

# Effect of Demographics in The Perception of Visual Semiotics in Cartoon Character Design for Advertising in Nairobi

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## Abstract

*The advertising world is rich in visual stimuli. It is necessary that images use semiotics that communicate rapidly and concisely. This research seeks to uncover if demographics, represented by age, gender and level of education, can be effectively used to segment a target audience in a bid to measure their perception of semiotics in cartoon characters among residents of Nairobi. This information will assist designers encode appropriate semiotics in cartoon design. 151 adult respondents were sampled from clusters in Nairobi. Pre-tests were conducted by a panel of three experts. Idioms describing profession and personality were used to design questionnaires further pre-tested using Cronbach's Alpha. A Mann-Whitney U test was applied to data collected on a five-point Likert scale to assess statistical significance. The results established that there is no statistically significant difference in the scores of 18- to 29-year-olds, and those above 30 years of age; both males and females; with secondary versus tertiary level of education; concerning the perception of semiotics. The results do not support the Rhetorical Theory. Personal cultural environmental experiences are numerous. A high degree of possible combinations of formative demographic variables in individuals may have influenced the respondent's personal perception abilities, creating assorted individual visual directories that overwhelmed those ingrained by their demographics. Approaches that consider factors other than, but not limited to the target audience's media exposure, attitudes, behaviour, and life stage may have to be explored. Additionally, if keeping to demographics as a means of segmentation, disparate demographics, other than those investigated in this study, should be explored. It would be statistically beneficial to establish the contribution of all the independent variables to dependent variables in one equation.*

**Keywords:** Cartoon character design, Demographics, Rhetorical theory, Semiotics.

## INTRODUCTION

There is an increase in the use of animated characters in advertisements in Nairobi. Cartoon character-based promotions have been used in Kenyan advertisements, such as those authored by Fatboy Animations for Jamii Telcom (Eero, 2000). Internationally, animated characters are common in branding and advertising fast moving consumer goods, for example, California Raisins and Joe Camel (Heiser, Sierra & Torres, 2008; Lawrence, 2003). Research in Western countries has shown the rhetorical capabilities that animated characters have. The fact that people respond to, and process, their visual information, as opposed to textual information, makes them an indispensable tool of communication (Patterson, 2010). It is also posited under the Rhetorical theory that the ability to process cartoon characters is influenced by demographics. However, it is not known whether

or not this is the case in Nairobi (Scott, 1994; Eero, 2000). This study sought to establish if demographic groupings, delineated on the basis of age, gender and level of education, can be used as a basis to segment target audiences when measuring perception of profile attribute characteristics of cartoons characters, such as accessories and body characteristics. This perception of semiotics in cartoons was measured among 18- to 70-year-old residents of Nairobi.

## THEORY

The Rhetorical Theory, in practise, is one party's effort to influence another and gain effect by designing and encoding communication materials appropriately. It is interpretive in nature. It is not a single prescriptive or descriptive proclamation suited to all rhetorical situations (Lucaites, Condit & Caudill, 1999).

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## Semiotics

Common visual stereotypes in signs and symbols are employed by artists to communicate following a semiotic tradition (Littlejohn & Foss, 2011). Using conventional cultural visual vocabulary and knowledge, character designers craft a message with the intention of communicating with an audience. Culturally aware viewers are able to deduce the sender's message (Scott, 1994; Eero, 2000), absorbing a specific pre-determined persona connotatively, and administering their personality traits unto a brand's message or product. Ferdinand de Saussure postulated that our comprehension and perception of reality is governed by the signs we use regularly within the social context in which they exist (Short, 2007). Charles Peirce posited that semiotics was a dogma of signs meaningful to a person, as a conveyer of a form of communication (Short, 2007). To this regard, Barthes (1964), elaborated that the rules governing the composition of dress, such as colour, size, cleanliness, condition and styling, were of consequence.

Costume, as deployed in character design semiotics, is gleaned from society. It is a fundamental part of a cartoon character's persona, and plays a central role in expressing their personality, identity and behavioural tendencies. In an article on military uniforms, Hertz (2006), explains that costumes offer observers visual clues that lead to expectations of the wearer's behaviour and social status. Hertz (2006), goes on to elucidate that costumes have the ability to communicate multi-layered messages that embody different meanings for different audiences simultaneously. Communities, regardless of what they are based on or what their beliefs are, commonly tend to follow specific dress codes, and as such, can still be costumed suitably (Guigar, 2004). Hertz (2006), states that in the case of departure from the norm, there is delayed recognition.

Character personality perception can be further defined by physical traits, such as weight, height, hair, and posture, among others. Guigar (2004), a seasoned cartoon character designer, posited that eyes portray a character's level of intelligence, with larger eyes appearing naïve. Guigar (2004), further advances that a soft rounded nose depicts a gentle, casual personality, whereas a short nose suggests innocence. Guigar (2004), postulated that chiselled,

blunt chins and jaw lines suggest daring, attractive men, and rounded chins the converse of. Common male types with specific archetypal characteristics deployed include; the hero, the screwball type, the goofy character, among others (Guigar, 2004; Blair, 1949; Williams, 2009). A male character with a small head, broad chest and a "T" shaped silhouette will evoke a pugnacious, but unintelligent strong man. Tsai (2007), asserts that poise contributes to further defining the character silhouette.

## Demographics

The transfer of meaning is a two-way process that is, by its very nature, conditioned by the background of the receiver (Short, 2007). Dimensions of personal experience can be influenced by a multiplicity of variables, such as culture, background, education, ideas and emotions, making the combinations of interpretations potentially limitless (Crow, 2010; Jamani, 2011). As such, meaning is not fixed and is a tangible variable in communicative exchange (Crow, 2010). It is posited that demographic origins of a receiver influences their perception of visual semiotics. As touted by the theory of rhetoric, persons with similar cultural indoctrination are inclined towards analogous perception habits. This makes the study of demographics vital to the comprehension of visual communication via semiotics. Chamarro-Premuzic, Burke, Hsu and Swami (2010), explored the associations between research subject's personality, and their perception of distinct visual art genres. Chamarro-Premuzic et al. (2010), narrowed down the demographic variables to investigate to age, level of education and gender. The study found that demographics were correlated to perception of the semiotics as found in art. For purposes of the study at hand, the reader's demographic background was segregated by age, gender and level of education, informed by the preceding studies.

## Discrete relationship between the independent and dependent variables

Target viewers' cognitive abilities, as influenced by their demographic background, should be understood if the advertisements are to be designed so as to achieve saliency and appeal. As such, this research seeks to establish the discrete relationship between the independent and dependent variables, manifested

in whether or not the independent variables of age, gender and level of education have an impact on ones' perception of a cartoon character. This is grounded on the cartoon's semiotics, as exhibited by the dependent variables represented by accessories and body characteristics.

A two-sided alternative hypothesis - non-directional hypothesis - was selected to determine whether the independent variable has an effect on the dependent variable in either direction. As an outcome of the literature reviewed on semiotics and demographics, the following hypotheses were proffered:

$H_0$  Age is not a factor in deciphering the semiotics of a cartoon character.

$H_1$  Age is a factor in deciphering the semiotics of a cartoon character.

$H_0$  Gender is not a factor in deciphering the semiotics of a cartoon character.

$H_1$  Gender is a factor in deciphering the semiotics of a cartoon character.

$H_0$  Level of Education is not a factor in deciphering the semiotics of a cartoon character.

$H_1$  Level of Education is a factor in deciphering the semiotics of a cartoon character.

## RESEARCH METHODS

The research methods selected for the study sought to effectively establish if the demographics represented by age, gender and level of education can be used as an effective tool to segment a target audience and measure their perception of semiotics in cartoons among residents of Nairobi. They are quantitative in nature.

Two cartoon characters were selected as the stimuli (123RF, n.d.; Furuberg, n.d.). This was done to enhance validity of response and decrease the influence of respondent's personal views based on the use of a single cartoon image. The selected cartoon images were picked from the internet 'Google Images' and only copyright free images were used. The internet is a rich source of images that was favoured in order to promote external validity. Only non-local images were used to avoid introducing bias created by pre-

existing familiarity by respondents.

Pre-tests were conducted with a convenience panel of three graduate experts from different creative fields. They were tasked to generate as many descriptive idioms as possible for the two cartoons. They then selected the seven most accurate idioms which encompassed profession and personality type, and questionnaires were developed.

In the preliminary investigations of this quantitative research, a pilot study was conducted. The questionnaires were tested and refined after pre-tests on 38 respondents. Cronbach's Alpha was administered to test the internal consistency reliability. Previous studies concerning perception and comprehension of the visual metaphor, as found in images used in advertising, used a reliability coefficient alpha of 0.7 (Mulken, Rob & Forceville, 2010). As such, the Cronbach's Alpha Coefficient for this study, which had eight questions, was 0.725 and was acceptable.

A five-point Likert Scale was used to demonstrate the intensity of conviction of the informative qualities of the semiotics, where 1 stood for 'False', 2 for 'Not Quite True', 3 for 'Maybe', 4 for 'Almost Certain', and 5 for 'Definitely'. It was easily understood and completed, whilst being reliable. The Mann-Whitney U Test, which is a non-parametric test (Boone & Boone, 2012), was used to test for differences between two different groups. This is because non-normal distribution of data was expected, as well as the occurrence of a small sample size. A probability value ( $p$ ) that is not less than or equal to .05, was employed to assess the statistical significance (McLeod, 2019).

Primary data was collected through the distribution of questionnaires. Stratified convenience sampling was carried out in various sites within Nairobi. These sites were located within Dagoretti, Embakasi, Kasarani, Kibera, Makadara, Nairobi Central, Parklands/Westlands and Ziwani. There were 151 respondents; 83 were male and 68 females. Their ages ranged from 18 years to 70 years, of which 86 fell between 18 to 24 years, and 65 were above 30 years old. 22 of the respondents had secondary level education, and 129 tertiary level education. As Nairobi is a

capital city in which the adult populace mind-set is largely geared towards employment, it was expected that most participants identified would have post-secondary education, hence the great imbalance in the respondents' of level of education.

## RESULTS

### Inferential Statistics

A Mann-Whitney U test revealed no significant difference in the levels of perception of semiotics between 18- to 29-year-olds and those above 30 years of age. The results are presented in **Table 1**. The *p* values were not less than or equal to .05, so the results were not significant. There was no statistically significant difference in the scores of the 18- to 29-year-olds and the 30s and above, concerning the perception of semiotics.

A Mann-Whitney U test revealed no significant difference in the levels of perception of semiotics between males and females. The results are presented in **Table 2**. The *p* values were not less than or equal to .05, so the results were not significant. There was no statistically significant difference in the scores of males and females concerning the perception of semiotics.

A Mann-Whitney U test revealed no significant difference in the levels of perception of semiotics between the secondary and tertiary levels of education. The results are presented in **Table 3**. The *p* values

were not less than or equal to .05, so the results were not significant. There was no statistically significant difference in the scores between the secondary level of education and tertiary level of education concerning the perception of semiotics.

### Descriptive Statistics

Question four leaned heavily around the “maybe” response. This also held true for question five. This was the case with all three independent variables mentioned, where similar results were garnered for both the dependent variables (**Table 4**).

## DISCUSSION

### Descriptive Statistics

The median gives an indication of the area in which the majority of the responses lie for the independent variables of age, gender and level of education. Based upon the answers proffered for question four, which gravitated heavily around the ‘maybe’ response, it is evident that the respondents were unable to resolve how to decipher the carpenter’s level of intelligence. In semiotics employed in the west, wide rounded eyes with diminished pupils denote lack of intelligence (Guigar, 2004). This is probably not a culturally accepted visual norm among the Nairobi respondents, which may account for their inability to decode the semiotic. Similar reactions were also recorded for question number five. It appears that the respondents were not familiar with the standard American rugby team regalia. As such, they were unable to determine whether or not the cartoon character was a sportsman.

**TABLE 1:** Cartoons with semiotics and age, 18- to 29-year-olds and those above 30 years of age

| Question | Mann-Whitney U | Z value | <i>p</i> -value |
|----------|----------------|---------|-----------------|
| 1        | 2654.0         | -.67    | .505            |
| 2        | 2353.5         | -1.85   | .064            |
| 3        | 2531.5         | -1.08   | .281            |
| 4        | 2684.5         | -.43    | .667            |
| 5        | 2644.0         | -.59    | .558            |
| 6        | 2383.5         | -1.70   | .088            |
| 7        | 2664.5         | -.57    | .570            |
| 8        | 2376.0         | -1.63   | .104            |

Source: Field survey 2017

TABLE 2: Cartoons with semiotics and gender, males and females

| Question | Mann-Whitney U | Z value | p-value |
|----------|----------------|---------|---------|
| 1        | 2598.5         | -1.05   | .292    |
| 2        | 2372.0         | -1.88   | .060    |
| 3        | 2637.0         | -.75    | .451    |
| 4        | 2631.5         | -.74    | .461    |
| 5        | 2446.0         | -1.45   | .147    |
| 6        | 2715.5         | -.44    | .661    |
| 7        | 2775.0         | -.20    | .839    |
| 8        | 2582.0         | -.86    | .389    |

Source: Field survey 2017

TABLE 3: Cartoons with semiotics and level of education, secondary and tertiary levels of education

| Question | Mann-Whitney U | Z value | p-value |
|----------|----------------|---------|---------|
| 1        | 1193.5         | -1.50   | .134    |
| 2        | 1315.5         | -.61    | .542    |
| 3        | 1094.5         | -1.86   | .062    |
| 4        | 1180.5         | -1.30   | .193    |
| 5        | 1336.5         | -.45    | .654    |
| 6        | 1307.5         | -.65    | .517    |
| 7        | 1332.0         | -.53    | .595    |
| 8        | 1287.5         | -.71    | .478    |

Source: Field survey 2017

TABLE 4: Descriptive statistics: Age, gender and level of education

| AGE     |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|
| Age     | Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   |
| 18 - 24 | N    | 86   | 86   | 86   | 86   | 86   | 86   | 86   |
| Median  | 5.00 | 4.50 | 5.00 | 3.50 | 3.00 | 5.00 | 5.00 | 5.00 |
| 30 +    | N    | 65   | 65   | 65   | 65   | 65   | 65   | 65   |
| Median  | 5.00 | 5.00 | 4.00 | 4.00 | 3.00 | 4.00 | 5.00 | 5.00 |
| Total   | N    | 151  | 151  | 151  | 151  | 151  | 151  | 151  |
| Median  | 5.00 | 5.00 | 5.00 | 4.00 | 3.00 | 5.00 | 5.00 | 5.00 |
| GENDER  |      |      |      |      |      |      |      |      |
| Gender  | Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   |
| Male    | N    | 83   | 83   | 83   | 83   | 83   | 83   | 83   |
| Median  | 5.00 | 5.00 | 5.00 | 3.00 | 3.00 | 5.00 | 5.00 | 5.00 |
| Female  | N    | 68   | 68   | 68   | 68   | 68   | 68   | 68   |
| Median  | 5.00 | 4.00 | 5.00 | 4.00 | 4.00 | 5.00 | 5.00 | 5.00 |

|                           |           |           |           |           |           |           |           |           |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Total</b>              | N         | 151       | 151       | 151       | 151       | 151       | 151       | 151       |
| <b>Median</b>             | 5.00      | 5.00      | 5.00      | 4.00      | 3.00      | 5.00      | 5.00      | 5.00      |
| <b>LEVEL OF EDUCATION</b> |           |           |           |           |           |           |           |           |
| <b>Level of Education</b> | <b>Q1</b> | <b>Q2</b> | <b>Q3</b> | <b>Q4</b> | <b>Q5</b> | <b>Q6</b> | <b>Q7</b> | <b>Q8</b> |
| <b>Secondary</b>          | N         | 22        | 22        | 22        | 22        | 22        | 22        | 22        |
| <b>Median</b>             | 5.00      | 5.00      | 4.00      | 3.00      | 3.50      | 5.00      | 5.00      | 5.00      |
| <b>Tertiary</b>           | N         | 129       | 129       | 129       | 129       | 129       | 129       | 129       |
| <b>Median</b>             | 5.00      | 5.00      | 5.00      | 4.00      | 3.00      | 5.00      | 5.00      | 5.00      |
| <b>Total</b>              | N         | 151       | 151       | 151       | 151       | 151       | 151       | 151       |
| <b>Median</b>             | 5.00      | 5.00      | 5.00      | 4.00      | 3.00      | 5.00      | 5.00      | 5.00      |

Source: Field survey 2017

In all three independent variables mentioned, similar results were garnered for both the dependent variables. As such, the independent variables were shown to have no bearing on perception of the dependent variables' attributes. It may be necessary to employ more nuanced methods of segmenting the respondents to decipher perception capabilities, beyond demographics. These could be based on other parameters, such as their level of exposure to media, personal interests and life stage.

**Inferential Statistics**

This study sought to uncover whether or not there was a relationship between a respondent's age, gender and level of education, and their perception of cartoon semiotics represented by accessories and body features. The null hypothesis for these cartoons stated that  $H_0$  Age is not a factor in deciphering the semiotics of a cartoon character;  $H_0$  Gender is not a factor in deciphering the semiotics of a cartoon character; and  $H_0$  Level of Education is not a factor in deciphering the semiotics of a cartoon character. The null hypotheses were all accepted, as the *p* values returned were all not less than or equal to .05, so the results were not significant. There is no statistically significant difference in the scores of 18- to 29-year-olds and those above 30 years of age; males and females; and secondary and tertiary levels of education, concerning the perception of semiotics. Age, gender and level of education were not contributing factors to the perception of semiotics.

Since statistically significant differences were not established between groups, there is no benefit in describing the direction of differences. As such, Mean Rank and Effect Size do not need to be ascertained.

The theoretical foundation of this study was the Rhetorical Theory. It was hypothesised that demographic background would influence a respondent's response to semiotics, with persons from a similar background proffering similar perceptions. The results go against what it postulates. The character designer's efforts to influence the target audience by designing and encoding communication audience specific materials using conventional cultural visual vocabulary, as was deemed appropriate, were unsuccessful (Littlejohn & Foss, 2011).

A variety of conditions may have prompted the acceptance of the null hypothesis. Short (2007), professes that an individual's interpretation of visual meaning is culturally instilled and conditioned by their background. However, personal cultural environmental experiences are numerous and can be diverse. There was a high degree of possible combinations of formative demographic variables available that can influence the respondent's personal perception abilities. These may have created assorted individual visual directories and reactions that superseded those offered by the selected demographics (Crow, 2010; Jamani, 2011). As such, meaning in the act of communicative exchange becomes relatively wide-ranging (Crow, 2010).

## CONCLUSION

At the beginning of this article, it is argued that there was a relationship between a respondent's age, gender and level of education, and their perception of cartoon semiotics represented by accessories and body features. The transfer of meaning is a two-way procedure influenced by the viewer's background (Short, 2007), whose experiences are shaped by a variety of variables as per the Rhetorical Theory. A designer should thus be able to use conventional signs and symbols to transmit a message to an audience. The findings presented revealed that this is not the case, in as far as using demographics to segment the target audience was concerned.

The advertising market is rich in visual environmental stimuli, and viewer's attention is increasingly diverted (Albakry & Daimin, 2014). It is necessary that images not merely attract the selected audience, but also communicate prescribed messages concisely (Coulter, 2005; Malmelin, 2010). To date there is no specific literature available that offers a guideline to local designers on semiotics to use to communicate to the local audience. This study hoped to offer a beginning to comprehending the local audience. While this study does not suggest a decisive riposte to the question of the precise semiotics to apply when communicating to the local audience, it does offer a start to understanding what is not applicable.

## RECOMMENDATIONS

This study set out to find out whether or not demographics could be used as an effective means of segmenting a target audience for purposes of selecting appropriate semiotics to communicate with them. As researched, the selected demographics did not prove effective in providing a basis by which the Nairobi adult populace could be segmented to pick out suitable semiotics for fitting communication. As an outcome of the results, there is no precise proposition to be made. However, it would be beneficial to pursue further research with certain bearings. This, in order to gather information that can be used to proffer suitable semiotic design recommendations.

Typical demographics, like age, gender and level of education, have traditionally been used as a parameter

to select semiotics when designing cartoon characters locally and in the west. However, they may be losing their efficacy as a utilitarian form of segmentation that informs character design in Nairobi. With the growth of a universal communication media, the world has become a global village. Nairobi, being a cosmopolitan city, has been influenced by international media. As such, the perception qualities of its citizenry may have been altered due to exposure to international media, to the extent that demographics are no longer effective as a means of segmentation. Other alternatives and approaches that consider other factors, such as, but not limited to, the target audience's media exposure, attitudes, behaviour, and life stage, may have to be explored.

Additionally, if keeping to demographics as a means of segmentation, disparate demographics other than those investigated in this study should be explored. Auxiliary variables may well prove to positively affect perception.

It would be statistically beneficial to establish the contribution of all the independent variables to dependent variables in one equation. This will assist in the rapid understanding of how shifts in the independent variable are capable of affecting the dependent variable with a single efficient effective equation.

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## APPENDICES

### Appendix 1

#### Cartoon 1:

- This man is a professional carpenter
- This man is hard working
- This man is easy to get along with
- This man is not very intelligent

#### Cartoon 2:

- This man plays on a rugby team
- This man is a College student
- This man is very confident
- This man has swag

Use the images to score from 1 (False) to 5 (Definitely), the degree to which each statement regarding the picture is true or false.

### Appendix 2



#### Cartoon 1

Source: 123RF n.d.



**Cartoon 2** - American college jock  
Source: Furuberg n.d.