Color Terminology in American English: 
Its Diachronic and Synchronic Heterogeneity

1.0 Introduction

The study of color terminology has long been used as a tool to study more basic truths of languages: linguistic anthropologists have used colors to study the linguistic relativity hypothesis, cognitive linguists and psychologists have used color terminology to study the universals of perception, and historical linguists have used colors as markers of basic words in a language that resist the corruption of interlingual contact. Some linguists have used color terminology to study the differences in languages between the sexes. Very few, however, have studied color terminology as a microcosm of language change, both on a diachronic and synchronic level. However, color terminology is a perfect vehicle for studying these changes as it has a rich history, well-developed theory of development (Berlin and Kay 1969), and well known differences in usage patterns in modern social groups. What is especially interesting are the factors that initiate the changes and differences in color terminology, as the “cause” of language change has often been obscure in the course of language history. Changes in color terminology,

1 I would like to thank Ted Fernald, Donna Jo Napoli, Cheryl Leung, and Julie Patton for their invaluable advice and suggestions. I would also like to thank the Linguistics Research Seminar for their suggestions, interesting questions over the course of the semester, and catalogs. I am eternally indebted to those individuals who volunteered to participate in my studies, and finally, I am also indebted to Jeroen Vanderhoeven for listening to me talk about catalogs for four long months.
however, seem to have origins that are much easier to study, although few researchers have
looked at this problem in detail. What this study attempts is just such an endeavor; it is an
examination of color terminology in American English, but specifically the motivation of current
trends toward the expansion of the color lexicon.

1.1 The Color Lexicon is Expanding

First of all, how do we know that the American English color lexicon is currently in a
state of expansion? Berlin and Kay’s extremely influential 1969 work entitled Basic Color
Terms: Their Universality and Evolution establishes a universal sequence in which color
terminology evolves in languages around the world. Their work seems to posit that color lexicons
are generally in a state of expansion rather than reduction. Although some small modifications
have been made to the original theory (Kay 1975), the foundations of Berlin and Kay’s original
tenets have stayed the same. After studying ninety-eight languages of various genetic stocks,
they concluded that a language can have a maximum of eleven basic color terms: black, white, red,
blue, green, yellow, brown, purple, pink, orange, and grey. Basic color terms are color terms that
are 1) monomorphemic, 2) taxonomically superordinate², 3) broadly applicable, and 4) salient
(Smith et al. 1995). Secondary color terms, then, are color terms that are part of the language but
do not fulfill Berlin and Kay’s criteria for basic color terms. Berlin and Kay’s theory also posits

²“Taxonomically superordinate” simply means that there is there is no other term that will include that
term. For example, indigo is not taxonomically superordinate because indigo is included in blue. Blue however is
taxonomically superordinate since there is no other color term that includes blue plus other terms.
that black and white always develop first in a language\(^3\) (Stage I), followed by red (Stage II), ending in the final stages of color terminology development with pink, purple, brown, and/or grey (Stage VII). Their theory implies that all languages were once at Stage I and will all eventually reach the maximum eleven basic color terms.

But what if a language has already reached the maximum eleven basic color terms, as English has? Does this mean that our color terminology will remain static forever? Probably not. First of all, Berlin and Kay’s theory accounts for secondary color terms to some extent. Kay posits that “In a community undergoing change in basic color lexicon the basic color terms added at later stages are present as secondary terms for speakers at earlier stages” (Kay 1975, 264). For example, languages that have not yet gained a word for blue might have such a word in their secondary color lexicons (Kay 1975). Therefore, Berlin and Kay’s theory allows for the expansion of secondary color terminology in languages that have reached their basic color term “limit” although these secondary color terms might never get a chance to become full-fledged basic color terms.

The alternative, of course, is that Berlin and Kay were wrong to establish a maximum number of basic color terms, especially as this seems to imply a human perceptual limit. Indeed, they themselves did speculate that Russian, which has separate color terms for both light blue and dark blue, might necessitate an additional stage of development (Berlin and Kay 1969, 99).

\(^3\)Although the foci of basic terms might be black, white, red, etc., peripheral members of the group could come from large areas of the color spectrum. In most cultures that have terms for only black and white, these terms actually represent dark and light, so that the foci of black is the darkest hue possible and the foci of white is the lightest hue possible. Peripheral members of black, for example, however, might include shades that we could consider dark blue, dark purple, dark green, etc. Therefore, it is not that Stage I cultures do not perceive the whole spectrum but that they do not distinguish between hues as much linguistically.
Polish also has 12 basic color terms, as blue is divided into terms for lighter blues and black-blues—respectively niebieski and granatowy (Wierzbicka 1990, 112). Would it be possible then for English to acquire new basic color terms? Zollinger has found there to be adequate space between blue and green on the psychological color solid\(^4\) for a basic color term representing blue-green hues (Zollinger, 1984). In my own research (see Study I), I found that subjects had a very difficult time placing a blue-green color chip (commercially labeled aquamarine) in either the blue or the green categories and several placed the chip in its own group called blue-green. It was also difficult for subjects to place a fuchsia colored chip in a category. Is fuchsia pink or purple or red? Perhaps none, in which case that is another potential source for an additional basic term. Indeed, in an analysis of color terms used in catalogs (see Study III), I noticed that very light shades of brown were never called brown but were always called tan, khaki, camel, etc. It would seem that there may be room in the spectrum for a basic color term representing light brown shades also. Archibald has proposed that lightening a dark color creates the potential for a basic color term which might account for fuchsia as a lightening of very reddish purple and tan as a lightening of brown (1992, 6). Wierzbicka has found similar problems in Polish for shades such as beige, off-white, and burgundy (1990, 111-2).

1.2 Why is the Color Lexicon Expanding? Do We Need More Terms in Today’s World?

All this seems to support the possibility of a lexicon with more than eleven basic color terms. After all, it has been proposed that the size of the color system is relative to the complexity of the culture. Zollinger has stated that “cultural complexity stimulates the terms. After all, it has been proposed that the size of the color system is relative to the complexity of the culture. Zollinger has stated that “cultural complexity stimulates the

\(^4\)A psychological color solid is constructed by measuring the perceptual distance between the focal colors of basic color terms (see Zollinger 1984 for a complete discussion).
development of the basic color lexicon in several ways, among them through the production of a larger variety of objects which exhibit a color previously less commonly found and by extending the range over which trade in these objects occur” (1984, 406). In other words, the more stuff that we have that is colored in hues not often found in nature, and the more we use these items, the more color terms we need. Could it be that America and other industrialized nations are reaching (or have reached) that point of materialism that more than eleven basic color terms have developed to describe the colors of all that we own? Could it be that we are at a never before witnessed ‘height of complexity’ and that is why Berlin and Kay did not find any languages with more than eleven basic terms in 1969?

Indeed, Berlin and Kay list only ten languages out of the ninety-eight that they studied that had eleven basic color terms. These are Arabic, Bulgarian, English, Hebrew, Hungarian, Japanese, Korean, Russian, Spanish and Zuni. It is interesting to note that all of these languages are used in industrialized nations with the exception of Zuni. Furthermore, almost all these languages have relatively recently borrowed some Stage VII color terms (orange, purple, pink and grey) from other languages (Berlin and Kay 1969, Casson 1997). In English, for example, orange and purple are loans from Old French (which in turn borrowed from Arabic) and Church Latin,

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5 A complex society could probably do very well with a large number of secondary color terms and only a small number of basic ones. After all, it is not important to the speakers of a language whether a term is basic or not--what matters is its functional value. However, it is assumed here that the more specifically colors need to be described in a culture, the more basic color terms will naturally develop in order to organize the terms and simply because the more a hue is described by a very specific term it becomes more probable that that term will gain the criteria necessary to be considered a basic term.

6Speakers of Zuni could possibly be considered to be participants in American culture, since it is spoken in the United States. However, as the language probably developed these terms before the culture had close contact with European descendants, it is more likely that Zuni is an exception to the general trend.
respectively (Casson 1997). Arabic, Bulgarian, and Hungarian have borrowed from the Romance languages. Japanese midori meaning ‘green’ is a recent development. Spanish café meaning ‘brown’ is probably also a recent development since it has a transparent origin to the beverage coffee. In other words, it is almost certain that the eleven-term status of most of the languages Berlin and Kay studied were recent developments. At the very least, although certainly more research could be done on the subject, it is probable that all the languages with eleven basic color terms have only recently become ‘eleven-term’ languages. The claim has been made, for instance, that Nostratic had no color terms and that Indo-European only had terms for white, black, red, and yellow (Casson 1997). Therefore, we must ask ourselves, if Berlin and Kay had done their study 1000 years ago, how many basic color terms would they have found to be the maximum number? Seven? Eight? Who is to say that cultures one thousand years from now won’t have upwards of twenty basic color terms, if the complexity of the cultures necessitates it? If technological evolution is directly related to the size of the color lexicon, then it would make sense that color lexicons were smaller in the past, are larger now, and that they are continuing to grow as our technology grows.

1.3 The History of the Color Lexicon in English

Indeed, the history of technology in England and America does seem to be directly related

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7 By ‘recent,’ I mean in the last few hundred years.

8 Some historical and comparative linguists might find this claim extremely controversial as the existence of Nostratic itself is controversial. Nostratic is the supposed super family reconstructed from Indo-European, Uralic, Altaic, Afro-Asiatic, Kartvelian, and Dravidian. Its existence is controversial because it was probably spoken 10,000 to 15,000 years ago, and the accepted time depth for proto language reconstruction is currently only about 3000 to 8000 years (Trask 1996).
to the size of the color lexicon, for both basic and secondary color terms. During the medieval period, England lacked the native dyes to make cloth any color except black (Casson, 1994). This time period corresponds with the time that English was dominated by brightness (white) and darkness (black) contrast color terms. Other basic color terms such as red, yellow, green, and probably blue were in existence (although perhaps in different forms), but they had brightness senses as well as hue senses (Casson 1997, Biggam 1995). At this time, colorful dyestuffs were available, but the Middle Eastern cultures had a monopoly on their production, and England resisted their import for patriotic and religious reasons (Schneider 1978 in Casson 1994). However, when Italy in the 15th century gained control of the dyestuffs market, it became increasingly difficult for England to resist their importation. It was during this Middle English period, from 1350-1500, that England had a semantic shift, from a brightness-term-dominated language to a hue-dominated color lexicon (Casson 1997). Color terms for brown and purple both entered the lexicon during the Middle English period, although they were present in the language during the Old English period as secondary color terms (Casson 1997). Beginning in the 16th century and culminating in the 17th century, the balance of power in the dye industry shifted from the Mediterranean countries to the Northern European countries such as Holland, France, and England (Casson 1994). This increased exposure to the technology of dyeing may have initiated the addition of orange to the basic color term lexicon, although it too was present in the language, as a name for the fruit, long before it became a basic term. Finally, pink became a basic color term around 1720, after the pink flower called pink (Casson 1997).

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9 However, Wyler (1984) claims that Old English did not have a term for blue until after brown became a basic color term.
The basic color term lexicon, however, was not the only color lexicon that was expanding. With the shift from brightness/darkness terms to hue terms, many secondary terms began entering the language (Casson 1994). This was possible because the emphasis on hue allowed people to associate the hues of certain objects with the hue in general. Casson calls this process metonymic since the formula “entity stands for entity’s color” was and still is used to generate secondary color terms (Casson 1994). Therefore, the expansion of the secondary color lexicon was not only marked by the same technological landmarks as the basic color lexicon, but the beginning of the technological revolution in the dyeing industry in England was really responsible for the birth of the secondary color lexicon in English. Secondary terms certainly existed before this time (how else could new terms enter the basic color lexicon if they were not peripheral first?) but the semantic shift and simultaneous technological revolution made the metonymic process possible and thus allowed hue-oriented secondary color terms to become important in their own right. In any case, none of the secondary color terms that existed before the Middle English period have survived to today, unless they became basic color terms or took on different meanings (Casson 1994). With the increased exposure to colors increasingly available in imported cloth from Italy and the East, the secondary color lexicon grew steadily. Indeed, many early secondary color terms come from the names of the dyes used. For example, crimson comes from the name for the insect, kermes, that was used to dye cloth a bright red (Casson 1994). The pace of secondary color terms entering the language after the initial spurt was steady but slow until the 19th century in which “more new [secondary] terms . . . entered the language than in the preceding four centuries combined”--indeed, forty entered the lexicon in that century compared to
only eight in the century before (Casson 1994, 17). The main reason for this sudden influx was
the invention of aniline dyes in 1856 (Casson 1994, 17). Synthetic processes allowed for many
shades to be made that people had not previously had large amounts of exposure to, since there
were a limited number of colors that could be made from natural dyes. Since these shades were
now part of their everyday lives (in their clothes and furnishings), there was a need for terms to
describe these shades. Let's remember Zollinger's statement that "cultural complexity stimulates
the development of the basic color lexicon in several ways, among them through the production
of a larger variety of objects which exhibit a color previously less commonly found."
Furthermore, increased usage of certain dyes or familiarity with those dyes and their counterpart
colors might increase chances that those shades will become basic terms. Zollinger has found that
the synonym of turquoise in German, türkis, has increased in usage after the dye for that hue
was invented in the late Thirties (1984). Purple in the history of English probably underwent a
similar history, since purple first was limited to descriptions of the clothing of royalty. It
probably only became more common as a secondary term and finally became a basic color term as
the shade became more available to common people.

What is especially interesting to note about the history of color terms in English is not
that technological advances played a key role in expanding color lexicons, but that it was the
fabric and clothing industry in which these technological advances occurred. Here may be an
answer to the question of what stimulates color terminologies, or at least what has stimulated the
color lexicon in English. After all, why does one need to talk about a color? What is a color term's
answer to the question of what stimulates color terminologies, or at least what has stimulated the
color lexicon in English. After all, why does one need to talk about a color? What is a color term's
communicative value? Wierzbicka (1990) posits that all basic color terms come from natural
elements such as the sky and plants, but why would we need to compare the color of anything to that of the sky unless the color of the thing itself was important? One area in which the color of the object is especially important is in clothing. After all, as we have already discussed, the colorful cloth from Renaissance Italy was in high demand in England. People consider the color of the clothing they wear to reflect on themselves, especially since color is generally an important factor in fashion. Furthermore, cloth and clothing are things that people have daily exposure to. Some researchers have surmised that groups interested in color related hobbies have the largest color lexicons (Simpson and Tarrant 1991; Swaringen et al. 1978; Greene and Gynther 1995) but it seems unlikely that a few people interested in some obscure interest could influence the language so enormously. Of course, these hobbies could certainly contribute to the growth of the color lexicon, but could they drive that growth? It seems more likely that something important to almost everyone would be a better candidate.

1.4 The American English Color Lexicon is Growing and There is a Need

Our color lexicons are probably still growing. At least one study has found that younger speakers have larger color lexicons than older speakers (Rich 1977; although see Simpson and Tarrant 1991 for a dissenting opinion). But beyond that, there probably still is a need for more color terms. I have already outlined the possibilities for growth in the basic term lexicon, but the clothing industry today uses an extraordinary number of secondary color terms to sell their products as well as to correctly identify their products. Many stores and mail order establishments offer identical items in myriad colors. Often times, shades of more than one focal products as well as to correctly identify their products. Many stores and mail order establishments offer identical items in myriad colors. Often times, shades of more than one focal basic term are available. There is a need to differentiate these different shades. Furthermore, many
catalogs do not seem to like to replicate the name used for a specific shade since customers often use the name of a shade to identify items that will match in color. If a catalog used sky blue for a light blue color, but then later for a medium blue, customers might be frustrated with the lack of consistency. Indeed, MacLaury has stated that "people innovate basic color categories as they attend increasingly to distinctiveness. They increase this selective emphasis in response to the novelty that impinges on them from external sources" (MacLaury 1991, 57). This implies that the more colored items people need to distinguish between, the more color terms people need.

Furthermore, there is the issue of marketing. Marketers coin novel color terms in the hopes that the entity associated with the color (a forest for forest green, for example) will appeal to the consumer. One plastics company has coined 45,000 color names (Casson, 1994). With such diligence, isn't it possible that advertising and retail are creating many color terms and those individuals exposed more heavily to such advertising acquire more of these new terms? Furthermore, nearly all of these new terms are transparent—that is, we know what hue the label is referring to because the term refers to something in the real world that has that color. Therefore, these colors are fairly easy to understand and learn, as a mnemonic device is built right in.

Finally, the fact that we have synchronic variability in the color lexicon of American English hints that a change in progress might be in the works: "all linguistic change has its roots in synchronic heterogeneity of the speech community" (Kay 1975, 257). Kay has found that languages with evolving color term systems do have speakers at different stages (Kay 1975). We have already briefly mentioned the age group differences, but there is also an established sex difference in the usage of color terms.
1.4.1 The Sex Difference in Color Terminology Usage

For a long time, people have observed that men and women generally use color terms differently in English. Women seem to use more secondary color terms, or have more terms for colors in the pink and purple range such as mauve or fuchsia. Perhaps most famously, Lakoff observed the following in *Language and Woman’s Place* (Lakoff 1975, 8-9):

As an example of lexical differences, imagine a man and a woman both looking at the same wall, painted a pinkish shade of purple. The woman may say (2):

(2) The wall is mauve,

with no one consequently forming any special impression of her as a result of the words alone; but if a man should say (2), one might well conclude he was imitating a woman sarcastically or was a homosexual or an interior decorator. Women, then, make far more precise discriminations in naming colors than do men; words like beige, ecru, aquamarine, lavender, and so on are unremarkable in a woman’s active vocabulary, but absent from that of most men.

Lakoff focuses on women’s versus men’s language in this quote, but she also notes that such rich color vocabularies are also associated with gay males as well as interior decorators. Also, she seems to make distinctions between active vocabularies and non-active vocabularies. Men might not have active color vocabularies with words such as ecru, but they might know the meaning of the word and could use it accurately if pressed to make certain color distinctions.

There have been a couple of early experiments that found that women are faster and more accurate in naming colors, although these do not seem to tell us about lexical choice differences and color lexicons (Ligon 1932; DuBois 1929). There have also been several empirical studies that support Lakoff (Rich 1977; Steckler and Cooper 1980; Nowaczyk 1982; Simpson and Tarrant and color lexicons (Ligon 1932; DuBois 1929). There have also been several empirical studies that support Lakoff (Rich 1977; Steckler and Cooper 1980; Nowaczyk 1982; Simpson and Tarrant 1991). One is Steckler and Cooper’s study of the difference in color lexicons for men and women, in terms of the kinds of ways men and women differentiated between colors for sweaters and the
specificity with which they did so (Steckler and Cooper 1980). Steckler and Cooper concluded that “women use more specific color terms than men” whereas men used more saturation adjectives (such as light blue versus dark blue), and more combinations of basic color terms (such as yellow-green rather than chartreuse) (1980, 375). Steckler and Cooper’s study, however, does not explore social factors other than sex that could affect an individual’s color lexicon. For instance, would a group of male interior decorators outperform a group of women from random occupations in using specific color terms? Also, Steckler and Cooper notice that women might acquire and use more specific color terms for certain colors because these colors “play a predominant role in the selection of cosmetics, clothing, and room decorations” (1980, 380). However, what if some women are not interested in cosmetics, clothing, and room decorations? Could it be then that these personal interests are more influential factors on color lexicons than the sex factor? After all, it does seem implausible that there is some gene in the Y chromosome that limits one’s color vocabulary. However, Rich did find that nuns, women who are generally not supposed to think about worldly things like clothes and who, in fact, often wear uniforms, do have larger color vocabularies than men, although smaller ones than lay-women (Rich 1977). This seems to indicate that cultural factors as well as personal factors might be reflected in the differences in color terminology. Women might be taught early on to use more colors, but it is really those who take an interest in color-related things that have the largest color vocabularies. The general trend, then, would show that women have larger color vocabularies than men for deep-seated cultural reasons, but also because women in general have a disproportionate interest in color-related hobbies than men (Simpson and Tarrant 1991). Psychological studies of salience
have also found that clothing is more “on the mind” for women than for men (Singer et al. 1977).

2.0 Outline of Paper

So far I have established that the color lexicon is growing, or at least has potential for growth, and that women seem to have larger color lexicons than men. But what is motivating the color lexicon expansion and why does it seem that women are leading the change? To answer these questions, I have focused on the expansion of the secondary color lexicon since it is both larger and has more variation in terms of usage. Furthermore, since basic color terms usually are drawn from the pool of secondary color terms, it makes sense that growth in the secondary color lexicon would coincide with a similar but much smaller growth in the basic color term lexicon. Therefore, any findings that result from study of the secondary color term lexicon are probably also applicable to the basic lexicon.

I conducted three studies on color terminology. Since hobbies and interests are often suggested as reasons why some people have larger color lexicons than others, Study I looked at several hobbies as well as other sociological factors such as socioeconomic status, gender, art education, and catalog interaction. This study attempted to narrow down the possibilities for the motivation of the color lexicon expansion. It also examined the differences in active and non-active color vocabularies.

The second study narrows the focus of the first study, in that only gender, catalog interaction, and interest in clothing were examined as possible factors affecting color lexicon size. Furthermore, Study II looks at the correlation between unconventional color lexicon size and the interaction, and interest in clothing were examined as possible factors affecting color lexicon size. Furthermore, Study II looks at the correlation between unconventional color lexicon size and the above factors. Since unconventional terms are usually the newest terms, they might help indicate
which groups are leading the expansion.

Study III looked specifically at catalogs, to see what it is about catalogs that could be motivating the expansion of the color lexicons. Also, Study III attempts to find out why it is that certain groups, specifically women, seem to have larger color lexicons (i.e. are leading the change in progress).

3.0 Study I. Which Groups Describe Colors Most Specifically?

In this first study, I examine how gender, personal interests, art education, and catalog interaction (as a measure of our need for new terms and the effect of advertising) could affect our color terminology and the number of basic color categories we employ. Also, I wanted to study how socioeconomic status might affect color terminology because individuals of the higher socioeconomic classes might have more money to peruse catalogs and pursue such interests as interior decorating and fashion. These individuals might also have more access to art education which might lead to larger color lexicons since larger color lexicons might just be a matter of learning more terms. I did not study the overall education of the subjects, although I thought that being well-read, etc. might contribute to greater color vocabularies, because I assumed that all subjects would be on about the same level of education as they all attend prestigious colleges.

3.1 Methodology

I began by soliciting twenty students by e-mail and word of mouth from the Tri-Co area (Swarthmore, Haverford, and Bryn Mawr Colleges) as well as some students from the Rhode Island School of Design during the Spring of '99. All subjects were in the age range of 18-21 (Swarthmore, Haverford, and Bryn Mawr Colleges) as well as some students from the Rhode Island School of Design during the Spring of '99. All subjects were in the age range of 18-21 years. Each student was interviewed for about 10-20 minutes and then given a questionnaire (see
attached). During the interview portion, I asked three questions. For the first question, I showed eighteen cards with color swatches on them. For the color swatches I used Crayola crayons, Berol Prismacolor colored pencils, and Berol Verithin colored pencils. I chose colors from three ‘basic’ color groups (red, blue, and green) and tried to choose colors that were both prototypical members of the groups and more peripheral members. These colors were (according to their commercial labels): bubble gum pink (R1), magenta (R2), scarlet (R3), crimson (R4), cherry (R5), raspberry (R6), deco blue (B1), light cerulean (B2), true blue (B3), ultramarine (B4), indigo (B5), aquamarine (B6), chartreuse (G1), spring green (G2), apple green (G3), grass green (G4), olive green (G5) and dark green (G6). Number labels were assigned approximately according to saturation, with the lightest colors at 1, the darkest colors at 6, and the most typical colors of the group in the middle numbers (these labels were not revealed to the subjects). The color swatches were used in an attempt to present colors as objectively as possible to the subjects. I showed these colors in a ‘random’ prescribed order (see Appendix iii) that attempted to avoid putting two colors of the same basic group directly adjacent to one another in the order, because I did not want subjects to feel like they had to distinguish between two similar colors if they would not normally do so.

The first question asked the subjects to name the colors on the cards, one by one, as they thought they would normally name the color in normal conversation, and were given the example of describing a friend’s sweater to another friend. I specified that the subjects did not need to distinguish between the cards and that they could use the same term for more than one card.

For the second question, the cards were presented again in the same order and the subjects
were asked to name the color as though they were asking to borrow that specific shade for an art project, or some other imagined event where the specific shade would be important. The purpose of the first question was to try to elicit how the subject would specify a particular color in normal conversation—that is, their active vocabulary (I call this ‘usage’). The purpose of the second question was to try to elicit the extent of the subject’s color vocabulary (‘max’)—that is, did the subjects know some color terms that were not part of their active vocabularies but that they could use if pressed to do so?

Third, I asked the subjects to sort the color cards into what they thought were basic color groups, so that all the cards in one group could be considered shades of the basic color. I indicated that they could create as many color groups as they thought were appropriate. This last question attempted to find out how many basic color groups the subject perceived to exist in the group of eighteen cards. For example, would the subject divide the ‘R’ cards into pink and red or just call the whole group red?

Finally, each subject was given a questionnaire that asked about gender, parents’ education, parents’ occupations, financial aid status, interest in fashion, interior design, art history, and the studio arts, number of courses taken in art, whether they considered themselves to be fashionable or skilled in the visual arts, how many clothing and interior design catalogs they received, if they browsed these catalogs, and if they purchased items from these catalogs (see Appendix iv-v).

I scored the subjects’ answers from 0-2. Basic color terms or those modified by saturation Appendix iv-v).

I scored the subjects’ answers from 0-2. Basic color terms or those modified by saturation adjectives such as light or dark or bright were given 0 points. Those answers that were secondary
color terms were given one point if their meaning was transparent. For example, *brick red* is transparent because the term indicates the color of bricks. Those answers that were opaque secondary color terms were given 2 points. An example of an opaque secondary term is *crimson*—it is not obvious today what the color *crimson* is unless we memorize the term, although some time in the past the term might have been transparent. Wrong answers were given 0 points (wrong answers were determined by looking up the given term in the *Merriam-Webster Dictionary Online*). Answers for the second question were given at least equal points as the answer for the same color on the first question, automatically. I did this because I reasoned that if the subject said that they would use the color in normal conversation, it was naturally part of their total color vocabulary. I scored the number of basic color groups the subjects divided the color groups into merely by counting the number of groups.

Socioeconomic status was scored from the answers given on the questionnaires. The total socioeconomic score was a total of three scores: parents’ education, parents’ occupation, and financial aid status. Parents’ education was scored on a scale from 0-4; 0=some high school, 1=high school diploma, 2=some college, 3=college graduate and 4=any graduate work. The score from the two parents was averaged to give the final education score. Parents’ occupation was scored using *A Standard International Socioeconomic Index of Occupational Status* (Ganzeboom *et al.* 1992). The scale was from 0-4 with 0 equaling a score from the bottom fifth (0-20), 1 equaling the second fifth (0-40), and so on. Again, the scores were averaged for the two parents. Financial aid was scored on a scale of 0-2 with 0=75% to full financial aid, 1=25% to 75% equaling the second fifth (0-40), and so on. Again, the scores were averaged for the two parents. Financial aid was scored on a scale of 0-2 with 0=75% to full financial aid, 1=25% to 75% financial aid, and 2=25% to no financial aid. All three scores were combined for a possible score
of 10 for socioeconomic status.

Personal interest was scored on a basis of 0-10, as indicated on the questionnaire, and I took the subjects’ responses directly as their score for each interest. On the questionnaire, I indicated that 0 = ‘I hate everything about this subject’ to 10 = ‘this is my passion.’

3.2 Results and Discussion

Table 1. Average ‘usage’, ‘max’, and ‘number of basic color group’ scores for some social groups.

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>Average Usage Score</th>
<th>Average Max Score</th>
<th># of Groups Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SocioEconomic Status Low (0-7)</td>
<td>5</td>
<td>9.2</td>
<td>13.4</td>
<td>3.6</td>
</tr>
<tr>
<td>SocioEconomic Status High (8-10)</td>
<td>15</td>
<td>8.2</td>
<td>13.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Male Gender</td>
<td>10</td>
<td>8.0</td>
<td>12.7</td>
<td>3.5</td>
</tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>3.8</td>
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<tr>
<td># of Catalogs Some (7 are also female)</td>
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<td>5</td>
<td>9.2</td>
<td>16.2</td>
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Table 1 presents the bulk of my data in terms of the score averages for important groups.
Given the results of previous research (Rich 1977; Nowaczyk 1982; Steckler and Cooper 1980; Thomas et al. 1978; Al-Jehani 1990) my results were not as striking as I thought they might be for a gender correlation (male ‘usage’=8.0; female ‘usage’=8.9; male ‘max’=12.7; female ‘max’=14.6; see figure 1). Especially since we tend to think of the difference in color terminology as one of usage (or ‘active vocabulary’) rather than overall knowledge, my results were very interesting since the greatest difference was between ‘max’ scores (1.9) rather than ‘usage’ scores (0.9). I think that part of the explanation for this phenomenon in my study is that it is harder to measure ‘usage’.

Figure 1. Male and Female Differences in Color Terminology
than it is to measure 'max.' That is, it is difficult for people to analyze themselves and really honestly answer what term they would use to describe a color in normal conversation, as I asked them to for the first question in my interview. However, it is easier to ask for the most specific term the subject can think of for a color and actually get the most specific term the subject can think of. Therefore, I think that the 'usage' score is probably closer to the 'max' score than it should actually be. If this is true, then it could affect correlations other than just gender; we should therefore keep this methodological problem in mind. However, the results for the gender correlation still show that females have more specific color lexicons, period, than males. It does not seem to just be a matter of usage--if that were the case, there should have been a minimal difference between the average 'max' scores for males and females. Overall, I would account for the gender correlation by positing that women possess a greater knowledge of specific color terms than males and possibly also use them more often than males. This makes sense in light of other sociolinguistic trends involving women. If we view some of the color vocabulary as high prestige, then it would follow the larger pattern that women would use these color terms more actively, since women supposedly use more prestige variants than men in general (Chambers 1995). If some of these color terms are part of a change in progress towards a larger color vocabulary, then that would also make sense since women tend to be the leaders in changes in progress (Chambers 1995). However, can we say that women are using high prestige terms (which are usually conventional) and new terms at the same time? Yes--conventional secondary color terms could have more prestige and thus women could use those more often than men. New (which are usually conventional) and new terms at the same time? Yes--conventional secondary color terms could have more prestige and thus women could use those more often than men. New color terms might not be socially salient, and thus the same women could also use these new
terms more often. Therefore, women in general would use more specific secondary color terms than men.

We can also see from the data in Table 1 that results were unexpected when it came to the socioeconomic status (SES) correlation (low SES ‘usage’=9.2; high SES ‘usage’=8.2; low SES ‘max’=13.4; high SES ‘max’=13.7). I expected members of higher SES to have significantly higher ‘usage’ and ‘max’ scores, as they probably would have had more exposure to an education that encouraged specific color terms and the money that could allow them to be more interested in fashion, interior decoration, art, etc. The numbers from my study, however, seem to show just the opposite: members of the lower SESes had a higher average ‘usage’ score by about 1.0. While I think that this was probably not significant, it could be explained by hypercorrection. Since almost all of my subjects were from extremely high class families, those from ‘lower’ classes would never be considered from the ‘lower’ classes in a more representative sample. More likely, they would be from the middle class. Therefore, it is possible that they associate more specific color terms with higher prestige, and as aspirers, outperform those of higher classes in this matter. However, I am more inclined to think here that these results are inconclusive. First of all, the ‘lower SES’ group only had five members (3 men and 2 women10) while the ‘upper SES’ group had fifteen. The difference in average scores could very well have been due to chance. Secondly, I do not feel that parent’s socioeconomic status is a good indicator here of the subjects’ socioeconomic status. All the subjects attend prestigious institutions, are getting top-

10Since the lower SES group was composed of three men and two women, it is improbable that gender was confounding the SES correlation. We might hypothesize that the lower SES group had scores that were just as high as the high SES group because the lower SES group was composed largely of women, and since women on average have higher scores, this would obfuscate the SES correlation. However, since the lower SES group was composed of more men than women, we cannot turn to gender as an explanation.
notch educations, and will probably go on to have high socioeconomic status. At the very least, all the subjects are getting a good education, if that is a factor of socioeconomic status and might contribute to greater specific color term knowledge/usage. Lastly, as I said before, even those from the ‘lower’ SESes were not really of very low SES in the reality outside of this elite college environment. Therefore, to really study a possible correlation between color terms and SES, we would need to get more subjects who are representative of lower SESes in the real world. Also, if future studies did find an SES correlation with color terminology scores, these findings would support the idea that women use these specific color terms more because the terms are of higher prestige, as it is a general sociolinguistic finding that women use prestige variants more often than men (Chambers 1995).

An interest in fashion did not seem to correlate with a higher color terminology score (low fashion ‘usage’=8.2, high fashion ‘usage’=8.6, low fashion ‘max’=14.0, high fashion ‘max’=13.4; see figure 2). This was surprising, especially in terms of the positive catalog correlation which will be discussed later on; I suggest therefore that interest in mail order catalogs is not related to fashion. Indeed, I have heard people say that they get catalogs and purchase from them because they hate to shop normally. Also, fashionable people were not well represented by my subjects. Only one subject rated herself as an eight in terms of fashion interest, and she had the highest fashion score. Therefore, it is also possible that I did not have enough fashionable students to come up with a correlation. Or, it could be that those who might produce a higher color come up with a correlation. Or, it could be that those who might produce a higher color
terminology correlation are those who would rate themselves as nines or tens; since the highest fashion interest score in the study was an eight, the lack of nines and tens might be why there was no fashion correlation.

Interior design did seem to have a slight correlation in that those who rated their interest in interior design as six or greater had overall greater ‘usage’ scores than did those who rated their interest as below six (low interior design ‘usage’=7.7, high interior design ‘usage’=9.1; see figure 2). I think that this is probably related to ‘color education.’ Those with an interest in interior interest as below six (low interior design ‘usage’=7.7, high interior design ‘usage’=9.1; see figure 2). I think that this is probably related to ‘color education.’ Those with an interest in interior design have not necessarily been educated in more specific color terms (by taking classes, etc.) but they might use those terms they know more often because they have need of more specific
terms or identify with an image that uses more specific terms.

An interest in art history seems to show the opposite pattern. Differences in average ‘usage’ scores for those with high interest and low interest are seemingly insignificant while average ‘max’ scores differ by a 1.9 margin (low art history ‘usage’=8.2, high art history ‘usage’=8.9, low art history ‘max’=12.9, high art history ‘max’=14.8, see figure 2). Perhaps those interested in art history are more educated in terms of specific color terms and use them in more academic settings but do not use them in normal settings. This remains to be studied.

Studio art fans have higher overall scores as compared to those who did not express as high an interest in studio art in both ‘usage’ and ‘max’ (low studio art ‘usage’=7.8, high studio art ‘usage’=9.4, low studio art ‘max’=13.0, high studio art ‘max’=14.6, see figure 2). Since most of the people who rated themselves as having a high interest in studio art attend RISD, a well known art school, these individuals are probably well educated in color terms as well as being surrounded by people who identify with an ‘art’ image. Therefore, it makes sense that these individuals would have larger color lexicons and use them more actively.

However, my hypothesis that the level of art education of people interested in interior design, art history, and studio arts somehow affects their overall ‘usage’ and ‘max’ scores does not reconcile itself with the data for the correlation between number of art courses taken and color scores (see Figure 3). That is because the number of art courses taken seems to correlate in terms of ‘usage’ and not in terms of ‘max.’ If education is what gives people the opportunity to acquire larger color lexicons, as we have been assuming, then these results do not make sense. The terms of ‘usage’ and not in terms of ‘max.’ If education is what gives people the opportunity to acquire larger color lexicons, as we have been assuming, then these results do not make sense. The
data instead seems to say that people who have taken more art classes do not have larger color vocabularies but have larger active color vocabularies. It may be that those who take more art courses have more friends from art courses with whom they can use more, and preciser, color terms (Napoli, personal communication). They may also get more used to using specific terms in their daily lives if they use them often in class. However, the explanation may lie again with the methodological difficulty in measuring ‘usage’ that might make ‘usage’ scores closer to ‘max’ than they should be; the higher ‘usage’ scores for those who have taken more than six art courses might then be reflecting greater ‘max’ scores. This might put the correlations for interest in interior design, art history, and studio arts into a new light. These correlations might still be
present, but perhaps the distinctions between ‘usage’ and ‘max’ are blurred, and the possible explanations I gave might carry less truth.

The final and perhaps most intriguing results for the color terminology scores come from the catalog data. Those who received catalogs had higher ‘usage’ and ‘max’ scores than those who received no catalogs (no catalogs ‘usage’=7.7, some catalogs ‘usage’=9.3, no catalogs ‘max’=12.2, some catalogs ‘max’=15.5, see figure 4). As discussed in the introduction, these results could mean that not only are advertisers exploiting differences in color terminology usage, but that they are influencing their readers into acquiring larger color lexicons. Catalogs are a rich source of color lexicon items and it makes sense that being exposed to these rich color vocabularies might cause
these individuals to acquire richer color vocabularies. Furthermore, I found that there was a correlation, especially for 'max' scores, for the degree to which individuals interacted with catalogs. Those who purchased items from catalogs had the highest 'usage' and 'max' scores (see figure 5). This might be explained by degree of exposure--those who pay the most attention to the catalogs acquire the most terms. Also, since ordering from catalogs requires telling the sales representative the color you want, purchasing from catalogs entails some form of internalization of the term. Not only must you read the color as you browse the catalog, but associate the term with the appropriate color and use the term when speaking with the sales representative. It makes sense that these 'purchasing' individuals would have the highest scores, when compared to
other catalog users, if catalogs do influence the acquisition of color terms.

Figure 6. Gender and catalog correlations with respect to color terminology scores.

Also, if there is a difference in the color terminology used in catalogs for men and women (as Frank 1990 and Study III seem to show), the difference in color terms used for men’s and women’s catalogs might be a part of the explanation for why males and females have a difference in their color lexicons. However, we have to keep in mind that seven out of the nine catalog receivers in my study were female, and Frank also found that the majority of catalog subscribers are women (Frank 1990). Furthermore, 4 out of 7 of the catalog ‘browsers’ in my study were female, and Frank also found that the majority of catalog subscribers are women (Frank 1990). Furthermore, 4 out of 7 of the catalog ‘browsers’ in my study were women (some men browse other’s catalogs) and 4 out of 5 of the ‘purchasers’ in my study were
also women. It is possible that either the gender correlation or the catalog correlation is a byproduct of the other. However, I have found that women who receive catalogs have higher scores than women who do not, and the same for men (women w/catalogs ‘usage’=9.1, women w/no catalogs ‘usage’=8.3, women w/catalogs ‘max’=15.3, women w/no catalogs ‘max’=13.0, men w/catalogs ‘usage’=10.0, men w/no catalogs ‘usage’=7.5, men w/catalogs ‘max’=16.0, men w/no catalogs ‘max’=11.9, see figure 6). This does seem to indicate that the catalog correlation is independent of the gender correlation although we must take these figures with a measure of skepticism since there are only three members in the group of women who receive no catalogs and only two members in the group of men that do receive catalogs.

There were fewer interesting correlations for the number of basic color groups perceived to exist among the color cards I used. The gender correlation seemed to be the strongest, with females perceiving more groups on average than males (females=4.2, males=3.5). So, for example, women tended to differentiate pink from red more often than males and blue-green from blue.\footnote{It is important to note that I am making no statements about the ability of women to perceive colors such as pink better than males. From my observations, it seemed clear that men can differentiate pink colors from red colors. The difference is in the organization of the color lexicon. Women do not seem to include pink colors as a member of red whereas men do. Therefore, the results of this study do not imply some sort of difference on the part of perception of men versus women simply because they use color terms differently. Sapir and Whorf’s linguistic relativity hypothesis would predict otherwise--I am therefore assuming that the linguistic relativity hypothesis is not relevant to my studies or this discussion (Chambers 1995).}

This makes sense if we accept the conclusion that females name colors more specifically and have larger color lexicons than males. If they differentiate more lexically for individual colors, wouldn’t it follow that they might differentiate basic color groups more? Furthermore, if this difference between men and women is not a static one, then this finding would imply that women are leading the expansion of the basic color lexicon, as well as the secondary color lexicon. I am
inclined to think that the correlation hints that women are leading this change, since many women thought that there was a blue-green category, even though blue-green is not widely accepted as a basic color category.

The only other correlation observed for the number of basic color groups was for socioeconomic status, which is surprising because the results for SES were rather inconclusive for the size of the color lexicon in both ‘usage’ and ‘max.’ However, the SES correlation for the number of perceived color groups was almost equal to that for gender (low SES=3.6, high SES=4.1). I do not know why this might be, except for the same reasons that I speculated that the size of the color lexicon might be larger for those of high SES.

Overall, I feel that most of the results would hold true for a larger sample. The gender results seem strong, especially in light of other studies and our own folk wisdom. Also, the gender results seem to follow patterns that other researchers have found women following, most importantly that women are leaders when it comes to changes in progress. The SES results seem to be one of those which suffered from lack of data. Further studies should probably get data from a more representative sample and not a prestigious college environment. However, the results for SES in terms of basic color category perception are interesting. If making finer distinctions for color categories is more prestigious, then this result is in line with the sociolinguistic literature. The results for the color terminology scores are not--however, I do not think that these results would hold for a larger, more representative sample, as already discussed above. The fashion correlation also suffered from a lack of good data so I am not sure if these think that these results would hold for a larger, more representative sample, as already discussed above. The fashion correlation also suffered from a lack of good data so I am not sure if these results would hold. However, since the other ‘personal interests’ did show some correlations, I
am inclined to think that the lack of correlation for ‘fashion’ was due to inadequate data, especially since women are normally associated with fashion and my sample had very few self-proclaimedly fashionable women. In any case, it was clear that interests in art history, studio art, and interior design as well as art education do play small roles in increasing the color lexicon size of individuals. However, I feel that the catalog results are strongest and most interesting. Not only are the catalog results backed up historically if we view catalogs as an extension of the clothing industry, but Jane Frank’s study (1990) as well as my own studies (see sections 4 and 5) indicate that there is some kind of relationship between catalogs and color vocabulary. Moreover, the catalog results are the most intriguing, as they hint at a definite culprit behind our current expanding color lexicon. Could it really be marketing and the need for more color terms in our overflooded and very colorful marketplace that could be driving the diachronic change?

4.0 Study II: A Closer Look at the Catalog and Clothing Interest Correlations

My second study focuses on the catalog correlation with color lexicon size, and explores it in more depth. Although to my knowledge there have been no empirical studies as of yet that have examined the effects of catalogs on our color lexicons, several recent popular sources have made observations that those who browse and purchase from catalogs have larger color lexicons on average. Two movies, *Fight Club* and *Being John Malkovich*, have commented on this phenomenon by including characters that are interested in catalogs and have large and active color vocabularies. A more specific observation was made by Ellen Goodman of the *Boston Globe* who stated that she wants to work for a catalog and “join the creative team that has devised an entire literary palette for what used to be merely green. Now it’s ‘lichen,’ ‘thyme,’ ‘thistle,’ ‘celadon,’
'sage,' 'leaf,' or 'moss.'” (November 28, 1999, D07). Goodman also says that she has recently replaced literature with catalogs as her recreational reading and claims that at least sixty-four catalogs are sent out per year, per person or a total of 17 billion catalogs per year! All this points to the increasing influence of catalogs upon our society. Although I was unable to obtain the figures for the number of catalogs sent out per person in, for example, the 1950’s, I am assuming that the number was considerably less than sixty-four, indicating growth in the catalog industry. Growth in the catalog industry would support that catalogs are driving the color lexicon expansion, as the growing catalog industry might be correlated with the growing color lexicon.

I also wanted to see if an interest in clothing was correlated with color lexicon size, and, if an interest in clothing is related to exposure to catalogs. If the clothing correlation seems independent of the catalog correlation, then that would seem to say that it is not necessarily an interest in clothing that is driving the change but merely exposure to very large ‘marketer’s’ color lexicons. Of course, an interest in clothing and exposure to catalogs are related to some degree, but is it a large degree or small degree? Also, this might tell us something else about our (pre) conceptions about why women might have more color terms. It has been assumed that the reason women have more color terms is that women have more interest in clothing and color related hobbies. But could it be that women simply have greater exposure to catalogs since catalog retailers often aim at women and because women themselves are more interested in catalogs?

Considering the amount of color terms we are bombarded with when browsing a catalog, it would make sense that women would thus learn more color terms if they do indeed have more exposure. Considering the amount of color terms we are bombarded with when browsing a catalog, it would make sense that women would thus learn more color terms if they do indeed have more exposure to catalogs.
4.1 Methodology

For this study, I recruited twenty-three students from Swarthmore College by e-mail and word of mouth. All students were either involved with a linguistics class or acquaintances of the author. A listing exercise was deemed appropriate since there were methodological problems involved in learning a subject’s “active vocabulary” in Study I. A listing study aims to find the limit of lexicons, in a way similar to the ‘max’ score in Study I. Subjects were given a piece of paper and read the following instructions:

Please write down as many color terms as you can think of in ten minutes. This is not a competition so please do not worry about the number of color terms you come up with. If you reach a point where you feel you don’t know any more terms, please just rest until the 10 minutes are up, in case you think of another word. Any questions?

Most students had questions about the phrase ‘color term.’ In this case, I further explained that a color term was a word used to describe a specific color and gave them the example red, as I assumed all subjects would list red anyway. Any further clarification did not use more color term examples as I did not want to bias the results. After the ten minutes were up, all subjects were given a questionnaire that asked them to rate their interest in clothing and to tell me if they ever browsed catalogs, ever purchased from catalogs, ever browsed clothing catalogs, and ever purchased from clothing catalogs. If they did purchase from clothing catalogs, I also wanted to know the percentage of clothing purchases in the last year that had come from catalogs.

I scored for size of color lexicons by simply counting the number of color terms that each person came up with. I did not count words that do not fall under the definition of color term such as paisley and vibrant. I also scored the number of unconventional terms by counting them.
Unconventional terms are those that are not found in Casson's list of simplex secondary color terms (1994), the *Merriam-Webster Dictionary On-Line*, or the *American Heritage Dictionary Third Edition*.

4.2 Results and Discussion

First of all, some results of the questionnaire were quite interesting. All subjects reported browsing catalogs of some sort and only three said they never browsed clothing catalogs (1 woman and 2 men). Only four (1 woman and 3 men) reported never buying anything from any type of catalog and nine reported that they never purchased items from clothing catalogs. These results indicate that catalogs have pervaded our everyday lives--everyone at least browses catalogs of some sort at some time in their lives and most indicate that catalogs play a more commonplace role in their lives. Some even rely on catalogs to purchase most of their clothing (see Table 2).

Another interesting thing to note was that a couple of subjects did not fully understand what I meant by *color term* and so included words that we wouldn't consider to be describing a specific color such as plaid, paisley, and checked. What is most intriguing is that while these terms are not ones that we would think of describing specific colors, they do describe specific kinds of patterns most often used on fabric. That is, these subjects were associating color with clothing. Smith *et al.* found similar results in their 1995 listing study.
Table 2. Questionnaire results and listing exercise scores for twenty three subjects. Clothing scores are on a scale of -5 to 5 with -5 indicating a dislike of clothing, 0 indicating indifference, and 5 indicating a love of clothing. % indicates the percentage of clothing purchased in the last year that came from catalogs. # indicates number of total terms while # Unconv indicates the number of unconventional terms.

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<td>F</td>
<td>-3</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>0</td>
<td>51</td>
<td>10</td>
</tr>
<tr>
<td>K.T.</td>
<td>F</td>
<td>4</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>5</td>
<td>38</td>
<td>1</td>
</tr>
<tr>
<td>C.V.</td>
<td>F</td>
<td>2</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>10</td>
<td>38</td>
<td>1</td>
</tr>
<tr>
<td>M.K.</td>
<td>F</td>
<td>0</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>20-30</td>
<td>70</td>
<td>14</td>
</tr>
<tr>
<td>T.M.</td>
<td>F</td>
<td>5</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>20-30</td>
<td>67</td>
<td>18</td>
</tr>
<tr>
<td>J.D.</td>
<td>F</td>
<td>4</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>&lt;5</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>E.T.</td>
<td>F</td>
<td>2</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>0</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>J.S.</td>
<td>F</td>
<td>3</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>0</td>
<td>58</td>
<td>4</td>
</tr>
<tr>
<td>J.A.</td>
<td>F</td>
<td>2</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>1</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>L.W.</td>
<td>F</td>
<td>0</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>0</td>
<td>44</td>
<td>3</td>
</tr>
<tr>
<td>J.A.</td>
<td>F</td>
<td>2</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>1</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>L.W.</td>
<td>F</td>
<td>0</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>0</td>
<td>44</td>
<td>3</td>
</tr>
<tr>
<td>L.F.</td>
<td>F</td>
<td>1</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>50</td>
<td>52</td>
<td>7</td>
</tr>
<tr>
<td>J.T.</td>
<td>F</td>
<td>4</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>80</td>
<td>47</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 3. The average scores for number of color terms, number of unconventional color terms, and interest in clothing for some groups including those divided by gender, clothing scores, and interaction with catalogs.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Average #</th>
<th>Avg. # Unconventional</th>
<th>Clothing Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men (n=9)</td>
<td>45.4</td>
<td>3.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Women (n=14)</td>
<td>47.1</td>
<td>5.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Buy 0% clothing from catalogs (n=12)</td>
<td>42.4</td>
<td>2.9</td>
<td>0.8</td>
</tr>
<tr>
<td>&gt;0-&lt;20% clothing from catalogs (n=7)</td>
<td>46.3</td>
<td>3.4</td>
<td>3.2</td>
</tr>
<tr>
<td>≥20% clothing from catalogs (n=4)</td>
<td>59.0</td>
<td>11.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Do not browse Clothing Catalogs (n=3)</td>
<td>33.7</td>
<td>0.7</td>
<td>0</td>
</tr>
<tr>
<td>Do browse Clothing Catalogs (n=20)</td>
<td>48.4</td>
<td>5.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Clothing Score -5 to 2 (n=15)</td>
<td>44.4</td>
<td>3.6</td>
<td>NA</td>
</tr>
<tr>
<td>Clothing Score 3 to 5 (n=8)</td>
<td>49.4</td>
<td>5.5</td>
<td>NA</td>
</tr>
</tbody>
</table>

The results of the gender correlation were not exactly as expected. First, men had higher clothing interest scores than women on average (see Table 3). This seems very strange in light of data like Singer *et al.*’s, who found that clothing terms are much more salient for women than for men (Singer *et al.* 1977), and our own folk wisdom that says that women care more about clothes. The only explanation that I can offer is that there is a stigma to caring about clothes in an intellectual environment like Swarthmore, and this stigma is much more pervasive for women than for men. Often times in our culture, we associate caring about clothes with a frivolousness that we also associate with hyperfemininity. Women who want to present themselves as intellectual and worthy of being taken seriously then, often want to separate themselves from this image, even if they do care about clothes. The only two people who scored themselves as intellectual and worthy of being taken seriously then, often want to separate themselves from this image, even if they do care about clothes. The only two people who scored themselves as having a negative interest in clothing were women. I do think, therefore, that many of the scores
women gave themselves were exaggeratedly low whereas the men’s scores were not. Indeed, the men’s scores might have even been exaggeratedly high because there seems to be a double standard for men in intellectual environments; academic men do not have a large reputation for being well-dressed so it might be prestigious to be a man and care about one’s clothes. Furthermore, it might be considered more politically correct and liberal minded for men to care about clothes and embrace their ‘feminine side.’

More importantly, the men, when scoring themselves, were probably comparing themselves to other men whereas the women were comparing themselves to other women. Therefore, if I had a representative sample of men and women, the scores for men and women should be about the same. Indeed, the difference in the scores was only 0.3 on a 10 point scale. However, if the women at Swarthmore perceive there to be very fashionable women in the world, then if I had an average sample of Swarthmore women and men in my study, the men’s clothing scores would come out higher than those of the women. Therefore, I probably should not have relied on self-reporting to test clothing interest or should have given subjects a specific reference point on which to base their scores. Again, however, the difference between the clothing scores for the men and women was only 0.3 on a 10 point scale anyway, so it might just be that the difference is not important. Furthermore, I should note that of the people in the high clothing interest group (scores of 3-5), five were women and three were men. However, for now, I will set this finding aside.

12 This is all personal speculation of course, but observations of my subjects support my views. One man gave himself a score of 5, but speaking in a admittedly subjective manner, I would never have guessed that he cared that much about his clothes. A woman who gave herself a 2, however, seemed that she spent more time on her wardrobe than the man with a 5.
Second, there did not seem to be an important difference in the overall size of men’s and women’s color lexicons. This is not necessarily a contradictory finding to that of the Study I, since Study I scored for specificity of usage rather than size of the lexicon. However, although the overall difference in color lexicon size was not as striking as expected, what did follow my expectations for the gender correlation was the average number of unconventional color terms. Women had approximately 42% more unconventional color terms in their color lexicons. This seems to indicate that women are indeed leading the change in progress, even if they do not have substantially larger color lexicons overall than men. They are using the newest terms the most, and presumably if the change in progress continues, these new terms will enter the general vocabulary and also into men’s lexicons. Furthermore, the fact that women have larger unconventional lexicons, though not larger overall lexicons, could account for the public’s general impression that women have larger color lexicons in general—if women are using terms that some women and most men are not familiar with, then it might be assumed that these women have larger lexicons in general.

The remaining results of the study were exactly in line with expectations and supported Study I. Those who browsed clothing catalogs had much larger overall color lexicons and unconventional lexicons, as compared to those who did not browse clothing catalogs (see Table 3). This finding indicates that browsing catalogs might increase one’s overall color lexicon as well as unconventional color lexicon; alternatively, those who have larger color lexicons to begin with are drawn to catalogs. I will address the issue of which is more likely in more detail later. It is as unconventional color lexicon; alternatively, those who have larger color lexicons to begin with are drawn to catalogs. I will address the issue of which is more likely in more detail later. It is interesting to note, however, that since all subjects browse catalogs of some sort, the ‘browse
catalog' correlation is for clothing catalogs only. This is very telling, since all the subjects in the
‘do not browse clothing catalogs’ category DO browse other catalogs. This seems to signify that
it is not necessarily catalogs that are causing the difference in color lexicons but clothing catalogs,
and, by extension, clothing.

Those who purchased the most clothing from catalogs (over 20%) had much higher scores
(27% higher for overall scores and 232% higher for unconventional scores) compared to those
who purchased only >0 to 20% of their clothing in the past year from catalogs. In turn, those
who purchased >0 to 20% of their clothing from catalogs had higher scores (9.2 % higher overall
and 17% higher for unconventional terms) than those who did not purchase any clothing from
catalogs at all. The fact that the unconventional scores were so much higher for the groups that
purchased clothes from catalogs indicates that there is something interesting about
unconventional terms and catalogs. Indeed, those who purchased the most from catalogs had the
largest color lexicons and largest number of unconventional terms of all other groups (see Table
3). Unconventional terms could be originated by advertisers and the clothing industry--this could
explain why those who buy the most from catalogs, and thus have the most interaction with
these terms, have the largest unconventional color lexicons. Also, as discussed in Study I, these
new terms might only be integrated into the vocabulary after using them repeatedly, which is
something one must do when purchasing from catalogs.

Also, the clothing scores for the ‘purchasing’ correlation were very interesting. As
expected, those who did not purchase any clothes from catalogs had the lowest clothing interest
Also, the clothing scores for the ‘purchasing’ correlation were very interesting. As
expected, those who did not purchase any clothes from catalogs had the lowest clothing interest
scores on average. But, as in Study I, those that purchased the most from catalogs had lower
clothing interest scores than those who purchased less. Again, as discussed earlier, this may be because some of the ‘high purchasers’ shop in catalogs because they dislike shopping in retail stores. But, although these high purchasers had lower clothing scores, they still had larger lexicons by far. This seems to indicate that it is something about catalogs in particular, rather than just an interest in clothing, that is driving the color lexicon expansion in American English.

However, those who had the highest clothing interest scores did have larger overall and unconventional lexicons than their less interested counterparts. This indicates that just an interest in clothing may lead one to have larger color lexicons, but it could also be that those interested in clothing are generally more inclined to browse and purchase from clothing catalogs (see Table 3). Nevertheless, for several reasons, I am inclined to think that interaction with catalogs affects the lexicons of individuals more than an interest in clothing.¹³ First of all, the difference between the two clothing interest groups was not that great (higher interest group had 11% larger overall lexicons and 53% larger unconventional lexicons) and was certainly not as great as the difference between the “non-purchasers” and the “≥20 % purchasers” (the high purchasers group had 39% larger overall lexicons and 290% larger unconventional lexicons). Furthermore, the individuals who bought the most from catalogs, the “≥20 % purchasers,” had the largest lexicons by far. One might expect that if catalogs are merely reflecting society, that new terms originate with people, perhaps people interested in clothes. That would mean that those with the highest scores would be those interested the most in clothes, since only some of the people interested in clothes would be those interested the most in clothes, since only some of the people interested in clothes would

¹³ This is different from saying that catalogs play a larger role in the expansion of the color lexicon since there may be more people who have a large interest in clothing than those who have a large interest in catalogs. Catalogs might affect their interested individuals more than clothing affects its interested individuals, but, overall, clothing might have a larger overall effect.
be drawn to catalogs, making the lexicons for those who interact with catalogs smaller than for those who are interested in clothes. Since this is not the case, it is more likely that catalogs are having some direct effect on the color lexicons of individuals. The direct effect of catalogs on lexicons is also supported by the fact that the high purchasers had lower clothing scores than "the >0% to <20% purchasers," indicating that clothing interest was somewhat independent from interest in catalogs.

Furthermore, the clothing score for ≥20% purchasers was composed from an average of four women. Two had high interest in clothing (scores of 4 and 5) while the others had low interest (scores of 0 and 1). This could be confounding the average since this group seems to be composed of clothes lovers and those indifferent to clothes. However, it also supports that an interest in clothing is somewhat independent of interest in catalogs: some shop catalogs because they hate shopping in malls and some shop catalogs because they love clothes and love anything to do with clothes, but both groups still have larger lexicons. Indeed, the two highest scorers for both overall lexicon and unconventional lexicon had scores of 0 and 5, respectively.

Another argument for catalog generation of new terms, as opposed to generation among the general populace, is that the lexicons of catalogs have much higher percentages of unconventional terms than the lexicons of people do, except for those people who purchase over 20% (whose average unconventional lexicons make up 18% of their overall lexicons). This could indicate that catalogs generate these terms but that only a small percentage come to be in use by the general public, and that of course, more rub off on the people that interact with catalogs more. Furthermore, it is unlikely that so many unconventional terms could be entering the lexicon
so quickly and spreading so rapidly if they are originating with individuals. How could someone in New York City make up a term and then someone in Alabama learn and use it in a relatively short period of time without some sort of mass media distribution? It is more likely that advertisers are coming up with these terms and then distributing them. This may partly be why secondary colors entered the lexicon at a slower rate before the mid-19th century. Not only were aniline dyes invented around then and therefore there was a practical need for more terms, but there was also a way to distribute these new terms quickly, since mail-order retail first came in significant use around the same time period (Emmet and Jeuck 1950)).

Of course, this is all speculation in terms of the cause being completely catalogs or completely clothing. In reality, both are probably playing a part and thus overlapping somewhat. Furthermore, in no way are clothing catalogs separate from clothing. Even if catalogs seem to be more significantly correlated to the size of the color lexicon, the driving force behind clothing catalogs is, of course, clothing. What catalogs seem to be doing is allowing people who have not previously enjoyed shopping the opportunity to spend time thinking about clothes in an atmosphere that they find more comfortable. In fact, we might think of catalogs as the next technological innovation in clothing, analogous to the importation of cloth from Italy in 1500 or the invention of aniline dyes in 1856. Thus, the influence of catalogs is simply a continuation of the historical importance of clothing relative to the evolution of the English color lexicon.

Finally, the ≥20% catalog purchasers were all women. Could it be that their extraordinarily high ‘unconventional’ numbers are skewing the results for women? If we take the values for these four women out of the average for women’s unconventional color lexicon size,
then the average size is 2.6 terms; that is 1.0 less term than the men. A similar phenomenon has been found to occur in other seemingly paradoxical sociolinguistic findings. In these findings, women who used the most new terms and led changes in progress were also very unconventional in their speech (although in general women speak conventionally), but these few women had such high numbers of new term usage, that they upped the averages for women in general (Strassel, personal communication). This is a very interesting finding, since it seems to say that gender is not very important in the way that we expected. It is not that all women in general have larger lexicons but that a few women have an extreme interest in clothes and/or catalogs, and they are defining the gender as a whole. Or, in other words, the individuals most interested in clothing and/or catalogs are women.

5.0 Study III: Gender Biased Marketing in Catalogs

My third study draws largely upon Jane Frank's study of catalogs (Frank 1990). Frank found that women's catalogs present apparel in more color choices than men's catalogs. She also found that more terms were used overall to describe women's clothing, although especially in the red, white, and purple color groups (Frank 1990, 122). Furthermore, she states that "advertising copy merely reflects a cultural bias which already exists: 'women's colors' are complex, multi-varied, more abstract, and expressive (raspberry sorbet, daffodil yellow, blush) while 'men's colors' are simple, straightforward, conventional, real-world (royal blue, gold, grey)" (123). While I agree with this, I completely reverse her underlying assumptions. Frank assumed that our society was reflected by catalogs and so used her catalog data to draw on truths about society. However, in my thorough analysis of thirteen catalogs and more casual study of fifty plus others,
I have read literally hundreds of color terms that I have never heard anyone use in my life (petrol, venus, peri, pacifica, acid, and pebble are just a few examples). How could catalogs be only reflecting society when no one in society uses many of the words? Moreover, catalogs are trying to sell—they want to be fresh and present an image of how we want to be rather than how we actually are. Therefore, I undertook to study if it was something about how catalogs market to men and women differently or what sells to men versus women that might be giving the edge to women in terms of color lexicon size. Other researchers such as Greene and Gynther have noticed differences in men’s and women’s catalogs: “During our search for color names used in clothing, etc., we noticed that men’s clothing was more often labelled as being red, blue, etc., while women’s clothing typically was described using elaborate color names” (1995, 31). Therefore, I also wanted to study differences in kind of color terms used. Furthermore, women’s catalogs could have more color terms than men’s catalogs for practical reasons, if women’s clothing comes in more colors. Of course, if catalogs are driving the color lexicon and more women use catalogs anyway, then that is certainly a large part of the picture. And, certainly, catalogs probably do reflect something about our society as Frank assumed. However, it seems impossible that catalogs are merely mirrors reflecting ourselves. Therefore, I am inclined to assume that it is a two way process: advertisers borrow from reality but reflect back a distorted image that shows how we want to be rather than how we are.

5.1 Methodology

The catalogs I used were all mailed directly to myself or to friends and family. They were all full-color, glossy catalogs selling clothing and sometimes other merchandise such as home
furnishings. There were thirteen catalogs in total: seven targeted both women and men, four targeted only women, and two targeted only men. I analyzed the color terms used by listing all the color terms that appeared in the catalog and noting how many times each term was used. I excluded from my analysis any unisex clothing, children’s clothing, and items not made from cloth, such as shoes, leather goods, belts, etc., as well as items not considered to be clothing, such as handbags. I then calculated the number of times color terms were used to describe colors (usage); the number of terms used (terms); the number of times a term was repeated on average (rep); and the percentage of total usage that were basic color terms (i.e. red, black, white, etc.), basic terms plus an adjective (light blue, heathered grey, bright red), transparent secondary terms plus a basic term (snow white, salmon pink, sea green), opaque secondary terms plus a basic term (loden green, indigo blue, crimson red), transparent secondary terms (boysenberry, jade, peach), and opaque secondary terms (vermilion, khaki, ecru). I also counted the number of terms that were unconventional, which were determined to be unconventional by the same methods as in Study II. I then calculated the percentage of terms used that were unconventional for each catalog.

However, two difficulties in the methodology must be considered when weighing the data. The first is that the size of the catalog and thus the total number of products and their colors (usage) will affect the number of repetitions for each color term. If a catalog is small or has a small men’s section that only sells a total of 20 or so products, color terms have less chance of being repeated than in a larger catalog. Therefore, it will look as though that catalog has a lower number men’s section that only sells a total of 20 or so products, color terms have less chance of being repeated than in a larger catalog. Therefore, it will look as though that catalog has a lower number of repeats than it might have if it was larger. Likewise, very large catalogs will have more chance
of repeating terms and therefore their repetition figures might be inflated. The second problem is that I did not have any figures on success of catalogs or which products sold were the most successful. This might have been helpful in gauging what kind of color terms are most persuasive. However, almost all the catalogs used have been in existence for quite some time and so probably have successful sales records or they would not still be in business.

5.2 Results and Discussion

Table 4. Data from analysis of types of color terms used, number of times terms repeated on average, and percentage unconventional terms for thirteen catalogs.

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Basic</th>
<th>AdjB</th>
<th>T-elab</th>
<th>O-Elab</th>
<th>TrSec</th>
<th>OSec</th>
<th>Total</th>
<th>Terms</th>
<th>reps</th>
<th>%unco</th>
<th>%unco</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCrew</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M Clothing</td>
<td>31%</td>
<td>3%</td>
<td>2.5%</td>
<td>0%</td>
<td>53%</td>
<td>10%</td>
<td>471</td>
<td>70</td>
<td>6.7</td>
<td>16</td>
<td>22%</td>
</tr>
<tr>
<td>W Clothing</td>
<td>37%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>56%</td>
<td>7%</td>
<td>393</td>
<td>118</td>
<td>3.3</td>
<td>60</td>
<td>51%</td>
</tr>
<tr>
<td>Anthropologie</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>W Clothing</td>
<td>34%</td>
<td>6%</td>
<td>8%</td>
<td>0%</td>
<td>48%</td>
<td>5%</td>
<td>120</td>
<td>58</td>
<td>2.1</td>
<td>16</td>
<td>28%</td>
</tr>
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<td>BrooksBrothers</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M Clothing</td>
<td>39%</td>
<td>17%</td>
<td>0%</td>
<td>0%</td>
<td>43%</td>
<td>11%</td>
<td>183</td>
<td>50</td>
<td>3.7</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td>W Clothing</td>
<td>39%</td>
<td>11%</td>
<td>0%</td>
<td>0%</td>
<td>47%</td>
<td>4%</td>
<td>101</td>
<td>31</td>
<td>3.3</td>
<td>8</td>
<td>26%</td>
</tr>
<tr>
<td>Spiegel (W)</td>
<td>50%</td>
<td>9%</td>
<td>3%</td>
<td>2%</td>
<td>29%</td>
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</tr>
<tr>
<td>Orvis (M)</td>
<td>22%</td>
<td>1%</td>
<td>3%</td>
<td>1%</td>
<td>56%</td>
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<td>152</td>
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<td>18%</td>
</tr>
<tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M Clothing</td>
<td>25%</td>
<td>18%</td>
<td>9%</td>
<td>2%</td>
<td>36%</td>
<td>11%</td>
<td>114</td>
<td>38</td>
<td>3.0</td>
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<td>21%</td>
</tr>
<tr>
<td>W Clothing</td>
<td>27%</td>
<td>10%</td>
<td>8%</td>
<td>2%</td>
<td>53%</td>
<td>0%</td>
<td>118</td>
<td>42</td>
<td>2.8</td>
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</tr>
<tr>
<td>JCPenney Gift Book</td>
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<td></td>
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</tr>
<tr>
<td>W Clothing</td>
<td>27%</td>
<td>10%</td>
<td>8%</td>
<td>2%</td>
<td>53%</td>
<td>0%</td>
<td>118</td>
<td>42</td>
<td>2.8</td>
<td>13</td>
<td>31%</td>
</tr>
<tr>
<td>JCPenney Gift Book</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M Clothing</td>
<td>26%</td>
<td>2%</td>
<td>4%</td>
<td>0%</td>
<td>48%</td>
<td>20%</td>
<td>231</td>
<td>71</td>
<td>3.3</td>
<td>22</td>
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<td>.5%</td>
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<td>11%</td>
<td>360</td>
<td>78</td>
<td>4.6</td>
<td>14</td>
<td>18%</td>
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47
Sundance
M Clothing 43% 9% 0% 0% 43% 4% 23 17 1.4 2 12%
W Clothing 21% 15% 11% 3% 40% 10% 62 45 1.4 11 24%

Jill (W) 21% 7% 2% 1.5% 60% 9% 324 92 3.5 51 55%
Blair (M) 33% 2% 1% 1% 51% 13% 384 65 5.9 18 27%

Territory Ahead
M Clothing 20% 3% 6% 0% 66% 5% 139 61 2.3 23 38%
W Clothing 36% 8% 0% 0% 40% 16% 50 29 1.7 8 28%

Esprit (W) 26% 8% 0% 3% 36% 27% 212 68 3.1 44 65%

Early Winters
M clothing 15% 3% 3% 0% 62% 18% 34 28 1.2 10 36%
W clothing 19% 3% 3% 0% 52% 23% 31 25 1.2 16 64%

Group
Men 28% 6% 3% 0% 51% 12% 3.4 25%
Women 32% 8% 3% 1% 45% 11% 2.7 38%

The terms used in both men’s and women’s catalogs are overwhelmingly “transparent secondary” terms. That is, they are non-basic terms whose metonymic origins are clear. This makes a lot of sense. As discussed above, advertisers use color words as a way of selling their product, and if the color term creates a pleasant association for us, then the catalogs have a better chance of selling more clothes. Furthermore, certain catalogs use certain kinds of associations. So, for example, a catalog selling outdoorsy products derives its secondary terms from more natural sources. For people who like the outdoors and therefore buy outdoor gear, pine may call to mind sources. For people who like the outdoors and therefore buy outdoor gear, pine may call to mind very pleasant associations and therefore attract them more to a product labeled as pine colored. Teenage catalogs trying to be edgy, on the other hand, use names like acid or flare, probably in
the hopes that their ‘cool’ color terms will appeal to their young consumers. No advertisers use
terms like puke green or baby shit brown, although I have heard such terms used in real life and
they appeared in some people’s lists in Study II. These terms would naturally call to mind not so
pleasant images, even if the term was very accurately descriptive.

Opaque secondary terms make up only a small percentage of the lexicons of most
catalogs. Again, this makes sense as these terms do not usually call to mind any images that
advertisers can exploit. However, if an advertiser does use an opaque term, it is almost always a
very conventional term that consumers will be familiar with, such as indigo. If they used
unconventional terms that had opaque origins, it would be hard to know what the color of their
product. Only the Esprit catalog, out of the thirteen analyzed, used many unconventional opaque
terms--the terms often had real world entity counterparts, but often the colors of these entities
were not clear. For example, what is the color of petrol? Therefore, Esprit often found it
necessary to put a conventional synonym term in parentheses next to the unconventional term.
This way, Esprit got the best of both worlds. They were free to create ‘edgy’ associations by
labelling their clothes with cool entities/words that have no obvious color but also correctly
identifying colors by the terms in parentheses.

Basic terms, perhaps against expectations, also make up a large part of the color terms in
catalogs. Often times, when a product only comes in one or two colors, basic terms are used.
This makes sense if distinctiveness is the issue: there is no need to use a more elaborate term if
there is only one color option. Also, there are very few secondary terms for black. After all.
This makes sense if distinctiveness is the issue: there is no need to use a more elaborate term if
there is only one color option. Also, there are very few secondary terms for black. After all,
black is black, and there is not really any need to distinguish between different shades of black.
Furthermore, black is a very popular color in catalogs and many products come in black. Therefore, the basic term percentage is probably inflated somewhat by the high frequency of black in catalogs. Indeed, in J Crew, black made up 45% of the basic color terms used in the women’s part of the catalog. That means that if we took black out of the calculations for J Crew’s women’s products, basic terms would only account for 26% of total usage rather than 37%. This inflation of the basic color term percentage by black was an issue for both men and women, but more so for women because women’s clothes more often come in black than men’s clothes (black only made up 23% of basic term usage for men in J Crew). Furthermore, catalogs such as the Brooks Brothers often offer a lot of black because of the type of clothes they are selling, in this case business attire.

However, even when black was accounted for, women’s catalogs still usually used more basic terms or an equal number of basic terms as the men’s catalogs. This was a totally unexpected finding, given the results of Study I that showed that men use less specific terms than women, the findings of other researchers such as Steckler and Cooper, and the observations about catalogs by Greene and Gynther. Indeed, there was no big difference between men’s and women’s catalogs for any of the different kinds of color terms. Men’s and women’s catalogs both seem to use about equal proportions of basic terms, secondary transparent terms, secondary opaque terms, etc. Therefore, if catalogs are indeed affecting the lexicons, it seems unlikely that it is by this route.

However, there were other differences between men’s and women’s catalogs. First of all, is by this route.

However, there were other differences between men’s and women’s catalogs. First of all, catalogs aimed at women do not repeat color terms as often as those aimed at men do, as
indicated by the number of times a term is repeated on average for women's products compared to men's products. Men's catalogs often use charcoal to refer to different shades of gray, or tan to refer to different shades of light brown. Women's catalog's color terms tend to be much more specific and have less repetition. That is, usually if there are two different shades sold in the catalog, the catalog will be more consistent and call those shades by different names. So, even if a catalog has a lot of blue items, even though blue is a basic term, it usually refers to only one hue. Women's catalogs seem to limit their usage of basic color terms to the focal shades of those terms. Secondary color terms are then used for more peripheral shades. Men's catalogs often follow the same practice, but not to the same degree. I often notice light blue shades labelled as blue, as long as there are not other shades of blue sold of the same item. That means that women's catalogs contain more terms between their pages than catalogs aimed at men. This could also partly be because men's catalogs offer fewer colors, period, then women's catalogs. Frank did find that women's products are offered in more color options than men's products (1990, 123). Furthermore, the range of colors offered for men's clothes is smaller than the range for women. We don't often find men's clothes in pink and purple shades, for example. Not only could the color limitations on men's clothing limit the number of total terms in color catalogs, and the number of terms in the pink and purple categories, but it might explain why men are stereotypically thought to use fewer secondary shades in those basic color categories; for example, Lakoff assumed that most men would not have mauve in their active vocabularies. In any case, if exposure to catalogs does increase one's lexicon, then the discrepancy in the sheer number of terms used for men's versus women's catalogs might mean that women clothing
catalog browsers are exposed to even more color terms than men clothing catalog browsers.

Secondly, the color lexicons in women's catalogs are composed of a much higher percentage of unconventional terms compared to the men's catalogs (see Table 4). This finding does support Frank’s observation that women’s terms are less conventional (1990). Perhaps more terms are needed to describe the greater number of colors offered in women’s clothing, and therefore advertisers are forced to invent words that are both accurate and persuasive. Or, advertisers could be responding to a perception on their part that women are persuaded more easily by certain kinds of entities in their color terms. For example, say an advertiser wants an ethereal and attractive word to describe a very pale blue. They also want to be fresh and original. The advertiser might then be forced to invent a word that fits all these criteria since no conventional term exists. This advertiser might then come up with something like cloud. Or, advertisers might be responding to a perception on their part that women are persuaded more easily by unconventional terms because they sound more trendy or prestigious. Whichever reason, what this finding means is that women catalog users are exposed to more unconventional terms than men catalog users. Therefore, the difference in unconventional terms for men's and women's products might also help explain why women tend to have larger unconventional color lexicons. Also, if catalogs do act to some extent as a reflection of society, these results might indicate that women use more unconventional terms themselves when discussing clothing.

The trends discussed above involving the number of unconventional terms and repetition of terms for men’s and women’s products held for all the analyzed catalogs except for the JC.
In this catalog, the men’s product section had a higher percentage of unconventional terms than the women’s section, and also repeated terms less. What was different about this catalog, however, from all the others, was that it was a ‘giftbook.’ This meant that the catalog was intended as a guide to buying gifts for others, often for one’s spouse or loved one. The copy on one women’s cashmere twinset even reads, “pamper her (or reward yourself) with this incredibly comfortable, highly versatile combo.” Although “or reward yourself” was included in the description, the fact that it was in parentheses indicates that the primary purpose of the catalog was to buy gifts for the opposite sex. This could explain why the trends seemed to be flipped for this particular catalog. The results indicate, however, that there is something about the intended reader rather than just the difference in clothing, that is affecting the differences in color vocabulary for men’s and women’s catalogs. If it was just the fact that men’s clothing comes in more limited colors that is causing the difference, then we would expect the JCPenney Giftbook numbers to be in line with the rest of the catalogs. Since this is not the case, advertisers must be appealing to women with a greater variety of color terms as well as more unconventional color terms.

The JCPenney results also indicate that retailers have an awareness about the difference in color terms used in their catalogs for men versus women. They seem to be using different terms depending on the target audience. In turn, if awareness on the part of the advertisers is evident, then this also supports the idea that the catalog industry is generating these unconventional

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14Another exception occurred for the Territory Ahead catalog, in that the men’s section had a higher percentage of unconventional terms than the women’s section. However, in this catalog the women’s section is much smaller than the men’s section so this result is probably due to a small pool of data for the women’s products.
terms. Furthermore, the percentage of unconventional terms used in catalogs is much higher than
the average number of unconventional terms in the normal lexicons of both women and men.
Women have on average an unconventional lexicon size of 5.1 (see 4.2)—that is 11% of the total
lexicon size on average. In women’s catalogs, however, 38% of the terms are unconventional on
average. Therefore, catalogs use more new terms than do average people. Again, this is an
indication that the catalogs are inventing these new terms and then distributing them to the
public, as it is those people who have the most interaction with catalogs that have the most
unconventional terms in their lexicons.

Finally, I have noticed for those individuals who purchased the most from catalogs that
their lexicons could often be matched to the catalogs they said they browsed and purchased from
the most. For example, T.M. in Study II had eighteen unconventional terms in her lexicon. All
eighteen can be found in catalogs. What was very interesting was quite a few of these terms were
unique to T.M. in my study. This indicates that T.M. is probably getting these terms from
catalogs rather than from her peers. Examples of some of these terms are cadet blue, opal, thistle,
shell, cloud, and pool. A more formal study would have to be done to see if this is a general trend,
but the case of T.M. indicates that catalogs do influence some individuals to a high degree.

However, regardless of the direct influence of catalogs upon our color lexicons, the results
of Study III confirm Frank’s findings that catalogs do use color terms differently for men’s and
women’s products, or more accurately, depending on the target audience. It is probable that this
difference is affecting the lexicons of women catalog browsers in America, but even if it is not, at
women’s products, or more accurately, depending on the target audience. It is probable that this
difference is affecting the lexicons of women catalog browsers in America, but even if it is not, at
the very least this difference is propagating the stereotype that that is how women talk. Thus,
catalogs are ensuring the stereotype's continuing existence and, perhaps, reality.

6.0 Conclusions and More Questions

6.1 Is Clothing Behind the American Color Lexicon Expansion?

Most researchers of the gender difference in color terminology have at least noted in passing that a greater interest in clothing has something to do with the larger color lexicons that women normally possess as compared to men, or the patterns in color knowledge that we observe. Steckler and Cooper noted that, “color terms appear to be salient in conversations involving cosmetics, clothes and similar goods that accentuate the female sex role, possibly leading to their development of an enriched color lexicon” (Steckler and Cooper 1980, 380).

Furthermore, an interest in clothing was correlated with larger lexicons in Study II. Although this correlation was seemingly not as important as the catalog correlation, we can probably view clothing catalogs as an extension of clothing. Therefore, the strong correlation for clothing catalogs and the size of color lexicons also reflects on the importance of clothing on the expansion of the color lexicon. This allows us to see the influence of catalogs as an extension of the long history clothing/cloth and the color lexicon have had together.

Moreover, it is not just catalogs in general that seem to be expanding color lexicons but clothing catalogs in particular. This indicates that other industries probably do not play a key role in the expansion of the American color lexicon. While Study I indicates that interests in art and interior design can influence the color lexicon, these interests did not have nearly as strong correlations as a high interaction with catalogs. Furthermore, personal observations indicate that and interior design can influence the color lexicon, these interests did not have nearly as strong correlations as a high interaction with catalogs. Furthermore, personal observations indicate that other industries do not produce as many color terms that become part of our active color lexicons...
as the clothing industry does. A preliminary study of interior design catalogs showed many more basic color terms and fewer unconventional terms used. Even industries like the cosmetics industry that are famous for their color names (and thus seem like perfect candidates when searching for causes for color lexicon expansion) do not seem to generate as many usable color terms. From self-examination of my own color lexicon, I cannot say that I possess any of the color terms often used in the cosmetics industry. That industry tends to shift its shades and its names radically with every fad and every season (Weintraub, *Allure Magazine*, 1999). These terms then often fail to ‘catch-on’. Even with those that do, such as vamp did several years ago (a very dark red Revlon shade of nail polish), the term is usually restricted to describing cosmetics shades. I have never personally heard vamp applied to anything else. Part of the reason is that many of the terms have no real world entities that represent that color such as raspberry for raspberry—therefore, these terms do not have real meaning for us or reference in the real world. These terms are thus isolated to their origins. Therefore, many of the color terms used by the cosmetics industry are not applicable to other areas. Clothing terms, however, do seem to have greater applicability, perhaps because clothing tends to be described by more transparent secondary terms. Also, clothing terms might be more widely applicable because cloth is so prevalent in our daily lives and it doesn’t seem too strange to transfer a term used for clothing to a term used for other fabric (such as in furnishings). We have seen already that some individuals associated fabric terms with color terms in Study II. Furthermore, once the term becomes more common, it can then usually be applied to anything and is no longer restricted to clothing. This is associated fabric terms with color terms in Study II. Furthermore, once the term becomes more common, it can then usually be applied to anything and is no longer restricted to clothing. This is what happened to purple: originally it described the color of the clothing of royalty. After it
became more common it was probably then only used to describe the color of cloth but then its applicability grew until it became a basic term.

6.2 Are Women Leading the Change?

Both Studies I and II as well as many studies done by other researchers have found differences in the lexicons of males and females. However, the differences found in my study were not that great and are seemingly explained by the extraordinarily high scores of a small class of women who have high interaction with catalogs. These women seem to be perpetuating the perception that women have larger color lexicons in general, when really it is that those who interact with catalogs the most and thus use the most unconventional terms are women. Thus, women are leading the change, but not all women. Interaction with catalogs is a more important predictor of large overall and unconventional color lexicons.

Also, these women may have such large lexicons because of the way that catalogs market to women as opposed to men. These women are presumably shopping for women’s clothing and thus exposing themselves to an even greater number of color terms than if catalogs were marketed in the same manner to both men and women. A very interesting question to ask is whether cultures in which men care as much about clothes as women still have gender-biased color lexicon usage. If the answer is yes, then the reason some women are attracted to catalogs might have to do with something about the catalog itself rather than just the clothing.
6.3 Catalogs and the Color Lexicon

With the increasing use of hardcopy and cyber catalogs\(^ {15} \) to sell clothing, it makes sense that these companies need to sell their product using descriptive and attractive copy as well as photos, in the absence of the actual product. Regular retail stores do not need to use as many specific, persuasive color terms as their products speak for themselves and there is no need to identify colors for the customer as the customer can simply choose the color she wants and then buy it. Therefore, the color terms in catalogs do obviously play some role in the persuasion of consumers as well as a role of practical identification. We can also see catalogs as a technical innovation in the clothing industry, analogous to aniline dyes in the 19th century or imported cloth from Italy in the 15th in that these innovations spurred the growth of the color lexicon.

Other features of catalogs, such as the selling of a single product in multiple hues, also encourages the use of more specific and varied color terminology.

So, it makes sense that catalogs could be causing the expansion of the American English color lexicon, at least in part. Together with the results of Studies I and II, there exists a strong argument for catalogs, and by extension the clothing industry, causing the expansion of the color lexicon in American English. If the trend continues, those secondary color terms that are used most often might become basic color terms, while many new secondary color terms will continue to be generated. Eventually, another technological innovation will be invented that initiates more growth. Our color lexicons will probably continue to grow as the complexity of our material culture does, unless some other pressure, linguistic or otherwise, develops to stop it.

\(^ {15} \)Although I have not explored the effect of 'on-line' catalogs on color lexicons in this study, in light of this study and the rapid growth of internet industries, I am sure that research into this area of catalogs would yield some very interesting results, especially if the internet continues to pervade our lives.
References


R1       R3
G6       B5
B4       B6
G2       G5
R6       R2
B3       B2
G1       G4
R5       R4
G3       B1

How did the subject organize the colors into groups:
Study I
Subject Questionnaire

Questionnaire:
Please answer the following questions as honestly as possible. There are no right answers and all answers are confidential. Answers need not be long.

1) How much education has each of your parents had? (e.g. high school diploma, some college, graduate, etc.)

2) What are your parents' occupations?

3) Are you on financial aid? If so, what percentage of your tuition? (optional, but it would really help me out!)

4) Please circle one: male/female
Which gender do you associate yourself most with?

5) Please rate your interest in the following categories on a scale from one to ten (1=I hate everything about it; 5=I am indifferent; 10=this is my passion!):
Fashion:
Interior Design:
Art History:
Studio Arts involving color (e.g. painting, multimedia, etc.):

6) Would you consider yourself fashionable?
7) Would you consider yourself artistically skilled? What kind of art?

8) Have you ever taken an art history class or studio art class? If yes please specify which and how many years you’ve taken.

9) How many companies do you receive clothing or interior design (Pottery Barn, IKEA, etc.) catalogs from on a regular basis?

10) Do you read/browse these catalogs? How much?

11) Do you purchase items from any of these catalogs?

Thank you very much for your time! If you are interested in the results of this study, please contact me in late April.
## Study I Data

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<th>Interior m=10</th>
<th>Art Hist m=10</th>
<th>Studio Art m=10</th>
<th># of Art Courses</th>
<th>Catalogs</th>
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$m=$ the maximum number of points available

Xs under the fashion category indicate subject said they considered to be fashionable to at least some degree

Xs under the studio art category indicate that subjects said that they considered themselves skilled in the visual arts

One X in the # of catalogs category indicates that the subject browses these catalogs

Two Xs in the # of catalogs category indicate that the subject buys items from these catalogs

Xs under the studio art category indicate that subjects said that they considered themselves skilled in the visual arts

One X in the # of catalogs category indicates that the subject browses these catalogs

Two Xs in the # of catalogs category indicates that the subject buys items from these catalogs

# of groups indicates the number of color groups the subject divided the color cards into

SES=socioeconomic status
Study II Questionnaire

Name: ____________________________ Age: ______

Sex: ____________________________ Sexual Orientation (optional): ______

Please rate your interest in clothing on a scale from -5 to 5:
-5 = I hate having to think about clothes
0 = I am indifferent to clothing
5 = I love clothes!!

Do you ever browse catalogs (of any sort)?

Do you ever purchase items from catalogs (of any sort)?

If yes, how often?

Do you ever browse clothing catalogs?
   Which?

Do you ever purchase items from clothing catalogs?
   Which?

If yes, what percentage (approx.) of clothing purchased in the past year has been from catalogs?