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On the Analogical Suffixation of Paired Antonyms: The Case of English *innie* and *outie*

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In English, there are a series of paired antonyms ending with the same suffix, particularly in slang or colloquial speech—*stardom*, *regulardom*/*unknowndom*; *friendship*, *enemyship*; *singlehood*, *marriedhood*, etc. This article looks into the tenets of the analogical suffixation of paired antonyms (ASPA), which is the process that is thought to underlie the mechanisms of morphological analogy and semantic complementation in the structuring of same-suffixed antonymic pairs (APs). In the study of ASPA, the AP *innie*/*outie* is used to explore the interconnection of antonymy, suffixation and analogy in the twenty-nine senses identified in the corpora (*News on the Web Corpus* and *Lexis Nexis Academic*). This case study shows that the semantic composition of the AP is the result of overlapping categories that involve the bases (*in-*, *out-*), the attached suffix (*-ie*/*y*), the complementary and coalescent nature of the pairs and the morphological adaptation undergone by the etymons to fit into the pairing markedness. The process of ASPA is a universal and scalar property that depends on the semantic opacity of bases, the sociolinguistic value of the word stock and the concept of lexical creativity. The examination of the morphological analogy of paired antonyms can shed more light on the predictability and performance (profitability) of word-formation mechanisms in both mainstream and peripheral lexis.

Keywords: antonym pairs; suffixation; analogy; slang; semantic complementaries

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La sufijación analógica de parejas de antónimos: el caso de las formas *innie* y *outie* en inglés

En inglés, existe una gran cantidad de parejas de antónimos que terminan en el mismo sufijo, sobre todo en el habla argótica y coloquial—por ejemplo, *stardom*, *regulardom*/*unknowndom*; *friendship*, *enemyship*; *singlehood*, *marriedhood*, etc. Este artículo investiga los principios de la sufijación analógica de parejas de antónimos (ASPA en inglés), que es el proceso que constituye la base de los mecanismos de analogía morfológica y complementación semántica en la formación de parejas de antónimos terminados en el mismo sufijo (AP en inglés). En el estudio de ASPA, se utiliza la pareja de antónimos *innie*/*outie* para el análisis del nexo existente entre los conceptos de antonimia, sufijación y analogía en los veintinueve significados identificados en los corpus (*News on the Web Corpus* y *Lexis Nexis Academic*). Este estudio de caso demuestra que un AP es el resultado del solapamiento de varias categorías en las que intervienen las bases (*in-*, *out-*), el sufijo (*-ie*/*y*), la naturaleza complementaria y coalescente de las parejas, y la adaptación morfológica de los étimos para que puedan encajar como pares. El proceso de ASPA es un principio universal y variable que puede depender de la opacidad semántica de las bases, del valor sociolingüístico del vocabulario y del concepto de creatividad léxica. El estudio del proceso de analogía morfológica de parejas de antónimos puede arrojar luz sobre la predictibilidad y uso (rendimiento) de los mecanismos de formación de palabras tanto en el léxico estándar como en el periférico.

Palabras clave: parejas de antónimos; sufijación; analogía; argot; complementariedad semántica

1. Introduction

The formation of opposite units in a language does not necessarily imply a fixed or rigid pairing of words in the system; for example, *boy* might be acknowledged as the opposite of *girl*, and on some occasions, *man* or *adult*. The process of antonymy might be context driven and its systemic sets are available to a broad range of lexical pairings (Jones et al. 2012, 2), which are also subject to shared semantic and referential properties, and so-called *minimal differences* (Lyons 1977; Cruse 1986; Murphy 2003). Continuing with the aforementioned example, *boy* and *girl* share a number of similarities—[human], [same-aged], etc.—whereas a minimal difference governs their oppositeness—[gender]. The relational semantics underlying the oppositeness of these words is not entirely related to referents, but also to words and language (Geeraerts 2010, 52).

A great deal of attention has been devoted to prefixation and antonymy in the process of affixed negatives in English (Zimmer 1964; Cruse 1986, 2000; Bauer and Huddleston 2002; Lieber 2004; Bauer et al. 2015). The output meaning of prefixed negatives, as in *un*bearable or *mal*function, results from the combination of "the broadly negative content of the affix [e.g., *in-*, *un-*, *non-*, *dis-*, *mal-*, etc.] with the meaning of the base" (Bauer et al. 2015, 354). The resulting antonymic pairs can give rise to semantic markedness and predictable grammaticality, although these affixes might also be attached to a certain type of base on the grounds of spelling, phonology or semantics.

Suffixes, on the other hand, show more complexity in the expression of oppositeness because derivation might lead to a change of grammatical category. Two global types of morphological oppositeness can be distinguished at this juncture: *suffix-dependent* and *base-dependent*. A suffix-dependent oppositeness is the process characterized by morphologically marked antonyms in the system, in which the suffixes attached add an opposite value to the resulting derivatives—feather*less*/feather*ed* (having N/not having N where N stands for the nominal base). This has also been defined as *morphological polarity* in the case of negative suffixation (Cruse 2000, 174). Similarly, bases are also acknowledged to embed suffixes with a certain degree of paradigmaticity, similar to the aforementioned properties of prefixes—*ugliness*/*prettiness*. The lexical or base-dependent content is essential in the establishment of antonymic pairing, in which the morphological constituents are not as relevant as the semantics of the full word—*wonderful*/*lousy*.[1] In contrast, base-dependent oppositeness may be defined as the result of a derivation process whereby both antonymic bases are equally derived with the same suffix, which is not fully involved in the antonymic pairing but is merely a grammatical categorization—for example, *fatso*/*thinno* (also in compounding, as in the case of *smart cookie*/*dumb cookie*). As can be seen, the latter category might be associated with extragrammatical or peripheral language, particularly slang, in which lexical innovation and cryptic encoding are important mechanisms. The exploitation

[1] These examples might be constituents of a much broader system of direct and indirect antonyms, in which the former are lexically related while the latter belong to a paradigmatic set of synonyms. For more information on this classification, see Gross and Miller (1990, 268) and Paradis et al. (2009, 383-84).

of "standard productive rules or schemas of English morphology or word-formation," such as affixation, has been recognized as a productive way of making new English words (MacKenzie 2014, 92-93).

This research thus intends to study the effects of context and the input meaning of bases on the formation of pairs of antonymic derivatives through the theory of morphological analogy and coalescence (Bauer 2001; Haspelmath 2002; Plag 2006). This is expected to shed light on the connection between antonymic paradigmaticity and cognitive oppositeness, particularly in slang vocabulary. In other words, I argue that antonymic paradigmaticity in the case of suffixed pairs is primarily induced by the contextual meaning of bases (*in-*, *out-*) and the analogical property of such pairs, and not so much by the morphology of etymons. In order to do so, the theory of analogical suffixation of paired antonyms (ASPA) is introduced and the case study of *innie*/*outie* is used to examine the interplay of the concepts of analogy, suffixation and antonymy.

The choice of *innie* and *outie*—also found as *inny*, but not *outy*—is a seminal step in the study of these concepts, as *-ie* derivatives have been traditionally characterized by high polysemy and profitability (Kastovsky 1986, 586).[2] High polysemy is an ideal prerequisite through which to trace the semantic extension of both units, which is considered an outcome of this analogical paradigm. I attempt to defend the notion that this type of pairing might result from the semantic input of bases—*in-* "inside," *out-* "outside"—morphological analogy and the coalescent nature of the antonymic pair (AP). The theory of ASPA, in fact, contributes to the scalarity of antonym canonicity, defined as "the extent to which antonyms are conventionalized as pairs in language" (Jones et al. 2012, 43). This might be related to the fact that antonym co-occurrences are not merely lexical associations; rather, their semantic components and values are clearly interconnected (Paradis et al. 2009, 386). Besides, the examination of multiple senses of *innie*/*outie* offers some important insights into the most relevant categories that characterize ASPA-based units. One of these categories is precisely the lexical creativity of bases, whose morphological connection with their corresponding etymons seems to be affected—see, for example, *outie* for "extroverted people". This finding can help researchers in understanding the lexical-categorical and conceptual approaches of antonymy (Jones et al. 2012, 43-45), also reflected in the morphological and semantic associations of the AP. The property of morphological analogy in AP, as the denomination of ASPA itself conveys, is relevant to the present study. In general, ASPA provides new insights into the regularity of suffixation in both standard and peripheral vocabulary. For instance, the suffixed constituents *friendship* and *stardom* have an analogical impact on the formation of *enemyship* (not *enemity* or *enemy-ness*) or *regulardom*/*unknowndom*, and hence on the emergence of the antonymic pairs *friendship* (or *allyship*)/*enemyship* and *stardom*/*unknowndom* (or *regulardom*):

[2] The term *profitability* as it is discussed in this article corresponds to Dieter Kastovsky's distinction between *performance* (profitability) and *syntagmatic rule* (availability) (1986), which can be succinctly sketched as the two axes of productivity on the syntagmatic and paradigmatic levels (Fernández-Domínguez 2015, 220).

(i) We must combat the debt of gratitude when it serves to foster enemyship. Yet enemyship is not our only problem. (Engels 2018, 111)

(ii) Once you were plucked from unknowndom, you were typically given lots of money by your record label, and then the record label would proceed to spend all of your money on lavish things for you, while you walked away broke at the end of the day. (*New Up's Official Blog* 2016)

Although this study does not make a distinction between mainstream and peripheral word-stock, Connie Eble's definition of slang as a set of words or phrases used by speakers to "establish or reinforce social identity or cohesiveness within a group or with a trend or fashion in society at large" (1996, 11) has been adopted. Slang and colloquial language is a central issue in the article, as the vast majority of *-ie* derivatives are not found in prescriptive or standard dictionaries. In fact, some previous corpus-based studies confirm that there exists a correlation between the suffix *-ie* and low-prestige word-stock (Schneider 2003). Some properties of slang and colloquial word formation—lexical creativity, rule breaking, etc.—are used in the present research in order to achieve a better understanding of antonymic pairing and analogical suffixation in peripheral vocabulary.

2. Methodology

The corpora used in this study were *News on the Web Corpus (NOW)* (Davies 2016) and *Lexis Nexis Academic (LNA)*. The former contains 8.3 billion words extracted from written texts such as journals, magazines and books, while the latter, also a collection of written texts, offers access to over 15,000 news, business and legal sources. A preliminary review of the corpora suggested that the pair of nominalizations *innie* and *outie*, visibly classed as a pair of base-dependent suffixed antonyms, is highly polysemous, which might be related to the prepositional or adverbial nature of the bases *in-* and *out-* and the functional notion of [inward/outward]. A notable feature of the pair is their cognitive and locative impreciseness, as it is applied to situations, activities or objects where [placement] or [direction] represents a minimal difference of oppositeness. The compilation of the units *innie*/*outie* from the NOW and LNA corpora was used to determine the number and type of senses shared by them, and the evidence-based connection established between the concepts of analogy, derivation and antonymy in the contextualized data.

The manual annotation of the hits was important to establish the degree of polysemy/homonymy of the units. The hits, a total of 1,856 from both corpora, were slotted into a semantic mapping (see table 1) and those that were ambiguous or contextually unclear were left out. No specific quantitative analysis of the results was carried out as this study only focuses on the morphological and semantic relatedness of

the senses. As the volume of data was not huge, only two annotators participated in the disambiguation process, one of whom acted as an expert annotator or superannotator. The interannotator agreement (IAA) was high: 98% for part of speech (POS) and 92% for word senses.

A case-study approach was adopted to gain a detailed understanding of the theory of ASPA and a deeper insight into the paradigmaticity of derived antonyms in which morphosemantic analogy plays a fundamental role. The use of corpora of natural language production generates significant data on the frequency of antonym co-occurrences and antonym canonicity (Willners 2001), as well as on contextual versatility, i.e., context variation.

3. Analogy, Antonymy and ASPA as Theoretical Prerequisites

This section revises some fundamental categories that are involved in the analogical paradigm being studied, particularly those of antonymy, context versatility, the evaluative effects of *-ie* suffixation and analogy. These aspects, as indicated above, are crucial to both the theory of ASPA and the present case study in order to demonstrate the effects of morphological analogy and context on paired antonymy.

The concept of antonymy that has been adopted here is built on the semantic relations of lexical units "in which words are considered only with reference to their definitional meanings and those definitions' relations with each other" (Murphy 2003, 5), and their context-dependent variation. Contextual versatility is, indeed, one of the primary features that has been taken into account to describe the notion of morphological analogy of paired antonyms. It shows how "the use potential of the most frequent antonyms applies in a wide range of ontological domains and they are found in a range of constructions and contrasting frames in text and discourse" (Jones et al. 2012, 55-56). The presupposed influence of context on this type of antonymic pairing explains why a corpus-based analysis is highly relevant to the present study.

However, regardless of the above-mentioned context-dependent variation, words can coexist as either antonyms or complementary opposites in the system (Cruse 2000, 168), and this can generate doubts over the conceptualization of antonymy. The understanding of the bases *in-* and *out-* as pure forms of oppositeness is unquestionably an expression of complementary relation. Yet, some other derived pairs that are described in section 4 also indicate that certain senses are closer to the concept of antonymy rather than to that of complementarity, for "virtually all complementaries display their characteristic properties only within certain specific domains" (Cruse 2000, 169). Therefore, the term *antonyms* is preferred over *complementaries* to avoid any unnecessary conceptual ambiguity.

The study of antonyms, particularly within a structuralist framework, has essentially been conducted through paradigmatic and syntagmatic relations. The former involve a set of words containing "members of the same grammatical category that share some

semantic characteristics in common, but fail to share others" (Murphy 2003, 8); these words can theoretically replace each other in a given context. The latter refer to the meaning of a word through its collocations and co-occurrences (Jones et al. 2012, 7-8). In the present study, a paradigmatic relation of antonymic units is also considered to exist in the complementary model of some pairs (Lehrer and Lehrer 1982; Cruse 1986). The typology of complementarity is dependent on the premise that the two items are both opposite and dependent, which can be interpreted through the philosophical notion that one cannot exist without the other: *false*/*true*, *in*/*out* (and therefore, *innie*/*outie*). Besides their complementary quality, these pairs are also regarded as nonscalar (Cruse and Togia 1995) since their universal limits are not cognitively questionable. This is in accordance with John Lyon's theoretical studies of meaning, which define a linguistic unit as "the set of (paradigmatic) relations that the unit in question contracts with other units of the language" (1963, 59). The theory of meaning discussed here reflects the universality of antonymy as a model of both referential and paradigmatic associations, the latter being understood as the "systems of choices a speaker faces when encoding his [*sic*] message" (Cruse 1986, 86). Within the domain of antonymic paradigmaticity, the relation between the concepts of context dependency and morphological analogy has received little attention.

Within the study of paradigmaticity of paired antonyms, the notion of antonymic canonicity clarifies how the theory of ASPA governs the formation of the analogical derivatives being studied here. In short, canonical associations are prone to co-occurrence at a high rate due to the aforementioned philosophical complementation—one cannot exist without the other—and their ability to be minimally different and maximally similar "in ways relevant to the contexts in which they co-occur" (Murphy 2003, 176). As Katherine J. Miller claimed in "Modifiers in WordNet" (1998; quoted in Murphy 2003, 17), being characterized by their high frequency or availability, these binary sets represent an explicit example of an intersection of direct (lexical) and indirect (conceptual) typology. This intersection contributes greatly to the establishment of rigid or coalescent canonical pairs that are lexically visible and conceptually unrepresented. Stated differently, opposite or binary sets such as *in*/*out* or *innie*/*outie* are systemic antonyms, and can also be used by other conceptual categories to indicate that they fit in—see the cases of *outie* for "extrovert" (as opposed to *innie* < *introvert*) and *innie* for "underwear" (as opposed to *outie* < *outwear*).

One might wonder why the AP *innie*/*outie* is relevant to this study of morphological analogy. Besides complying with the requirement of both being suffixed with *-ie* (or *-y* as in the case of *inny*), the vast majority of senses compiled are context dependent and there appears to be some disparity between the bases *-in* and *-out* and the morphological construction of etymons. At first sight, the nominalizations *innie* and *outie* appear to follow the derivative pattern *in-*/*out-* + *-ie* in which the bases are recognizably adverbial—as in *innie* "someone that has a concave navel" or *outie* "a gay person who has just come out of the closet"—and the suffixes are noun-forming morphemes. However,

these nominalizations cannot be merely regarded as a combination of morphemes at the lexicological level. In fact, the semantic output of these derivatives results from the semantic value of the bases, the elliptical semantic information of the collocational elements the derivatives are used with and the paradigmatic and peripheral meaning of the suffix *-ie* (or its spelling variation *-y*). Also, previous research has established that *-ie* might be classed as a familiarity marker (Quirk et al. 1985, 1584), or thought to convey nuances of nonseriousness or informality (Dressler and Barbaresi 2001, 144). This might have an impact on the polysemous nature of *-ie* nominalizations, whereby their peripheral or slangy context embeds the suffix with a clear functional value rather than an embellishing one (Bauer and Huddleston 2002, 1636). As well as the semantic contributions of the suffix, the nature of the base and its wide-ranging syntactic and cognitive possibilities also exert an influence on polysemy and, as expected, on analogical patterning.

The analogical patterning of words, which is a fundamental notion in this study, is a highly controversial concept as it is still uncertain to what extent morphology is in fact rule governed or analogy based. The principle of analogy in derivation dictates that any new derivative is created provided there is "a suitable pattern for it to be formed on" (Bauer 2001, 76). However, analogy and rule governance are not contradictory notions in slang word formation, as slang is generally characterized by rule breaking and insubordination, but only within an intrinsic system where a "conventionalized disregard for conventions" predominates (Sornig 1981, 76). This might lead to a compromise theory based on the complementation between rules and analogy, the latter being described as a psycholinguistic phenomenon in which a new coinage simply catches on and its level of performance (or profitability) guarantees the conventionalized paradigm (or rules) that it creates. In other words, not only can analogy "[simplify] the rule system, thus making it easier for subsequent generations to generate forms by rules" (Bauer 2001, 83), but it also helps understand "what sort of new words a speaker can form" (Aronoff 1976, 19). Therefore, trying to fix a clear boundary between what complies with analogy or with rules is what could make the phenomenon of analogy problematic. In this study in particular, the concept of analogy is preferred over rules since the lexical creations under scrutiny might result from "rule-changing innovation" (Chomsky 1964, 22). Although this study does not seek to elaborate on the conceptual incongruences of morphological analogy in vocabulary, the label *analogy* has been adopted here to conform with the criteria of semantic regularity and peripheral morphology.

In view of what has been mentioned so far, I suggest that the concepts of analogy, context versatility and antonymy converge under the theory of ASPA. This is, in a nutshell, a transversal theory that might help understand the logic underlying the formation of antonymic derivatives in speech. One of its prerequisites dictates that the bases of ASPA-affected units—*regular-*/*star-*; *in-*/*out-*—constitute canonical or easily recognized antonymic pairs in the system, and both elements undergo a

similar derivation process—the same suffix is attached. The fundamentals of this approach lie in the alignment of morphological analogy and cognitive oppositeness, the former being a prevalent and economical device that suffixed antonyms possess in order to maintain morphologically marked oppositeness, giving rise to conceptual opacity or nonrepresentation. That is, the connection between opposite concepts, particularly in peripheral vocabulary, is not fully guaranteed by the morphological representation of the concepts, as expected in the system, but by the extrapolation of canonical, antonymic pairing. The notion of morphological nonrepresentation or unrelatedness is not new and goes hand in hand with the constructivist theories of word formation (Booij 2018a; Jackendoff and Audring 2016), in which the examples of *outie* (< *outward navel*) and *outie* (< *extrovert*) corroborate the differences between morphological representation and nonrepresentation. Such analogical transposition is based on the premise that word formation is also "helped by the process of association or analogy with the forms and senses of existing words in the language" (Wales 1990, 339).

ASPA is a gradable, two-faceted mechanism. One unit of the antonymic pair can determine the suffixation and semantic evolution of the other—thus, *stardom* is a determinant or trigger in the formation of *regulardom* or *unknowndom*—and the full constituency of the pair. Once the pair is established and contextually recognized, it might also export this suffixal regularity to other likely, context-dependent models in which this etymon-pair liaison is imitated. The gradable nature of the regularity and the derivation analogy within a pair might somehow be induced by the availability of the units in the system and the semantic opacity of the bases. For example, the following four cases might fall into the ASPA criteria, but they are visibly restricted by the aforementioned factors:

- *emptiness*/*fullness*: both exist in the system.
- *stardom*/*regulardom*: one is in the system (*stardom*), while the other (*regulardom*) is determined by the morphological features of its mainstream constituent and, of course, contextual variability.
- *innie*/*outie* "shape of the navel": both are in the system with this sense, but the high semantic opacity of their bases (*in-*, *out-*) and the analogical export or extrapolation of the pair contribute to their semantic extension.
- *innie*/*outie* "*introvert*/*extrovert* person": nonexistent units in the system; the lexical-categorical connection of *innie-introvert* is clear, whilst in the case of *outie-extrovert* there are other conceptual and semantic factors involved.

The connection between the aspects of semantic opacity and the type of base is related to the primary attributes of function or content in the grammatical classification of words: functional bases (*in-*, *out-*) are expected to convey more ambiguity and, therefore, more polysemy than content-related ones (*empt*(*i*)-, *full-*).

4. Findings and Discussion

A preliminary compilation of data suggests that the antonymic pair *innie*/*outie* is highly polysemous in contemporary English. Of the 1,856 hits annotated and reviewed manually on NOW and LNA, twenty-nine senses were found (see table 1). What is interesting about the preliminary corpus-based data is that *innie* and *outie* are highly frequent collocates on NOW. While *innie* and *outie* show 76 and 140 hits respectively, a search for their collocates revealed 36 matching strings, proving that the AP they construe appears to be frequent in corpora.

Table 1. Corpus-based senses of the AP *innie*/*outie*

APs	Senses
innie/*outie*$_1$	A navel that is concave (*innie*) or convex (*outie*)
innie/*outie*$_2$	Someone who has a concave (*innie*) or convex (*outie*) navel
innie/*outie*$_3$	A nipple that is concave (*innie*) or convex (*outie*)
innie/*outie*$_4$	The vagina (*innie*) and the penis (*outie*)
innie/*outie*$_5$	A female transexual who still has male reproductive organs (*outie*) or not (*innie*)
innie/*outie*$_6$	A penis that has been circumcised (*outie*) or not (*innie*)
innie/*outie*$_7$	Someone who parks their car either back-in (*innie*) or back-out (*outie*) (< *back-in*, *back-out*)
innie/*outie*$_8$	Someone who prefers to live either in a house (*innie*) or a condo (*outie*) (< *outdoors*)
innie/*outie*$_9$	Someone who is either introvert (*innie*) or extrovert (*outie*) (< *introvert*)
innie/*outie*$_{10}$	A politician that is involved with the working government (*innie*) or not (*outie*)
innie/*outie*$_{11}$	Someone who includes too much information on Wikipedia (*innie*) or someone who does not approve of too much information (*outie*) (< *inclusionist*)
innie/*outie*$_{12}$	Someone who belongs to a religious congregation (*innie*) or not (*outie*)
innie/*outie*$_{13}$	Someone who is a customer of a given company (*innie*) or not (*outie*)
innie/*outie*$_{14}$	A homosexual who has come out of the closet (*outie*) or not (*innie*)
innie/*outie*$_{15}$	Someone who supports Brexit (*outie*) or someone who is against it (*innie*)
innie/*outie*$_{16}$	Someone who supports either Laura Ingraham (*innie*) or Lindsey Graham (*outie*) (< *Ingraham*)
innie/*outie*$_{17}$	A small plastic piece that is attached to a shoelace (*innie*)

APs	Senses
innie/*outie*$_{18}$	One of the parts of a puzzle piece, in which there might be a round missing part (*innie*) or a round tab (*outie*) that fits into another piece's innie
innie/*outie*$_{19}$	A bowled cricket ball that swerves in the air from off to leg (*innie*) or from leg to off (*outie*) (MWD 2018a, 2018b)
innie/*outie*$_{20}$	A connector that might have protrusions (*outie*) or receptacle gaps (*innie*), also known as male or female
innie/*outie*$_{21}$	Outerwear (*outie*) or underwear (*innie*) (< *outerwear*)
innie/*outie*$_{22}$	A type of tomato that is concave (*innie*) or convex (*outie*) in the section where the fruit is attached to the rest of the plant
innie/*outie*$_{23}$	A type of garden plant that can grow inwards (*innie*) or outwards (*outie*), taking as a point of reference the wall or fence around the garden
innie/*outie*$_{24}$	Jeans that are worn below the waist line making the navel visible (*outie*) or not (*innie*)
innie/*outie*$_{25}$	A psychological thriller novel (*innie*) or a monster-based horror novel (*outie*) (< *inside*, *outside*)
innie/*outie*$_{26}$	The type of narrative that is based on personal insights (< *inward*)
innie/*outie*$_{27}$	A type of lineup in football or baseball that might take place infield (*innie*) or outfield (*outie*) (< *infield*, *outfield*)
innie/*outie*$_{28}$	An underwear shirt (*innie*) or an outerwear one (*outie*) (< *outwear*)
innie/*outie*$_{29}$	Headphones (*outie*) or earphones (*innie*)

Regardless of the quantifiable data, the morphological and semantic variations undergone by each pair show some of the properties and tenets of the theory of ASPA in English, particularly in slang or colloquial words. This case study could demonstrate that an AP, such as *innie*/*outie*, may also affect other semantic relations where one of the AP constituents or one of their etymons is involved, indicating that the impact of these suffixed antonyms is also reflected in other context-dependent associations.

The extraction of senses from corpora and dictionaries is hereafter illustrated with contextualized examples in order to explore the impact of both context and the morphosemantic value of AP constituents (see table 2). The suffixed word forms compiled can help corroborate the postulate that the AP *innie*/*outie* is in fact the result of morphological adaptation and coalescence. However, not all the APs have undergone the same type or degree of change. This variability seems to be mostly related to context dependency and referential meaning. Hence, the use of examples can bring to light these pragmatic features and reveal the tenets of ASPA in more detail.

Table 2. Matching strings extracted from NOW and LNA

APs	Ex.	Context
innie/outie$_{1}$	(1)	Just five weeks ago, Silvana posed in a crop top and leggings to show that her "innie" belly button had popped and become an "outie." (*Mail Online* 2018)
innie/outie$_{2}$	(2)	"If an innie tries to be an outie or vice versa then there's trouble," Cook says. "First, work out which you are and then try to find markets that suit that type." (*Financial Review* 2008)
innie/outie$_{3}$	(3)	"Hey, you've got an innie and an outie." [...] "Inversion of the nipple is a common sign of breast cancer." (*News Star* 2014)
innie/outie$_{4}$	(4)	"And finally I had my outie made into an innie," she added. And to the confused-looking doctors she explained, "I used to be a Roger." (*Mail Online* 2015)
innie/outie$_{5}$	(5)	At age 70, Bill would become Kate. It was an operation he'd long ago dismissed as unattainable—but one Linda said he deserved to have. She'd travelled the arc of his life, supportive even after his bombshell confession […]. "And your goal today?" a nurse asked. "Turning an outie into an innie," Kate answered, laughing. (*Washington Post* 2016)
innie/outie$_{6}$	(6)	Wow, Bobby, that was a really hot sex tape. I've seen a penis that was an innie. (*Fox News* 2009)
innie/outie$_{7}$	(7)	Now that the high-roller, low-roller issue is settled, we can move on to another topic of personal preference—whether you're an innie or an outie when it comes to parking your car. (*Charleston Gazette* 2015)
innie/outie$_{8}$	(8)	Are you an innie or an outie, a homebody who craves a lawn or a condo high-flyer? (*Star* 2014)
innie/outie$_{9}$	(9)	It has been reported that a full 40% of executives describe themselves as introverts, including Microsoft's Bill Gates [...]. Odds are President Barack Obama is an innie as well. (*Forbes* 2009) I'm not saying an introvert and extrovert can't generate yin-and-yang bliss. It happens all the time, but the innie has to love the outie for his outieness, not in spite of it, and vice versa. (*Washington Post* 2001)
innie/outie$_{10}$	(10)	Do you have an innie or an outie? "We fully understand we are the outsider in this race. I think the people are going to elect someone outside of government." (*Hotline* 2010)
innie/outie$_{11}$	(11)	On one side are the come-one-come-all inclusionists, who argue there are no space restrictions [...]. On the other side are the deletionists, who counter that the hugely popular compendium [...] should focus on quality rather than quantity. (*Edmonton Journal* 2007)
innie/outie$_{12}$	(12)	Are you an innie or an outie? Do you live inside organized religion or outside? (*Philadelphia Inquirer* 2003)

APs	Ex.	Context
innie/outie$_{13}$	(13)	When it comes to Web sites, Florida Power Corp. today is showing off its innie and its outie. Inside the electric utility, employees throughout its 32-county service territory are being introduced to an intranet—a new corporate wide Internet, complete with departmental Web sites. (*St. Petersburg Times* 1996)
innie/outie$_{14}$	(14)	OK, sure, she doesn't say she is gay or lesbian or bisexual in so many words. She says she is "not technically out," but has brought home "men and women." (*dorothysurrenders.blogspot.com* 2009)
innie/outie$_{15}$	(15)	About half of David Cameron's cabinet probably have Eurosceptic tendencies—here the *Guardian* offers its best guesses of their positions at the moment. (*Guardian* 2015)
innie/outie$_{16}$	(16)	Are You an Innie or an Outie? [...] radio host Laura Ingraham told her listeners on Tuesday that she will consider running against Sen. Lindsey Graham (R) in 2014. Ingraham: "It would be kind of fun: Graham versus Ingraham. How about Ingraham and out-Graham?" (*Hotline* 2013)
innie/outie$_{17}$	(17)	Shoelaces can be a pain, they seem to have a life of their own coming undone when you do not want them to and going into a knot when you are trying to get them undone! Surely, there must be a simpler solution to this hassle? Well there could be and it is called the innie! […] The innie is a small clip made from plastic, there is one for each lace and they fit inside the shoe so nobody is any wiser to your secret. (*techmash.co.uk* 2016)
innie/outie$_{18}$	(18)	The upper left quadrant piece is in the shape of a puzzle piece with blank (innies) on the top and right side of the puzzle piece and tabs (outies) on the bottom and left side of the puzzle piece. (*US Fed News* 2014)
innie/outie$_{19}$	(19)	"And my innie (in-swinger) is going out. I can't work out why." Smyth reckons he bowled his best last season when he "had a crook elbow." (*Northern Daily Leader* 2013)
innie/outie$_{20}$	(20)	I wouldn't get to the outlet and find I was trying to plug an innie into another innie (that's technical electrical talk). (*Toronto Star* 1999)
innie/outie$_{21}$	(21)	Innie or outie? WWD asked several entertainment divas an important question: Is innerwear as outerwear a fashion do or a fashion don't? (*Women's Wear Daily* 2011)
innie/outie$_{22}$	(22)	Many (but not all) paste tomatoes have a special shape, an oblong shape with the scar where the tomato attached to the plant being an "outie" rather than an "innie" in configuration. (Deppe 2015)
innie/outie$_{23}$	(23)	I used to have an herb garden back there. No more. If this part is growing inward, this is an "innie." And if the shape of it is coming out more like this, pushing out, that would be an "outie." (*Global Broadcast Database* 2008)
innie/outie$_{24}$	(24)	Belinda Jackson traces the ever-fickle path of trend dressing. We need to talk about skinny. Innie or outie? Jeans, that is. (*Adelaide Magazine*, 2008)

APs	Ex.	Context
innie/outie$_{25}$	(25)	His works are, as he recently put it in the *Paris Review*, either "innies" or "outies." "Innies" deal with the horror inside (psychological, for the most part), while "outies" deal with the horrors outside (monsters). (*Globe and Mail* 2006)
innie/outie$_{26}$	(26)	If you are Bill Bryson, author of *A Short History of Nearly Everything*, a masterly epitomizing of the entire body of natural science that spent approximately 15,000 weeks on the best-seller list (without the help of Oprah), and that cloned its own glossy illustrated edition with specially commissioned etchings by Warhol, Picasso and Raphael, your gaze turns inward, or rather downward, toward your navel. Lucky for the reader of the resulting memoir, *The Life and Times of the Thunderbolt Kid*, Bryson's navel, like Whitman (both the poet and the sampler), contains multitudes. From that innie (or outie; oddly for such a revealing chronicle, he never specifies), Bryson has produced a book so outlandishly and improbably entertaining, you begin to doubt its veracity. (*New York Times* 2006)
innie/outie$_{27}$	(27)	In our innie vs. outie lineup, we like the outie guys at every position except shortstop and maybe the final two outfield spots. (*Mercury News*, 8 July 2006)
innie/outie$_{28}$	(28)	I became interested in corsets a couple of years ago when I saw one designed as a Star Trek Next Gen uniform top with the bottom swoosh, it looked really cool. I've made several of my own since then, some underwear, some outerwear. I think what distinguishes an "outie" from an "innie" is the fabric used for the top layer, some fabrics just says "underwear." (*blogforbettersewing.com* 2012)
innie/outie$_{29}$	(29)	Headphones or earphones? One of the most important choices for a frequent flyer, and one that after many years and several changes of heart I'm still yet to make. (*Sun* 2016)

Most contemporary English dictionaries agree that the only meaning of *innie/outie* that has made it as an entry is *innie/outie*$_1$. This sense makes direct reference to the convex or concave shape of the navel (*Merriam-Webster Dictionary Online* 2018a, 2018b; *Oxford English Dictionary Online* 2018a, 2018b), and consequently the person having a convex or concave type of navel (example 2) has also been traced in corpora (not in dictionaries).[3]

The normative or encyclopedic semantic relation involving a body-related shape (*innie/outie*$_1$) is thought to generate analogous suffixed pairs in which another part of the body is also connected with the minimal difference of [concave/convex] or [inside/outside]: *innie/outie*$_3$, *innie/outie*$_4$, *innie/outie*$_5$, *innie/outie*$_6$. Given that sense 1 was found to be the case in 63% percent of the hits, it is easy to predict that these body-related pairs are logically influenced by this preestablished semantic model. However, examples (4) and (6) are not directly linked to the [inwardness/outwardness] of the body part, but its location [inside/outside]: *innie/outie*$_4$ is used to denote the vagina or the penis, and *innie/outie*$_6$, a noncircumcised or circumcised penis. The antonymic pair *innie/outie*$_5$ is in fact

[3] In this discussion, senses refer back to table 1 and examples, to table 2.

an extension of sense 4, but in a more specialized manner: an *innie* or an *outie* refers to a transexual person and whether they have undergone a sex-change operation.

An interesting result to emerge from the data is that a number of nominalizations—twelve pairs in total—are associated with the semantic trait of [person], which confirms the correlation between *-ie*/*y* suffixed clippings and [person] (Schneider 2003, 89). This is connected with the nominalizing effects of the suffix *-ie* in slang word formation and its multifaceted motivations (Bardsley and Simpson 2009, 49). Besides senses 2 and 5, ten more senses, 7 to 16, are the result of a leximitization process in which the semantic categories of [inside/outside] (placement) and [inwards/outwards] (direction) are not necessarily referred to. Examples (7) and (8) show two cases of the meaning [inwards/outwards]. The other eight senses, 9 to 16, however, are highly context dependent, since the semantic contribution of the bases *in-*/*out-* is mediated by the contextual co-occurrences and the analogical pairing of *innie*/*outie*, in agreement with the fundamentals of ASPA discussed in the previous section. Interestingly, example (9) shows that a correlation between *innie*/*outie* and *introvert*/*extrovert* is only partially driven by morphological match; that is, the etymon *introvert* undergoes a clipping process to conform with the morphological and semantic pattern of the AP *innie*/*outie*, but *extrovert* does not—otherwise, *exie* would have been a compliant choice. The unit *extrovert* is subject to the extrapolation of the *innie*/*outie* model and its analogical morphology. This single example also corroborates the notion that in the formation of antonymic pairing through ASPA, the morphology of the etymons might not be as important as the pairing itself. Also, context seems to be key to understanding the type of semantic evolution both units show. This is in fact an indication of the morphological compactness or coalescence of the pairs, which can also be defined as the supremacy of antonymic pairing in certain contextual situations. Whereas one of the constituents is expected to show lexical markedness—probably owing to its semantic and morphological associations with the etymon—the other undergoes morphological adaptation—*innie* < *in-* < *introvert* but *out* < ? (*extrovert*).

Similar to *innie*/*outie*$_9$, senses 10 to 16 also comply with the theory of morphological coalescence. That is, they originate from the semantic fusion of the bases *in-* and *out-* in such a way that its resulting AP (*innie*/*outie*) is more semantically relevant than the etymons or senses they stand for. As such, the connection between bases and etymons becomes morphologically cryptic and unrelated: in examples (11) and (16), the base *in-* is morphologically connected with the etymons *inclusionist* and *Ingraham* respectively, but *out-* is not (*deletionist*, *Graham*). The complexity of this model of semantic associations and contextual dependency is only possible through both the analogical extrapolation of the morphology of the suffixed pairs and the semantic value that at least one of the AP constituents is able to activate.

Semantically speaking, senses 10 to 16 all refer to [person], which, as previously indicated, reinforces the semantic content of the suffix *-ie*/*y* as a noun-forming morpheme. An interesting feature of examples (10) to (16), with the exceptions of

(11) and (16), is that they all explicitly share the aspect of [inside] or [outside] not as a spatial trait but in terms of [belonging to]. For instance, being inside/outside the government (10), an organized religion (12), the electrical grid (13), the "closet" (14) or the European Union (15) is represented through the AP as a colloquial manner of referring to members of each community. Alternatively, *innie*/*outie*$_{11}$ (< *inclusionist*) and *innie*/*outie*$_{16}$ (< *Ingraham*) do not make any explicit reference to spatial [inside/outside], but to their etymons. However, as explained above, their corresponding *outies* are not motivated by their contextualized etymons, but rather by the existing AP in the system.

Examples (17) to (29) denote a semantic narrowing or specialization of the pairs: sports (19), electricity (20), fashion (24) and gardening (22). Some antonymic associations are linked with the semantic traits of [shape] and [non-human]—examples (17), (18), (22), (23), (27) and (29)—in which the [inward] or [outward] direction of one of the parts of the objects concerned predominates. Following the theory of semantic compactness, it is not difficult to predict that [non-human] senses are also affected by the process of ASPA. However, not all the units are connected with their etymons through morphological anchoring, i.e., the morphemes *in-* or *out-* are easily traced in both the lemma and the etymon. The antonymic pairing of *innie*/*outie* is used, against all morphological odds, to maintain the prevailing aspect of oppositeness: *innie* < *in-swinger* (19); *outie* < *outerwear*, *innie* < *innerwear*, rather than *underwear* (21). Example (24) is not exactly a clear case of homonymy as it could be interpreted as a metaphorical construct that originates from the interplay of the shape of the navel, the inner self and the narrative style of the authors described. However, it is interesting to see how the antonymic pair of *innie*/*outie* could be essential in the semantic value of this process of lexical innovation. This validates the idea that the model of antonymic pairs and their consequent suffixal analogy motivates the formation of these polysemous units.

Some of the examples show that context is particularly relevant to the full denotation of the AP. In examples (18), (19), (20), (22), (23) and (25), the words *innie* and/or *outie* are accompanied by brief explanations of their meanings since a straightforward connection between the neologisms and their referents cannot always be established. This cryptic feature of language pertains to slang or jargon. In this case in particular, an already-existing AP, also known as "model" or "trigger" (Mattiello 2016, 104), motivates the denotation of referents that are not necessarily represented by the morphological structure of pair constituents. For instance, the coinage of *innie*/*outie* for a puzzle piece (18), an electrical plug (20), an herb garden (12) or headphones (29) might be motivated by the input meanings of bases (*in-*, *out-*) and the compactness of the AP in the system.

The examples confirm that there exists an association between the trigger and the lemmas at different levels, morphosemantic and pragmatic. The vast majority show that there is no morphological connection between *innie*/*outie* and the etymons, with the exceptions of senses 8 (< *outdoors*), 9 (< *introvert*), 11 (< *inclusionist*), 16 (< *Ingraham*), 21 (< *outerwear*) and 28 (< *outwear*). At the pragmatic level, context dependency plays

a fundamental role, as it dictates why each AP constituent becomes meaningful in a given stretch of text. The fact is that this seems to be a commonality among most of the examples: APs are construed upon a relevant feature that can be either explicit—*innie* < *in-swinger* (19)—or implicit—*innie* < someone who parks back in (7).

A common morphological feature that some of these pairs show is clipping, one of the ways of keeping a morphological connection with their etymons. Clipped bases are expected to take part in the formation of such antonymic pairings whereby just one of the AP constituents undergoes the processes of clipping and suffixation. The correlation between clipped bases and *-ie/y* suffixation is not new: these formations are well known to be subject to prosodic restrictions, to the effect that such clippings are almost uniformly disyllabic (Marchand 1969; Kreidler 2000; Lappe 2007). The coinage of its complementary or co-occurring pair is based on the morphological and semantic outcomes of ASPA. As seen in table 1, the following etymons have been identified: *outdoor* (8), *introvert* (9), *inclusionist* (11), *Ingraham* (16), *in-swinger* (19), *outerwear* (21, 28), *inside/outside* (25) and *infield/outfield* (27). With the exception of senses 25 and 27, these etymons do not rely on systemic pairs of antonyms, which confirms the complexity of their coinage and their high morphological coalescence. These cases were in fact the earliest empirical data that indicated a correlation between morphological analogy and antonymy.

In general, the examination of *innie* and *outie* as an antonymic pair has allowed for a comprehensive categorization of the semantic and morphological changes that suffixal analogy can bring about. Although the polysemous nature of APs is used to explore the theory of ASPA, a strict or stigmatized correlation between polysemy and suffixal analogy in antonymic pairing should not be seen as a universal. In fact, this case study in particular has only been used as a medium to describe the full scope of the phenomenon of analogical suffixation of paired antonyms. The contextualized data used in the analysis revealed a correlation among AP constituents (base and suffix), pair coalescence, etymons and context. Based on the examination of this pair and its corresponding senses, and on corpus-based matching strings, five fundamental categories can be established: base dependency, creative complementation, pair compactness, morphological adaptation and suffixation uniformity. These are not the only traits relevant to the analysis of antonymic pairs, but they are all essentially involved in the process of ASPA according to an evidence-based study of senses such as the one conducted in this article.

Base-dependency, as opposed to suffix-dependency (e.g., *useful/useless*), implies that the meaning conveyed by lexical bases is a crucial generator of antonymy in ASPA-based pairs. This is connected with suffixation uniformity, as both units are derived with the same suffix. The input meaning of one of the bases (*in-*, *out-*) is imported by the other in order to guarantee the degree of pair compactness or coalescence in the process of analogical complementation. Pair compactness is better perceived in those pairs conveying a higher degree of polysemy, since their association governs ensuing morphological transformations and crypticism. The pair *innie/outie* is a highly compact

unit, for it accounts for nonstandard shifts and disconnection with the etymons—*innie* < *Ingraham*, *innie* < *introvert* as opposed to *outie* < non-Ingraham supporters, *outie* < *extrovert*. Thus, the effect of coalescence is also reflected in the creative adaptation of complementary bases, which might undergo other word-formation processes, such as clipping, or take on completely new signifiers—*outie* standing for *extrovert*. The process of creativity is defined here as "intentional formations that follow an unproductive pattern" (Haspelmath 2002, 100), which explains the extragrammatical nature of some of the senses recorded. Although the suffix *-ie* is known as a frequent morpheme in slang word stock (Plag 1999; Lipka 2002; Bauer 2008; Bauer et al. 2015), the creative adaptation of complementary bases contributes, no doubt, to the slangification of the pairs at a higher rate.

5. Conclusions

The study has shown some hitherto unexplored features of antonymic pairs, particularly those that comply with the process of ASPA. The corpus-based examination of the AP *innie*/*outie* has identified specific lexical and conceptual regularities, which suggests that semantic shift or polysemy might be conditioned by both the referential value of direct antonyms—*innie*/*outie* "shape of the navel"—and the analogical impact that one AP constituent has on the other—*innie* "introvert" > *outie* "extrovert." However, morphological analogy cannot be restricted to the derivation uniformity of pair constituents, but rather is also extended to the interlexical analogy that the coalescent property of an AP might exert on the other APs. Although the study focuses on the processes of analogy and antonymy in coalescent pairs, the findings may well have a bearing on the semantic traits of the pair being studied (*innie*/*outie*). A total of twenty-nine senses have been identified in the corpora, and as expected, sense 1 ("shape of the navel") was found to account for the majority of the hits annotated. With respect to the semantic categories of these senses, a logical or conceptual pattern was confirmed: [direction], [placement] and [human] constitute common denominators in most of the senses, which reflects semantic shifting and morphological consistency. The evidence from this study also suggests that context dependency is essential in the way these pair constituents are used discursively. In other words, the coinage of suffixed, analogical APs, particularly in slang word formation, is generally induced by contextual versatility.

Overall, this study strengthens the idea that ASPA is a scalar property of antonym pairs. The scalarity depends on, among other factors, the semantic opacity of bases—less opacity involves less chances of suffixal analogy—the extragrammaticality of suffixed antonyms, also linked to the type of vocabulary generated (slang, standard, jargon, etc.), and the process of lexical creativity. One implication of this scalarity and evidence-based data is the possibility of determining five global categories that characterize the formation of these pairs: base dependency, creative complementation, pair compactness or coalescence, morphological adaptation and suffixation uniformity. These ASPA

variables are intended to describe the models of antonym pairing in more detail, as well as the concepts of morphological analogy and pair coalescence. The complexity of the process of ASPA lies in the peripheral regularity that slang pairs might convey, which can also be used as an analytical approach to explore how standardness functions under similar circumstances. Since the research was limited to this case study in particular, it was not possible to examine the quantitative contribution of this property. Further research should be undertaken to explore the quantitative implication of ASPA-based derivatives in both peripheral and mainstream lexis.[4]

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