norwegians have. This is seemingly what instils an English prosodic process related to stress patterns of words which participants utilize to judge expletive infixations, instead of a specific rule of expletive infixation.



# Preface

I remember sitting on the floor in my living room as a child, playing a new game, wondering what the sentences on the screen said. I knew it was some form of instruction on how to continue my quest to save the princess Zelda, and my parents tried their best to translate. Legend of Zelda: A Link to the Past on the SNES sparked my love for games and my interest in English. This obsession with games would only continue to fuel my interest in the English language. And as English classes began, I had found my source of motivation and feeling of mastery in school.

As most students of a new language, and especially as a kid, the new language had exciting taboo words which were never taught in class, and naughty meanings in Norwegian. Swearing has always been a fascinating aspect of language to me, which only gained traction as I learned more and saw its good and bad uses. It was always weird how some countries view swearing as a societal-from-religion based abomination, while in other countries a word which is wholly negative in the aforementioned country could mean everything from an affectionate way to call the attention of a friend, to referring to a nasty person. Swearwords in good settings are used to describe feelings with intensifiers and create humour in jokes or between friends. However, in bad settings they can be used to hurt and insult, though even regular language can serve this function. As such it has always been my stance that swearing is not a bad thing, but rather another aspect of language which needs to be respected and taught in proper usage. When I as a university student heard the word *fan-fuckin-tastic* and discovered that the affixes I was taught as a child, had another grouping which function almost exclusively with swearwords, I knew I had my master thesis.

Thank you to my advisor Andrew Weir for always being available to answer questions as I stumbled through unfamiliar theoretical fields, and always being encouraging with his calm presence. Thank you to co-advisor Dave Kush for his help with the statistical side of the data, which was very helpful to a student with little experience in statistics at the beginning of this thesis. And another thanks to both for the very helpful and enlightening discussions at the beginning of the thesis. Thank you to Annjo Greenall for stepping aside early in the process and introducing me to advisors she felt would be in a better position to assist me in writing this thesis.

And a final invaluable thank you to my parents, Gunn and Ole, who have been there every step of the way with heartfelt supporting words, creating a calm space in this crazy world, and comfort when times were tough. Had it not been for you I would not be where I am today, writing a master thesis to graduate as a teacher, with a masters in English.





# Contents

Figures .....	xi
Tables .....	xi
Abbreviations/Symbols .....	xi
1 Introduction .....	13
2 Literature review .....	15
2.1 Affixes .....	15
2.2 Stress & Metrical Phonology .....	16
2.2.1 Stress .....	17
2.2.2 Metrical Phonology .....	17
2.3 Evolution of the expletive infixation rule .....	18
2.3.1 Segmental to Prosodic infixation rule .....	19
2.3.2 Metrical infixation rule .....	20
2.4 Interest.....	23
3 Method and design .....	25
3.1 Method selection .....	25
3.2 Choosing the categories and words.....	25
3.2.1 Infix before main stress .....	26
3.2.2 Infix after main stress .....	26
3.2.3 Infix before secondary stress .....	27
3.2.4 Stranded word-initial unstressed syllable.....	27
3.2.5 Condition ranking .....	28
3.3 Introductory questionnaire design .....	28
3.4 Judging - Likert scale.....	29
3.5 Participant selection .....	30
4 Results & Discussion.....	31
4.1 Data preparation .....	31
4.1.1 Participant elimination .....	31
4.1.2 Z-scoring .....	31
4.2 Z-score average by word condition .....	32
4.3 Other datapoints .....	33
4.3.1 Level of education .....	33
4.3.2 Years of English education.....	34
4.3.3 Norwegian - usage of English hours per week .....	35
4.3.4 Frequency of swearword usage .....	36
4.3.5 Judgement multimodality .....	37

4.3.6	Examining those with a ratings average below 2.0 .....	42
4.4	Discussion .....	44
5	Conclusion .....	51
6	Literature.....	53
7	Appendix .....	55
7.1	Relevance of thesis for the teaching profession .....	55
7.2	Raw data used .....	56
7.3	NSD Approval .....	57
7.4	Words chosen - with stress and feet markings .....	58
7.4.1	Cond 1 - Infix before main stress .....	58
7.4.2	Cond 2 - Infix after main stress .....	58
7.4.3	Cond 3 - Infix before secondary stress.....	58
7.4.4	Cond 4 - Stranded initial unstressed syllable.....	59

## Figures

Figure 1 metrical tree of modest and gymnast (Selkirk, 1980, p. 565) .....	18
Figure 2 Metrical tree displaying branching preference (Selkirk, 1980, p. 571) .....	18
Figure 3 metrical tree for Alabama, Fantastic & Popocatepetl (McCarthy, 1982, p. 578).20	
Figure 4 violating feet boundaries with the infix (McCarthy, 1982, s. 580) .....	21
Figure 5 superfoot creates additional infixation site (McCarthy, 1982, p. 581) .....	22
Figure 6 Defooting a word-initial syllable into a superfoot (McCarthy, 1982, p. 584) .....	22
Figure 7 superfoot rescuing stranded-unstressed syllable. ....	27
Figure 8 Graph of condition 3 words by Norwegian participants by z-scores .....	38
Figure 9 Graph of condition 1 words by Norwegian participants by z-scores .....	40
Figure 10 Graph of condition 4 words by Norwegian participants by z-scores. ....	41
Figure 11 Graph of condition 2 words by Norwegian participants by z-scores. ....	42
Figure 12 Graph of Norwegians below 2.0 average by age and education .....	43

## Tables

Table 1 Norwegian and English Z-score average. ....	32
Table 2 Norwegian and English Z-score average by education .....	34
Table 3 Norwegian z-score average by years of English education .....	34
Table 4 Norwegian z-score table by condition and spoken English in hours per week. ....	35
Table 5 Norwegian z-score table by condition and written English in hours per week. ....	35
Table 6 Norwegian and English z-score table by use of swearwords in writing. ....	36
Table 7 Norwegian and English z-score table by use of swearwords in spoken English. ...	36
Table 8 Norwegian below 2.0 average by condition and z-score.....	43
Table 9 Norwegian below 2.0 average - z-score average by education level .....	44
Table 10 words separated by what page they appeared - z-score average. ....	48

## Abbreviations/Symbols

$\sigma$	Syllable
$\sigma_s$	Syllable carrying stress
$\sigma_w$	Syllable without stress
$\Sigma'$	Stress superfoot
$\Sigma$	Stress foot
IPA	International Phonetic Alphabet



# 1 Introduction

This thesis investigates if Norwegians possess a process of infixation in L2 English. Infixation is a process of inserting a morpheme inside another morpheme, rather than at the edge such as in prefixation and suffixation. While infixation is a productive morphological process in languages such as Tagalog, it is not an oft recognized part of the English language. While infixes are generally a kind of affix, i.e. bound morphemes, morphemes which are infixes in the English language are free morphemes, in contrast to the bound infixes seen in languages such as Tagalog. The most common type of morphemes used as the infix are expletives which generate such valid examples as *fasci-fuckin-nating* and *fan-fuckin-tastic*. This process of infixing expletives is predictably referred to as expletive infixation.

In the literature which investigates this process, authors began to develop rules which determined, by the nature of word stress, where the infix could land and where it could not. The authors, in the course of developing and simplifying this expletive infixation rule, also state this ability is acquired with great ease by native speakers of English, to the point where only a few valid inputs would be required. If this ease of learning is as clear as the authors state, then is the rule an expletive infixation specific rule, or is it perhaps part of general English grammatical/phonological knowledge learners subconsciously acquire with the language? In this thesis I will gather data from Norwegian participants, as well as an English control using an online questionnaire, to examine this through the following research questions:

- Do Norwegians possess some form of the expletive infixation rule which allows them to deem an infixation well-formed as well as recognize malformed examples?
- Does increased exposure to English increase the likelihood of Norwegian participants possessing this ability?
- Does the data suggest that this ability is tied specifically to an expletive infixation rule, or does the pattern fall out from more general principles of (English) morphology/phonology?

The data consists of responses from 120 Norwegian and 20 English participants to 7-point Likert scale tasks, endpoints labelled natural/unnatural, of 32 English examples of expletive infixation, chosen and divided into four categories of varying predicted acceptability, alongside some individual demographic data points such as education and frequency of swearword usage. The data was then z-scored and analysed.

The results will show that Norwegians do possess this ability and are able to judge the categories correctly. However, this ability is not connected to the level of education, nor the number of hours of spoken and written English per week nor the frequency of swearword usage. Instead, the ability seems to be tied to learning the English language, as the data suggests the rule utilized is not expletive infixation specific, but rather one that is central to knowing and using the English language, either by having a repository of stress patterns to all English words, or the process to figure out this pattern at moment of production.



## 2 Literature review

Before the data is analysed, we first need a theory base to start from. We will first look at what infixations are, alongside a few non-expletive bound morpheme examples in the English language as well as an example from Tagalog. We will then examine the theory behind word stress, as well as why some authors argue there is only one level of stress, primary, whilst others argue there are three and how this connects to infixation. We will also look at the theory of *metrical phonology* which attempts to construct a framework which predicts the stress patterns of words, and thus insertion locations for infixations.

Then we will look at the evolution of the expletive infixation rule, from a specific segmental ruleset to a more general metrical version. Finally, a short explanation of why this topic was chosen.

### 2.1 Affixes

Affixes are usually taught as two types of morphemes you can append either to the beginning or end of a word, respectively called prefix and suffix. These appendages function in such a way that they modify the root word with distinct meanings. Adding the prefix *un-* will make the subsequent word mean the opposite of the word stem, as seen in the example *obtainable* which means something is acquirable. Add the prefix *un-* gives us the word *unobtainable* meaning something which cannot not be acquired anymore. Suffixes are morphemes added to the end of words to transform their meaning, such as the suffix *-s* which on nouns indicate plurality as seen with *car - cars* or third person present tense on verbs *he made cars - he makes cars*. Prefixes and suffixes are the two types of affixes both L1 and L2 learners of English are taught about and how to use correctly. However, in this thesis we are looking at *infixes*, which are affixes that are rarely, if ever, taught in school no matter if you are an L1 or L2 learner of English, partly because, as we will see in a moment, several authors would argue English as a language does not have infixes of any kind. As inferred by the name, this process is inserting something into a word stem. Examples can be seen in Hip-Hop where the word *house* has the infix *-iz-* inserted to make the slang word *hizouse* or a *Homeric* infix, named after the figure Homer Simpson from *The Simpsons*, where *Education* becomes *Edumacation* by inserting the *-ma-* infix (Yu, 2004, p. 2). It is however important to point out, given the humorous nature of infixation as presented thus far, other languages use infixation as a natural part of their language. A good example of this is seen in the Austronesian language of *Tagalog* in the Philippines, such as the perfective infix *-in-* as seen in (1) (Yu, 2007, p. 60).

(1)	plántsa	-	iron (v.)	-	p- <b>in</b> -lántsa	-	“ironed”
	gradúhan	-	grade	-	g- <b>in</b> -radúhan	-	“graded”

Thus far the affixes we have seen are adding morphemes to words, either to change their meaning or create a slang word. However, the infix affix has another function where an entire word is inserted into another word; this process is referred to as *Tmesis*, however as we will see in a moment *tmesis* is argued to not be the same as infixation. In this thesis, we will look at a certain type of infix usage, where the user inserts a swearword

into another word, also referred to as Expletive Infixation (McCarthy, 1982). Some well-formed examples can be seen in (2).

- (2) fan-fuckin-tastic  
fasci-fuckin-nating  
re-fuckin-member

Although the use of infixes is not rare in the world's languages, as they exist, or existed, in languages such as ancient Greek and old Norse, there is disagreement that the English language in fact has infixation. A supplement made to the Oxford English Dictionary in 1972, defined tmesis as "the separation of the elements of a compound word by the interposition of another word or words" (McMillan, 1980, p. 166) as seen in *chitchat - chit and chat*. However, as seen in the infixation examples using *hizouse* and *edumacation*, referring to them as compound words would be wrong, as the words are not split apart, but rather modified with an internal insertion. This point was also countered by other authors who used the term infixation earlier in examples such as *Jesus H. Christ* (Mencken, 1936, p. 316), and Montague who in 1957, on the argument that English did not have infixation, defended its existence by saying the principle of adding another word inside of another word was infixation: "Introducing a whole word into the middle of the original to give it greater intensity is based on the principle [of infixation]" (1957, p. 117). Tmesis and infixation in English are therefore not the same.

It is also worth noting that the interaction between morphology and phonology must be quite a bit more complicated than the elementary ways of examining morphology. In the exercise of drawing trees to show the morphological structure of a word, it is easy to do so with the inclusion of prefixes and suffixes. Inserting another separate word into the middle of a such a tree, however, could present a challenge. Consider a tree for *unobtainable* - [un [[obtain] [able]]]. Now consider a tree for *abso-fuckin-lutely* where it would become necessary to split up a stem to insert another morpheme, such as *fucking*; it is not immediately clear how this is possible. In addition to the difficulty of splitting up a stem, we observe the fact that expletive infixations such as *-fuckin-* cannot be placed at any point inside a stem, as demonstrated in (3), and instead are governed by constraints of phonological/prosodic/metrical nature which we will examine later<sup>1</sup>.

- (3) abso-fuckin-lutely  
\*fa-fuckin-ntastic

## 2.2 Stress & Metrical Phonology

Before we look at how the theory of Expletive Infixation production has advanced, we will first need to cover two topics used to explain the rules behind it. First, we will look at word stress, and in particular a theorized third category of word stress, that of *tertiary* word stress used at the beginning of formalizing the rule of expletive infixation. We will then look at the theory of *metrical phonology* which attempts to formalize the idea of an internal structure which govern word stress patterns.

---

<sup>1</sup> Expletives which can be infixed belong to the classes of Theo-implicatives *fan-goddamn-tastic* or Fornicatives *fan-fuckin-tastic* (Zwicky, Salus, Binnick, & Vanek, 1971), this includes derivations such as *fricking* & *goshdarn*; *fan-goshdarn-tastic*.



### 2.2.1 Stress

The subject of word stress is usually divided into two categories of stress. The first is that of primary word stress, which is the main stress type. Syllables which carry the primary stress are pronounced using more muscular energy, resulting in a combination of higher pitch as well as longer length. The extra muscular movement can also result in the stress being pronounced louder, and in fact many have defined loudness as the key indicator of stress (Ladefoged, 2006, p. 242). The International Phonetic Alphabet, IPA, indicates primary stress using a ['] before the main stressed syllable as seen in the following examples of primary stress: *awe-* in *awesome* /'ɔ:səm/ and *-tas-* in *fantastic* /fæn'tæstɪk/.

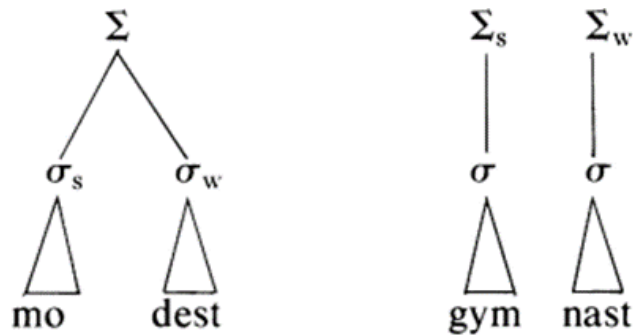
The second recognized category is that of secondary stress, which mimics that of primary stress, but at a subordinate level, meaning not as forceful or loud as a primary stress is. Examples of secondary stress, alongside the IPA stress symbol of [ˌ] are *-gang-* in *doppelganger* /'dɒp(ə)lˌgæŋə/ and *-vi-* in *television* /tɛlɪˌvɪʒən/. Authors like Ladefoged (2006) dispute the existence of any stress level other than primary and argues that any other perceived level of stress, other than primary, is not about a minimal version of the primary stress pitch, volume, and length effects but rather that of vowel quality, either a full or reduced vowel.

However, some linguists utilize a third classification of stress, predictably named *tertiary* word stress, and demonstrate this by using the label 3 above the syllable containing a tertiary stress, in contrast to the 1 of primary stress and 2 of secondary such as the example <sup>3</sup>ty<sup>1</sup>coon (Halle, 1973, p. 459). The syllables which would be attributed this level of stress are the ones which remain unstressed after primary and secondary stress have been assigned but contain full vowels. Examples of these full vowels which under the two-stress system would be unstressed are *unreduced short vowels* such as /ɒ/ in the second syllable of *neon* and /æ/ such as at the beginning of *ambition*; long vowels such as /ɑ:/ such as the beginning of *grandma*, and /u:/ in *tofu*; and diphthongs such as /eɪ/ in *Monday*, and /əʊ/ in *piano*.

In an experiment which looked at the production of reading out stressed syllables, Fear et.al demonstrated that while unstressed syllables with unreduced vowels could not conclusively be called an intermediate case between secondary stress and unstressed syllables with reduced vowels, they also could not be grouped together with either due to the duration and intensity when pronounced (Fear, Cutler, & Butterfield, 1995). This does support the idea of multiple levels of stress. Despite this disagreement of what the levels of stress are, and English stress not being as predictable as languages such as French, it is not entirely unpredictable. We will now look at metrical phonology which attempts to construct a framework which describes this.

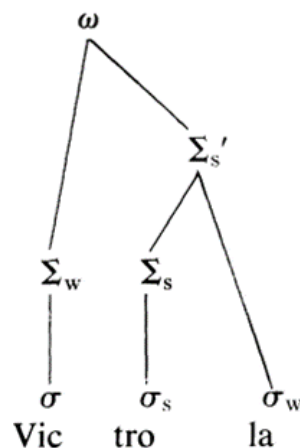
### 2.2.2 Metrical Phonology

Metrical phonology assumes a binary stress model wherein words have a hierarchically structure of categories called feet and each segment receives a label of **strong** or **weak** corresponding to its prominence with the sibling node. All syllables (σ) to the left in a foot (Σ) corresponds to a syllable bearing stress and thus is the most prominent. This means that in a monosyllabic stress foot, the syllable would naturally carry stress as there is always a stressed syllable in a stress foot. However, in a bisyllabic stress foot only the leftmost syllable carries any stress with the other syllable being unstressed. Strong on the left, weak on the right (Selkirk, 1980).



**Figure 1 metrical tree of modest and gymnast (Selkirk, 1980, p. 565)**

As seen in Figure 1, this can be exemplified with *gymnast* and *modest*, in which the *-nast* syllable would carry a secondary stress while *-dest* does not carry any stress, making it a weak syllable. Therefore, *gymnast* would consist of two stress feet ( $\Sigma$ ) demonstrating that both *gym-* and *-nast* have stress, meaning no syllable is weaker from a stress/unstressed viewpoint and thus cannot be to the right in a stress foot. The word *modest* however would only have one foot, as only the leftmost syllable would carry stress, with the rightmost syllable being unstressed and is thus subject to reduction and domination by the stress foot (Selkirk, 1980, p. 565).



**Figure 2 Metrical tree displaying branching preference (Selkirk, 1980, p. 571)**

For structures such as dactylic, stressed followed by two unstressed, and amphibrach, unstressed followed by a stressed then another unstressed, Selkirk suggests a stress superfoot ( $\Sigma'$ ) able to dominate a regular foot plus another syllable following the general idea of s/w relationship already described, with the addition of a preference to label branching feet that of s, or strong. Therefore, even though the foot-syllable of *Vic-* in Figure 2 is on the left, the fact that the stress superfoot on the right is branching, prioritises the superfoot for the strong label. Even with a rudimentary idea of how metrical phonology attempts to formalise word stress, we will introduce some more concepts over the course of the interaction between metrical phonology and expletive infixation.

### 2.3 Evolution of the expletive infixation rule

With an idea of what is meant by *tertiary stress*, as well as *metrical phonology*, we will now examine the expletive infixation rule, and its development from segmental to metrical.

### 2.3.1 Segmental to Prosodic infixation rule

According to Aronoff (1976, p. 69), Siegel (1971) studied this phenomenon in an unpublished paper where he formulated an initial rule for how he saw expletive infixations could be formed, and which conditions had to be accounted for. Siegel's rule stated this is formed by inserting the English infix *fuckin* into a stem which contained a 3-1 stress pattern, and as mentioned earlier, in a system with tertiary stress, the 3 indicates tertiary word stress. Therefore, in this rule tertiary stress must precede the main stress and the infix must come before the primary stress as proven by (4).

- (4) fan-fuckin-tastic  
\*Chi-fuckin-cago

As mentioned previously, the reason *fantastic* is categorized as having tertiary stress in *fan-* is because of the syllable possessing an unreduced short vowel, that of /æ/ - /fæn'tæstɪk/. The *Chi-* of *Chicago* however does not possess a full unreduced vowel instead containing the reduced vowel of schwa /ə/ - /ʃə'kɑ:go/; therefore, it cannot be assigned tertiary stress and according to Aronoff (1976) is unsuitable for an expletive infixation. The rule received a form update by Aronoff in 1976 to mainly streamline the information and make it clearer that the product becomes a word after applying the infix process (Aronoff, 1976, p. 70). Aronoff agreed with Siegel in his argument that the infix must precede the primary stress and that a tertiary stress must be at some point before the infix confirming (4).

In 1982 McCarthy investigated this rule and agreed with it being able to correctly predict the examples seen in (4), however he argued that the rule did not insert immediately preceding the primary stressed vowel, but instead the primary stressed syllable as seen in (5) (McCarthy, 1982, p. 575).

- (5) a. fan-fuckin-tastic                   \*fant-fuckin-astic  
  \*fa-fuckin-ntastic  
      b. Du-fuckin-brovnik               \*Dubr-fuckin-ovnik  
      c. in-fuckin-stantiate            \*inst-fuckin-antiate  
  \*i-fuckin-nstantiate

The next investigation was whether primary stress is needed directly following the infix, or if any form of stress would do as the examples in (6) suggest.

- (6) every-bloody-body  
      handi-fuckin-cap  
      kinder-goddamn-garten

These examples, according to McCarthy, show the placement of infixations before a syllable not carrying the primary stress to be slightly less favourable than infixes before syllables that does carry primary stress. Although both forms are better than those before unstressed syllables. With the supposition that a primary stress is needed following an expletive infixation done away with, the focus turned towards the idea of a required tertiary stress preceding the infix at some point in the word, which he quickly dismissed with the example of *necro-fuckin-mancy* where the infix is after the primary stress, following up with some examples seen in (7) where no stressed syllable precedes the infixation (McCarthy, 1982, p. 576).

- (7) to-bloddy-gether  
de-fuckin-generate  
e-bloddy-nough

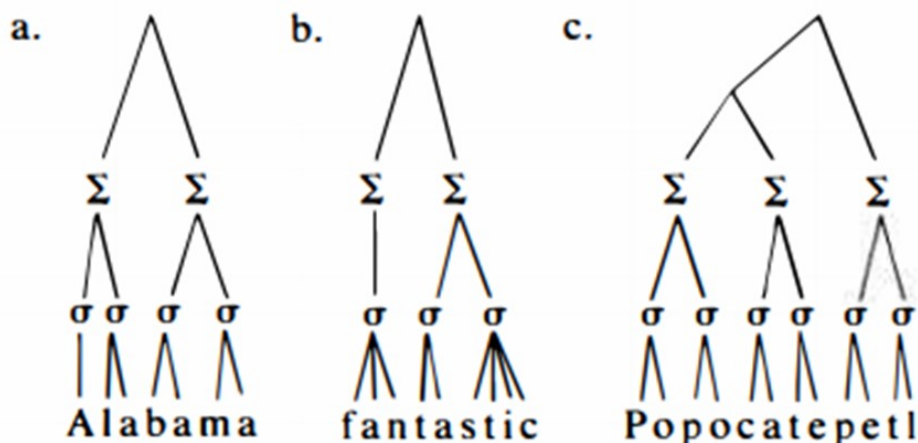
A restatement of the rule at this point would require a stress to be placed on the syllable following the infix, and that the infix is placed to the left of the syllable initial consonant cluster. Whilst this prosodic rule was more accurate and more fitting than the first, it still does not explain the relationship between the infix, stress and point of insertion. McCarthy then begins to restate the rule using metrical phonology.

### 2.3.2 Metrical infixation rule

With the structure of metrical phonology in mind, McCarthy reformed the rule to state infixes can be inserted to the left of each internal foot and writes it has seen in (8) (McCarthy, 1982, p. 578).

- (8) X [Y]<sub>Σ</sub>  
1 2 -> 1 EXPLETIVE 2

The metrical version of the rule thereby states an infix must come before a foot, whilst the older rules both includes a provision of a stressed vowel and placement to the left of a maximal syllable-initial string. The simpler and more descriptive of the rule is therefore clearly superior to any other more complicated, and less accurate, suggestions.



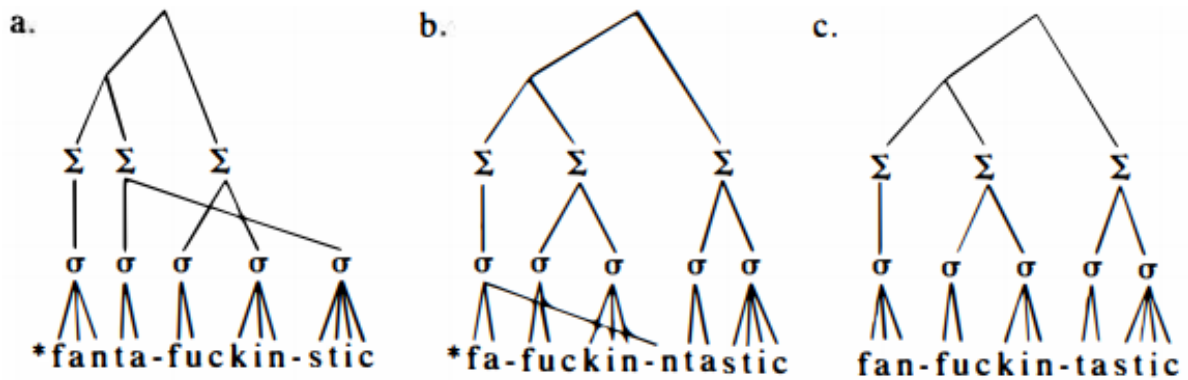
**Figure 3 metrical tree for Alabama, Fantastic & Popocatepetl (McCarthy, 1982, p. 578)**

Considering the example in figure 3 of a simplified metrical analysis for the words *Alabama*, *fantastic* and *Popocatepetl*. As the rules state an infix can be placed to the left of a foot, we can see both *Alabama* and *fantastic* has one insertion point each, whilst *Popocatepetl* would have two as proven by (9a) and (9b).

- (9) a. Popo-fuckin-catepetl  
b. Popocate-fuckin-petl  
c. \*Popoca-fuckin-tepetl

Inserting an infixation into a monosyllabic word would therefore be impossible, besides the fact that it would constitute a prefix. Inserting something into a trochaic word, meaning a word consisting of one stressed and one unstressed syllable would also not be possible as they would have no placements for infixes due to a lack of internal boundaries. In reasoning why the metrical rule seem to be the clearest and simplest in its description, McCarthy highlights that infixation is done by inserting words into other

words, meaning you are inserting a structure of feet made up of syllables into another structure, and thus the infixation has to happen where it does, between feet, otherwise you end up with an overlapping structure as seen in the malformed example of (9c) where the infix, which is itself a foot ( $\Sigma$ ), splits another foot. A visual example of this structural overlapping can be seen in figure 4.

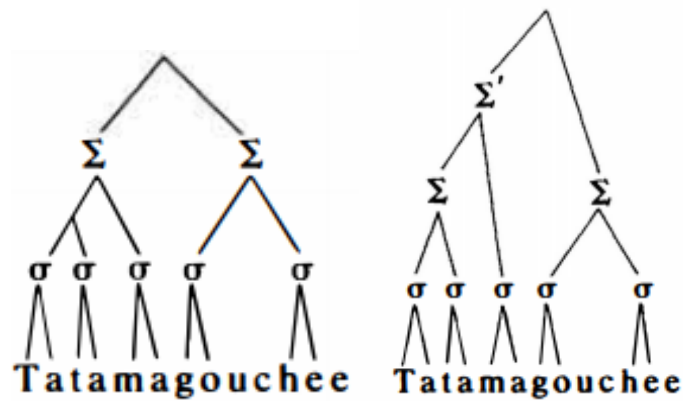


**Figure 4 violating foot boundaries with the infix (McCarthy, 1982, s. 580)**

Figure 4a shows inserting the infix inside of the foot consisting of -tastic would split it, thus creating a situation of the unstressed syllable -stic having to relocate away from its foot, rendering it unacceptable. Similarly unacceptable is Figure 4b where the infix splits the word-initial syllable, separating the last consonant and displacing it. Contrast both examples to Figure 4c, which slots the infix between the already existing stress feet without displacing or overlapping anything, creating a well-formed product using expletive infixation. The rule is however still unable to account for the examples found in (10).

- (10) Tatamagouchee ->  
 a. Tatama-fuckin-magouchee  
 b. Tata-fuckin-magouchee

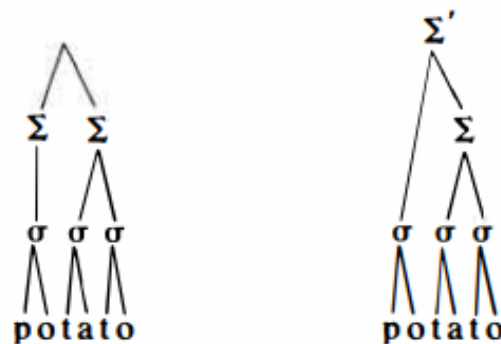
(10a) makes sense as the process has been described up until now, as it does infix between two feet. However, the acceptable product in (10b) seems to suggest that the interruption between a sister non-terminal and a terminal placement inside the first foot, can still create a well-formed product. Here it seems to suggest that inserting an infix between a sister non-terminal and a sister terminal node still creates a well-formed example. Thus far the rule of infixation using metrical phonology has only used the regular stress foot suggested by Selkirk (1980). Taking into consideration the stress superfoot however introduces an explanation.



**Figure 5 superfoot creates additional infixation site (McCarthy, 1982, p. 581)**

The possibility of (10b) is explained with a slight change to the metrical trees we have seen thus far, which alters the structure to include two types of feet. The first type is the stress foot ( $\Sigma$ ) we have already seen, consisting of one or two syllables ( $\sigma$ ). The other one is the stress superfoot ( $\Sigma'$ ), capable of dominating a regular stress foot as well as a syllable. A visual example of this can be seen in Figure 5.

**a. Before Defooting      b. After Defooting**



**Figure 6 Defooting a word-initial syllable into a superfoot (McCarthy, 1982, p. 584)**

At this point the rule is capable of explaining what is necessary for a well-formed infixation, including with words containing a dactyl<sup>2</sup>. How does the metrical system handle words that carry an unstressed word-initial syllable considering the foot structure? In this McCarthy states that "initial unstressed syllables may be incorporated as less-deeply embedded members of the following foot (McCarthy, 1982, p. 583)". This process of joining a single syllable to a superfoot, which would initially be under its own foot, is referred to as defooting as seen in Figure 6. Whilst this process does produce well-formed examples such as *po-fuckin-tato*, they do seem less desirable than words which do carry word-initial stressed syllables.

In conclusion to this development of the metrical version of the expletive infixation rule McCarthy states "The result is that there is essentially no rule of Expletive Infixation ... that all observed properties of this robust phenomenon ... can be derived from a theory of foot-level metrical structure (McCarthy, 1982, p. 589)".

<sup>2</sup> This thesis will not investigate if Norwegians correctly judge infixes in dactylic structures.

## 2.4 Interest

One of the main interesting points on expletive infixation is the fact that it is a clear example of subconscious knowledge, perhaps partly due to no native English-speaking country viewing swearwords as an integral thing to learn, no matter the widespread usage by societies such as in Great Britain. And perhaps partly due to religious roots as seen in The United States. Despite this fact, it is a phenomenon that many native speakers seem to possess and use.

The ease with which speakers, at least native ones, learn this structure is described by McMillan as "The readiness with which speakers, after hearing a model like *abdamsurd*, can fluently place an intensifier in suggested words ... attests the grammaticality of the process" (McMillan, 1980, p. 167). Echoed by McCarthy who states, "If no phonological conditions on Expletive Infixation need be stipulated, it follows that no difficulties will be attendant on learning this rule, even from extremely impoverished data" (McCarthy, 1982, p. 580). Two authors thus make a point of a speaker not needing to be educated in how to make such valid constructions, instead it is sourced from other grammatical rules which is inherent to learning language itself.

The question then would be what the data can tell us about the question of Norwegians possessing the ability to produce, in this thesis judging, valid constructions in English in accordance with predictions of validity and preferences from the authors we have looked at thus far. If Norwegians do not possess the same ability as native speakers, we would expect to either see judgements which oppose the predicted acceptability of each word category, or fluctuating numbers which make it difficult to say if Norwegians are able to judge according to the predictions, and comparison to the English control data.

Do Norwegians possess an expletive infixation rule in some form or does the ease with which speakers are able to intuit this rule, according to several authors from a scarce amount of input, suggest that the ability is not inherent to a specific expletive infixation rule but rather to a more generalised prosodic process which is needed to understand and produce the English language? This supposition that the rule for making such constructions is inherent to the language lays the foundation for asking: if native speakers absorb the needed rules, what about speakers who learn English as a second or third language? Are those speakers able to recognize and evaluate the validity of such constructions without ever being taught in the subject, and if so at which point along the evolution of the rule do they seem to be placed?

To try to answer this in the form of the research questions mentioned in the introduction, we will now look at the data gathered and see if we can see any trends or results which suggest Norwegians do in fact possess something, and if so if we can connect it to aspects such as length of English education, level of education and media consumption amongst other things. To answer this or see if there are any conclusions or inferences to be drawn, we will look at data gathered from both Norwegian and English-speaking participants; the Norwegians for actual data, and the English speakers for data and control numbers. If the English-speaking participants are wholly unable to judge the examples as predicted, that would in itself be a result. We will now look at the method used and how the questionnaire was designed and why it was constructed the way it was. We will go through the words selected and how they are categorised, which also answers why these categories were selected.





## 3 Method and design

In this section we will look at what method has been selected for the data gathering process, and why. We will then go through the structure and content of the main data gathering survey, what words with expletive infixations were selected and what category they belonged to, as well as why those categories. Finally, the design of the introductory questionnaire, its design and purpose.

### 3.1 Method selection

At the beginning of this project the initial plan was to gather information with qualitative interviews, in order to better control the selection of participants in order to get a varied selection of such variables as even spread of experiences with the English language, the amount of exposure to it, and proficiency. This was however derailed due to the covid-19 pandemic, which rerouted the method to a quantitative questionnaire. In later consideration the usage of interviews could also have influenced the data, when participants would have to be selected to be invited and in a personal setting, despite safety precautions, might not feel comfortable enough in a personal setting where they might feel the interviewer is judging language skills or attitudes (van Peer, Hakemulder, & Zyngier, 2012).

The purpose of selecting a survey/questionnaire instead of perhaps online interviews, besides actually gathering a proper amount of data perhaps difficult in a one-on-one situation, was to make it easier for the participant. In written form online it is easy to make sure instructions are repeated and that the participants sees, understands, and agrees to participate. It also enables a larger array of question types, such as menus with age blocks, free form answers for known languages or Likert scale questions.

To increase the likelihood of a participant not being scared off by disclaimers and agreements thus completing the survey, identifiable personal information was not gathered. Information such as exact age, location of living, school attended, or any such question was left out. In addition, because this survey was made and published on the service Nettskjema found at nettskjema.no, made by the University of Oslo, the collection of IP addresses by the server could also be disabled. No matter the answer, no single piece nor any combination of the answers gathered can trace back to a specific individual. This project has therefore been approved by the Norwegian Centre for Research Data, NSD, as a completely anonymous survey. The approval, in Norwegian, can be viewed in Appendix 3.

### 3.2 Choosing the categories and words

In questionnaires questions unrelated to the examined theory are often included in order to obfuscate the aim and to avoid training or informing the participant of what kind/s of structures are being tested, potentially making them want to perform better, thus altering the data (Schütze & Sprouse, 2013, p. 39). However, for this questionnaire which contains 32 words with *-fuckin-* inserted, such filler questions were dropped. It is not clear what these filler questions would look like considering the subject matter but could conceivably utilize other infixations such as the previously mentioned *homerics* or

expletives as prefixes or suffixes. However, given the appearance of the constructions being tested, it would immediately become clear what is being tested.

The question then came to the subject of what words should be included, how should they be presented and on what basis were they selected. In this vein four conditions were decided upon which should result in data of sufficient quality to determine whether Norwegian possessed an expletive infixation rule, and perhaps which version, or a prosodic process. Each word category contained 8 words constructed from words with the same internal structure and stress patterning. Let us now look at these four categories.

### 3.2.1 Infix before main stress

As stated in the theory, the most basic formulation of the rule states that if an expletive infixation comes before a main stress in a valid stress foot position, it should be found as acceptable by a native speaker. As such the first condition decided upon were words which all participants should find acceptable. These words were all trochaic pair words, meaning two individual stress feet, providing a singular valid position between them. These words seen in (11) all fit a category deemed by McCarthy to be most acceptable, I will label this category "unambiguously good".

- (11)
- a. *combi-fuckin-nation*
  - b. *mathe-fuckin-matics*
  - c. *edu-fuckin-cation*
  - d. *expla-fuckin-nation*
  - e. *contra-fuckin-diction*
  - f. *exe-fuckin-cution*
  - g. *ambi-fuckin-dextrous*
  - h. *popu-fuckin-lation*

### 3.2.2 Infix after main stress

In contrast to the first condition, the words included in this section should all be deemed unnatural by every tester who possesses the ability to form grammatically valid products as well as expletive infixations. These words were of the same type as condition one, that of two trochaic feet, however this time the expletive infixation is inserted into the middle of the second stress foot, thus placing the infix after the main stress. This would mean that there is no stress at all after the infixation, which we have seen is needed in a well-formed output. This overlapping we saw examples of earlier should seem unnatural to any native speaker of English, as well as any who possess the rule needed to judge if they are well-formed. These words, seen in (12), are therefore labelled as "unambiguously bad".

- (12)
- a. *acqusi-fuckin-tion*
  - b. *applica-fuckin-tion*
  - c. *democrat-fuckin-ic*
  - d. *celebra-fuckin-tion*
  - e. *correspond-fuckin-ent*
  - f. *diagno-fuckin-sis*
  - g. *entertain-fuckin-ment*
  - h. *understand-fuckin-ing*

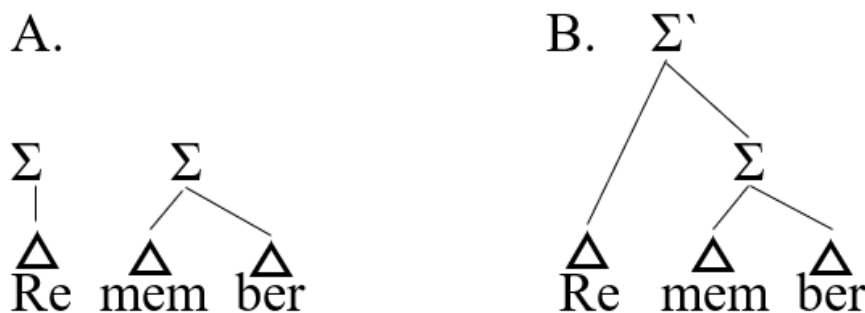
### 3.2.3 Infix before secondary stress

This category tested for the alternative explanation provided by McCarthy, that there is no need for main stress to follow the infixation, it is enough that any stress follows it. The words in this category, like those before, are double trochaic words. However, this time the primary stress is not on the third syllable but on the first, with secondary stress located on the third syllable, thus immediately following the infix. If McCarthy is correct that any stress is acceptable, but primary is better, then we should expect the numbers to be higher than those violating the stress rule, but slightly lower than those of primary stress. The words in this category can be seen in (13)

- (13) a. *doppel-fuckin-ganger*  
 b. *necro-fuckin-mancy*  
 c. *fasci-fuckin-nating*  
 d. *compli-fuckin-cated*  
 e. *agri-fuckin-culture*  
 f. *peda-fuckin-gogy*  
 g. *tele-fuckin-vision*  
 h. *terri-fuckin-tory*

### 3.2.4 Stranded word-initial unstressed syllable

The final category tests words in which Selkirk would utilize the defooting rule to explain how the metrical stress feet can accommodate a word-initial unstressed syllable. Words with an unstressed word-initial syllable, with the stress on the second syllable are called Amphibrachs.



**Figure 7 superfoot rescuing stranded-unstressed syllable.**

As seen in Figure 7a, the syllables *-mem-* and *-ber* is correctly distributed to a stress foot, as *-mem-* is stressed whilst *-ber* is not. This does however mean that to correctly get one correct stress foot, the word-initial unstressed syllable *re-* is under a stress foot by itself, which automatically means it should also carry stress, which is clearly not the case. By using this defooting rule we obtain the tree seen in Figure 7b, where the *re-* syllable is defooted and absorbed by a stress superfoot, which also dominates the regular foot. And because metrical trees prefer branching feet over the left strong/right weak rule, the regular foot absorbs stress instead of the word-initial syllable. McCarthy also identifies this defooting product to contain one valid infixation location, between the unstressed syllable and before the main stressed syllable located in the one trochaic foot. The words in this category can be seen in (14). This category combines the validity of the infix immediately preceding the main stress, as well as the validity of the new infixation location after the defooting process. These words are predicted to be accepted but

ranked lower in preference by both the unambiguously good words as well as those with the infix before secondary stress.

- (14) a. *ac-fuckin-knowledge*  
b. *re-fuckin-member*  
c. *de-fuckin-pression*  
d. *a-fuckin-bolish*  
e. *a-fuckin-partment*  
f. *so-fuckin-lution*  
g. *ob-fuckin-jective*  
h. *po-fuckin-tential*

### 3.2.5 Condition ranking

Each condition is testing a construction mentioned in the evolution of the expletive infixation rule, and as such we can from this generate a prediction of how the words should be judged by anyone who possesses the ability, be it from a specific infixation rule or not. Condition 1 with the infix before primary stress in a valid location should be judged as the most natural. Then comes condition 3, wherein the primary stress is at the beginning of the word and the infix is instead followed by secondary stress. Condition 4 consists of words with a valid infix before primary stress, but in an amphibrach word with a rescued word-initial syllable. Last comes condition 2, the words where the infix overlaps the root words stress pattern, as well as no following stress.

From this the predicted ranking would be 1 is better than 3, is better than 4, is better than 2.  $1 > 3 > 4 > 2$ .

## 3.3 Introductory questionnaire design

The participants were first informed of their rights to stop participating at any point, alongside information for me and my advisors as well as being told their data was entirely anonymous with no private information, not even IP's, being gathered and stored. This information is vital, and as such was placed on the frontpage with further instruction that by clicking the button to proceed, they agreed and understood.

As the introductory questionnaire is the first one they encountered when clicking on the URL, it is here that the participants were informed of the general aim of the questionnaire, that they were to judge words that had expletive infixations for acceptability, meaning if the words sounded unnatural or natural.

The introductory questionnaire asked for the following questions common to both languages:

- Age group
- Nationality
- Mother tongue
- Bilingual status (native in language used in the home from an early age)
- level of education
- Number of hours spent speaking/writing English per week.
- English used with family members.
- Strongly agree/strongly disagree - frequency of use of swearwords in English.

The Norwegian version of the questionnaire asked for some additional datapoints. Did the participant remember how many years of English education they had, and if so, how

many; and how many hours per week is spent consuming English media. The reason for wanting these additional datapoints is in order to say if the ability to judge correctly is a function of education or increased exposure from things like media, as that is one of the primary ways in which an L2 learner can access new input for the language (Saville-Troike, 2012, p. 169), unless present in a country where they speak the target language.

The reason for having an English version of the questionnaire when the aim was to test Norwegians, is to also gather a control to confirm if native speakers possess the ability, as well as a point of comparison to the Norwegian numbers. Either way this control data would have rendered an interesting result. It would confirm that there is something which makes expletive infixations natural to produce, which would give valid data to check the Norwegian data against. Or it would go against this theory of infixations in literature which states how easy it is to learn, by showing that none of the participants possessed this ability.

### 3.4 Judging - Likert scale

Four versions of the questionnaire were created, by distributing the 32 test words across 4 pages. In each questionnaire the words were on the same page, but their order was randomized. Each word was accompanied by a Likert scale, ranging from 1 to 7, with endpoints labelled "unnatural" and "natural". Usually, the endpoints are labelled as unacceptable/acceptable, but this was discounted for this thesis as it could be misunderstood by people who are averse to swearwords and would therefore perhaps judge any word with a swearword in it unacceptable from a personal belief standpoint. By exchanging this for unnatural/natural the aim was to instead to remind them of the instructions, that their judgements were for whether the constructions sounded natural or not. Even so, there is a possibility of some participants still judging them from a personal belief standpoint regarding swearwords, as instructions for acceptability judgments have been shown to not always have the wanted impact (Schütze & Sprouse, 2013).

The reason for using a 7-point Likert scale instead of production task is to be able to say something about the sensitivity of the rule being tested. Considering the data is 32 words in four categories, it will guarantee the ability to say something on data related to all four. Authors predict varying degrees of acceptability for three of the categories and marks one as completely unacceptable, and the chances of all categories having some measurable amount of data after participant generation is not guaranteed to be high enough. Additionally, even though production tasks could have been given with a root word and an infix specified, it would not be a guarantee for all relevant categories to have data, the required time from the participant would also increase which could lead to larger drop off. A 7-point Likert scale also make possible the task of diagnosing any reasons for why certain words in a category might be judged as less, or more, natural than the other words in that category by making them visible as a gradient on a chart, instead of every word being a multimodal cluster.

In each word judgement task, a YouTube URL was included for anyone who needed to hear the word pronounced by an English RP speaker, either to hear how an unfamiliar word is pronounced or to refresh their knowledge of the stress rhythm. This would however go on to create an error in condition 3, which we will return to when the data is analysed.

### 3.5 Participant selection

Participants were invited to participate with a link to the corresponding introductory language questionnaire URL. This means that the URLs were shared, amongst other locations, on Facebook with a short introduction and explanation in the language corresponding to the URL shared. Additionally, the URL was shared on the subreddit for NTNU on Reddit located at [www.reddit.com/r/ntnu](http://www.reddit.com/r/ntnu), Reddit being a message-board type of social site, with more focus on sharing content than personal updates. As a part of the anonymity consideration there was no question included to ask where the participant found the URL.

It is also worth remembering that participants from Norway will have gone through obligatory English education alongside other subjects. Presupposing that each participant has completed the obligatory schooling, each participant will have had ~9 years minimum of English education, from 2<sup>nd</sup> grade to freshman year (Utdanningsdirektoratet, a) for a total of ~728 hours (Utdanningsdirektoratet, b), at which point English transitions into electives. Any data collected will therefore be from someone who has education in the language, which will affect the data. If the rule is infixation specific, we might still see heavy variation or noise if the Norwegian participants have not been exposed to it yet or learned it yet, or the data will show no specific trends thus making it more likely that there is no rule specific to infixation, but rather a general one for the English language.

## 4 Results & Discussion

This chapter will combine the presentation of the data as well as discussion. I will first present the numerical data, describe what it shows, then finally discuss the interpretation of that data. I will do this for each piece of data.

A copy of the raw data collected for this thesis, both Norwegian and English, can be found at the URL in appendix 2.

### 4.1 Data preparation

Before we to look at the actual data, let us first look at the steps taken to prepare it, meaning the elimination of non-suitable participants, and standardising the word Likert scales rating using z-scoring.

#### 4.1.1 Participant elimination

Before analysis of the data is performed, any participants who did not perform the task properly, did not have sufficient proficiency in English or stood out as anomalous outliers needed to be removed.

##### 4.1.1.1 Norwegian elimination

At the end of the data collection, 192 Norwegian participants clicked the link. 35 participants were eliminated for not having completed the task after filling out the introductory questionnaire. A further 3 were eliminated for responding that their mother tongue/first language was not Norwegian. 3 participants were eliminated for not having finished high school/videregående. 5 participants were eliminated for rating every word a one, thus rendering the Z-Score either a 0 or NA.

Finally, those participants with a rating average below 2.0, indicating an abundant use of 1 scores was eliminated to not negatively influence the rest of the data. From this a total of 26 participants were eliminated. We will however come back to these 26 participants, to see if they still have the ability, perhaps just to a smaller degree than the other participants or perhaps some other factor is common to them.

##### 4.1.1.2 English elimination

The total amount of English responses at the end of gathering was 25. From these 2 were eliminated due to a lack of follow-up answers to the second questionnaire, for the same reasons as those mentioned in the previous section. An additional 3 participants were eliminated for responding that their mother tongue/first language was not English. This because the control numbers were, for similar reasons to the Norwegian elimination of those without Norwegian as a mother tongue, meant to be only native English speakers for proper control data.

#### 4.1.2 Z-scoring

As mentioned earlier in section 3.4, there is a problem regarding the use of Likert-type scales. Ideally the difference in acceptability between each step on the scale would be uniform, meaning the step/difference between 1 and 2, is interpreted as the same as between 3 and 4, 6 and 7, and so on. Making sure participants treat the differences

between the numbers as uniform is however impossible to guarantee, although anchoring examples could have been used to help participants get used to the scale (Schütze & Sprouse, 2013, p. 33). No such anchoring was included due to the uniqueness of the judgements asked, and as such it would be challenging to create a good enough anchoring example without explicitly stating what is being tested and how to judge the word correctly, which would invalidate subsequent data. Because how the participants view the scale cannot be entirely guaranteed, it is recommended to generate a z-score for each rating, which will handle different participants using the scale differently. The responses from someone who only responded using 1 to 3 would therefore be treated equal to someone who responded using the entire 1 to 7 scale.

The generation of the by-participant z-score is done in the following manner. First the participants mean,  $\mu$ , is required, which is done by adding up all each individual word ratings,  $x$ , and dividing it by the number of ratings,  $N$ , this gives us the mean. Then we need to calculate the participants standard deviation using the following formula  $\sigma = \sqrt{(\sum(x - \mu)^2)/(N - 1)}$ . Once the standard deviation has been calculated, we use the following formula to calculate the z-score of each individual word:  $Z\text{-score} = (x - \mu) / \sigma$ . Z-score therefore represents each word rating in standard deviation units. By doing this for each participant the numbers can be treated as slightly better than raw averages, without consideration for any one user's self-imposed restriction of the scale.

## 4.2 Z-score average by word condition

The first piece of data we will examine is the simple average of z-scores by word condition, one table for Norwegian and one for English. With the assumption that condition  $1 > 3 > 4 > 2$ , we would expect to see the numbers reflect this, with the numbers for condition 2 being the lowest, indicating that there is some process in place which dictates that the others might be good, but condition 2 is definitively bad.

Norwegian - z-score average		Average of Z-Score
1 Unambiguously good - infix before main stress		0.492
2 Unambiguously bad - infix after main stress		-0.941
3 infix before secondary stress		0.306
4 Stranded initial unstressed syllable - infix before main stress		0.143
English - z-score average		Average of Z-Score
1 Unambiguously good - infix before main stress		0.682
2 Unambiguously bad - infix after main stress		-1.174
3 infix before secondary stress		0.365
4 Stranded initial unstressed syllable - infix before main stress		0.127

**Table 1 Norwegian and English Z-score average.**

Before we discuss the 3 valid categories, let us first cover condition 2, words with the infixation placed after the main stress, creating overlapping stress patterns, and judged by Selkirk and McCarthy as malformed. As seen in Table 1 the English participants judge this condition to be at a score of -1.17 whilst the Norwegian score is -0.94. While the Norwegian judgement do not seem as high as the English one, the words found in this condition appear judged as unnatural by all participants in both languages.



Condition 1 where the infixation is located before main stress, is clearly the condition deemed the most natural: The English control participants rate the condition at 0.68 and the Norwegian at 0.49. Despite there being a distance between the Norwegian data and the English control, the comparison between those results and those of condition 2 suggests that both Norwegian and English participants possess some process which enables them to judge words according to predictions.

In condition 3 the infix was placed before a secondary stress in double trochaic words, which McCarthy judged as a valid, but less optimal location compared to condition 1. Therefore, one would expect to find the ratings of condition 3 to be lower than condition 1, which is what we find. The English score for condition 3 is 0.36 indicating a positive judgement, but worse than condition 1. The Norwegian results mirror this with an average rating of 0.39 for condition 3.

In condition 4 the infix was inserted before the main stress, but after a word-initial unstressed syllable. As explained earlier, this does not violate the concept of metrical phonology due to the process of defooting the stranded syllable. Instead, the unstressed syllable is subsumed under a superfoot, thus keeping the metrical structure valid. McCarthy deemed this process of defooting and subsuming under a superfoot would create another valid insertion point for an expletive infixation. therefore, we should again see a positive number that is at least larger than negative and condition 2. And in fact, that is what we see. The English score is at 0.12 and the Norwegian score slightly higher at 0.14.

Through the simplest form of analysis, we can easily see a trend in the data, where the English participants were more able to not only correctly judge acceptable examples but also do so in order of the acceptability suggested by the expletive infixation theory as put forth by McCarthy. This trend, though smaller, is also observed in the Norwegian data where the conditions are rated in accordance with predictions. It is however quite interesting how close the numbers for condition 4 is between English and Norwegian, thus essentially rendering the numbers the same. Given the appearance of utterances with an unstressed syllable and infix right after it, could it perhaps give the appearance of a regular word with a prefix attached, thus either confusing the participant or trigger some other phonological process which deals with prefixes? This could have been tested for with the inclusion of a category of its own dealing with prefixes, which McCarthy did touch upon (McCarthy, 1982, p. 585), but which is outside this thesis.

### 4.3 Other datapoints

Now that we have data which seemingly confirm that some rule is possessed by the participants, it is time to look at what the data says when limited by the questions included in the introductory questionnaire. These questions were asked to uncover if this ability to judge well-formed examples corresponded to higher education, increased personal use of English, a larger use of swearwords in everyday life, or level of education.

#### 4.3.1 Level of education

In the questionnaire, level of education was labelled by name, but responses were converted to a numerical value as follows: 1 is "completed high school"; 2 is "some college/university"; 3 is "undergraduate degree"; 4 is "higher degree (MA/PhD etc)". If the process behind expletive infixation show to be a function of education, it might show

a correlation with increased exposure of English in written study material and classes, as well as increased use of the language.

Norwegian - education - zscore				
	1	2	3	4
1 Unambiguously good - infix before main stress	0.389	0.476	0.493	0.539
2 Unambiguously bad - infix after main stress	-1.032	-0.924	-0.879	-0.982
3 infix before secondary stress	0.205	0.246	0.331	0.364
4 Stranded initial unstressed syllable - infix before main stress	0.438	0.203	0.055	0.079
English - education - zscore				
	1	2	3	4
1 Unambiguously good - infix before main stress	0.660	0.683	0.766	0.666
2 Unambiguously bad - infix after main stress	-1.138	-0.854	-1.280	-1.177
3 infix before secondary stress	0.492	0.114	0.271	0.394
4 Stranded initial unstressed syllable - infix before main stress	-0.014	0.057	0.243	0.118

**Table 2 Norwegian and English Z-score average by education**

The data seen in Table 2 seem to suggest a trend in condition 1 for Norwegian participants, with increasing numbers for each step beginning at 0.38 at education level 1 rising to 0.53 of education level 4. The English participants of condition 1 does not display this increase as both education level 1 and 4 ends up on 0.66 with some variation in level 2 and 3. Even though the data suggests a slight trend in the Norwegian data towards a higher level of education equalling better ability to judge the words, the numbers are too close to confidently call it a clear trend. Therefore, the assumption will be that the participants ability to judge the words is not a function of education. What is clear however is the trend we have been seeing throughout the data, which is that of the 1 > 3 > 4 > 2 pattern. If this is in fact a trend, which would need more data to confirm, it is potentially related to the situation in Norway in which the higher your level of education the higher the chance of some material and/or teaching being in English, as well as the increased percentage of student assignments, masters, and Ph.D. papers being written in English (Ljosland, 2008, pp. 70-71).

#### 4.3.2 Years of English education

With education seemingly only confirming the 1 > 3 > 4 > 2 trend, let us see if the number of years participants have had English education reveal anything. 3 participants who reported blank for this question are excluded here only.

Norwegian - zscore by years of English education																
	2	3	6	7	8	9	10	11	12	13	14	15	16	17	20	21
1	0.019	-0.047	0.501	0.622	0.477	0.524	0.550	0.459	0.454	0.600	0.622	0.385	0.548	0.535	0.550	0.513
2	-0.352	-1.121	-0.221	-0.846	-0.914	-1.095	-0.950	-1.025	-0.932	-0.993	-0.976	-0.770	-0.946	-1.076	-0.935	-1.025
3	-0.130	0.647	-0.020	0.403	0.289	0.335	0.286	0.274	0.382	0.313	0.309	0.119	0.647	0.389	0.495	0.513
4	0.464	0.521	-0.261	-0.180	0.148	0.237	0.115	0.292	0.095	0.080	0.045	0.266	-0.249	0.152	-0.110	0.000

**Table 3 Norwegian z-score average by years of English education**

With the discrepancy of the low numbers seen in Table 3 when contrasted with previously stated number of years Norwegian students have obligatory English education, it is important to remember that the ages of 18 to 64 is covered by the data, and the focus in

education has shifted in the last 50, 40, and 30 years. Older participants, depending on school and focus will most likely not have had that number of obligatory English classes.

With no seeming trend correlating ability to judge with years of English education, the only thing we can say is that once again the 1 > 3 > 4 > 2 trend is established. This suggests that whatever is making participants able to, on the whole, judge correctly is not something that only those who have studied the language for long have acquired, but rather something that all have picked up. This could suggest the process of expletive fixation is governed not by some specific rule, but by some phonological process.

### 4.3.3 Norwegian - usage of English hours per week

With the level of education seemingly not making a significant difference in the ability to correctly judge the words, let us look at how Norwegians judged infixation as a function of hours of spoken English per week, followed by hours spent writing English. Participants could select blocks of time in the following sizes: 0, 1-2, 3-5, 5-8, 10-15 and 15+.

Norwegian - oral english per week - zscore	1-2	3-5	5-8	10-15	15+
1 Unambiguously good - infix before main stress	0.266	0.462	0.413	0.484	0.525
2 Unambiguously bad - infix after main stress	-0.799	-0.942	-0.949	-0.943	-0.940
3 infix before secondary stress	-0.266	0.571	0.296	0.328	0.287
4 Stranded initial unstressed syllable - infix before main stress	0.799	-0.090	0.241	0.131	0.127

**Table 4 Norwegian z-score table by condition and spoken English in hours per week.**

This time the data in Table 4 seems to be more variable than before, which could be due an unevenness in number of participants regarding how much English they speak each week. No trend regarding numbers of spoken English per week is obvious, as the difference between condition 1 15+ block with 0.52, and 3-5 block at 0.46 is not significant. Let us look the data for written English per week.

Norwegian - written english per week - zscore	0	1-2	3-5	5-8	10-15	15+
1 Unambiguously good - infix before main stress	0.452	0.530	0.397	0.596	0.608	0.416
2 Unambiguously bad - infix after main stress	-0.811	-0.928	-0.953	-1.039	-0.989	-0.926
3 infix before secondary stress	0.183	0.316	0.345	0.272	0.385	0.307
4 Stranded initial unstressed syllable - infix before main stress	0.176	0.082	0.211	0.171	-0.004	0.202

**Table 5 Norwegian z-score table by condition and written English in hours per week.**

The lack of a trend is once again obvious in Table 5, with participants reporting 1-2 hours of writing English per week with a score of 0.53 whilst those with 15+ hours is at 0.41. With a lack of correlation between the number of hours spent speaking/writing English per week and the ability to correctly judge each word, we come to two possibilities. The rule for creating valid expletive infixations is acquired very early or there is no specific rule for expletive infixation. If there is no specific rule for expletive infixations, it would suggest that the process responsible instead belongs to some other function which perhaps deals with the matter of word prosody, or just stress structures, which applies given the importance we have seen thus far, that the infixation does not overlap with any stress foot.

#### 4.3.4 Frequency of swearword usage

With seemingly no conclusive trend in the amount of English used per week, let us now look at the questions about whether participants *strongly disagreed*, *mildly disagreed*, *neither disagreed nor agreed*, *mildly agreed*, and *strongly agreed* to the following two statements: "I often use swearwords when I write in English" and "I often use swearwords when I speak English".

If there is a connection with the frequency with which the participant swears, and their ability to correctly judge the words, it suggests that increased experience with swearwords makes the judgement easier. We will first look at data for the swearing in writing, for both Norwegian and English. After that we will look at the corresponding tables for spoken swearword use.

Norwegian - uses swearing in writing often - zscore					
	Strongly Disagree	Mildly disagree	Neither	Mildly Agree	Strongly Agree
1 Unambiguously good - infix before main stress	0.497	0.490	0.545	0.461	0.552
2 Unambiguously bad - infix after main stress	-0.984	-0.966	-0.733	-0.943	-0.984
3 infix before secondary stress	0.270	0.408	0.068	0.336	0.276
4 Stranded initial unstressed syllable - infix before main stress	0.217	0.068	0.120	0.146	0.156
English - uses wearing in writing often - zscore					
	Strongly Disagree	Mildly disagree	Neither	Mildly Agree	Strongly Agree
1 Unambiguously good - infix before main stress	0.675	0.718	0.765	0.563	0.660
2 Unambiguously bad - infix after main stress	-1.043	-1.139	-1.264	-1.232	-1.181
3 infix before secondary stress	0.398	0.361	0.285	0.419	0.375
4 Stranded initial unstressed syllable - infix before main stress	-0.030	0.061	0.213	0.250	0.146

**Table 6 Norwegian and English z-score table by use of swearwords in writing.**

Table 6 shows no upwards trend for condition 1, which would be expected if the participants carry an expletive infixation specific rule and the more a participant disagreed with using swearing the less experienced they would be. Here however we see numbers that are quite close in condition 1 with mildly agree with the lowest at 0.46, and strongly agree at the highest with 0.55. Condition 3 and 4 have no real trend showing, instead displaying variations from a bottom of 0.06 to 0.40 in condition 3 and from 0.06 to 0.2 in condition 4.

This lack of trend is echoed in the English table, where those who mildly disagreed and those who answered neither scored the words highest with 0.71 and 0.76 respectively, whereas strongly disagreed at 0.67 and strongly agreed at 0.66 are very close. The other conditions show the same pattern as before, with condition 2 judged as completely unnatural, and the others rising and falling seemingly disconnected by the sorting condition. Let us now look at the data for usage of swearwords in spoken English.

Norwegian - uses wearing orally often - zscore					
	Strongly Disagree	Mildly disagree	Neither	Mildly Agree	Strongly Agree
1 Unambiguously good - infix before main stress	0.514	0.539	0.543	0.439	0.495
2 Unambiguously bad - infix after main stress	-0.996	-0.976	-0.965	-0.909	-0.917
3 infix before secondary stress	0.261	0.475	0.208	0.290	0.330
4 Stranded initial unstressed syllable - infix before main stress	0.221	-0.038	0.214	0.181	0.092
English - uses swearing orally often - zscore					
	Mildly disagree	Neither	Mildly Agree	Strongly Agree	
1 Unambiguously good - infix before main stress	0.854	0.756	0.740	0.557	
2 Unambiguously bad - infix after main stress	-1.093	-1.091	-1.243	-1.174	
3 infix before secondary stress	0.261	0.447	0.341	0.401	
4 Stranded initial unstressed syllable - infix before main stress	-0.022	-0.112	0.162	0.217	

**Table 7 Norwegian and English z-score table by use of swearwords in spoken English.**

Again, the Norwegian data in Table 7 for condition 1 shows no trend in judgements with numbers 0.51 - 0.53 - 0.54 - 0.43 and 0.49. In other words, there seems as though those who claim to either not use swearwords often, or answer in the middle, judge the words better than those who answer that they use it often. Condition 2 is again deemed unnatural. Both conditions 3 and 4 also show a lack of increasing trend, instead doing the familiar rise and dip.

The English data however reveal something surprising, besides the fact that no participants answered that they strongly disagreed that they used swearing often when speaking, the trend is inverse. In condition 1, instead of those who strongly agreed with the statement judging the words best, it is the participants who responded that they strongly disagreed. The numbers are 0.85 - 0.75 - 0.74 - 0.55. In other words it is those who do not use swearwords often when speaking that judges the words best. This is however not a trend which is echoed by conditions 3 and 4.

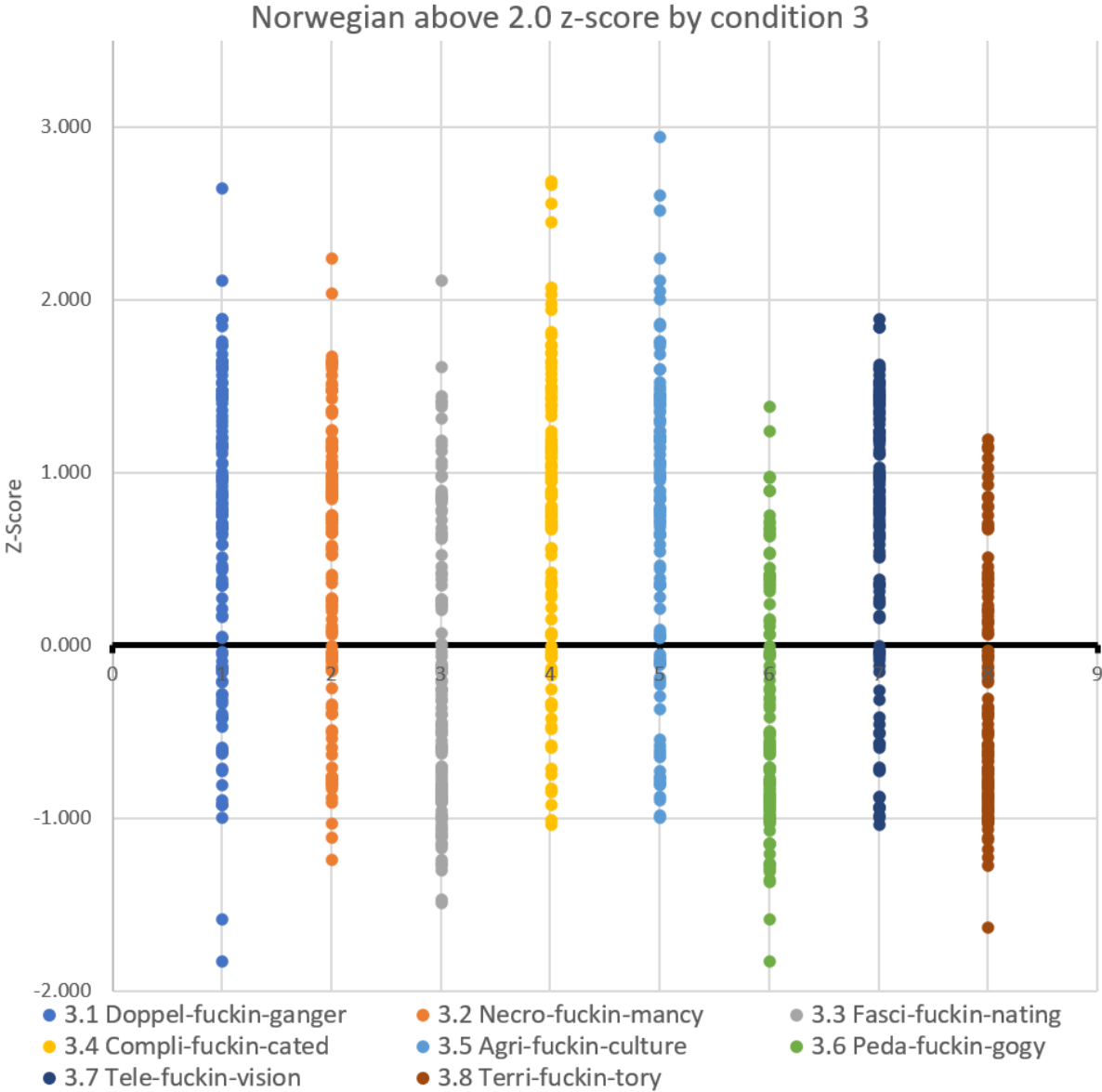
With seemingly no trend in the Norwegian data between usage of swearing orally or writing, it does not seem to be the case that using swearing more often would enable the participant to better judge the words. That those who answered strongly agree having numbers that are so close to those who answered both neither and those who answered strongly disagree seemingly suggests that experience with swearwords carry no bearing towards being able to correctly judge expletive infixations. It becomes even more confusing when we look at the English oral data for condition 1, those labelled as "unambiguously good". Under the supposition that using swearwords often would make you better at their usage, one would expect the numbers to go up the more the participant identifies with using it often. Here however the inverse is the case, the more the participant is self-reporting to not use swearing often when speaking, the better able they are to judge the words of this one condition. The lack of a trend showing those who use swearing more often are better at judging the infixations, would suggest that the process which is in play is not swearword specific but rather tied to something else.

The English numbers could be the result of having fewer participants, with the scale being skewed towards those who do not use swearing and so a larger sample size could reverse it. There is also the chance of the word "often" in the question skewing the results, as many might not be able to correctly self-report themselves, considering their usage of swearing to not be "often" enough to be warrant that description.

#### 4.3.5 Judgement multimodality

The wide variety of numbers belonging to condition 3, trochaic words with the infix placed before a secondary stress, brought up an interesting question. Given the prediction that these products should still be judged as well-formed by someone possessing the process required, why are we seeing these low numbers compared to those labelled unambiguously good in condition 1. Are we seeing these numbers because every participant is judging them about the same, thus creating a gliding scale from low

score to high, or are we instead seeing perhaps a multimodal response of two or more groups of participants, some who possess the rule and some who do not.



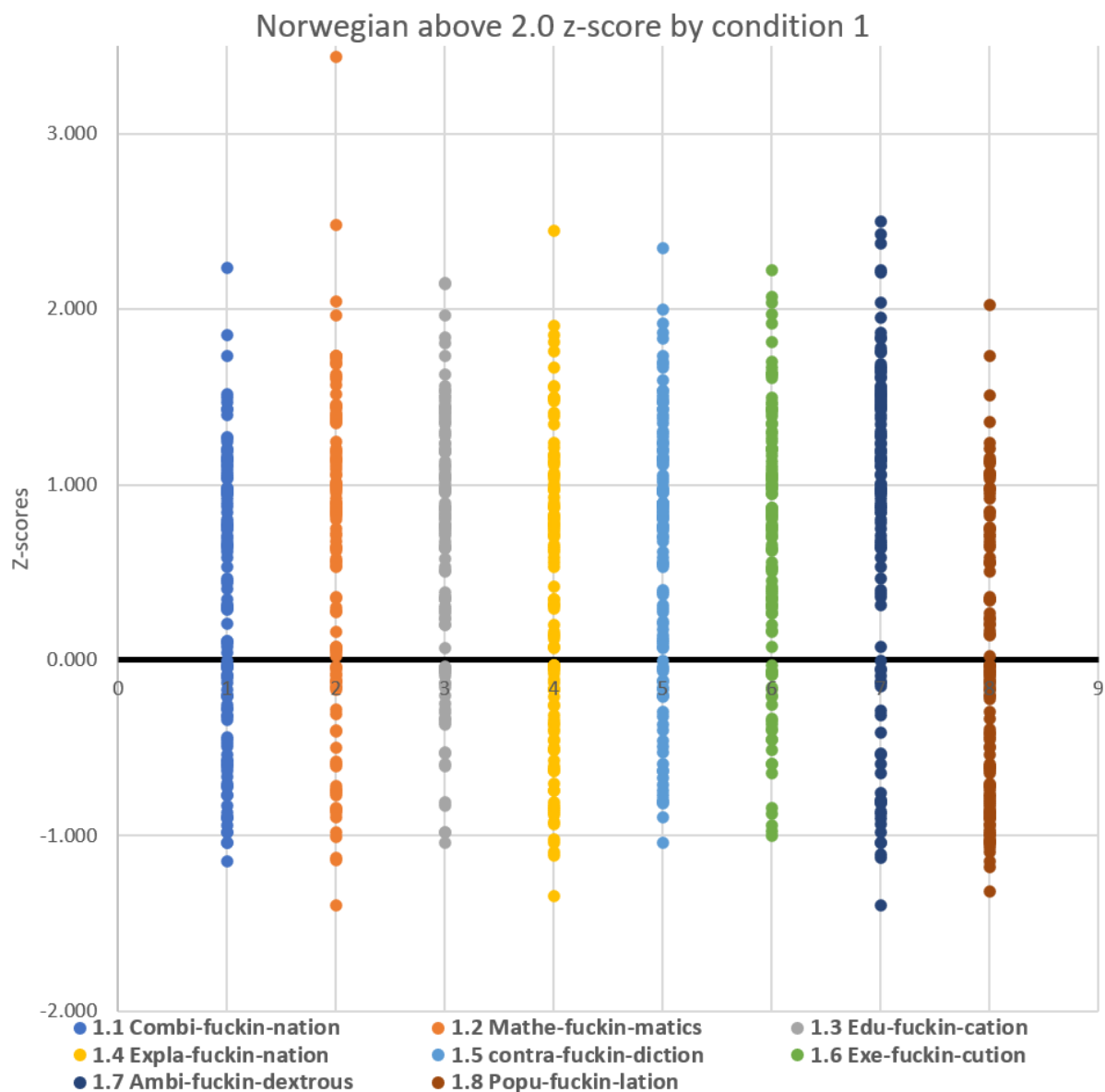
**Figure 8 Graph of condition 3 words by Norwegian participants by z-scores**

As seen in Figure 8, where each dot indicates one participants z-score for each word, there are no clusters of dots as one would expect if the question elicited a multimodal answer which would indicate separate groups of speakers. This suggests that the reason the numbers are low for condition 3 is not because one group possesses the ability, and others do not, but rather individual words reducing the average, which would pose the question of why those words? In hindsight this could be for one of two reasons, one pertaining to the learned accent by L2 speakers, the other by an error in the judgement task for the word.

When pronounced with an American accent, the phonological spelling might look something like this /'tɛrə.tɔɾ/ in which case the presence of a secondary stress would necessitate two stress feet, which would create a valid infix location. However, the word is rated lower than the average condition 3 word, which can be explained by the

phonological spelling of the word with a British RP accent, /'terətri/, which does not contain a secondary stress, but instead elides the schwa vowel through syllabic compression thus eliminating the valid infix location. As mentioned in the questionnaire design, the participants were able to play audio from YouTube with an RP speaker pronouncing the words, RP chosen to keep the voices and way of pronouncing consistent. This however meant the word was pronounced as /'terətri/, and not /'tɛrə,tɔɪ/. Either this word is rated lower because the participant's L2 accent is that of something close to British RP, or they were unsure and used the audio clip for help, which would have made the infixation sound unnatural. Given the spread of ratings for *terri-fuckin-tory* it seems to be a combination, as not all participants rated the word below a z-score of 0.0 which suggests that not all participants utilized the audio clip, but instead operated with an American way of pronunciation, either because it is their main learned dialect, or the visual of the question suggested that it is indeed to be considered from the American viewpoint with its two feet, and not from a British standpoint. But what about *pedagogy*? While this is purely speculation, it is possible that negative associations from the word *pedophile*, using the same root of *ped*, was enough for the participants to be influenced to give it a lower score.

Let us quickly look at the condition 3 z-score average without the two potentially troublesome words *peda-fuckin-gogy* and *teri-fuckin-tory* and see how this would affect acceptability of condition 3. As a reminder, z-score average of Condition 3 was 0.30 for the Norwegian participants. With these two words discounted, the condition 3 average jumped up to 0.52, much closer to that of condition 1. As a point of comparison, let us look at the same type of graph for the words in condition 1, those labelled as "unambiguously good".

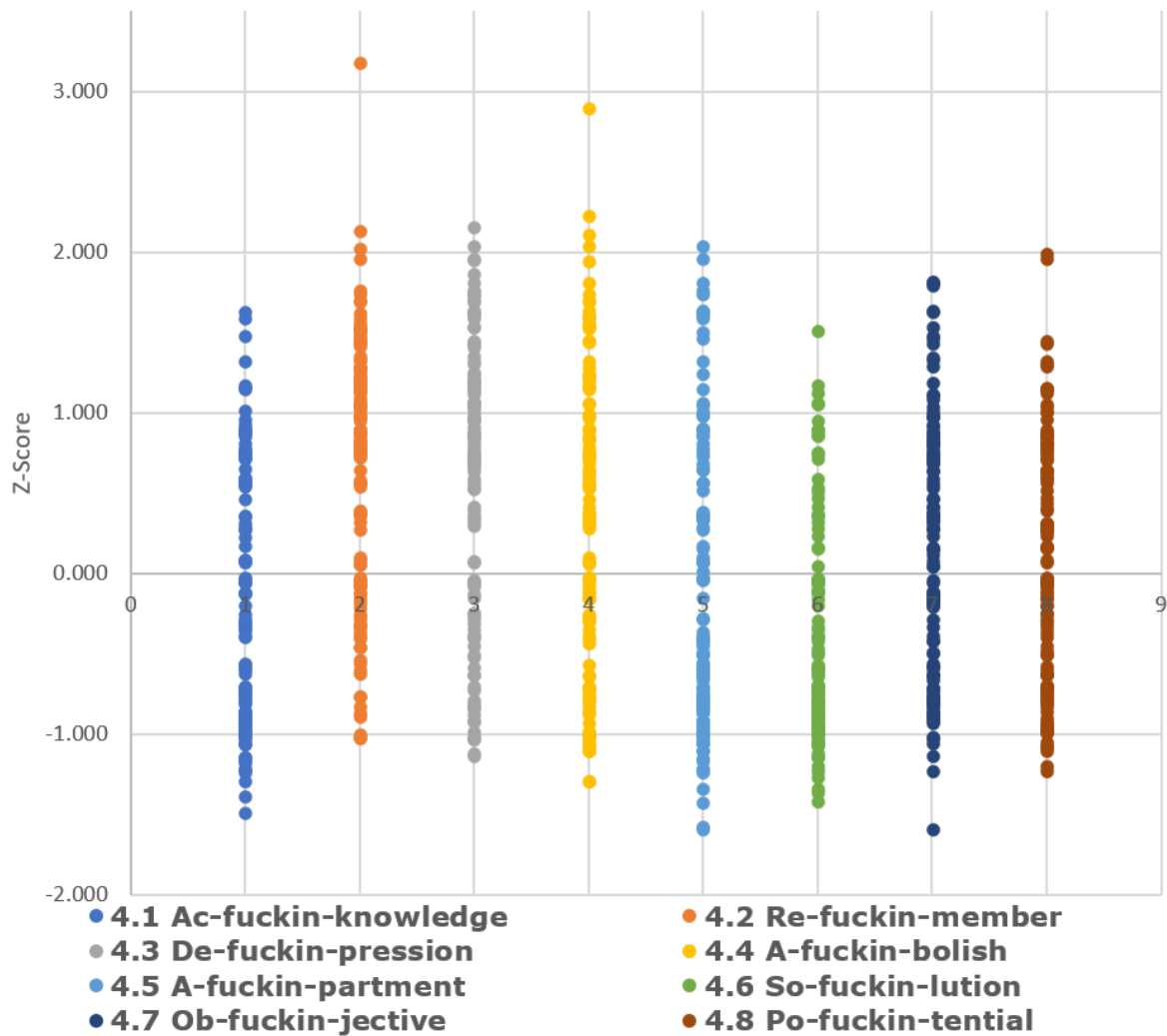


**Figure 9 Graph of condition 1 words by Norwegian participants by z-scores**

As seen above in Figure 9, there is no obvious multimodal grouping of participants, other than perhaps in the judgement for word 1.7 *Ambi-fuckin-dextrous* which displays a small gap between those close to a z-score of 0.5 and those closer to 0 and below, the relative sizes of the numbers however do not make this a clear multimodal event. It is however clear that most participants judged these words above 0.



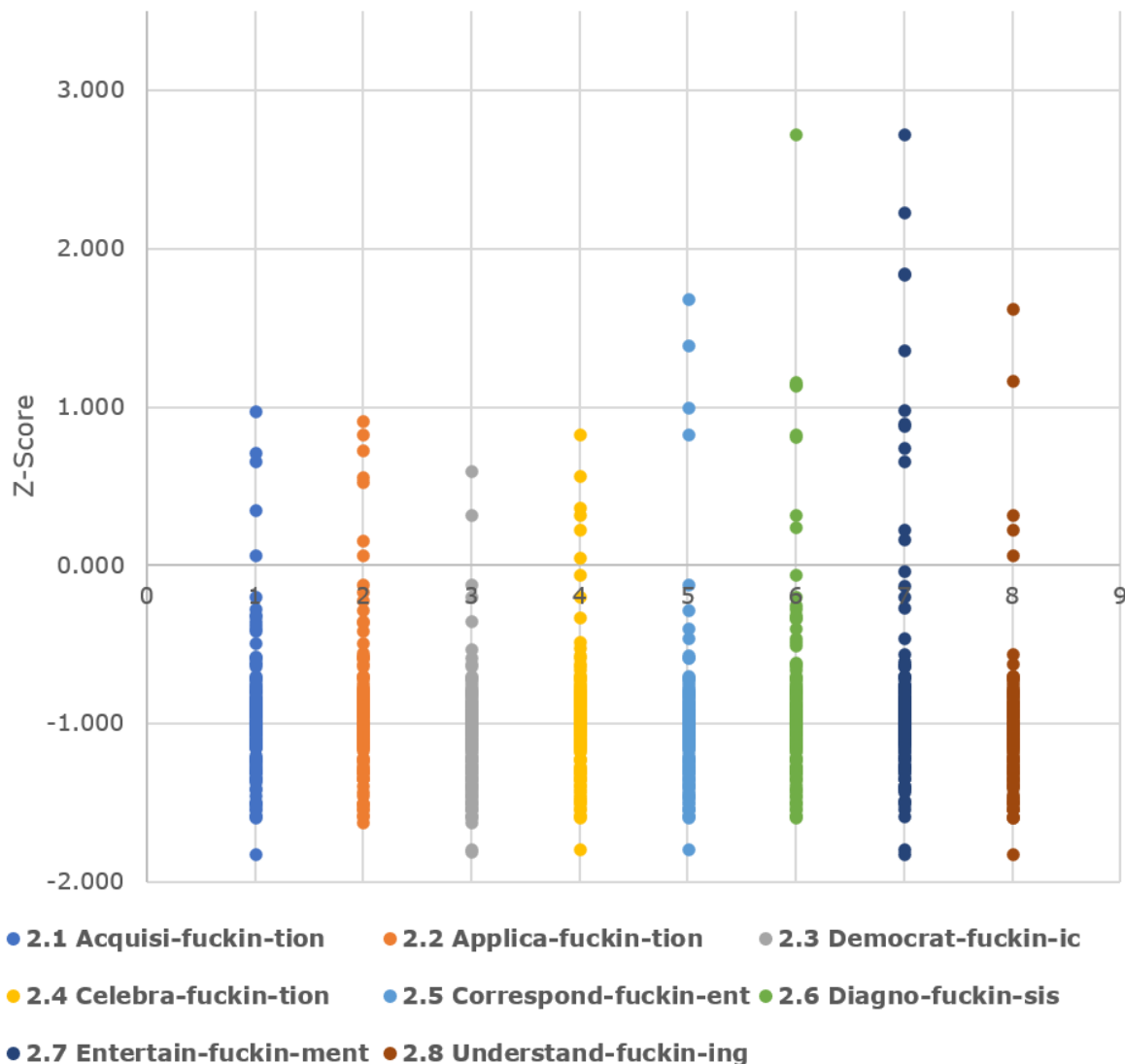
## Norwegian above 2.0 z-score by condition 4



**Figure 10 Graph of condition 4 words by Norwegian participants by z-scores.**

As seen in Figure 10, condition 4 seems to be more stable than condition 3, in that there are no single words which could be explained as dragging the average down, thus confirming that the aberrant words seen in condition 3 was either due to an error with the word or some bias in the participant. With the words in condition 1, 3, and 4 checked we should finally check condition 2, labelled as "unambiguously bad" and see if there are any particular words judged more harshly than the others.

## Norwegian above 2.0 z-score by condition 2



**Figure 11 Graph of condition 2 words by Norwegian participants by z-scores.**

In Figure 11 we can see conclusively, especially when compared to the other graphs, none of the words found in condition 2 is judged natural except by a very small number of participants.

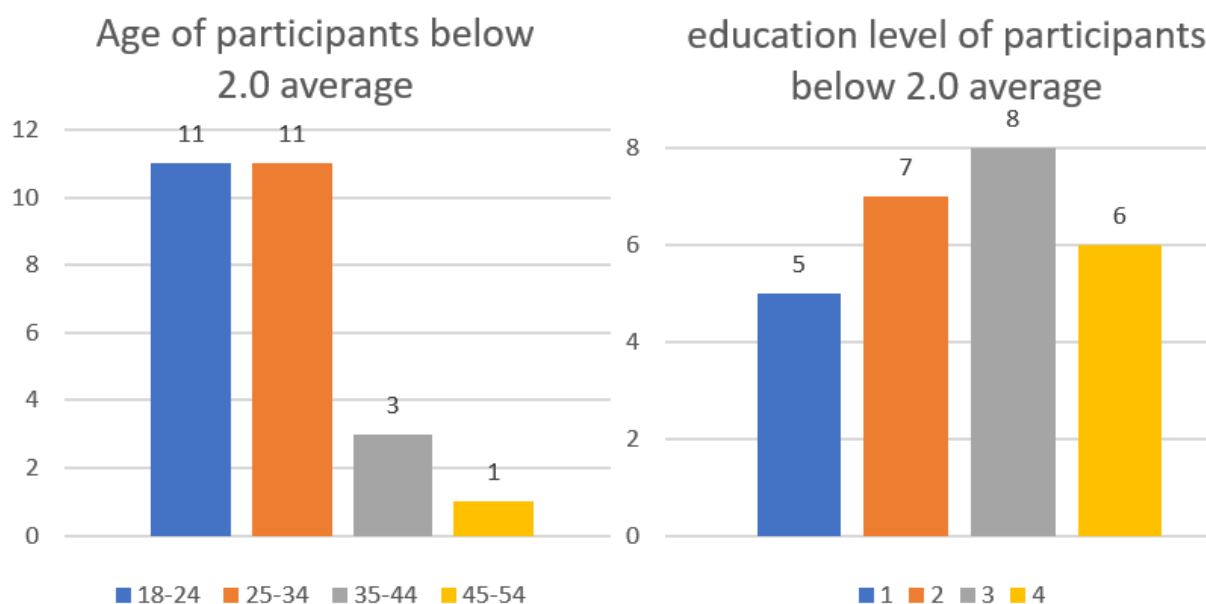
### 4.3.6 Examining those with a ratings average below 2.0

To not be in a position of having trimmed the data in such a way that other numbers were falsely inflated, we will quickly examine those 26 Norwegian participants eliminated for having sub 2.0 averages. Did they have such low ratings because they do not possess the process at all, or perhaps just a weaker version of it?

Norwegian - below 2.0avg - by condition and z-score avg	Average of Z-Score
1 Unambiguously good - infix before main stress	0.260
2 Unambiguously bad - infix after main stress	-0.524
3 infix before secondary stress	0.240
4 Stranded initial unstressed syllable - infix before main stress	0.025

**Table 8 Norwegian below 2.0 average by condition and z-score**

Let us first examine the z-score averages by condition. As seen in Table 8, condition 1 is rated at 0.26 by those below 2.0 average, compared to 0.49 by those above 2.0 average. Condition 3 and 4 are still deemed as valid at 0.24 and 0.02 respectively, compared to the other Norwegians as 0.30 and 0.14. Add into this the same result for condition 2 -0.52 as compared to -0.94 of the other participants, and it seems clear that these participants still possess the ability to judge the words, just in a smaller scale than those with an average above 2.0. Let us now examine these participants a bit closer and see if there are any connections.



**Figure 12 Graph of Norwegians below 2.0 average by age and education**

As seen in Figure 12, the ages of the participants below 2.0 average is varied, with 11 participants each in 18-24 and 25-34, 3 in 35-44 and 1 in 45-54. This continues with the education level of the participants, with 5 participants at education level 1, 7 participants at level 2, 8 participants at level 3 and 6 participants at level 4. There does not seem to be any connection, other than the presence of a lesser developed ability to judge the words. Now let us look at the z-score average by education level and see if the participants below 2.0 average mirror the trend shown earlier for Norwegians that higher education means better able to judge condition 1.

Norwegian - below 2.0 average - z-score by education level	1	2	3	4
1 Unambiguously good - infix before main stress	0.069	0.225	0.384	0.296
2 Unambiguously bad - infix after main stress	-0.410	-0.422	-0.576	-0.671
3 infix before secondary stress	0.216	0.216	0.133	0.428
4 Stranded initial unstressed syllable - infix before main stress	0.125	-0.019	0.059	-0.054

**Table 9 Norwegian below 2.0 average - z-score average by education level**

Table 9 shows a slightly growing trend, which stops at the highest level of education. Unlike the participants above a 2.0 average, which displayed a constant growth in condition 1, here we see the numbers 0.06 - 0.22 - 0.38 - 0.29. Add to this the variation between the rest of the conditions and education levels, and it appears to be the case that these participants do possess some process which allows them to judge clearly valid ones, condition 1, to be just that and to deem unnatural ones, condition 2, as that.

## 4.4 Discussion

Now having looked at the average z-score by condition, as well as combined with our other control questions, it is now time to consider the results and what they suggest might be the case. Is there an expletive infixation rule which needs to be learned or be demonstrated for both an L1 and L2 speaker to acquire or is it a rule which is intrinsic to the acquisition of English, such as the knowledge of word stress patterns, which dictate whether participants find the constructions valid or not? Before discussing the data, we should reiterate the predicted  $1 > 3 > 4 > 2$  pattern, hereafter "the pattern", discussed earlier in the thesis for convenience. The pattern refers to the predicted acceptability by condition as laid out in the literature review.

Whatever rule is in place and makes participants able to respond to these constructions is not expletive infixation specific as all numbers are plotted on a sliding scale instead of a multimodal cluster. If the rule were specific, we would see much clearer numbers as the rule should realistically make each word a judgement of natural or unnatural, and not a variable answer under the supposition that an infixation specific rule would only deal with infixations. What we instead see is a rule which makes judging the words a variable experience. If we then consider the theories brought into this field to explain the thought process of the authors as it relates to the evolution of a rule which enables expletive infixation, that of stress and metrical phonology, it makes sense that the rule itself is responsible for such functions in the English language. If you are a speaker of English, you know how to pronounce most of the words you use, which means you have either an internal library of stress patterns or you have a process which parses these at moment of recollection/production. Such a function would then theoretically also flag such a thing as two separate stress patterns overlapping, as seen with condition 2 where the infix violates the metrical stress feet, creating an unnatural and difficult to pronounce product. The usage of a pre-existing prosodic process would also cover what several authors have pointed out, that the ease with which speakers of English can acquire the ability to judge and produce expletive infixation, suggests that there is in fact no such thing as an expletive infixation specific rule. With this seemingly confirmed, it makes sense that Norwegians who have had obligatory English education would also be in possession of this ability, thus making them able to judge the words according to the predicted pattern. I will now discuss the data gathered in more detail to see if the above statement is still valid.

The first data examined was that of z-score average by word condition, as this would be the first data to first suggest the presence of the rule, whatever that might be, in participants. If the data for Norwegian participants was inconclusive then the only potential conclusion to be drawn would be that Norwegians do not possess the rule, and not as confirmation that there is none. To say this with more certainty, English data was gathered as a control with which we could compare the Norwegian results. If the Norwegian data suggested that Norwegians did not possess such an ability, and the English data reflected the same, it would suggest that we did not draw enough participants; there is no rule; or the rule is so expletive infixation specific that not many know it. However, if the English data fit the predicted condition pattern mentioned above, it would conclusively suggest that there is in fact an underlying process governing the construction, and thus judgement of the infixations, but it would not state anything about whether the rule is general to some other phonological process in the English language, perhaps as related to word-stress patterns, or a specific rule for the creation of expletive infixations. If the Norwegian data were still inconclusive with the English data saying there is a rule, one would assume that the rule is specific. However, if both Norwegian and English participants can judge the words according to predictions then we know there is something which dictates validity, but not quite if it is a specific rule or general prosodic process. And as we saw in section 4.2, both the English and Norwegian participants judge according to the pattern. However, as we can see the Norwegian participants judged slightly lower in three of the four conditions than the English, which should not be the case if the rule was infixation specific and all participants had it. Our first datapoint consequently seems to suggest the following: There is something allowing participants to judge these constructions and the data for Norwegians and English is relatively close. In order to further develop these thoughts, I then examined the other points of data in section 4.3.

The next data examined was that of participants z-score by level of education. With this section there was a few different ideas and uses for the data. Under the supposition that the process is not unique for infixation, one would expect the scores to be comparable across all levels of education which is what we see. Although the numbers are quite close, we cannot be certain that they are distinguishable enough to say higher education level equals better grasp of any rule which exists. And as mentioned before as a note to remember in participant selection, all Norwegian participants who have achieved the lowest education level used in this thesis would have gone through an obligatory number of hours in English education, around 728 hours. If we combine the fact that the numbers by education level are as close as they are, the fact that the numbers show participants were still able to judge according to the  $1 > 3 > 4 > 2$  pattern, and obligatory English lessons participants would have had, we end up with evidence which further suggests that the rule is not infixation specific. Instead, it is something that is connected to prosodic or phonological facts related to stress feet, which could also apply across languages. This will be considered later.

Continuing to examine education, this time by number of years of English education in section 4.3.2, the idea of the ability stemming from some prosodic ruleset in the English language seems to be further supported. There is variation in the data, which can be attributed to a relatively low number of participants to spread around the 16 alternatives selected and as such we should not expect an even spread as some will have fewer participants than others, making their judgements closer to individuals rather than averages. While the data is too noisy to say there is a correlation between number of years of English education and possession of the ability, what is obvious is the  $1 > 3 > 4$

> 2 pattern. What we can therefore say is that whatever form the ability has, it is acquired early and seemingly rather easily due to low number of years, in reality school hours, needed to judge correctly.

Moving on to the number of hours per week used to speak or write English, section 4.3.3, and seeing if this correlates to having the rule. First by oral English, where we once again saw numbers too close to call a trend, however the number by condition is still strong enough to say that the pattern is there, which is confirmed by number of hours spent writing English per week. There can be several possible answers to why this is the case. While this set of data cannot confirm or deny the existence of a rule which is specific to expletive infixation, it can say if such a rule would be difficult or easy to acquire. If the rule is difficult, requiring either continuous experience or increased exposure, one would assume that a higher number of hours spent with the language would increase this chance, which it seemingly does not. This suggests that the ability is easily acquired and does not require practiced output to maintain.

With the numbers of hours using English seemingly not correlating to the ability, what about experience with using swearwords both when speaking and writing? If the rule is infixation specific, we should see a trend where those who self-report to use swearwords often are better able to judge the rule. The reason for this is the idea that participants who do not use swearwords should have a lower chance of both encountering the rule and remembering it for further use. And whilst we did not see a correlation, we did see the pattern. When looking at the data for experience as it relates to spoken swearword usage, the numbers became more interesting. While the numbers for both Norwegian and English were too close to say there is a trend either way, other than the pattern being present, something seemingly happened in the English data. Those who self-reported to strongly agree that they used swearing when speaking judged condition 1, labelled as "unambiguously good" the lowest, whilst those who reported to mildly disagree judged them the highest. Although this could just be minor differences considering the relatively low number of English participants, it does suggest that experience with swearword usage, be it orally or written, has no impact on the ability to judge the word constructions and only the presence of the pattern says that they are. The data once again seemingly confirms that participants possess the ability to judge expletive infixations correctly and are doing so in line with previous predictions regarding the conditions. This ability is however not connected to self-reported frequency of swearword usage, meaning the process which allows participants to do so, is more likely to be one of English word stress, and not a specific expletive infixation rule.

After examining these datapoints we can safely begin to draw inferences. All participants are able to judge expletive infixations in a target-like fashion regardless of highest level of education completed; the number of years spent has no bearing on the ability to judge correctly; number of hours spent speaking and writing English per week has no bearing; the frequency of swearword usage has no bearing. Seemingly all participants, regardless of exposure or experience with the language, are able to judge the words in accordance with the predicted pattern. It also seems to be the case that the rule is not expletive infixation specific, but rather one which deals with something more fundamental aspect of the English language, such as word-stress patterns.

While the numbers we have looked at thus far clearly shows that there is some process which allows all participants to judge the words according to the predicted pattern, we must consider what the presence of an expletive infixation rule would look like. The

presence of a rule specific to expletive infixation should show up as a clear multimodal response to either of the conditions. A rule which is specific to expletive infixation must quickly be able to tell the user if a construction is valid or not, whereas a more general process which deals with prosodic validity would realistically result in varying degrees of acceptability due to varying degrees of language comprehension/fluency. And as we saw in the multimodal chart for condition 3, there seems to be no clear multimodal response present, which would present as two or more clusters of responses, instead of a somewhat connected line, which indicates a sliding scale. As we also saw from the chart, which was discussed in section 4.3.5, there seems to be an error with two of the words chosen, one for potential negative connotations, and one word where the results depended on if the participant used an American or a RP dialect to analyse the word. When those two words were removed however, the new average does suggest that with two better suited words the numbers for condition 3 would be much closer to that of condition 1. It is feasible that the process which made the participants judge these two words as less natural than the other words in condition 3, was influenced by other factors influencing their rating thus giving us a sliding scale. This influence should theoretically not happen if there was an expletive infixation specific rule, unless the imagined other process influenced the rating before the expletive infixation rule would be applied.

We also compared the multimodal graph for condition 3 with that of condition 1. It is important to remember that although we do see a few gaps, the numbers are too close to call them multimodal and will not be treated as such. Again, we see the sliding line instead of clusters. If we consider the average for condition 3 with the troublesome words removed and compare it to condition 1, 0.52 and 0.49 respectively, the numbers suggest the prediction made by McCarthy that both primary and secondary stress after the expletive infixation works is confirmed, at least by Norwegian participants.

At the onset of the result section, 26 participants were eliminated for having below 2.0 average score, under the assumption such a low average might be noise in the system instead of useable results. Upon examination of that data in section 4.3.6 however, we once again see the familiar pattern albeit seemingly slightly weaker than those with an average above 2.0. Considering these participants represent almost every age block, and every education level, no definitive answer can be made as to why these participants gave the judgements they did. What we can say is that the participants below a 2.0 average still display the ability to judge the words in accordance with the predicted pattern.

One last thing to consider is the possibility of the nature of the words leading to a situation where the questionnaire itself could potentially teach this underlying process to participants. Filler questions are used to obfuscate the real aim of the questions, to hide what is being tested to prevent participants from adopting a targeted attitude in which they attempt to do well on a "test". However, when what is being tested is 32 words with swear words infixated into them, filler questions would not be as effective when the obvious contrast between a regular word infix and a swearword would reveal much about the aim. With several authors stating that the ability to create, and thus judge, valid constructions need only a few valid inputs for an individual to absorb the underlying process, it must be considered a possibility. With 32 words on 4 pages, 2 words per condition on each page, six out of eight constructions are well-formed according to the main rule, that of stress after infix. If participants encounter 75% of valid constructions on each page, that are made with an easy to acquire rule, could some participants have learned this rule from the questionnaire itself?

Page 1	Average	Page 2	Average
1.2 Mathe-fuckin-matics	0.586	1.1 Combi-fuckin-nation	0.331
1.8 Popu-fuckin-lation	-0.064	1.5 contra-fuckin-diction	0.628
2.4 Celebra-fuckin-tion	-0.965	2.3 Democrat-fuckin-ic	-1.067
2.6 Diagno-fuckin-sis	-0.855	2.7 Entertain-fuckin-ment	-0.778
3.3 Fasci-fuckin-nating	-0.153	3.1 Doppel-fuckin-ganger	0.647
3.5 Agri-fuckin-culture	0.740	3.8 Teri-fuckin-tory	-0.301
4.6 So-fuckin-lution	-0.421	4.1 Ac-fuckin-knowledge	-0.191
4.8 Po-fuckin-tential	0.063	4.2 Re-fuckin-member	0.649
Page 3	Average	Page 4	Average
1.6 Exe-fuckin-cution	0.659	1.3 Edu-fuckin-cation	0.672
1.7 Ambi-fuckin-dextrous	0.781	1.4 Expla-fuckin-nation	0.345
2.1 Acquisi-fuckin-tion	-0.940	2.2 Applica-fuckin-tion	-0.902
2.5 Correspond-fuckin-ent	-0.994	2.8 Understand-fuckin-ing	-1.027
3.6 Peda-fuckin-gogy	-0.405	3.2 Necro-fuckin-mancy	0.515
3.7 Tele-fuckin-vision	0.656	3.4 Compli-fuckin-cated	0.747
4.3 De-fuckin-pression	0.590	4.4 A-fuckin-bolish	0.373
4.7 Ob-fuckin-jective	0.150	4.5 A-fuckin-partment	-0.069

**Table 10 words separated by what page they appeared - z-score average.<sup>3</sup>**

A quick look at the data in Table 10 seems to dismiss this notion. If the assumption is that they did not possess the rule at the beginning of the questionnaire, instead acquiring it as they judged each word, we would see relatively low numbers at the beginning, growing to numbers which adhere to the  $1 > 3 > 4 > 2$  prediction. Instead, while there are variations, there is no evidence which supports the participants learning from the questionnaire, it does however confirm the predictions, that condition 2 is always judged as unnatural, while the other conditions are in the positive. It might also be the case that participants went through an introspection as they assessed each word, perhaps leading to a sharpening of the underlying prosodic process which is responsible for these judgements as they read each word and went through a process of "how-does-this-sound".

For future study it would be interesting if one could test learners as they progress through the school, to investigate when this ability enters an individual's toolbox. This would however require either a sizeable societal shift on swearwords, or one could perhaps generate similar constructions with infixations which mimic the stress pattern of swearwords useable in expletive infixations. With more time, another questionnaire should have been prepared and distributed with the initial words in order to examine the results beforehand to identify potential problems such as the ones discovered in this thesis as it relates to the words *territory* and *pedagogy*. And as we saw in the multimodal graph for condition 2, none of the words are deemed natural, except for by a few

<sup>3</sup> Words appear by the increasing number assigned as each word was selected and generated to be tested. This order can be found in appendix 4 but does not reflect their position on the page from one questionnaire to another.



participants. This could be due to a participant clicking wrong or judging it, but no other condition 2 word, as natural; or there is a single digit number of participants who do not possess the rule.

Furthermore, the process which seemingly allow participants to judge the words correctly has thus far been attributed to some function of the English language, wherein the conclusion is if you are able to speak English and thus use prosodic stress correctly then you have this ability. What has not been considered due to the subject of this thesis being English centric, and a lack of time and space, is what if this ability is not acquired by Norwegian L2 speakers through the acquiring of English specifically, but rather from an expansion of an already acquired ability from some similar prosodic process in Norwegian? We know that transfer between L1 and L2 has been observed and is often said to be one of the most important aspects required for L2 acquisition (Saville-Troike, 2012, p. 18) and this could help explain why Norwegians seem to possess a target-like ability regardless of education, age, or experience with swearwords due to the process not being instilled from scratch in a new language, but rather expanded with additional rules added to an already existing Norwegian prosodic ruleset. The first step in the process of figuring out this could be to examine if the metrical feet system of English is equal, or similar, to that of Norwegian which would mean the infixation spots could be the same. Then the existence of Norwegian infixation would have to be shown, or possibly be developed, in order for test items to be created.

How would one go about testing this? First participants would need to be selected, which will most likely be a challenge. Participants would need to be well into their L1 acquisition, but before major, or any, English acquisition. Challenges with this could be the participants not understanding the words used or are too young for actual swearwords to be used. First examples in Norwegian would need to be constructed, in such a way that one can either state that infixations are not a thing in Norwegian, or that the system is different/similar to that of English. If the systems turn out to be the same, or similar, one expects participants to correctly judge English example constructions if some form of transference is happening. On the other hand, if there either is no similar Norwegian system or the resulting constructions is too different, one would expect participants to either not be able to judge correctly, or the data would be too varied to make any conclusion. This would suggest that what makes participants able to judge English expletive infixations is specifically tied to the acquisition of the English language.



## 5 Conclusion

To reiterate the research questions introduced in the Introduction.

- Do Norwegians possess some form of the expletive infixation rule which allows them to deem an infixation well-formed as well as recognize malformed examples?
- Does increased exposure to English increase the likelihood of Norwegian participants possessing this ability?
- Does the data suggest that this ability is tied specifically to an expletive infixation rule, or does the pattern fall out from more general principles of (English) morphology/phonology?

Data from both Norwegian and English participants were gathered, ending up with 120 valid Norwegian participants and 20 English participants for control. The participants were first sent to one questionnaire for control questions to give us datapoints, after finishing they were sent to one of four questionnaires with the same words in different orders. The participants judged the expletive infixations with a 7-point Likert scale to give us individual word ratings, which were then z-scored to give us a statistical basis.

The data clearly shows that Norwegians do in fact possess an ability which allows them to correctly judge if the productions are natural or not. This they did in the predicted  $1 > 3 > 4 > 2$  pattern. This ability is however not connected with the exposure to the English language as analysed by the control questions gathered for this thesis, given the education level, the number of hours spent by the participant writing or speaking the language or the frequency with which they use swear words both in writing and speaking. However, with all Norwegians having around ~700 hours of obligatory English education, it is suggested that learning the language itself will instil the rule which enables the participant to judge these constructions.

With the data clearly showing the Norwegians possess the ability to judge correctly, we also see that the data does not suggest a multimodal response to the conditions, bar two troublesome words in condition 3. With the ability, and no multimodal response we can say that there is no rule which is specific to expletive infixation, as that rule would make a production either natural or not and not result in a sliding scale opinion. The ability therefore seems to stem from the English language itself, and that it is related to the underlying phonological process which all speakers of English utilize, which is that of either having a library of, or online processing of, the stress patterns of all English words a participant knows.



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# 7 Appendix

## 7.1 Relevance of thesis for the teaching profession

There are several reasons as to why this thesis is relevant to the teaching profession. A teacher is responsible for several moving parts throughout the day, such as planning out what to cover for the next several classes, what to test the students for, to better plan future lessons, and if you are the kontaktlærer for a class then you will manage in large part the relationship between home and school. In the same vein, planning out the structure for data collection such as what to collect and how, analyzing the data from multiple angles and figuring out the best way to explain the information for this thesis all help build a personal work ethic which will aid the future. It has reinforced the attitude of admitting if a mistake is made, as all can make them but only by admitting can it be learned from.

As a fluent speaker of English, it is also fascinating to keep learning about phonological rules which govern the language. I can speak the language, and explain what primary and secondary stress is, but now I am able to describe in much greater detail how the phonological rule of stress applies, about the theory of the 3 stress levels as well as metrical phonology which explains why stress patterns are the way they are.

Furthermore, this work proves something which I believe answers a question which students continuously ask in several fields: "Why must we learn this?". Very often the answer is not that the student will require the solution or answer to the specific task they are working on in that moment, but rather it is the methods and tools they use to achieve the answer they require. It is reasonable to assume that none of the Norwegian participants have ever been sat down and taught the rule of expletive infixation, yet they seem able to judge them correctly. Instead of recalling a specific lesson, all lessons where students used English in practice in groups or with the teacher went towards this, by learning the rhythm and stress of the English language they also learned what makes an expletive infixation invalid as a construction. This acquisition of knowledge without explicit instruction is fascinating to think about and is something teachers should keep in mind. Most things you say, do or show will influence students. The ability to add 4 + 4 will help with taxes, source critique tasks will help students ask critical questions and be more mindful of untruths, ideally anyway. And learning a language such as English will impart subconscious rules about rhythms and stress patterns which will not necessarily make a weirdly constructed word unable to be understood, but it will sound or "feel" wrong.

Finally, the concept of swearwords in school have always fascinated me. To me they are simply a very descriptive element in the English language which should not be ignored, but perhaps not taught. I have met teachers and supervisors who found it unacceptable for a teacher to use a small swearword in even in a fitting situation such as stepping on a wire, thus pulling it out and cutting the screen in a lesson or movie; I have also met teachers who do not mind, if it is never used to hurt. And the fact that a subject that is taught to all students of English, that of affixes, has a separate affix which in English is most prominent with swearwords, and thus rarely taught, is very fascinating. It seems like the point is to teach, up until it is unacceptable as judged by some societal standard.

## 7.2 Raw data used

A copy of the raw data used in this thesis has been uploaded to OSF, the Centre for Open Science, at the suggestion of advisor Dave Kush.

The data can be located at the following URL:

[https://osf.io/gqbwm/?view\\_only=53a1333b9b7f4377a3cf1d90e78b5b3e](https://osf.io/gqbwm/?view_only=53a1333b9b7f4377a3cf1d90e78b5b3e)

If for some reason the above page has expired, contacting the author of this thesis would be the next step. royahagen@gmail.com



## 7.3 NSD Approval

**Prosjekttittel:** Engelsk infiksering i Norske L2 brukere

**Referansenummer:** 112771

**Registrert:** 23.08.2020 av Roy Andreas Hagen - royaha@stud.ntnu.no

**Behandlingsansvarlig institusjon:** Norges teknisk-naturvitenskapelige universitet / Det humanistiske fakultet / Institutt for språk og litteratur

**Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat):**

Andrew Weir, andrew.weir@ntnu.no

**Type prosjekt:** Studentprosjekt, masterstudium

**Kontaktinformasjon, student:**

Roy Andreas Hagen, royahagen@gmail.com

### 25.08.2020 - Vurdert anonym

Det er vår vurdering at det ikke skal behandles direkte eller indirekte opplysninger som kan identifisere enkeltpersoner i dette prosjektet, så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet den 25.08.2020 med vedlegg, samt i meldingsdialogen mellom innmelder og NSD. Prosjektet trenger derfor ikke en vurdering fra NSD.

HVA MÅ DU GJØRE DERSOM DU LIKEVEL SKAL BEHANDLE PERSONOPPLYSNINGER?

Dersom prosjektopplegget endres og det likevel blir aktuelt å behandle personopplysninger må du melde dette til NSD ved å oppdatere meldeskjemaet. Vent på svar før du setter i gang med behandlingen av personopplysninger.

VI AVSLUTTER OPPFØLGING AV PROSJEKTET

Siden prosjektet ikke behandler personopplysninger avslutter vi all videre oppfølging.

## 7.4 Words chosen - with stress and feet markings

Main stress in **bold**, secondary underlined, feet marked with []

### 7.4.1 Cond 1 - Infix before main stress

- (1.1) [com-bi]-[**nat**-ion] -> [combi]-fuckin-[**nation**]
- (1.2) [math-e]-[**mat**-ics] -> [mathe]-fuckin-[**mat**ics]
- (1.3) [ed-u]-[**ca**-tion] -> [edu]-fuckin-[**ca**tion]
- (1.4) [ex-pla]-[**na**-tion] -> [expla]-fuckin-[**na**tion]
- (1.5) [con-tra]-[**dic**-tion] -> [contra]-fuckin-[**dic**tion]
- (1.6) [ex-e]-[**cu**-tion] -> [exe]-fuckin-[**cu**tion]
- (1.7) [am-bi]-[**dex**-trous] -> [ambi]-fuckin-[**dex**trous]
- (1.8) [pop-u]-[**la**-tion] -> [popu]-fuckin-[**la**tion]

### 7.4.2 Cond 2 - Infix after main stress

- (2.1) [ac-qui]-[**si**-tion] -> [acqui][**si**-fuckin-tion]
- (2.2) [ap-pli]-[**ca**-tion] -> [appli][**ca**-fuckin-tion]
- (2.3) [dem-o]-[**crat**-ic] -> [demo][**crat**-fuckin-ic]
- (2.4) [cel-e]-[**bra**-tion] -> [cele][**bra**-fuckin-tion]
- (2.5) [cor-re]-[**spond**-ent]-> [corre][**spond**-fuckin-ent]
- (2.6) [di-ag]-[**no**-sis] -> [diag][**no**-fuckin-sis]
- (2.7) [en-ter]-[**tain**-ment] -> [enter][**tain**-fuckin-men]
- (2.8) [und-er]-[**stand**-ing]-> [under][**stand**-fuckin-ing]

### 7.4.3 Cond 3 - Infix before secondary stress

- (3.1) [**dop**-pel]-[gang-er] -> [**doppel**]-fuckin-[ganger]
- (3.2) [**nec**-ro]-[man-cy] -> [**necro**]-fuckin-[mancy]
- (3.3) [**fas**-ci]-[nat-ing] -> [**fasci**]-fuckin-[nating]
- (3.4) [**com**-pli]-[ca-ted] -> [**compli**]-fuckin-[cated]
- (3.5) [**agri**]-[cul-ture] -> [**agri**]-fuckin-[culture]
- (3.6) [**ped**-a]-[go-gy] -> [**peda**]-fuckin-[gogy]
- (3.7) [**tel**-e]-[vi-sion] -> [**tele**]-fuckin-[vision]
- (3.8) [**ter**-ri]-[to-ry] -> [**teri**]-fuckin-[tory]

#### 7.4.4 Cond 4 - Stranded initial unstressed syllable

Main stress in **bold**. Remember first syllable is unstressed and dominated by stress superfoot.

- (4.1) ac-**knowl**-edge      ->      ac-fuckin-**know**ledge
- (4.2) re-**mem**-ber      ->      re-fuckin-**mem**ber
- (4.3) de-**pres**-sion      ->      de-fuckin-**press**ion
- (4.4) a-**bol**-ish      ->      a-fuckin-bolish
- (4.5) a-**part**-ment      ->      a-fuckin-**part**ment
- (4.6) so-**lu**-tion      ->      so-fuckin-**lu**tion
- (4.7) ob-**jec**-tive      ->      ob-fuckin-**ject**ive
- (4.8) po-**ten**-tial      ->      po-fuckin-**ten**tial

