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Examining the Effectiveness of Public Service Advertisement through Hormonal Marketing Approach

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Abstract

Public service advertisement concentrates on beliefs and attitudes of its target audiences. The aim to examine the effectiveness of public service advertisement through the hormonal marketing approach. This semi-experimental research which involves pre-test and post-test phases consists of two groups, that is, a test group and a control group. Some female students at the University of Mazandaran who were chosen by matched sampling formed the statistical population of this study and were divided into two groups of ten. These people were asked to watch a video with the theme of public service advertisements. Before and after watching the video, blood sample was taken from each person, and every individual was given a gift card and a choice to donate them to charities or keep them to themselves after watching the video. SPSS version 18 was used as the software for data analysis and hypothesis testing. The results revealed that public service advertisements affected the oxytocin hormone secretion, but this have not any impacts on donations made by the test subjects and public service advertisements didn't influence charitable donations. Changes to oxytocin hormone in response to the effect of public service advertisements was affected by individual differences which depended on personal attributes, location and characteristics.

Keywords: public service advertisements, oxytocin hormone secretion, donation.

1. Introduction

Used in non-profit organizations in order to achieve humanitarian goals, public service advertisement is the technique of advertising commercial goods for non-commercial purposes. In other words, public service advertisement is intended to inform or amuse its audiences and encourage them to perform certain behaviors. Generally, it seeks non-commercial purposes and is designed by the use of mass media (Atkin, 2001). Considering the emotional and sentimental characteristics of its audience, a public service advertisement enjoys two major advantages when aiming to motivate people: First, it can improve people's understanding of the subject by establishing an emotional relationship, and second, by interacting and communicating with individuals, it can last longer in their minds and be more persuasive. (Brown, 2009). Otherwise speaking, this type of advertising messages and psychological operations reduce the cortex inhibition in the audience by influencing different areas of their brains, particularly the amygdale and emotional centers such as pain and joy, as a result, they stimulate certain behaviors in the targeted audience. The effect of psychological operation messages not only isn't limited to the brain structure but it also affects the neurotransmitters and endocrine hormones (Sepehry, et al, 2012). Hormones are considered stimulants which represent a predictor of the

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consumers' behaviors and reactions towards decision-making and choice as they are secreted in the body. Oxytocin is one of the known hormones secreted by the brain. Oxytocin is an anon-peptide hormone that is produced in the paraventricular and supra optic nuclei of the hypothalamus. This peptide is found in most delivered neurons to brains especially at binding sites (Kesmati, et al, 2006). This hormone is the stimulant of social feelings. In other words, when someone's relationship with others is positive, oxytocin hormone strengthens positive social behavior and when the relationship is negative, this hormone strengthens negative feelings. Previous studies showed that oxytocin hormone has a positive effect on positive feelings. In one study, people who inhaled the oxytocin hormone, showed self-giving behavior. As a result, this hormone plays an important role in the creation of social and pro-social behavior among individuals (Hadadi nia, 2011). Public service advertisement is a potentially powerful tool which tries to focus on and emphasize public health and other social challenges that countries face. Regardless of whether the public service advertisements include childhood care, community voluntary services to address a problem, raising awareness toward global warming or promoting diagnosis of HIV through charitable donations, this type of advertising has the potential to reach a large group of audience and its main goal is to use massive and effective force of advertisements to analyze and solve problems of public and social needs (Leneon, 2011). Non-profit organizations use marketing tactics and public service advertisements to build the image of their organization, gain reputation in the community and receive people's helps. Implementing a pivotal program, this type of organizations encourages the willingness of donors by motivating them to make contributions in an effort to promote their own trade marks in the minds of people through advertisement. They also achieve their objectives by establishing a mutual relationship between themselves and the donors (Niekerk, 2007). Based on the above-mentioned, public service advertisements make some changes in knowledge, attitudes or behaviors of its audience and its effectiveness impact the brain, thus brain interactions cause secretion of oxytocin hormone. Oxytocin as a predictor of the behavior based on the positive or negative assessments of that, can cause a certain behavior. As a result, according to the mentioned issues, the importance of this issue and also considering the mediator role of oxytocin hormone as a predictor in charitable behaviors of people, the researchers' aim is to answer the question whether or not public service advertisements affect financial contribution to charitable activities.

2. Literature Review

2-1. Public Service Advertisement

Public service advertisements are designed to inform or amuse the audience and to persuade them to perform certain behaviors, generally for non-commercial purposes and by the use of mass media (Atkin, 2001). This type of advertising aims at correcting or changing the audience's behavior. One of the challenges in public service advertisements is creating a completely new behavior. Instead of replacing one brand with another, the challenges public service advertisement campaigns face is "not doing something", "doing business differently" or "performing a new task". This problem causes existing strategies to face a serious hardship, because the obstacles those involved in campaigns must overcome are based on deep, unconsidered and self-justified beliefs. What is aimed in this type of advertising is people's deep beliefs and thoughts which have been shaped and are rooted in the depths of their minds during the years. Based on this, identifying the target audience, understanding their attitudes, priorities and barriers of thoughts and behaviors are the most important issues in the public services advertisements. Misdiagnosis in any of the above cases puts public service advertisement campaigns on the wrong path, and results in failure (Leneon, 2011).

What matters the most is that most people deny their negative and bad behaviors or think of those as right and proper, and refuse to change their own behaviors. Thus, in this category of advertisement, satisfying the audience is very difficult and requires audience research, psychology, sociology, and advertising techniques and so on. This type of advertising puts more emphasis on audience's emotions which often leads to success of advertising campaigns. For example, a text without an image about helping needy and sick children did not receive substantial support from people, but if this ad had included an image of a sick disabled child along with an appropriate and attractive slogan, it would have involved the audience emotions and created better behavioral responses compared to a text without images.

Another important factor that must be considered in the design of public service advertisements is the fact that the audience always have the right to choose. They are often willing to continue their current behavior instead of changing it and adopting a new behavior. So, designers of advertising campaigns must answer this important question: Why do the audience accept our speech? What are the reasons of changing behavior? The audience of public service advertisements should earn something in return of changing their attitudes and consequently their behaviors. This process is called bartering (Rommele & Klingemann, 2002). Finally, the most important features to consider about this type of advertising are: the number and types of variables in this type of advertising are more. Sometimes it takes a long time to achieve a successful public service advertisement campaign. This type of advertising is often done by non-profit organizations. Decision making about problems that must be addressed is done with regards to important social issues, and selecting media or a combination of media is the most important factor. Those creative campaign designers who choose the media by relying on identifying the audience and being aware of their tastes, have the competitive advantage in comparison to those who are involved in public service advertisement campaigns but do not have this knowledge (Leneon, 2011).

2-2. Oxytocin Hormone

Oxytocin hormone is a Nano-peptide produced in the paraventricular and supra optic nuclei of the hypothalamus. This peptide is found in most delivered neurons to brains especially the binding sites, and it is possibly considered as the ability of neuro peptide hormone to provide sexual behavior (Kesmati, et al, 2006). In general, it plays a key role to the growth of social behavior, inter personal reactions, and controlling anxiety. Oxytocin or (OT) is a hormone that plays a key role in the birth and milk production. The minor role of this hormone is creating social behavior. Oxytocin, released in the brain, acts as a mediator in different brain behaviors. On its transmission path to the posterior pituitary, OT is in the form of a pro-hormone vane. The pro-hormone vane includes signal peptides, oxytocin neuro-hormone and neuro-physic. These hormones are important in vertebrates and bony fish, so that they play roles in social behavior in all species. This hormone is similar in different animals with different names but all have almost identical functions (Keller. & Lévy, 2008; Kim, et al, 2010).

Oxytocin is a hormone that appears as a mediator in social behavior of animals and humans. Various studies have shown that oxytocin causes parental, maternal and emotional behavior, this hormone causes social behaviors such as confidence, sympathy and empathy in humans. This hormone motivates social feelings, so that when the relationship of someone with others is positive, oxytocin hormone strengthens positive social behavior and when this relationship is negative, it strengthens negative emotions. Previous studies showed that oxytocin hormone has a positive effect on positive feelings. In one study, people who inhaled oxytocin hormone showed self-giving behavior. It is suspected that this hormone plays an important role in forming relationships among people (Kesmati, et al, 2006).

Ying lin et al. (2013) conducted a study with the title of "Oxytocin increases the influence of public service advertisements". In this study, a neuro-physiological model of effective public service advertisements and two tests were provided. In the first experiment,40 male students between the ages of 18-32 were used. These individuals were divided into two groups: 40 units of oxytocin and placebo. After people were affected by taking oxytocin, they watched 16 videos on public service advertisements with issues such as smoking, drinking and spending money. Each advertisement was between 30 and 60 seconds. After watching the movies, people responded to a prepared questionnaire, then they received a $5 reward and finally they had this option to decide whether they wanted to help charities. But in the second test, ACTH hormone (Adore Nocorticotro pin hormone) and oxytocin levels in blood were measured before and after watching the public service advertisements. For the second experiment, 42 healthy men and women aged between18-35 were used. People in the second test group were different from the first experiment. First, blood sample was taken and later they sat and answered the questions on an embedded computer station, then people watched short advertisements lasting 59 seconds about cigarettes. After filling out the second questionnaire, they expressed the intensity of their feelings and a second blood sample was taken. Finally, they were given $40 and a choice to decide whether they want to help anti-smoking charities. The results suggested that people under the influence of oxytocin, intended to do more social activities and paid more attention to them, but the placebo group didn't show such an effect.

Baraza et al. (2011) conducted a research under the title of "An injection of oxytocin increases charitable giving regardless of financial resources". In this study, participants did a series of economic games to earn money and they also had the opportunity to donate part of their income to charity. 132 male students from the University of California with different racial characteristics and a mean age of 20 were used for the study. 72 individuals of this group were in the test group. 40 units of inhaled oxytocin were determined for each one and 57 others were in the control group and the placebo was prescribed for them. After filling out the questionnaire, people were placed at the computer stations and played a series of economic games, finally they received some money to be able to help charity. The process took 70 minutes after injection. Finally, they could choose to donate an amount of money by selecting an option while they themselves were responsible for the rest of the donated amount. At the end, the results showed that oxytocin injection increased the charitable activities and the amount of money obtained in this experiment had not affected donations.

Marinos et al, (2011) conducted a study with the title of "The effect of oxytocin on charitable aid with the mediator role of parental love". 57 female postgraduate students aged 18-30 were used. Participants were divided into two groups; 24 units of inhaled oxytocin were used for half of them and placebo was given to the second half. Then, every individual was given 50 euros and was asked to make their decisions on donating the money after watching a movie related to UNICEF. Finally, it was expected that oxytocin increases the willingness of participants to donate money to charity by evaluating data through ERP / EEG, but it was only effective among participants who had low levels of parental love experience.

Shirkhodaie et al. (2016) conducted a study with the title of "Charity marketing: explaining the role of gender among youth". This study aims to explain gender roles in youth through assessing charity marketing. This is a semi experimental study, pretest and posttest design with an experimental group and a control group. Statistical population were students of Mazandaran University. Through the matched sample for the test group and control group 10 cases were detected. In this study, people were exposed to a film of a public-service advertisement. Before and after each film a blood sample was taken from each individual. Participants answered a questionnaire that aimed to measure the variable of intent to donate. Finally, each person was given a certain amount of coupon to decide whether to help that charity or not. To analyze the data and test the hypotheses SPSS18 was used. Results show that there is no significant difference between men and women in the amount of oxytocin hormone, intent to donate to charitable activities and donation amount to charitable activities.

Khalili Palandi et al. (2017) conducted a study with the title of "Comparison of oxytocin secretion following advertising observation in male athletes and non- athletes". The study aims to compare the effects of watching commercial messages on the amount of hormone oxytocin has been done on male athletes and non- athletes. Methodology study, pretest and posttest design with an experimental group and a control group. Statistical populations were male students of Mazandaran University. Through the matched sample for the test group and control group 10 cases were detected. People exposed to film themed charity activities. before and after each film from each individual the blood was taken, so, participants were answered a questionnaire that aims to measure the variable intent to donate and finally to all the people pay the same bon cash was delivered each person donating it to charity after the decision. To analyze the data and test the hypotheses from SPSS18 is used. The results revealed that between athletes and non-athletes is not significant difference in the amount of hormone oxytocin, intent to donate to charitable activities and donation amount to charitable activities.

According to existing definitions and previous studies, this study examines the effectiveness of public service advertising through hormonal marketing approach. The three hypotheses of this study are as follows:

H1: A public service advertisement affects oxytocin hormone secretion.

H2: Oxytocin secretion affects donations to charitable activities.

H3: A public service advertisement affects donations to charitable activities.

3. Methodology

This is an applied research study based on aim with a quantitative nature. The strategy used is semi experimental (laboratory). Semi experimental plan researches involve pre-test and post-test phases with a test group and a control group. Female students at the University of Mazandaran were the research population. Matching was used to increase the reliability and reduce the possibility of errors in the case. In other words,

women were non-pregnant, non-breastfeeding, healthy, without taking medicine and between the ages of 18-30, so that the higher and lower ages of them were excluded from the test. After reviewing those willing to participate in the test, the sample was selected. Since the most appropriate number for a sample group in an experiment ranges from10 to 20 (Ahmad, 2010), the sample size was determined as 10 people for each group. The main reason to use two groups of females in this study was that women face more oxytocin hormone secretion than men (Kesmati, et al, 2006). The public service advertisements show social and charitable activities more prominently and their focus of attention is on the target audience's attitudes and beliefs which are usually of high degrees of persuasion and express the changes of people's behavior very clearly and, as a result, can cause changes towards charitable activities, making the use of these types of advertisements more effective for studies of this type (Ying Lin, et al, 2013). Consequently, we decided to employ these types in the present study and included a variety of topics for charitable activities under consideration. The public service advertisement used in this study was fictitious and of an anonymous brand about support for children suffering from cancer. Since moral commitment, social approval and trust cause people to pay attention to charitable organizations (Leushuis, 2012), in this study it was assumed that participants trusted charities in the test.

The test procedure is as follows:

- Performing steps of experiment in the test group: 10 female students in the test group aged between 18-30, were selected as samples according to the specified conditions.

- The first step (pre-test): In this step, blood samples were taken from all people to assess the status of oxytocin before watching the promotional movie and rest. Of course, a code was given to each one in the group to identify and isolate blood sample tubes perfectly.

-Second step (test): In this step, everyone was exposed to the promotional movie with the theme of charity. This movie was shown once, lasted 1 minute for individuals. The purpose of its display was to be a stimulant for oxytocin hormone secretion in people.

The final step (post-test): In this step, after each person watched the advertisements, her blood sample was taken again to examine the status of oxytocin. A gift card with the value of one hundred thousand Rials was given to her to decide whether to donate it or not. At the end of the test, two boxes were built one of which was a charity box for help and revealed aid to charity, and if she put her gift card into the other box she received money equal to the amount of the gift card. Finally, she had to decide what to do with the rest of her money.

- performing the steps of experiment in the control group: 10 female students in the control group between the ages of 18-30, were selected as samples according to the specified conditions.

- The first step (pre-test): In this step, blood samples were taken from all of them to assess the status of oxytocin before watching the promotional movie and the rest.

-Second step (test): In this step, everyone was exposed to promotional movie with the theme of charity. This movie was shown for 3 times in 1 minute for that specified person.

The final step (post-test): In this step, after the person watched advertisements, her blood sample was taken again to examine the status of oxytocin. A gift card with the value of one hundred thousand Rials was given to her to decide whether to donate it or not. At the end of the test, two boxes were built one of which was a charity box for help and revealed aid to charity, and if she put her gift card into the other box, she received money equal to the amount of the gift card. Finally, she had to decide what to do with the rest of her money.

It should be noted that after each step, every person in the group was led to another room until everyone completed testing. The main reason for this was to prevent people from interacting with other groups and keep the study in a high rank in terms of accuracy.

In the end, the results of the test group were compared with those of the control group, the two groups had different times for watching the movie. In order to measure oxytocin hormone, oxytocin levels in the blood was measured in international units (IU). To measure the financing variable, the considered amount of aid was determined by the participants. (Ying Lin, et al, 2013). Finally, after analyzing 20 blood samples, results were fully prepared. To analyze the data and test hypotheses, SPSS version 18, variance analysis and two independent samples test were used.

4. Findings

4.1. Sampling

Demographic characteristics of the sample were evaluated in terms of age and marital status. The results show that 80% were single and 20% were married. Age 10% (19 years), 20% (20 years), 45% (21 years), 15% (22 years), 5% (23 years) and 5% (30 years).

4.2. Testing the Hypotheses

H1: A public service advertisement affects oxytocin hormone secretion.

This hypothesis was measured by using two independent samples T-test and the results are in the table (1) as follows:

Table 1. The results of two independent samples t-test

	Number	Average	The significant level of Leuven test	T-value	Two-tailed significant level
Oxytocin hormone secretion Advertisement for once	10	25.15330	0.4	-0.693	0.00
Advertisement for 3 times	10	41.44340		-0.693	0.00

As results of two independent samples T-test indicated in the table 1, a significant level of equality of variances was approved, so two-tailed significant level in the first row is under consideration. According to the two-tailed significant level related to the equality of the means test, it can be concluded that with unequal averages of oxytocin hormone secretion in both groups, a public service advertisement either displayed one or three times is influential on the amount of oxytocin hormone secretion. The average advertising is three times more than the average advertising once.

H2: oxytocin secretion affects donation to charitable activities.

For testing the second hypothesis, variance analysis was used and the results were in the table (2) described below:

Table 2. The results of variance analysis

	The significant level of Leuven test	The level of variance analysis
Oxytocin hormone secretion	0.2	0.3

With the assumption that equal variances were approved, but the significant level was greater than 0/05, the result showed that oxytocin hormone secretion did not affect the donation between the two groups.

H3: A public service advertisement affects donation to charitable activities.

This hypothesis was measured by using two independent samples T-test and the results are in the table (3) as follows:

Table 3. The results of two independent samples t-test

	Number	Average	The significant level of Leuven test	T-value	Two-tailed significant level
Oxytocin hormone secretion Advertisement for 1time	10	65000	0.1	1.903	0.07
Advertisement for 3 times	10	28000	-	1.903	0.07

As it can be seen in table 3, a significant level of equality of variances was approved, so two-tailed significant level in the first row is under consideration. According to the two-tailed significant level related to the equality of the means test, it can be concluded that with equal donation in both groups, a public service advertising has not affected donation to charitable activities when its display is once or three times. Table (4) shows the results of designed hypotheses in summary:

Table 4. The results of hypotheses test

Hypotheses	Results
A public service advertisement affects oxytocin hormone secretion.	Confirmation the hypothesis
Oxytocin secretion affects donations to charitable activities.	Rejected the hypothesis
A public service advertisement affects donations to charitable activities.	Rejected the hypothesis

It can be concluded that showing public service advertisement for three times has affected oxytocin hormone secretion, but it is ineffective on donations. Although advertising has been shown three times, it has not encouraged people to donate to charitable activities.

5. Discussion and Conclusion

Public service advertisements aim at increasing public awareness and developing possible solutions for public issues and affect people's beliefs, attitudes and behaviors. As a result, this type of advertisement promotes the culture of society and improves social life. These precious ambitions are achieved through negation of the current high-risk behavior, trying to adopt a new behavior or modifying the current behavior. Oxytocin hormone in humans also causes social behaviors such as confidence, sympathy and empathy. This hormone motivates feelings and encourages people to help and do social and charitable activities.

Examining the same literature review, Ying Lin et al (2013) showed that oxytocin increases the effect of public service advertisements. In other words, people who were under the influence of oxytocin, tended to do social activities and paid more attention to them. But it didn't affect people in the placebo group. In addition, Baraza et al (2011) stated that oxytocin increases charitable donations regardless of financial resources. They concluded that oxytocin increased the charitable activities and the amount of money that was available in the experiment didn't affect the financial aid. They concluded that oxytocin injection increased the charitable activities and the amount of money that was available in the experiment didn't affect financial aid.

In contrast, Marinos et al (2011) announced while it was expected that the effect of oxytocin increases participants' willingness to donate to charity, it was only effective for participants who had low levels of parental love. In other words, parental love is not influential on financial aid. According to this view, Clark Alford et al (2013) suggested although oxytocin is logical for supporting social and emotional motives in parts of the brain which is proportional to the motivation and reward, there is limited information on whether oxytocin directly affects the learning of reward. So, they concluded that when oxytocin is associated with reward, it has a negative relationship with the reward and donation. According to assessment of the variables in this study, the test results showed that a public service advertisement affected donation with regards to the mediator role of oxytocin hormone secretion. A public service advertisement affected oxytocin hormone secretion and oxytocin hormone secretion did not affect the donation. It should be noted that the effect of oxytocin depends on the personal characteristics, location and the individual characteristics. Oxytocin stimulation is only used for pro-social behavior of people (Bartez, et al, 2011). So, the effects are just debatable for the subjects of this study and the results are different from the research of Yang Lin et al (2013). Since this type of advertisement aims at deep beliefs and ideas of people which have been shaped and rooted in the depths of their minds over the years, effectiveness of public service advertisements on donation is remarkable. So, identifying the target audience, understanding their attitudes, priorities and mental and behavioral barriers are the most important issues in public services advertisements. As a result, it is suggested to identify the target audience as the first priority of your advertisement. Because there is a difference between the audience who react more to behavior change and the audience who need or want to profit from changing the behavior.

Many studies have shown that in order to change perspectives, emotional motives are much more important than purely intellectual topics. Public service advertisements have taken a step further in this context and maximized the impact and severity of the problem from an emotional point of view. That is why it is more successful in encouraging people to take action.

One of the challenges of public service advertisements is to use relevant topics and state them in a realistic way. Therefore, it is suggested that the audience should agree with your message which was designed in accordance to their interests and desires. Obviously, this is one of the effective ways. It is suggested to consider the display timing of public service advertisements. Also, it is suggested to state the messages of public service advertisements as what they actually are. These messages must be stated simply, accurately, clearly and unambiguously. Because the goal of every public service advertisement is to replace uncertainties with detailed information.

Since it is the requirement for public service advertisements to attract more target audiences, and the opportunity to get the information should be maximized for people, so it is recommended to use all possible ways because it reduces the target audience's excuses. The final point is that when oxytocin hormone is injected in humans like inhaled oxytocin, it is more effective. Because the access to human brain through nose is quicker and it is an effective method for effects on central nervous system. In this study, examining oxytocin hormone secretion was done naturally. Therefore, it is suggested that oxytocin hormone be used by inhaling. The last point is that situation and economic indicators affect the financial actions and because subjects of this study were students and more than half of them (75%) were in a poor and weak economic status, so it can be concluded that donation to charitable actions was not a lot, and its amount was similar between the two groups.

References

Ahmad, W. (2010), *An empirical investigation of the association between creative advertising and advertising effectiveness in Pakistan*, (Doctoral dissertation), university of Islamabad.

Atkin, C. (2001), *Impact of Public Service Advertising: Research Evidence and Effective Strategies*. (Doctoral dissertation), University of Michigan State, 20.

Barraza, Jorge A., McCullough, Michael E., Ahmadi, Sheila and Zak, Paul J. (2011). Oxytocin infusion increases charitable donations regardless of monetary resources. *Hormones and Behavior*, 60, 148–151.

Bartz, J. A., Zaki, J., Bolger, N., & Ochsner, K. N. (2011). Social effects of oxytocin in humans: context and person matter. *Trends in cognitive sciences*, 15(7), 301-309.

Brown, M., & Point, K. (2009). *Should My Advertising Stimulate an Emotional Response?*. Retrieved April, 10, 2017.

Clark- Elford, R., Nathan, PJ., Auyeung, B., Voon, V., Sule, A., Muller, U., Dudas, R., Sahakian, B J., Phan, L and Baron-Cohen, S. (2013). The effects of oxytocin on social reward learning in humans. *International Journal of Neuropsychopharmacology*, 1-11.

Hadadi nia, H., Shondi, H., Shrbat ogli, A and Seidan, S.E. (2011). Understanding the impact of the brand and product type on customer response to the marketing charity. *Journal of Management Sciences in Iran*, 6(23), 101-126.

Keller. M and Lévy. F. (2008). *Olfactoryy mediation of maternal behavior in selected mammalian species*. New Delhi: Prentice Hall.

Kesmati, M., Raei, H., & ZADKARAMI, M. (2006). Comparison between sex hormones effects on locomotor activity behavior in presence of matricaria chamomilla hydroalcholic extract in gonadectomized male and female adult mice.

Khalili Palandi, F., Shirkhodaie, M., Farzan, F., & Fathi, R. (2017). Comparison of oxytocin secretion following advertising observation in male athletes and non- athletes, *Journal of Sport Management and Motor Behavior*, 13(25), 1-18.

Kim. P., Leckman. J., Mayes. L., Feldman. R., Wang. X and Swain. J. (2010), The Plasticity of Human Maternal Brain: Longitudinal Changes in Brain Anatomy during the Early Postpartum Period. *Brain & Development*, 27, 80-87.

Leneon, J. (2011). *How public service ads*, Translator: Mino Mirzaei, Tehran: Abi press.

Leushuis, R. (2012). *Continuous donation to and trust in a charitable organization*, (MA of dissertation), University of Twente.

Lin, P. Y., Grewal, N. S., Morin, C., Johnson, W. D., & Zak, P. J. (2013). Oxytocin increases the influence of public service advertisements. *PloS one*, 8(2), e56934.

Marinus, H. Huffmeijer, R., Alink, Lenneke R. A. Bakermans- Kranenburg, MarianJ. and Tops, Mattie. (2011). The impact of oxytocin administration on charitable donating is moderated by experiences of parental love-withdrawal. *Frontiers in Psychology*, 2, 1-8.

Niekerk, E. Van. (2007). *Not-for-profit marketing: branding, brand equity and marketing of smaller charities*. (MA of dissertation), South Africa.

Rommele, A and Klingemann, H. (2002). *Public information campaigns and opinion Research*, Research Unit, WZB, Berlin.

Sepehry, H., Ghasemi, K and Rastgare faraj zade, A. (2012), *Medical Physiology Gaytvn- Hall*, Tehran: Lofty Thoughts Press.

Shirkhodaie, M., Farzan, F., Fathi, R., Tahmasbi, N., & Khalili Palandi, F. (2016). Charity Marketing: Explaining the Role of Gender among Youth. *Journal of women's studies sociological and Psychological*, 13(4), 153-180.