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Morphological Behavior of the Prefix 'In-' and Its Assimilated Forms in English Negation

Martinus Hergirico Riandana [1], Barli Bram [2]
Sanata Dharma University, Indonesia [1, 2]
hergirico@gmail.com, barli@usd.ac.id

Abstract:

This study aimed to find the underlying form of the prefixes in-, im-, il-, ir- and morphological processes occurring in the complex words containing those prefixes. The researchers focus on the negation, meaning only words with a prefix that changes the initial meaning of the root word into a negative meaning are qualified. Descriptive analysis was employed. Seventy qualified words from the Oxford English Dictionary were chosen to be analysed. The researchers formulated two research questions: (1) What is the underlying form of the prefixes in-, im-, il-, and ir-? and (2) What morphological processes occurred in the complex words containing prefixes in-, im-, il-, and ir-? The findings showed that the prefix in- is the underlying form of those prefixes seen from the lenses of morphology and phonology. Further, affixation is a morphological process that occurs in complex words containing those prefixes. This study contributes to shaping a better understanding of the prefix in- and its assimilated forms for English educators and language learners. Implications are discussed.

Keywords: Affixation, Allomorphy, Assimilation, Negation

1. INTRODUCTION

One of the important aspects of linguistics is morphology. It is a branch of linguistics that studies the internal structure of words into the smallest unit. The smallest unit of words is a morpheme. It also studies how those elements of word formation function to create meaning. Morpheme is divided into two categories, namely free and bound morphemes. The difference between those two lies in meaning. A free morpheme can stand alone and indeed has meaning. On the other hand, a bound morpheme cannot stand alone and be meaningless. It leads the researchers to a

morphological process known as affixation. Truong et al. (2024) stated that affixation is a method to generate new words, especially those that are negative in English. They provide an example of prefix un- which changes the word intended into unintended.

In word formation processes, there are derivational and inflectional word formation. Inflectional word formation involves inflectional morphemes to convey grammatical information without changing the lexical category (Goni et al., 2022). Conversely, derivational affixation is adding affixes to the root words in order to form new words which alter the initial meaning and lexical category (Fitria, 2022). In English word formation, affixes which include prefix and suffix attached to root words to change their initial meaning (Kau, 2023). Following the definitions, they suggest that affixation includes prefix and suffix. Prefixes is the focus of this research.

Moreover, one of the most productive prefixes is in-. According to Oxford Learner's Dictionary, when the researchers tried to search for the meaning of prefix in-, it is defined as not or the opposite of. Throughout the development of English, the prefix in- develops into im-, il-, and ir-. The examples are relevant becomes irrelevant, possible becomes impossible, and logical becomes illogical. The development led the researchers to delve deeper into whether the prefix truly defines as conveying the opposite of the initial meaning, and to examine whether the prefix in- has variations.

Some previous research explored prefixation. Soares (2025) studied the morphological processes of a language in East Timor, the Makasae language. The study focuses on the prefixes au- and tuli- in forming verbs and adjectives. Descriptive qualitative was employed to analyse the data. Gunawan et al. (2025) explored the types of negative prefixes in The Jakarta Post online newspaper and the negative prefixes frequently mentioned in it. Their study employed a qualitative method. Another research by Xhina (2021), the study aimed to compare paradigmatic set of Albanian and English formations which incorporate prefixes in-, il-, ir-, and im-. The previous studies indeed discussed morphological processes and prefixes. However, this research exhibits how the established theories engage with the seventy qualified words. With those seventy clearly presented data, it is hoped that this research provides a useful reference for students, particularly those who need practical explanations of how those prefixes engage with the root words. Then, the seventy words also function to examine whether the theories remain relevant.

An explanation of the processes involved is needed to enrich morphological awareness. The researchers try to fill in the gap by conducting research, particularly addressing those two issues. Experts' views are used as the main reference (Lieber, 2009; Plag, 2018; Aronoff & Fudeman, 2022). Unlike previous morphological studies, the researchers combine morphological and phonological lenses to present the findings and discuss them using a more friendly diction. The researchers also present a table used to analyze the data and a pie chart to illustrate the data composition.

Morphologically, the process behind the changing prefix is worth studying. The relationship between morphology and phonology creates new words. The researchers formulated two research questions: (1) What is the underlying form of the prefixes in-, im-, il-, and ir-? and (2) What morphological processes occurred in the complex words containing prefixes in-, im-, il-, and ir-? By answering the research questions, the researchers hope that this study contributes to morphological analysis in English, particularly on understanding why the prefix in- change into in-, im-, il-, and ir- and what processes happen. The researchers also hope that readers broaden their mindset in relation to morphological awareness. This study is also beneficial for English

educators and English as a second language students to comprehend negation, which is frequently used in academic purposes and daily conversation. With a better understanding of the processes, educators and students have confidence dealing with prefixes, particularly those with negation. Practically, this study contributes to fostering a deeper understanding of the prefix in- and its assimilated forms.

2. LITERATURE REVIEW

2.1 Morphology

To delve deeper into the topic, morphology is the first term to discuss. Morphology is an exploration of the structure of words, which focuses on morphemes that form words (Fitriyeni, 2024). Similarly, Dirgeyasa (2024) stated that one of the crucial aspects in linguistics is morphology, which explores word construction and the process involved, considering the variety of languages and the growing number of vocabulary. Morphology is a topic in linguistics which discusses word formation. Different from syntax, which focuses on sentence construction, morphology focuses on word formation. In morphology, there is a familiar term, namely morphological awareness.

2.2 Morphological Awareness

Morphological awareness refers to one's ability to be familiar with morpheme structures in words, namely prefixes, suffixes, and roots. Coelho et al. (2024) stated that morphological awareness is the capacity to intentionally reflect and work with morphemes, the smallest unit of a language. Furthermore, morphological awareness is the capacity to intentionally utilize the smallest unit of a language, written and spoken, which is important particularly for children experiencing language difficulties (Apel & Henbest, 2020).

2.3 Affixation

As stated in the introduction, affixation includes prefix and suffix. Prefix and suffix are one of the smallest units of a language. A prefix is a bound morpheme, placed in front of a root word. In a similar definition, prefix is a term added in front of a root word to produce a new word that has a different meaning (Aslamiah, 2020). Then, on the other hand, root word is a free morpheme and placed after a prefix. In relation to the topic discussed, Cahyo (2021) stated that negation can be indicated using prefixes. Some of the examples are mentioned in the introduction, specifically in the third paragraph.

3. RESEARCH METHODOLOGY

This study is in line with the interpretivism paradigm, meaning that it is a part of qualitative research. Creswell and Poth (2016) stated that researchers' interpretation, reflection, comprehensive explanation of the issue, respondents' views, and a contribution to the work of literature are presented in the final report of a qualitative study. The researchers' interpretation and comprehensive explanation of the issue were the core of the study. This suggests that this study is in line with the interpretivism paradigm. Furthermore, Haki and Prahastiwi (2024) stated that qualitative study focuses on the participants' views, offering comprehensive understanding of social phenomena. The participants can be replaced with the data collected and the core is that qualitative research offers comprehensive understanding of social phenomena. Prefix in- and its assimilated form is phenomenon in linguistics field.

The study aimed to find the underlying form of the in-, im-, il-, ir- prefixes and morphological processes occurring in the complex words containing those prefixes. Descriptive analysis was used, employing document analysis of lexical data. Descriptive analysis functions as a way to describe phenomena and comprehend one's perspectives (Creswell & Poth, 2016). Additionally, Furidha (2024) similarly stated that the descriptive analysis allows the researchers to comprehensively describe and examine phenomena, events, or social facts, which focus on understanding individual perspectives rather than numerical measurements.

The data were English words which contain prefixes in-, im-, il-, and ir-. They were collected from the Oxford English Dictionary (OED), cross-checked through Oxford Learner's Dictionary and Longman Dictionary of English Language and Culture. All of the results of the search were directly listed. OED was the main source of data as it is a reliable source and internationally recognized reference. While there might be some debates on the use of dictionary as the main source of data, current studies show that dictionary is trustworthy and advantageous to examine morphological research. It was used due to its historical significance and extensive citation evidence (García, 2024; Héois, 2022; Williams, 2023). Furthermore, the researchers were the main instrument to interpret the data. In line with Creswell and Poth (2016), this study employed qualitative descriptive analysis that positions the researcher as the main instrument for analyzing the data. To avoid potential bias, morphological theory (Lieber, 2009; Plag, 2018; Aronoff & Fudeman, 2022) and double-coding by the two researchers were utilized to ensure interpretive reliability in processing the data.

There were three steps taken to collect the data. First, finding the words in the OED based on the prefixes. Second, preparing spaces for each prefix in a blank Google Document. There were four prefixes in total, meaning there were four sections to be filled. The order was arranged as follows: Prefix in-, prefix im-, prefix il-, and lastly prefix ir-. Third, listing the identified words in the spaces provided. The researchers copied the search results from the OED and pasted them directly into the Google Document. Words beginning with the prefix in- such as inequality, inactivate, and indirect, were categorized into the prefix in- category. Similar treatment was done to the prefixes im-, il-, and ir-. The last step in data collection was rechecking the categorization of the words based on the prefix they belong. It was done to ensure the accuracy of the categorization.

After collecting the data, the researchers analyzed the data. As a result of the search in Oxford Learner's Dictionary that prefixes in-, im-, il-, and ir- defined as not or the opposite of, the researchers focused on the negation. Lieber (2009) also stated in her book that the examples of negative affixes are in-, un-, and non-. It strengthens the view that prefix in- and its assimilated forms negate the root word, in which they add the meaning "not" to the root word. She provides examples, namely, inattentive, unhappy, and nonfunctional. Subsequently, the data analysis steps taken were discussed in the next paragraphs.

First, eliminating words listed in Google Document whose prefix does not change the meaning to a negative meaning (negation). That implies there was an inclusion criterion to select words in which the prefix alters the root word into a negative meaning. Following the inclusion criterion, the initial data were refined to seventy qualified items. In applying the inclusion criterion, the researchers admitted that there might be some skipped words due to the researchers' limitations. Second, making a table and categorizing qualified words based on the prefix and lexical category. The table allowed the researchers to see the data in order, which helped the researchers during

the data analysis. The table is essential, as Motamedisedeh (2023) stated that the table arranges raw data collected into an understandable format, and it allows researchers to examine patterns and knowledge more easily. Below was the table used.

Table 1: First Analysis

No	Prefix	Lexical Category	Word
1.	in-		
2.	im-		
3.	il-		
4.	ir-		

The third was separating the prefix from the root word. This was done to identify whether the root word is a free or bound morpheme. This technique was suggested by Aronoff and Fudeman (2022), which differentiates inflectional and derivational processes. The next step was observing the changing phoneme /ɳ/ in the prefix in- to phonemes /m/, /l/, or /r/. This part was crucial as the analysis started to show significant progress, making it possible for the researchers to address the research questions. The researchers find answers to the underlying form of the prefixes in-, im-, il-, and ir- and morphological processes that occur in the complex words containing those prefixes.

The last step was arranging the second table to present the final result of the analysis. The table was the reference to draw the findings and the discussion sections. The seventy words were coded based on six criteria, namely prefix, lexical category, word, root word, meaning change, and semantic shift. Thus, the difference between the first table and the second table lies in the columns entitled root word, meaning change, and semantic shift. The coding enabled the researchers to identify systematically the morphological patterns of those prefixes, which were then described qualitatively. Below was the table used to present the final result of the analysis.

Table 2: Second Analysis

No.	Prefix	Lexical Category	Word	Root Word	Meaning Change	Semantic Shift
1.	in-					
2.	im-					
3.	il-					
4.	ir-					

4. RESULTS

4.1. The Underlying Form of the Prefixes in-, im-, il-, and ir-

It is stated in the introduction that the researchers have two research questions. In this part, the researchers exhibit the findings relevant to the first research question, namely, **what is the underlying form of the prefixes in-, im-, il-, and ir-?** In the data analysis, the researchers mentioned that the second table was used to present the final result of the analysis. Below was the second table mentioned.

Table 2: Second Analysis

No.	Prefix	Lexical Category	Word	Root Word	Meaning Change	Semantic Shift
1.	In-	Noun	Inaction	Action	No action	Positive to negative
2.			Inactivity	Activity	No activity	Positive to negative
3.			Incoherence	Coherence	No coherence	Positive to negative
4.			Inequality	Equality	No equality	Positive to negative
5			Injustice	Justice	No justice	Positive to negative
6			Instability	Stability	No stability	Positive to negative
7			Insufficiency	Sufficiency	No sufficiency	Positive to negative
8			Intolerance	Tolerance	No tolerance	Positive to negative
9			Inattention	Attention	No attention	Positive to negative
10		Verb	Inactivate	Activate	Not active	Positive to negative
11			Invalidate	Validate	Not validate	Positive to negative
12			Incapacitate	Capacitate	Not capacitate	Positive to negative
13		Adjective	Inaccurate	Accurate	Not accurate	Positive to negative
14			Inadequate	Adequate	Not adequate	Positive to negative
15			Inartistic	Artistic	Not artistic	Positive to negative
16			Incapable	Capable	Not capable	Positive to negative
17			Incomplete	Complete	Not complete	Positive to negative
18			Incondign	Condign	Not condign	Positive to negative
19			Incorrect	Correct	Not correct	Positive to negative
20			Indirect	Direct	Not direct	Positive to negative
21			Ineffective	Effective	Not effective	Positive to negative
22			Inflexible	Flexible	Not flexible	Positive to negative
23			Insensitive	Sensitive	Not sensitive	Positive to negative
24			Intolerant	Tolerant	Not tolerant	Positive to negative
25		Adverb	Inaccurately	Accurately	Not accurately	Positive to negative
26			Inadequately	Adequately	Not adequately	Positive to negative
27			Incompletely	Completely	Not completely	Positive to negative
28			Incorrectly	Correctly	Not correctly	Positive to negative
29			Indirectly	Directly	Not directly	Positive to negative
30	Im-	Noun	Imbalance	Balance	No balance	Positive to negative
31			Immobility	Mobility	No mobility	Positive to negative
32			Impatience	Patience	No patience	Positive to negative
33			Imperfection	Perfection	No perfection	Positive to negative
34			Impurity	Purity	No purity	Positive to negative
35		Verb	Immobilize	Mobilize	Not moving	Positive to negative
36			Impair	Pair	Not pairing	Positive to negative
37		Adjective	Immature	Mature	Not mature	Positive to negative
38			Immobile	Mobile	Not mobile	Positive to negative
39			Immodest	Modest	Not modest	Positive to negative

40			Immoral	Moral	Not moral	Positive to negative
41			Impatient	Patient	Not patient	Positive to negative
42			Imperfect	Perfect	Not perfect	Positive to negative
43			Impossible	Possible	Not possible	Positive to negative
44			Impure	Pure	Not pure	Positive to negative
45		Adverb	Impartially	Partially	Not partially	Positive to negative
46			Imperfectly	Perfectly	Not perfectly	Positive to negative
47			Improperly	Properly	Not properly	Positive to negative
48	Il-	Noun	Illiteracy	Literacy	No literacy	Positive to negative
49			Illegality	Legality	No legality	Positive to negative
50			Illegitimacy	Legitimacy	No legitimacy	Positive to negative
51		Verb	Illegalize	Legalize	Not legalize	Positive to negative
52		Adjective	Illegal	Legal	Not legal	Positive to negative
53			Illegible	Legible	Not legible	Positive to negative
54			Illegitimate	Legitimate	Not legitimate	Positive to negative
55			Illogical	Logical	Not logical	Positive to negative
56		Adverb	Illegally	Legally	Not legally	Positive to negative
57			Illogically	Logically	Not logically	Positive to negative
58	Ir-	Noun	Irregularity	Regularity	No regularity	Positive to negative
59			Irrelevance	Relevance	No relevance	Positive to negative
60			Irresponsibility	Responsibility	No responsibility	Positive to negative
61		Verb	Irreconcile	Reconcile	Not reconcile	Positive to negative
62			Irregulate	Regulate	Not regulate	Positive to negative
63		Adjective	Irrational	Rational	Not rational	Positive to negative
64			Irregular	Regular	Not regular	Positive to negative
65			Irrelevant	Relevant	Not relevant	Positive to negative
66			Irresponsible	Responsible	No responsible	Positive to negative
67			Irreversible	Reversible	Not reversible	Positive to negative
68		Adverb	Irrationally	Rationally	Not rationally	Positive to negative
69			Irregularly	Regularly	Not regularly	Positive to negative
70			Irresponsibly	Responsibly	Not responsibly	Positive to negative

With the help of the table, the researchers delve deeper into the data collected. Correspondingly, the data analysis combined with experts' views found that prefix in- was the underlying form of prefixes im-, il-, and ir-. It was seen from the perspectives of morphology combined with phonology. Derivational prefixation (a class maintaining) and regressive assimilation in which led to linguistics phenomenon, namely allomorphy were identified. Further discussions were presented in the "Discussion" subtopic.

Using the table, the researchers found some findings which were described as follows. The table exhibited that every prefix has noun, verb, adjective, and adverb. The difference was in the total number of each prefix. From each prefix, the adjective was the most significant to all. Prefix in- has twelve adjectives, prefix im- has eight adjectives, prefix il- has four adjectives, and prefix ir- has five adjectives. Overall, twenty-nine words beginning with prefix in- were identified. It was

followed by the words beginning with prefix im-, in total eighteen of them. Then, thirteen words beginning with prefix ir- were identified. The last one, the words beginning with prefix il-, were identified to be ten in total. While it may appear self-evident, the analysis of the table suggests that prefix in- is the underlying form of those prefixes from which the others were derived by phonological assimilation. It was strengthened by Lieber (2009), together with Aronoff and Fudeman (2022), who stated that the underlying form of those prefixes is the prefix in-.

Furthermore, there were free and bound morphemes. The researchers also found that the seventy words were considered complex words. They consist of a prefix and a root word. Complex words include a variety of components, namely prefix, root word, and suffix (Booij, 2012). Similarly, Wood et al. (2024) stated that complex words include derivational morpheme (prefix or suffix) together with the root word. Not limited to it, with the help of the experts, OED, and Longman Dictionary of English Language and Culture, the researchers found that indeed, those prefixes negate the root word. There were changes in meaning when the prefixes were added to the root words. Similar view was presented by Aronoff and Fudeman (2022), who stated that in- is an example of primary prefix. Hence, the researchers recommend that the prefixes indeed function as negative affixes. It was then regularly known as negation.

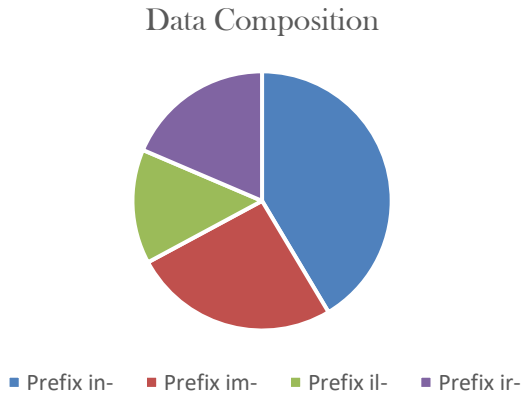

Figure 1: Pie Chart of Data Composition

The pie chart provides a visual representation of the data in which also strengthens the recommendation that indeed the prefix in- is the underlying form of prefixes im-, il-, and ir-. The pie chart functions as a straightforward reference to the data composition.

4.2. What Morphological Processes Occurred in the Complex Words Containing Prefixes in-, im-, il-, and ir-

One of the linguistics branches is morphology. It studies word formation processes. The process in it divided into two, namely inflectional and derivational morphology. Adding a prefix, an infix, and a suffix was regularly named as affixation. Affixation is included as derivational morphology. Derivational morphology is a branch of linguistics which focuses on new word formation through derivational morphemes, namely prefix, infix, and suffix to the root word (Kusumawardhani et al., 2024). Based on the experts' views and the results of the data analysis, prefixation was the process found in the collected data.

To ensure that the prefixation occurred, the researchers found the root word of the collected data. Through a morphological lens, free and bound morphemes were identified. Free morpheme is an individual kind of morpheme which expresses meaning without needing to be

joined to other morphemes (Somabhai, 2024). Some examples taken from the table were action, balance, literacy, and regular. On the other hand, a bound morpheme is a linguistic element that is attached and must be combined with a free morpheme (Sukri, et al., 2024). The four prefixes namely in-, im-, il- and ir- were examples of bound morphemes. Bound morphemes have to be combined with free morphemes to make meaning. Further discussions were presented in the "Discussion" subtopic.

5. DISCUSSION

The Underlying Form of the Prefixes in-, im-, il-, and ir-

A question to be addressed, namely, what is the underlying form of the prefixes in-, im-, il-, and ir-? The question led the researchers to delve deeper into the topic and then recommended that the prefix in- is the underlying form of those prefixes. Morphological combined with phonological lenses, the processes involved include derivational affixation (class maintaining) and regressive assimilation, which led to linguistics phenomenon, namely allomorphy. Derivational affixation is lexeme construction steps which both create substantial meaning and change syntactic grouping (Lieber, 2009). Then, derivational affixation is a process where prefixes or suffixes are added the the root word, in which for prefixes, they modify the meaning without changing the lexical category, while suffixes may change meaning and lexical category (Wulandari, et al., 2023).

They suggested that affixation creates a new word and a new meaning. Lieber (2009) then stated from a phonological lens that assimilation means a process where parts become similar in phonological aspects in terms of nasality and voicing. Further, according to Lieber (2009), allomorphy arises as the result of assimilation. It is where sounds are similar to each other in the area of pronunciation. Allomorphy is the phenomenon where an individual morpheme may have different forms, or known as allomorphs, depending upon the environment where it is applied (Storme, 2024). Another expert, Plag (2018), stated that allomorphs are distinct morphs which represent similar morpheme, and allomorphy is a phenomenon in which distinct morphs realize identical morpheme.

Those processes explain where phoneme /n/ change into phonemes /m/, /l/, and /r/, depending on the initial sound of the root word. The prefix in- remains unchanged when the root word does not start with sounds /m/, /p/, /b/, /l/, and /r/. Aronoff and Fudeman (2022) strengthen the idea by stating that the prefix in- is an example of primary prefix. Those illustrate that prefixes other than in- are phonologically conditioned allomorphs. They follow the first phonological sound of the root word to match the place of articulation. Similarly, Bonet (2023) stated that phonologically conditioned allomorphs are described as morpheme variations which are affected by the phonological environment, namely the base word's place of articulation. Another identical view by Bunau (2022), even though on a different language, namely Bidayuh-Somu, also stated that allomorphs are influenced through the phonological environment, including the root word's place of articulation, which then identified as phonologically conditioned allomorphs.

The following are expert's arguments and the researchers' analyses. Lieber (2009) explained that prefix in- will transform into im- if the root word begins with the phoneme /m/. Plag (2018) did not state explicitly the same as Lieber (2009). However, the exploration of English articles in his book (chapter two) presented similar behavior to prefixes in-, im-, il-, and ir. The word "the" has two pronunciation options, namely /ðə/ and /ði/. /ðə/ is followed by a consonant, while /ði/ is

followed by a vowel (Plag, 2018). It is to mentioning that the phenomenon, known as allomorphy, also happens there. Based on the table, the researchers found that phonemes /p/ and /b/ (bilabials) also transformed phoneme /n/ in the prefix in- to phoneme /m/ in the prefix im-. Then, Lieber (2009) explained that prefix in- will transform into im- if the root word begins with phoneme /m/. It is indeed phoneme /m/ that transformed the prefix in- into im- to align the place of articulation of the root word. Examples taken from the table, namely mobility, possible, and balance. Mobility becomes immobility, possible becomes impossible, and balance becomes imbalance.

Next, Lieber (2009) suggested that prefix in- will transform into il- if the root word begins with the phoneme /l/ (lateral). Another expert's view stated that the prefix in- has allomorphs. Through the lens of phonology, the prefix in- appears as in-, im-, il-, and ir- (Aronoff & Fudeman, 2022). The word illegal was provided as an example in their book. It illustrated a morphophonemic interaction whereby sound and structure interact to determine prefix choice. As a result, it is not inlegal, imlegal, or irlegal. The chosen one is illegal because the initial sound of the root word is the phoneme /l/ (lateral). Based on the table, words beginning with phoneme /l/ indeed transform the prefix in- into il-. Examples taken from the table, namely literacy, legal, and logical. Literacy became illiteracy, legal became illegal, and logical became illogical.

Furthermore, Lieber (2009) stated that the prefix in- will transform into ir- if the root word begins with the phoneme /r/ (rhotic). Remember that Aronoff and Fudeman (2022) stated that the prefix in- appears to be in-, im-, il, and ir- as they are seen from phonological lens. An example provided by them, namely, irreplaceable. It is not inreplaceable, imreplaceable, or ilreplaceable because the initial sound of the root word is the phoneme /r/ (rhotic). Based on the table, it is illustrated that the researchers have the same views on it. Words beginning with phoneme /r/ indeed transform the prefix in- into ir-. Examples taken from the table, namely, responsibility, rational, and regularly. Responsibility becomes irresponsibility, rational becomes irrational, and regularly becomes irregularly. The deeper exploration of the transformation is provided in the next discussion topic below.

Morphological Processes Occurred in the Complex Words Containing Prefixes in-, im-, il-, and ir-

A question to be addressed, namely, what morphological processes occurred in the complex words containing prefixes in-, im-, il-, and ir-? The explanation falls under derivational morphology, namely, affixation. Affixation means a morphological process in which affixes, bound morphemes, are attached to the root word to produce a variety of forms (Chairunnisa et al., 2024). It is a morphological process where an affix is added to a word to construct a different meaning (Gusparia et al., 2022). As explained in the "Results" subtopic, affixation is divided into three, namely prefix, infix, and suffix. The data collected all underwent prefixation. Those are in- , im-, il-, and ir-. They are indeed different in spelling, but they have the same function and meaning. It was then regularly known as allomorphy. There, the prefixes function to negate the root word. To ensure the prefixation occurred, the researchers found the root word of the collected data. The identification of free and bound morphemes helped the researchers to examine the divisions.

The noun injustice exposed the process of forming a new word by affixation, or specifically, prefixation. Justice was the root word, a free morpheme, and according to Summers (1992), its meaning is fairness. In- is the prefix, classified as a bound morpheme and cannot stand alone.

The prefix in- negates the root word into a negative meaning. Injustice means unfairness or the truth of not being just (Summers, 1992). Then, the verb invalidate. Validate is a free morpheme which it makes meaning even when it is not attached to another morpheme. When the prefix in-, a bound morpheme, is added, it negates the root word. Validate means legally to make valid (Summers, 1992). On the other hand, invalidate means showing that a thing is not correct or to make a thing invalid (Summers, 1992). Those explorations suggest that affixation is the morphological process occurs in those complex words. It also suggests that negation is found.

Remember Aronoff & Fudeman (2022) stated that prefix in- is an example of primary prefix. Those illustrate that prefixes other than in- are phonologically conditioned allomorphs. They follow the first phonological sound of the root word to match the place of articulation. Then, the prefix in- appears to be in-, im-, il, and ir- as they are seen from phonological lens (Aronoff & Fudeman, 2022). The investigation of the words in the previous paragraph exhibited derivational processes which maintain the lexical category. They exemplified affixation, which negates the root words. The word justice, the prefix in- negates the root word, as it becomes injustice. Justice is an adjective, and when the prefix in- engages, it does not change the lexical category. It is in line with Abdulla & Qadir (2020) who stated that derivational prefixation rarely changes the lexical category, but it often changes the lexical meaning. Another example is the word validate which then becomes invalidate when the prefix in- engages to negate the root word. Although there is a change in meaning, it maintains the lexical category. Both validate and invalidate are verbs.

Affixation, specifically prefixation of im-, has similar behavior to prefix in-. As mentioned in the findings section, Lieber (2009) explained that prefix in- will transform into im- if the root word begins with phoneme /m/. Plag (2018), although slightly different, the exploration of English articles in his book (chapter two) presented similar behavior to prefixes in- and its assimilated forms. The word “the” has two pronunciation options, namely /ðə/ and /ði/. /ðə/ is followed by a consonant, while /ði/ is followed by a vowel (Plag, 2018). It is to mentioning that the phenomenon, known as allomorphy, also happens there. Then, based on the table, the researchers suggest that /p/ and /b/ (bilabials) also transform prefix in- into im-. The noun imbalance consists of balance as a free morpheme and the prefix im- as a bound morpheme. The prefix im- functions to negate the root word. Summers (1992) stated that the meaning of balance is steady, where all weights are evenly distributed. Yet the meaning changes when there is a prefix im- and it becomes a lack of proper relationship or a lack of balance (Summers, 1992). Then, the noun imperfection. The identification of free and bound morphemes resulted in perfection as the free morpheme and im- as the bound morpheme. It suggests that perfection is the root word. Summers (1992) described perfection as the condition of being perfect. Then, the prefix im- as a bound morpheme is present to negate the root word. As a result, the meaning becomes “faulty or not perfect.” (Summers, 1992). The explorations suggest that affixation is the morphological process occurs in those complex words. It also suggests that negation is found.

Following the previous discussion, the changing prefix in- to im- exemplified phonological assimilation of /n/ to /m/. Each example illustrated a morphophonemic interaction whereby sound and structure interact to determine prefix choice. According to Teimi (2022), morphophonemic interaction defines the way phonological and morphological aspects collaborate, with changes in both affecting each other and influencing semantic interpretation in linguistics system. Balance becomes imbalance, not inbalance, because the initial sound of balance is /b/ (bilabials). The prefix im- engages as a result of morphophonemic interaction. It is

prefix im- rather than prefix in-, il-, or ir- because the initial sound of the root word is the phoneme /b/ (bilabials). Then, perfect which becomes imperfection as the prefix im- engaged. It is not inperfection, ilperfection, or irperfection because the initial sound of the root word is the phoneme /p/ (bilabials).

Moreover, the researchers analyze the words that began with il-, resulting in similar behavior. Il- is the prefix, a bound morpheme that cannot stand alone. It must be attached to the root word to make meaning. The noun illegality. Il- is the prefix and legality is the root word. According to Summers (1992), the word legality means "the condition of being allowed by law." Conversely, illegality means the condition of being outlawed. It is indeed illustrated that the prefix il- is added to negate the root word, meaning it changes the root word into a negative meaning. Another example is the adjective illogical. Logical can stand alone and it can be translated, meaning it is a free morpheme. Logical means exhibiting clear reasoning (Summers, 1992). On the other hand, the bound morpheme, prefix il-, is added to transform the adjective logical into a negative meaning. According to Summers (1992), illogical means to be contrary to what is reasonable. Those explorations suggest that affixation is the morphological process occurs in those complex words. It also suggests that negation is found.

Building on the previous discussion, the transformation from prefix in- to il- happens as a result of morphophonemic interaction. Then, it determines the prefix choice. Remember that Lieber (2009) suggested prefix in- will transform into il- if the root word begins with the phoneme /l/ (lateral). Similarly, Aronoff & Fudeman (2022) stated that through the lens of phonology, the prefix in- appears as in-, im-, il-, and ir-. Legality, the root word, its initial sound is the phoneme /l/. It is in line with the experts that the prefix chosen for words beginning with the phoneme /l/ is the prefix il-. Another example taken from the table that strengthens the theory is the word logical. It becomes illogical when the prefix il- is engaged. Logical, the root word, its initial sound is the phoneme /l/. The prefix il- engages as a result of morphophonemic interaction, which determines the prefix choice.

Correspondingly, the words beginning with prefix ir- also have similar behavior to those beginning with prefixes in-, im-, and il-. The noun irrelevance stands for a prefix and a root word. The prefix is ir- and the root word is relevance. Relevance can make meaning even when just with the word itself. On the other hand, the prefix ir- cannot stand alone and make meaning. It can be seen that ir- is the bound morpheme and relevance is the free morpheme. Summers (1992) stated that relevance means "having practical value or importance." Conversely, irrelevance means the state of being irrelevant (Summers, 1992). The prefix ir- is added to negate the root word, resulting distinct meaning. Then, the adjective is irregular. Regular is the root word, a free morpheme. Then, ir- is the perfix, a bound morpheme. Regular means appearing with the same amount between one and the next (Summers, 1992). On the other hand, the prefix is added to negate the root word and the meaning changes to different of shape and of time (Summers, 1992). The explorations suggest that affixation is the morphological process occurs in those complex words. It also suggests that negation is found.

Enriching the previous discussion, remember that Lieber (2009) stated, the prefix in- will transform into ir- if the root word begins with the phoneme /r/ (rhotic). Correspondingly, Aronoff and Fudeman (2022) stated that the prefix in- appears to be in-, im-, il, and ir- as they are seen from phonological lens. The transformation can be seen from these words: Relevance becomes irrelevance and regular becomes irregular. Each example illustrated a

morphophonemic interaction whereby sound and structure interact to determine prefix choice. The root words: Relevance and regular, their initial sounds is the phoneme /r/ (rhotic). The discussions explain why the transformation is not to the prefix im- and ir-.

Engaging with experts' views, OED, and the analyses of the collected data, the researchers conclude that the derivational affixation (a class maintaining) and regressive assimilation, which lead to a linguistics phenomenon, namely allomorphy, direct the researchers to suggest that the underlying form of those prefixes is the prefix in-. It is in line with Tarigan & Sembiring (2023) that the study is supported by morphophonemic theory, which believes that it deals with how morphemes change their appearance or pronunciation depending on the sounds surrounding them. Similarly, Masthuroh et al. (2020), although French, suggest that the prefix in- has variations as a result of assimilation. Further, the process that occurred is affixation. The prefix, a bound morpheme attached to the root word, which is a free morpheme. Then, it changes the initial meaning of the root word. It is in line with Iseni and Rexhepi (2023) that prefix (a bound morpheme) is added before a root word (free morpheme) to change the meaning or function.

6. CONCLUSION

The study aims to find the underlying form of the prefixes in-, im-, il-, ir- and morphological processes occurring in the complex words containing those prefixes. Through the lenses of morphology combined with phonology, the researchers found that the underlying form of those prefixes is the prefix in-. It can be seen from the analyses that the processes are derivational affixation (a class maintaining) and regressive assimilation, which lead to linguistics phenomenon, namely, allomorphy. It is where the phoneme /n/ in the prefix in- transforms to /m/, /l/, and /r/ or prefix im-, il-, and ir- to match the initial sound of the root word. Then, it is regularly known as phonologically conditioned allomorphs.

Correspondingly, affixation is the morphological process occurring in the complex words containing those prefixes. Affixation involves prefix, infix, and suffix. All the collected data are constructed using prefixes, which also means those complex words consist of a bound and a free morpheme. The prefix is the bound morpheme, and the root word is the free morpheme. It strengthens that derivational affixation (a class maintaining) found in the process of forming those complex words. Longman Dictionary of English Language and Culture is used after the experts' views to analyze meaning transformation before and after the prefixes. Based on the analyses with the help of the dictionaries, the prefixes indeed negate the root word (see the discussion section). Then, it strongly recommends that the prefixes are added to negate the root words.

To conclude, this study contributes to shaping a better understanding of the morphophonemic interaction, which explores the prefix in- and its assimilated forms for English educators and language learners. It explores linguistics phenomenon, namely allomorphy. This study strengthens morphological awareness of English educators and language learners in triggering word structure comprehension and further development in linguistics aspects. It enriches the study of derivational morphology through demonstrating the way phonological environment influences morpheme realization. Then, the exploration of how the established theories (Lieber, 2009; Plag, 2018; Aronoff & Fudeman, 2022) engage with real data provides a useful reference, particularly for those who need practical explanations of how those prefixes engage with the root words.

The analyses of the qualified words support the applicability of the theories proposed by the linguistics experts. That is to say, the theories remain relevant. This study encourages future researchers in the field of morphology and phonology to explore the usage of those prefixes by native and non-native speakers. Future researchers are suggested to conduct a comparative study to analyze morphological awareness between native and non-native English speakers.

7. REFERENCES

Abdulla, S. A. F., & Qadir, M. H. S. (2020). A Comparative Morphological Approach to Class Maintaining Derivational Affixes in English and Kurdish. *Journal of University of Human Development, 6*(4), 25-34. https://doi.org/10.21928/juhd.v6n4y2020.pp25-34

Apel, K., & Henbest, V. S. (2020). Morphological awareness skills of second-and third-grade students with and without speech sound disorders. *Language, Speech, and Hearing Services in Schools, 51*(3), 603-616. https://doi.org/10.1044/2019_LSHSS-19-00045

Aronoff, M., & Fudeman, K. (2022). *What is morphology?* John Wiley & Sons.

Aslamiah, S. (2020). The Use of Prefixes and Suffixes for Increasing Vocabulary Students. *FIKRUNA, 2*(1), 41-55. https://doi.org/10.56489/fik.v2i2.19

Bonet, E. (2023). Phonologically Conditioned Allomorphy. *The Wiley Blackwell Companion to Morphology*, 1-33. https://doi.org/10.1002/9781119693604.morphcom062

Booij, G. (2012). *The grammar of words: An introduction to linguistic morphology*. Oxford University Press.

Bunau, E. (2022). Free and Phonologically Conditioned Allomorphs of the Bidayuh-Somu Language. *European Journal of Language and Culture Studies, 1*(5), 9-16. https://doi.org/10.24018/ejlang.2022.1.5.27

Cahyo, R. D. (2021). Corpus Linguistics Research: Prefix Analysis on Technological Article from abcnews.go.com. *Journal of Research on Applied Linguistics, Language, and Language Teaching, 4*(2), 130-137. https://doi.org/10.31002/jrlt.v4i2.1597

Chairunnisa, T., Anggraeni, D., Marshanda, P., & Jumanto, J. (2024). Analysis of the affixation process in the second victory novel by Morris West. *Surakarta English and Literature Journal, 7*(1), 101-116.

Coelho, C., Capelas, S., Couto, P. S., Vinagre, R., & Lousada, M. (2024). The Impact of Morphological Awareness on Reading and Spelling. *Revista Brasileira de Educação Especial, 30*, e0017. https://doi.org/10.1590/1980-54702024v30e0017

Creswell, J. W, & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches (4th ed.)*. SAGE Publications.

Dirgeyasa, I. W. (2024). Exploring the English Word Formation Process (A Literature Review). *Journal of Language, Literature and Teaching, 6*(3), 37-50. https://doi.org/10.35529/jllte.v6i3.37-50

Fitria, T. N. (2022). Analysis of word formation process in online shop's terminologies. *Kajian Linguistik dan Sastra, 7*(2), 67-80. https://doi.org/10.23917/kls.v7i2.15511

Fitriyeni, F. (2024). Morphological Analysis of Students' Writing. *JETAL: Journal of English Teaching & Applied Linguistic, 5*(2), 164-171. https://doi.org/10.36655/jetal.v5i2.1503

Furidha, B. W. (2023). Comprehension of the descriptive qualitative research method: A critical assessment of the literature. *Acitya Wisesa*: *Journal of Multidisciplinary Research*, 1-8. https://doi.org/10.56943/jmr.v2i4.443

García, P. O. (2024). English Neology: A Journey through the Oxford English Dictionary Online Newest Entries (2018-2022). *GAUDEAMUS, 4*, 71-102.

Goni, R. C., Triyono, S., & Sahayu, W. (2022). Morphological Analysis of Inflectional and Derivational Morphemes on Instagram's Captions. *Journal of English Language Teaching, Literature and Culture, 1*(2), 99-108. https://doi.org/10.53682/jeltec.v1i2.5685

Gunawan, T., Syadiah, S. N. H., Helmie, J., Saprudin, S., & Nurviyani, V. (2025). Negation Prefixes: Document Analysis on Jakarta Post through Morphological Analysis Study Approach. *Jurnal JOEPALLT (Journal of English Pedagogy, Linguistics, Literature, and Teaching), 13*(1), 97-125. https://doi.org/10.35194/jj.v13i1.4918

Gusparia, G., Wirawan, F., Wahyuningsih, D., Syaftinentian, W., & Ningsih, S. G. (2022, December). An Analysis Students' Ability in Understanding English Affixes. *Proceeding of International Conference on Science and Technology* (Vol. 1, No. 1, pp. 37-39). https://doi.org/10.36378/internationalconferenceuniks.v0i0.2820

Iseni, A., & Rexhepi, A. (2023). Prefixes of Germanic Origin. *ANGLISTICUM. Journal of the Association-Institute for English Language and American Studies, 12*(1), pp.40–48. https://doi.org/10.58885/ijllis.v12i1.40.ai

Haki, U., & Prahastiwi, E. D. (2024). Strategi pengumpulan dan analisis data dalam penelitian kualitatif pendidikan. *Jurnal Inovasi Dan Teknologi Pendidikan, 3*(1), 1-19. https://doi.org/10.46306/jurinotep.v3i1.67

Héois, A. (2022). What can Verbal Derivation Tell us about Proper Names?. *Lexis. Journal in English Lexicology*, (20). https://doi.org/10.4000/lexis.6589

Kau, M. E. W. (2023). Derivational Affixes in English and Arabic Words: The Process of Word Formation. *Ideas: Jurnal Pendidikan, Sosial, dan Budaya, 9*(4), 1267-1274.

Kusumawardhani, P., Sihombing, E., & Nuraeni, C. (2024). Derivational Morphology on Calum Scott's Song from Bridges Album. *Pujangga: Jurnal Bahasa dan Sastra, 10*(2), 101-114. https://doi.org/10.47313/pujangga.v10i2.3791

Lieber, R. (2009). *Introducing morphology*. Cambridge University Press.

Masthuroh, S. A., Suryadi, M., & Subiyanto, A. (2020). Phonological Process of Prefix /In-/ In French. *Retorika: Jurnal Bahasa, Sastra, dan Pengajarannya, 13*(2), 321–327. https://doi.org/10.26858/retorika.v13i2.13516

Motamedisedeh, O. (2023). Tables. In *The Ultimate Guide to Functions in Power Query: Turn Raw Data into Actionable Insights* (pp. 179-346). Apress. https://doi.org/10.1007/978-1-4842-9754-4_8

Plag, I. (2018). *Word-formation in English*. Cambridge University Press.

Soares, A. C. (2025). Morphological Analysis of Prefixes in the Makasae Language. *Jurnal Syntax Admiration, 6*(1), 927-932. https://doi.org/10.46799/jsa.v6i1.2098

Somabhai, M. B. (2024). An Analysis of Free and Bound Morphemes in Alfred Tennyson's Poem Entitled "Marriage Morning". *Vidhyayana - An International Multidisciplinary Peer-Reviewed E-Journal - ISSN 2454-8596, 9*(si3). https://doi.org/10.58213/vidhyayana.v9isi3.1783

Storme, B. (2024). French liaison is allomorphy, not allophony: evidence from lexical statistics. *Morphology, 34*(4), 415-455. https://doi.org/10.1007/s11525-024-09429-8

Sukri, M., Arifuddin, A., Baharuddin, B., Apgriyanto, K., & Wardana, L. A. (2024). Indonesian Language Derivational Bound Morpheme/-em. *Theory and Practice in Language Studies, 14*(3), 683-692. https://doi.org/10.17507/tpls.1403.08

Summers, D. (1992). *Longman Dictionary of English Language and Culture*. Longman Inc.

Tarigan, K. J., & Sembiring, M. (2023). The Allomorphy in English Words: Morphology and Phonology Interrelated Approach. *Language Literacy: Journal of Linguistics, Literature, and Language Teaching, 7*(1), 229-240. https://doi.org/10.30743/ll.v7i1.7075

Teimi, C. (2022). Causativization in Arabic: Evidence for the interface between semantics and morpho-phonology. *International Journal of Language and Literary Studies, 4*(4), 139-157. https://doi.org/10.36892/ijlls.v4i4.1097

Truong, T. H., Otmakhova, Y., Verspoor, K., Cohn, T., & Baldwin, T. (2024). Revisiting subword tokenization: A case study on affixal negation in large language models. *arXiv preprint arXiv:2404.02421*. https://doi.org/10.48550/arXiv.2404.02421

Williams, D. A. (2023). Women's Words and the Words of Women in the Oxford English Dictionary. *Review of English Studies, 74*(316), 730-751. https://doi.org/10.1093/res/hgad052

Wood, C., Garcia-Salas, M., Schatschneider, C., & Torres-Chavarro, M. (2024). Morphological Complexity in Writing: Implications for Writing Quality and Patterns of Change. American *Journal of Speech-Language Pathology, 33*(3), 1432-1442. https://doi.org/10.1044/2024_AJSLP-23-00265

Wulandari, S., Yatmikasari, I., & Sariyati, I. (2023). Transformation of Health Terminology through Derivational Affixation in CNN Online News. *CALL: Journal of Critical Theory, Art, Language, and Literature, 5*(1), 29-38. https://doi.org/10.15575/call.v5i1.16973

Xhina, O. (2021). Topic: A Linguistic Study of the English Allomorphs il, ir, im, in and their Albanian equivalence: Tema: Un estudio lingüístico de los alomorfos ingleses il, ir, im, in y su equivalencia albanesa. *South Florida Journal of Development, 2*(5), 7028-7039. https://doi.org/10.46932/sfjdv2n5-051