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A Morphological Study of Drug Brand Names

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A Morphological Study of Drug Brand Names

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A Morphological Study of Drug Brand Names

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Linguistics Honors Thesis

1. Introduction

Every time we walk through a store or pharmacy, we walk amongst aisles upon aisles of brand name products, including medications. Whether they are behind the counter or on the shelf, how often do we take the time to consider the brand name of our prescription or medicine of choice? The truth is, people probably don't analyze the brand name, but they have subconsciously made a decision to buy this specific brand. What is it about such common and widely known brands such as Lipitor and Allegra that makes them marketable and linguistically interesting? This investigation aims to understand the strategies behind the creation of brand names for pharmaceutical drugs from a morphological perspective. While this study does not focus on why people choose to buy certain brand name drugs, it aims to explain what linguistic concepts and strategies aid in the formation of these consumer brands. I compare and discuss the different structures of generic names versus brand names. I analyze the use of certain groupings of stems in generic names, and continue my analysis by breaking down their prospective brand names to uncover meaningful morphemes. There is an art behind the naming of a drug, and how brand names reveal meaningful information about the purpose of the drug through the use of certain morphemes and morphological processes. The creation of pharmaceutical drug brand names include direct references to the generic name, instances of sound symbolism, and play on words to reveal the purpose of the product in a meaningful manner. There is no true systematic process behind the creation of drug nomenclature, but strategic moves are made both linguistically and creatively to create successful drug brand names.

1.1 Why is it important?

The naming process of pharmaceutical drugs has become increasingly important. Misreading a drug or misinterpreting its uses has led to various troublesome cases for patients. Below is a story of a particular patient's case with the incorrect drug prescription.

A pharmacist reported a mix-up between **benazepril** (Lotensin) and **Benadryl** (diphenhydramine). A patient faxed a request to the pharmacy to ask for her “benazapryl.” The pharmacist who received the fax interpreted it as Benadryl and placed a bottle of diphenhydramine in the bag for pick-up. Around this same time, the pharmacy went through a change in wholesaler, and many manufacturers of generic products were changed.

A few days later, a coworker of the patient picked up the medication (along with several others). The technician at the point of sale told the coworker that many of the manufacturers had changed recently and that some of the pills may look different. The patient received the diphenhydramine, filled her medication box with the capsules, and took diphenhydramine daily for 3 weeks before noticing she was unusually tired. When she brought the bottle back to the pharmacy, the error was recognized (Gaunt 2010).

When drug names are too similar, whether they are brand names or generic names, a doctor may prescribe the incorrect medication, worsening a patient’s condition, or causing new symptoms. The job of the brand name developer is to create something that is distinct from all other drug names so as not to create confusion in the pharmaceutical world.

The first matter in need of explanation is the difference between a generic name and a brand name. Brand names are meant to convey the purpose of the drug in a marketable way. Generic names are the scientific name for the drug, representing the active agent. There can be multiple brand names for the same generic name. For example, according to MedIndia, (medindia.net) there are 90 brand names for acetaminophen, 275 for Amoxicillin, and a surprising 662 for aceclofenac. Thus we can see how easily it may be to confuse certain prescriptions when there are so many different names for the same drug.

Drug brand names can be disapproved for various reasons. The Division of Medication Errors and Technical Support (DMETS), also known as the US FDA has recommended disapproval of trademarks for the following reasons:

- Names are too similar to existing names
- Misleading, incorrect, or unsafe elements
- Claims not supported by clinical data
- Prefixes and suffixes may be confused with a common medical abbreviation
- Inclusion of dosage form or regimen in the proprietary name
- Similarities in storage environment
- Unacceptable similarity between generic and brand names (Dinsmore n.d)

I consulted the Institute For Safe Medication Practice's (ISMP) list of confused drug names, and have chosen some pairs to list below. The list includes pairs that not only look alike (which we are not concerned with), but also sound alike.

- Fortical—Foradil
- PROzac—PriLOSEC
- Qwell—Kwell
- Viagra—Allegra
- Yaz—Yasmin
- Ziac—Tiazac
- ZyrTEC—Zantac

I will discuss a couple of pairs briefly to show that although they are often confused, they clearly have different functions in the pharmaceutical world. *Fortical*, generic name *calcitonin nasal*, is used to treat osteoporosis in women who have been in menopause for at least five years. *Foradil*, generic name *formoterol fumarate*, is used for oral inhalation by asthma patients. *Zantac*, generic name *ranitidine hydrochloride*, is used to ease heartburn. *Zyrtec*, generic name *cetirizine hydrochloride*, is an allergy medication (Rxlist, Inc. 2013)

It is the role of the pharmaceutical industry to ensure that trademarks abide by the following five criteria:

- Be free of bad meanings or connotations
- Be relatively easy to pronounce

- *Not* add to medication errors
- *Not* infringe upon other products
- Undergo considerable scrutiny (Dinsmore).

There are various constraints that need to be taken into consideration when creating a brand name for a drug in order for them to be successfully marketable and understood in the medical world. The few criteria listed above may seem simple, but the creation of a truly strong brand name that can undergo the scrutiny of various committees and organizations and still pass the test is no easy feat.

1.2 Who's in charge?

Behind the scenes of the pharmaceutical world, various groups work with drug nomenclature. "In the United States, the United States Adopted Names (USAN) Council is the officially recognized group for selecting nonproprietary names. The USAN Council works in conjunction with the World Health Organization (WHO) International Nonproprietary Name (INN) Committee and other national nomenclature groups to standardize drug nomenclature" (Boring 1997, 621-622). Applications for a new drug name must be submitted to the Food and Drug Administration (FDA).

So while all of these groups work together on generic nomenclature, brand names are the responsibility of the company wishing to market them. However they cannot simply do as they please. As mentioned above, drug brand names must go through a series of reviews before being accepted into the medical and pharmaceutical world. Typically starting with a list of 50 candidates it will be narrowed down after legal review for fileability to 10 candidates. After further extensive review a brand name is chosen and the remaining suitable names are filed as backup. The Patent Trademark Office (PTO) is then responsible for the federal registration of the trademark, if the company chooses to apply for it. In Appendix 1 I have provided the areas of judgment according to the Labeling and Nomenclature Committee (LNC). As we can see, the brand naming process is extensive. From a morphological

perspective it is interesting to investigate the naming process and the importance of brand name analysis.

2. The Role of Morphology

Before I begin my analysis, I must introduce some important morphological concepts that pertain to this study. Below I have provided a list of terminology and their definitions according to Lieber (2010).

Prefix- Bound morphemes that come before the base of the word (p. 33).

Infix- An affix which is inserted into a base morpheme, rather than occurring at the beginning or the end (p. 201).

Suffix- Bound morphemes that comes after the base (p. 33).

Stem- The part of a word that is left when all inflectional endings are removed (p. 204).

After consulting some articles related to drug nomenclature, I have found that these morphological terms are often misused. While I have not delved into my analysis yet, I would like to provide some important and interesting background information concerning material which I will discuss in my full analysis.

According to the American Medicine Association, most generic drug names are formed with a prefix, an infix, and a stem. The prefix in a name has no meaning; it is solely used to differentiate between other similar drugs. The infix is used occasionally for further sub classification, and the stem “indicates place in nomenclature scheme; novel stems suggest novel drug action; drugs with the same stem are related” (American Medical Association, “Generic Naming”). For the purpose of this study, the generic stem is going to prove to be the most significant part of the generic name. Before consulting generic stems, I will look briefly at what the American Medicine Association means when they refer to prefixes and infixes. Let’s look at a couple of examples of generic names, which I will return to later in this study. The following generic names refer to cholesterol medications, *atorvastatin* and *rosuvastatin*.

Both have the same stem *-statin*, which leaves us with *atorva-* and *rosuva-*. I could induce that they might consider *-va-* to be the infix in this case, since it appears in both generic names, which according to the AMA would be used for further subclassification of this group of drugs. Then we would be left with what they consider to be “meaningless prefixes” *ator-* and *rosu-*. From a morphological perspective, all morphemes must be meaningful, so this idea of a meaningless prefix doesn’t really correspond to the description of a prefix. As for the “infixes,” an infix is meant to be inserted within a stem or a base to break it apart. We rarely see this in English. Considering the structure laid out by the American Medicine Association, the infix does not interrupt the stem in anyway, so if anything it would be considered another prefix. Rather than a prefix and an infix, a string of morphemes (which we could call prefixes) is attached to the beginning of the stem. Thus generic names are built by adding on meaningless morphemes to the meaningful stem in order to distinguish between similar drugs.

Shmerling (2012) explains the distinction between generic and brand names in the following way: generic drugs that share a similar action or purpose will often share the same stem in their name, which helps categorize them into groups. Referring again to Shmerling (2012) I have provided his list of common generic stems.

"-pril" – Medications including enalapril, lisinopril and captopril, among others, treat high blood pressure, heart disease and kidney problems. They are all ACE-inhibitors, so-named because they all inhibit the enzyme, angiotensin-converting enzyme.

"-statin" – These cholesterol-lowering drugs all inhibit a particular enzyme (called HMG CoA reductase) that is important in cholesterol synthesis. Examples include atorvastatin, lovastatin, and pravastatin, among others.

"-cillin" – This stem refers to a group of closely related antibiotics, including penicillin, ampicillin, and dicloxacillin.

"cef-" – A group of antibiotics, called cephalosporins (such as cefazolin, cefotaxime and cefaclor) use the "cef" stem at the beginning of the name (as a prefix), rather than at the name's end (as a suffix) (Shmerling, 2012).

Considering Shmerling's last statement on the placement of *cef*, from a morphological perspective he appears to confuse the idea of a stem and a prefix. Prefixes and suffixes are added to the stem, or the base. If *cef* is the stem, then what follows would be considered a series of suffixes. Just because the stem does not occur at the end of the word in this case does not mean that it is not the base. If *cef* is the true generic stem, it cannot also be considered a prefix, considering what the American Medicine Association stated earlier about how prefixes in generic names are meaningless and only used for further distinction. In this case, *cef* is the most meaningful component, aside from its placement. After reading through the information provided by the AMA as well as Shmerling's article, I gather that morphological terminology is often misused in the pharmaceutical world. However stems will prove to be significant in this study, as well as other creative morphological processes.

3. Analysis: What's in a name?

3.1 Generic Information

Creators use a number of tactics in the naming process in order to achieve the desired end result. They can use sounds symbolism; they can combine certain prefixes and suffixes to reveal how the drug functions; they can clip pre-existing words and create blends; they can make compounds and clever references, all to aid in the understanding and desired consumer consumption of the product. The possibilities are endless, but brand name creators must choose wisely in order to successfully market their product while still conveying relevant and correct information pertaining to the specific use of the drug. In my analysis I will consider what processes occur to derive a brand name, as well as how the name relates to its generic name and function.

In the US, the generic name is often referred to as the USAN, the United States Adopted Name. The USAN is not used as an actual component in the brand naming process; it is the job of the company trying to market a USAN to create a proprietary name distinct from the USAN and other drug names. However we will see later on that traces of the generic name do often show up in drug brand names.

According to Shmerling (2012), “stems make it possible to identify the type of medication from its generic name even when you've never heard of that particular drug. For example, medostatin is a drug distributed outside of the U.S. Although I've never heard of or prescribed this medication, the stem -statin is a clue that it's a cholesterol-lowering drug similar to lovastatin” (Shmerling, 2012). In his article Shmerling lists only a select few of the hundreds of stems used in the pharmaceutical world. I have conducted further research on generic stems and have constructed a table which includes the stem, a generic name that uses this stem, the function of the drug, as well as a brand name example, whose generic name contains this stem (Appendix 2). While the lists of existing stems are extensive, I have chosen to only include drugs that will be referenced here in my study. The U.S National Library of Medicine provided a list of all generic stems that I have included in the table. As mentioned I have only included relevant stems to this study, which depend on the brand names that I have chosen to analyze.

3.2 Brand Name Analysis

While the generic names are not translated directly into the brand names, they contain important information about the purpose of the drug that aids us in the understanding of the brand name. When we look at a brand name, what information can we uncover? I am going to use the stems of the generic names as a starting point of my analysis of drug brand names. Following the information provided by these stems as to what each drug's active ingredient is as well as its purpose, I am going to analyze the brand names of certain categories of drugs, in order to see if the meaning of the generic stem coincides with the meaning evoked through

the brand name of the drug. Given this list of names, I am going to try to uncover any morphological processes used to create the brand name provided. In order to show differences and similarities in the brand naming process, I am going to discuss very distinct groups of drugs: cholesterol medicine, oral contraceptives, as well as asthma and allergy medications. All three groups are very distinct with no relation to one another; however they will prove to show some similar processes, such as the use of the generic stem. Note that the following is taken from Appendix 1, the LNC's judgment factors for creating a brand name:

The United States Adopted Names Council discourages the use of USAN syllables in a trademark because it acts as a bar to the subsequent generation and adoption of other names for similar products. Therefore, the LNC recommends against names that contain too much of the USAN name or any of the USAN "stem" (Boring, 1997, 632).

While the LNC recommends that generic stems are not incorporated into brand names, I have found that various brand names use this tactic, or strive to incorporate as much of the stems as they can without seeming too forward. Although the LNC advises against this tactic, I am using it as my starting point for my analysis as it yields some interesting results.

3.2.1 Cholesterol Medication

Referring back to Shmerling's select list of generic stems, I have chosen to start with *-statin*, which refers to cholesterol lowering medications. I researched different medications and although not all include *-statin* in their generic names, a certain pattern does indeed arise amongst multiple brand names. Below is a chart of these brand names with their corresponding generic name. Where there is a slash between two names under the generic name column, this is to show that there is more than one active ingredient present in the drug to make up the generic name.

(1)

Brand Name	Generic Name
Lipitor	atorvastatin calcium
Crestor	rosuvastatin calcium
Zocor	simvastatin
Tricor	fenofibrate
Vytorin	ezetimibe / simvastatin
Simcor	niacin / simvastatin
Mevacor	lovastatin
Fibricor	fenofibric acid
Advicor	niacin XR / lovastatin
Niacor	niacin

After reviewing these brand names, I am arguing in favor of *cor* as the true shared morpheme. While researching medical roots and suffixes I discovered *cordi-*, which uncommon as a prefix, pertains to the heart (“Cordi,” 1989). In Latin it can be seen as either *cordi* or *cor*. Since cholesterol is an important factor of heart health, the use of *-cor* is justified. *Cor* does not appear across all of these brand names however, as we see in Lipitor, Crestor, and Vytorin. These three are related through the use of *tor*. I can conclude that *tor* is a direct reference to *atorvastatin*. Although it is not the generic name for all of the corresponding *tor* brand names, they make reference to it, as it is directly linked to the cholesterol stem *-statin*. This tactic of using *tor* for brand names that don’t include *atorvastatin* could be to show a relation with other similar products. All brands technically include the actual Latin morpheme *or-* meaning of or pertaining to the mouth, as seen in *oral*; this usage can be justified as all of these medications are consumed orally, but it is rather unlikely. While all of these brands do not technically share the morpheme *cor*, it could be that the use of *tor* or *cor* signifies to the customer that it is a cholesterol medication, by the default similarity to other products on the shelf.

I found another pattern amongst some cholesterol brands that I did not include in the chart above. Taking a look at brands Pravachol, Welchol, and Lescol, we see derivations of the suffix *-col*, which we can directly relate to cholesterol. Pravachol is a perfect example of the transfer of generic name information into a brand name. Its generic name is **pravastatin**, which we see directly in **Pravachol**. Now *Lescol* is a perfect example of play on words which I discuss later in this paper, but taken apart it would appear to mean “less cholesterol.” *Welchol* is translated into “well” or “healthy” cholesterol. These brands are all related in their battle against cholesterol, which we see with the suffix *-col*, and each one uses its own tactic to convey a slightly different connotation. As I’ll show later on, play on words tends to be a significant tactic in the brand naming process.

The majority of these brands are easy to analyze semantically. All of the active ingredients have to do with lowering cholesterol and lipids. Lipitor therefore is created through a clipping of *lipid*, and the *tor* morpheme. While no other brand references lipids directly, the majority reference their active ingredients in some way. For example, we have **Simcor**, whose generic name is *simvastatin*, and **Niacor**, whose generic name is *niacin*. Then there’s **Fibricor**, whose generic name is *fenofibric acid*. The tactic of representing parts of the generic name in the brand name is becoming apparent. These cholesterol medication brands will be further discussed in a later section of this paper.

3.2.2 Oral Contraceptives

One of the main stems used in the generic names of oral contraceptives is *gest*, indicating usage for hormone control and contraception. We see this stem in generic names such as *levonorgestral*, *norgestimate*, and *desogestrel*. Most oral birth control medications are a combination of two generic products. For example, brand name Aviane is generically known as *ethinyl estradiol levonorgestral*. *Estr-* in *Estradiol* refers to estrogen, a common active ingredient as expected in women’s birth control medications.

Concerning brand names, I have created a list below of brand name oral contraceptives that all contain a similar pattern. On the left is the brand name and in the right column is their corresponding generic name.

(2)

Brand Name	Generic Name
Cyclessa	desogestrel/ethinyl estradiol
Jolessa	levonorgestrel/ethinyl estradiol
Lessina	levonorgestrel/ethinyl estradiol
Alesse	levonorgestrel/ethinyl estradiol
Camrese	levonorgestrel/ethinyl estradiol
Enpresse	levonorgestrel/ethinyl estradiol
TriNessa	norgestimate/ethinyl estradiol
MonoNessa	norgestimate/ethinyl estradiol

This chart is a prime example of how the same generic name can yield multiple brand names. Although I have only chosen a select few, unlike some of the cholesterol lowering medications, the brand names of oral contraceptives don't seem to translate any information from the generic name into the brand name. One thing to note about these brands is that many of them are generic versions of a more prestigious brand name. Generic oral contraceptives contain the same active ingredients (which we see in the generic name); however they may contain different inactive ingredients than the brand name such as dye and fillers. For example, Jolessa is actually considered the generic version of Seasonale, and Lessina is a generic version of Levlite. Both versions function in the same manner. While some of the drugs listed above are considered generic, they still operate under a brand name structure and therefore are significant to my analysis.

Amongst all of these brands, there is a recurring pattern of *essa* or *esse*, which are typically seen as suffixes. All of these brands share the suffix *-ess*, with variations on spelling. *-Ess* forms nouns denoting female persons or animals. In French it is seen as *-essa*,

and in Romanic forms *-esse*, which would explain the variation. Thus the use of *ess-* could merely be to portray femininity concerning the product.

Aside from these specific brands, brand name birth control medications give off a very feminine connotation, as that is the market they are trying to target. Often times certain medications resemble female names, such as Zarah, Heather, Portia, Errin, Briellyn, and Camilla. Here is where Jolessa may also be included. Using names provides a more relatable connection to the product, almost like it's your friend. It also adds a feminine edge to the product, unlike some birth control names such as Desogen, or Estrostep. However, brands like those take another approach to naming by including references to estrogen, the feminine hormone. This tactic of using names is very different from what we saw in the cholesterol section. Brands are made more personal in order that women feel more comfortable taking them.

3.2.3 Asthma and Allergy Medication

Now I'd like to move on to a more complex set of medications that yields some of the same tactics as the previous sections, as well as some different ones. Asthma and allergy medications all have to do with keeping the passages clear for ease with breathing, which is why I grouped this section together. First I'd like to start with common asthma medications. Below is a chart with the brand name on the left and generic name on the right. The list is made up of Inhaled Corticosteroids, which are considered the most effective long term usage medication for control and management of asthma. I only include the ones whose names seem significant, for example not made up of acronyms such as QVAR Inhalation Aerosol.

(3)

Brand Name	Generic Name
Pulmicort Flexhaler	Budesonide
Symbicort	Budesonide in combination with Formoterol (bronchodilator)
Alvesco Inhalation Aerosol	Ciclesonide
Aerobid Aerosol	Flunisolide
Flovent	Fluticasone
Advair Diskus	Fluticasone in combination with Salmeterol (bronchodilator)
Asmanex Twisthaler	Mometasone
Dulera	Mometasone in combination with Formoterol (bronchodilator)
Azmacort	Triamcinolone Acetonide

Before I move onto the next chart of allergy medications, I want to make note of a couple of patterns that are seen amongst the asthma medications. The most common generic names include *budesonide*, *mometasone*, and *fluticasone*. None of the generic names appear to translate into the brand names; rather the brand names are more creative to show the function of the product.

Below is a list of common nasal sprays and antihistamines. The question is whether or not they have anything in common with the asthma medications, and what patterns we find. The first table represents nasal sprays and the second represents antihistamines used for treating allergic rhinitis. The brand name is listed in the left column, followed by the generic name in the center, and the class of medication on the right where applicable. Some nasal sprays pertain to the antihistamine class, but I have chosen to separate them because they are specifically nasal sprays in function, unlike the other antihistamine products. The class is significant to see any relations amongst generic stems. For the antihistamine table, all

medications are in the antihistamine class. Where more than one brand name exists they are listed in the same box.

(4)

Brand Name	Generic Name	Class
Astelin Nasal Spray Astepro	Azelastine	Antihistamine
Dymista	Aselastine/Fluticasone Propionate	Antihistamine/steroid
Q-Nasl	Beclomethasone Dipropionate	Steroid
Rhinocort	Budesonide	Steroid
Omnaris Nasal Spray Zetonna	Ciclesonide	Steroid
Nasal crom Nasal Spray	Cromolyn Sodium	Mast Cell Inhibitor
Veramyst Spray	Fluticasone Furoate	
Flonase	Fluticasone Propionate	
Atrovent	Ipratropium Bromide	Anticholinergic
Nasonex	Mometasone Furoate Monohydrate	
Patanase	Olopatadine	Decongestant
Afrin	Oxymetazoline	Antihistamine
Nasacort AQ	Triamcinolone Acetonide	

(5)

Brand Name	Generic Name
Semprex-D	Acrivastine
Palgic	Carbinoxamine
Bromax	Brompheniramine
Zyrtec	Cetirizine
Chlor-Trimeton	Chlorpheniramine
Clarinx	Desloratadine
Benadryl	Diphenhydramine
Allegra	Fexofenadine
Xyzal	Levocetirizine
Alavert, Claritin	Loratadine

As a starting point I will discuss the generic stems used in the three groups of drugs. Amongst the antihistamines, there are two prevailing stem usages: *-tadine*, and *-astine*. Both *-tadine* and *-astine* are antihistamines. These stems are represented across the board in the chart, but we also find a couple of outliers, such as in *Clorpheniramine*, *Diphenhydramine*, *Fexofenadine*, *Hydroxyzine*, and *Levocetirizine*. However, *-mine* and *-zine* are represented, which I'd say relate to antihistamines. Concerning the nasal sprays and asthma medications, there are various generic ingredients shared amongst the two groups of products, such as *mometasone*, *budesonide*, *ciclesonide*, *fluticasone*, and *flutisonide*. Through these shared generic names, we can see the relation amongst these particular groups of products. All of these generic names include *son* which is not a true stem. The stems *-onide* and *-olone* are true generic stems to reference steroids. We find these stems names such as *ciclesonide*, *flutisonide*, and *triamcinolone*. The stem *-asone* that we see in *fluticasone* and *mometasone* refers to the class of corticosteroids that pertains to various medications.

Often, fragments from the generic names are translated into the brand names. This occurs in a few cases amongst these groups of medications. Below I have listed corresponding pairs of brand names and generic names, highlighting in bold the portions of the generic name that are translated into the brand name.

(6)

Brand Name	Generic Name
Chlor -Trimeton	Chlor pheniramine
Astelin nasal spray Astepro	Azelastine
Nasal chrom nasal spray	Cromolyn Sodium
Patanase	Olopatadine

In Nasalchrom nasal spray, *crom* appears as the derived generic stem *cromil* used in *Cromomlyn Sodium*, which is used for anti-allergens. We also saw this tactic in the

cholesterol medication section. I can conclude that one strategy in forming the brand name of a medication is to incorporate significant meaningful segments from the generic name into the creation of a brand name, in order to show a direct relation with the active ingredient of the product.

The next pattern I noticed that transferred from generic to brand name was the use of *cort*. None of the brand names' corresponding generic names included *cort*; however it stems from Corticosteroids. *Cort* is a true generic stem, which represents cortisone derivatives. The word corticosteroid is formed by the combining steroid with the combining form *cortico-* which refers back to *cortex*, which could refer to the brain or outer part of the kidney ("Cortex," 1989). I researched the purpose of corticosteroids and found that "Corticosteroids are man-made drugs that closely resemble cortisol, a hormone that your adrenal glands produce naturally." (Cleveland Clinic Foundation 1995-2013). The following Asthma medications and Nasal sprays make use of *cort* in their brand names: Pulmic**ort** Flexhaler, Symbic**ort**, Azmac**ort**, Rhinoc**ort**, and Nasac**ort** AQ. In all cases it is presented as a suffix. Thus we can see that there is still a transfer here from a generic drug class to a specific brand name, through the incorporation of *-cort* as a suffix. This strategy is meant to refer to the relation of these products to the class of corticosteroids, thus expressing their function as a medication.

Generically, anti-asthmatics, nasal sprays, and antihistamines are related. The next step is to start taking apart the brand names to see how each group and brand chose to distinguish itself from the others. For example, while *fluticasone* is generic for both a nasal spray and an anti-asthmatic, they can't possibly use the same tactics in creating a brand name when each serves a different purpose. With *fluticasone*, we find nasal spray brand names Flonase and Veramyst, and with asthma medications we have Flovent. Contrary to what I said, two of these brand names are actually extremely similar, even though they serve two different purposes. Both Flonase and Flovent products are used for an ease of breathing. The

way we distinguish them is the use of *nase* in Flonase, which provides a literal link to the nasal passages, and nasal spray. Flovent however references a *vent*, which we can relate to ventilation and the circulation of air, easily relatable to asthma products which are meant to make breathing easier for patients. Both products want to depict the act of air flow, but they manage to do so in a distinct manner to their specific product. Another pairing is found with the generic name *budesonide*, which we see in asthma medication Pulmicort Flexhaler and Rhinocort Nasal Spray. Neither references *budesonide* directly, but both use *cort*, which I described earlier as relating to Corticosteroids. Taking these two brands apart we are left with *pulmi-* and *rhino-*. *Rhino* is a combination form meaning of or related to the nose (“Rhino-”, 1989) as we see in *rhinovirus*, also known as the common cold which affects our nasal passages. Thus we can see the relation to nasal spray. The clipping *pulmi-* refers to *pulmonary*, pertaining to the lungs (“Pulmonary”, 1989). From this we can conclude that although brand names of different classes can have the same generic active ingredient, brand name creators are able to create distinct names to relate to the function of their product, albeit similarities may exist.

Amongst these three groups of medications, one pattern occurred in each of the three categories. The use of *-nex* as a suffix occurred in Asmanex, Nasonex, and Clarinex (one brand from each category of anti-asthmatics, nasal sprays, and antihistamines). Thus there must be some significance to the suffix *-nex* in relation to these types of medications, or the purpose they are trying to convey. One possible but rather unusual answer is the literal translation of *nex* from Latin to English, which is ‘death.’ This may make sense for Asmanex and Nasonex, meaning something like death to asthma, or death to blocked nasal passages—basically a means of ending the symptoms the product is trying to cure. However it doesn’t readily seem to apply to Clarinex, because this brand name seems to suggest a sense of ‘clarity’ from allergy symptoms. This specific connotation of *nex* could still function across brands in a milder sense, suggesting the purpose of ending symptoms and in this case

providing a less foggy and clear existence that we find when we receive clarity. Yet the literal translation of this suffix I could go into an analysis of suffix *-ex*, however this would not explain the existence of 'n'.

If we were to consider *-ex* as the actual suffix, it could have a couple of meanings according to Laurel Smith Stvan in her article, "The contingent meaning of *-ex* brand names." She finds that "meanings for *-ex* are contingent, reflecting knowledge by a given speaker of a referent's domain in a given time, region and culture." Stvan divides product names into two categories: Products with "Killer" *-ex* morpheme, and products with "Enhanced" *-ex* morpheme. The "killer" products do not necessarily kill anything, but they provide a sense of 'getting rid of.' The "enhanced" products have a much more positive connotation, generally implying a sense of newness. Taking a look at some of our brands such as Asmanex and Clarinex, Asmanex could be considered a "killer" product, getting rid of symptoms, while Clarinex could be considered an enhanced product, implying a new sense of clarity. The use of *-nex* can then also be justified in its relation to Stvan's "killer" *-ex* morpheme.

3.3 Sound Symbolism

Using medications I have previously discussed, I would like to talk about sound symbolism. While this adds a phonological perspective, I still think it is important to recognize as a facet of the brand naming strategy and process. Sound symbolism can affect the choice of morphemes used in a brand name, if their pronunciation gives off a strong or weak connotation. In an article in *USA today*, Russell (2007) talks about the art of creating a brand name for a drug.

A lot of it is more art than science," said William Trombetta, professor of pharmaceutical marketing at St. Joseph's University in Philadelphia. "There are certain letters that express power and control, like Z, M or P. Other letters, like S, are

more passive. Depending on what the drug does, you want to give the name certain features.

Want to sound high-tech? Go for lots of Z's and X's, such as Xanax, Xalatan, Zyban and Zostrix.

Want to sound poetic? Try Lyrica, Truvada and Femara.” (Russell, 2007)

To begin the discussion on sound symbolism, I am going to compare and contrast brand names for cholesterol medications and oral contraceptives. Both medicinal groups have very distinct consumer audiences. Cholesterol lowering medication is typically aimed towards an older crowd, while on the opposite end birth control typically targets young women. What kind of connotations do brands such as Zocor, Fibricor, and Mevacor project, versus Jolessa, Alesse, and Lessina? As Russell stated above, a company wants to use certain sounds in order to convey the purpose of the drug. The cholesterol medications use harder sounds, such as voiced stops and fricatives to convey strength about the product. When looking at a brand like Zocor or Mevacor, the consumer senses that the medication is going to get the job done. These brands are not going to mess around; they are going to lower your cholesterol in an efficient manner. On the other end of the spectrum we have the birth control medications. These brands enable the use of soft poetic sounds. In almost all cases, the [s] phoneme is used, a voiceless fricative, creating a sort of easy, flowing image, with a more passive connotation concerning the product. Many brands end in “a,” which also aids in the soft delivery of the product. Companies want young women to feel that their products are approachable—that they feel soft and feminine on a day to day basis, as they must take the oral contraceptives on a daily basis in order for them to take effect. Had the names been switched around, I find it hard to believe that an elderly man would buy cholesterol lowering medication named Jolessa, and that vice versa a twenty year old girl would buy a birth control named Zocor. There is an art to connecting with the consumer market, and sound symbolism plays a large part in that. Sound symbolism connects with one of our main senses,

hearing, and creates a relationship between consumer and product in a manner of seconds.

Companies have to get it right in order to create a successful brand name.

3.4 What does it do? Playful Hidden Meanings

Aside from the use of specific sounds to convey a certain sensation about the product through the use of sound symbolism, the other key factor in naming a product is suggesting what it does through the use of certain words and sounds together.

“Want to suggest what it does? Flonase is an allergy medicine that aims to stop nasal flow. Lunesta, a sleeping drug, implies "luna," the Latin word for moon — a full night's sleep.

Then there's Viagra, the erectile-dysfunction drug made by Pfizer. It uses the prefix "vi" to suggest vigor and vitality. The word rhymes with Niagara, suggesting a mighty flow” (Russell, 2007).

While I discussed earlier the relation to the generic name in order to convey the purpose of the drug, the next step is talking about other hidden meanings that aim to convey this same information in a different manner. I have chosen brands from each of the categories mentioned in this discussion that have not been previously referenced. I already mentioned earlier how the *-col* cholesterol medications use this idea of play on words to convey something about the product, as we saw in Welchol and Lescol. Aside from Russell's examples of Lunesta and Viagra, as well as my own examples of cholesterol medication mentioned earlier, we see this process in other brands such as the following: Aviane, Allegra, Altoprev and Ortho-Novum.

The first brand name drug is Aviane, an oral contraceptive medication. Aviane gives off an interesting connotation of freedom and liberation. I have deduced this from the Latin translation of bird, which is 'avis' or 'aves' in plural. Birds have the freedom to fly, and so the creators of the brand name Aviane chose to evoke this sensation of feeling liberated when their consumers took their product. By taking Aviane, women have the liberty and peace of

mind to do what they want. Who doesn't want to feel like a bird? This is the connotation that I feel Aviane emits.

Allegra, an allergy medication, also has a playful meaning behind it. First it is interesting in its similarity to the word *allergy*, but it plays off the Romance languages' translation of cheerfulness and happiness as we see in Spanish *alegria* and Italian *allegria*. Thus Allegra chooses to lead with a positive cheerful connotation in order to sell their product, rather than a harsher more powerful name such as those described in the sound symbolism section.

Altprev is a cholesterol lowering medication. *Alto* relates again back to the Romance languages, meaning "high" or "tall" in both Spanish and Italian. The other half of the equation is a clipping of what I have deduced to be the word *prevention*. Thus, the purpose of Altprev is to "prevent high cholesterol." We see a combination of a borrowed word as well as the morphological process of clipping of a word to create this specific brand name. So far amongst the three brands discussed, Aviane, Allegra, and Altprev, we are seeing translations of words from other languages into the brand names, specifically Romance languages, which we know stem from Latin.

The last brand name drug is Ortho-Novum, another birth control medication. Many birth control brand names sound very exotic, often like a women's name as I mentioned earlier, but this brand sounds a little more scientific and is also a translation from Latin. *Novum* is Latin for "new." *Ortho*, which is also found in other various birth control brands such as Ortho-cept, Ortho-cyclen, and Ortho Microner, can have a couple of meanings. According to the Oxford English Dictionary, it is derived from Greek "Forming words, chiefly scientific or technical, with the sense 'straight, rectangular, upright, perpendicular', or sometimes 'right, correct, proper'." ("Ortho," 1989) This brand of birth control is definitely less playful sounding than brands like Lessina and Aviane, but it implies a certain strength

and newness in its usage. It is a scientific connotation, but when translated appeals to the desire to feel like a new woman.

4. Conclusion

While I only researched and discussed a small portion of pharmaceutical brand names in specific medicinal categories, I do believe that I have uncovered some useful information and patterns that arise in brand name nomenclature. I feel that it would be beneficial if I continued this study into various other genres of pharmaceutical drugs in order to see if I could uncover more brand naming tactics, as well as to see if my own conclusions from this paper translate across the board. My findings are very specific, and I'd like to see if I could broaden the horizon to discover a general consensus, since some of my findings are already showing a trend amongst the groups of medication I chose to study.

Creative approaches make up a dominant strategy in brand name nomenclature. Some of my findings include hidden meanings derived from other Romance languages, as we observed in brands Aviane, Allegra, Altoprev, and Ortho-Novum. This tactic proved to be interesting because words are always being borrowed from other languages to add to our own, and it shows that brand names are not exempt from this practice.

Certain common morphological processes exist sporadically throughout brand names, such as clippings of certain words, as we saw in Pulmicort Flexhaler, derived from *pulmonary*. Affixation is a main source of creating nomenclature, especially as we found within generic names. Suffixation proved a consistent tactic especially when it came to referring to generic products, such as the Corticosteroids as we saw in Azmacort and Symbicort. Sound symbolism also proves to be significant, creating certain connotations about the product in order to reach out to the targeted market of consumers. All of these specific findings lead to a better understanding of just how many details brand name creators are concerned with when they are trying to create a brand name that abides by the rules laid down for them by the FDA and other nomenclature committees.

The key point that I take away from this study is the importance of a generic name and the significance of the generic stem. Often times there are direct relationships between the drug's generic name and its brand name. Typically there will be a transfer of a generic stem or otherwise another component of the name in order to offer a correlation to the active ingredient of the drug, and thus its function. It is true however that the majority of brands that I analyzed did not in fact show this direct relationship if I really add up the numbers, as it is advised against by the LNC. However I do see it as a general pattern that I believe is more widespread amongst other types of medication; it is simply a strong tactic in drug name nomenclature.

It is true that most brand names, like many of the ones that I have studied, opt for a more clever naming process through play on words and hidden meanings, and these often work—however they are all too specific to each brand to show any clear and general pattern or tactic amongst a variety of medications. Each brand is catered to as a separate entity, and this is where creativity comes in to play. I can only analyze so far the meanings behind certain brands like this, but I can hope to uncover a set pattern of morphological processes such as the use of certain affixes and stems amongst brands.

My analysis has led me to find various morphological tactics used in the creation of brand name nomenclature, and has only furthered my interest in the subject. There is so much to discover about the role of morphology and linguistics in brand name nomenclature, not only related to pharmaceutical brands but on a wider span as well. I conclude that there is no set process laid out for the creation of drug brand names, but there are indeed some useful moves and linguistic tactics that aid in the creation of a strong brand name. The creation of a successful brand name is no easy feat, and it takes various linguistic tactics and tricks to create a marketable and catchy brand name that appeals to the masses. Consumers stand by their brand, and linguistics plays a significant role in making sure that so the brand gives a sense of security in the product and its purpose.

Appendix 1: LNC Judgment Factors Concerning Brand Name Development

- Sound-alike/look-alike names,
- Misleading, incorrect, or unsafe elements encoded into a name,
- Unjustified hyperbole beyond clinical data,
- Confusing prefixes or suffixes that conflict with common medical abbreviations including numbers,
- Dosage form or regimen as part of the proprietary name,
- Suggestion of an unapproved use,
- Store environment of the product. Two products with similar names will cause less concern if they are physically separated in pharmacy storage areas and will always remain separated, that is, one is a topical product and the other is an oral solution,
- The United States Adopted Names Council discourages the use of USAN syllables in a trademark because it acts as a bar to the subsequent generation and adoption of other names for similar products. Therefore, the LNC recommends against names that contain too much of the USAN name or any of the USAN “stem,” and,
- The LNC is more concerned with letters that are easily blurred or confused when handwritten such as W, M, N, C, L, and O. Additionally, the LNC is more sensitive to similar syllables in the first part of a proprietary name since physician’s handwriting often tends to trail off into obscurity with the last part of a name (eg, Dynacin and Dynacirc). (Boring 632)

Appendix 2: Table of Generic Stems (referenced in study)

Stem	Generic name	Brand name	Function/Class of Drug
-statin	Atorvastatin	Lipitor	Lowers cholesterol
-gest	Levonorgestral	Alesse	Birth control
-tadine	Loratadine	Claritin	antihistamine
-astine	Acrivastine	Semprex-D	antihistamine
-onide	Budesonide	Rhinocort	Steroid
-olone	Triamcinolone	Nasacort AQ	Steroid
-asone	Mometasone	Nasonex	Steroid

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