



The Placebo Effect of Faith: Unpacking the Interplay between Belief, Expectation and Perception

Dr. Philip Akinmurele

Ph.d, United States Institute of Diplomacy and Human Rights, United States

* Corresponding Author: **Dr. Philip Akinmurele**

Article Info

ISSN (online): 2583-8261

Volume: 04

Issue: 01

January-February 2025

Received: 19-11-2024

Accepted: 20-12-2024

Page No: 98-103

Abstract

The placebo effect, traditionally observed in medical contexts, has broader implications extending to beliefs, religion, philosophy, and psychology. This study explores how the placebo effect influences spiritual and religious experiences, emphasizing how expectations and conditioning shape perceived outcomes. It delves into various definitions of the placebo effect across disciplines—medical, psychological, philosophical, and religious—and highlights its impact on belief systems. The research also critically examines the interplay between belief, expectation, and perception, questioning the nature of religious experiences. It underscores the power of human expectation in shaping reality and invites reflection on the ways in which placebo effects manifest in religious practices. Ultimately, this work aims to spark dialogue about the complex relationship between mind, body, and belief, offering new perspectives on the placebo effect and its implications in spiritual and psychological contexts.

Keywords: Placebo Effect, Expectation, Belief, Spiritual Experiences, Religious Practices

Introduction

The placebo effect has long been recognized and found useful in medical contexts, but it needs to be stated that its implications extend far beyond the physical health. This study spots out the differences and effects of placebo effects in beliefs, religious, philosophical and psychological effects which also examine how expectations and conditioning shape spiritual experiences and perceived outcomes. It also shed more light on the placebo effects inherent in religious experiences. In all, the motive of this work is to spark critical discussion, arose commentaries, and provides enlightenment on the interplay between belief, expectation and perception, challenging the nature of religious experiences.

PLACEBO: Toward a Definition

Just like in the field of philosophy where there is no universally acceptable definition of the subject matter as various philosophers defined philosophy from their areas of specializations (Omeregbe, 1990:1) ^[20], PLACEBO has been defined in various ways according to various scholars and disciplines as follows:

1. General definition of Placebo / Placebo effects

PLACEBO: “An inert substance or treatment that produces a perceived or actual improvement in a person’s condition, due to psychological or neurobiological factor rather than any inherent therapeutic effect”. (Merriam- Webster Dictionary, 2020) ^[15].

2. Medical Definition

“PLACEBO: A substance or treatment that is designed to simulate the effect of a real treatment, but has no actual therapeutic effect” (National Institute of Health, 2020) ^[19].

3. Psychological definition

“Placebo effect: A phenomenon in which a person experiences an improvement in their Symptoms or condition due to their expectation that a treatment will be effective, rather than any actual therapeutic effect of treatment” (American Psychological Association, 2020) ^[1].

4. Philosophical definition

“Placebo effect – A demonstration of the power of human expectation and belief in shaping reality, highlighting the complex relationship between mind and body” (Moerman, 2002) ^[16].

5. Religious definition

The placebo effects on religious definitions varies according to the perspectives of Christianity, Islam, Buddhism, Hinduism, Judaism, Taoism, etc. According to Christianity, “the placebo effect is a manifestation of God’s healing power working through faith and prayer”. (Koenig, 2015) ^[12]. In general, spiritual perspectives,” it is a manifestation of the interconnectedness of body, mind, and spirit” (Dossey, 2013) ^[5].

Conversely, looking at the various views and understanding of Placebo, it is a dummy treatment, medication, or intervention that has no actual therapeutic effect but is designed to mimic the appearance and feel for a real treatment. It follows from this understanding that the Placebo effect is triggered by the person’s belief from the treatment and their expectation of feeling better, rather than the characteristics of the placebo.

Types of PLACEBOS

There are various types of placebos but principally, it can be categorized into three main categories: Pharmaceutical, Non-Pharmaceutical and Psychological placebos. This is to state that other sets of placebos are fused into these three categories. There is need to discuss them one after the other to bring out the components and be able to grasp the meaning as appropriate.

1. Pharmaceutical Placebo: They are inactive substance or treatments designed to mimic the appearance and feel of actual medications, but lack any therapeutic effect. The examples are:

- Inert tablets or capsules:** For example, sugar pills used in studies on antidepressants, anxiety medications and pain management. Like the chronic pain tablet like Panadol (Beecher, 1955) ^[2]
- Saline Injections or Solutions:** These are used in studies on vaccine efficacy, pain management and cancer treatment – like saline injections as a placebo control (Polio Vaccine study, 1955) ^[23].
- Sham Surgery:** These are used in studies on orthopedic procedures, neurosurgery and cosmetic surgery like sham knee surgery as a placebo control (Moseley *et al*, 2002) ^[18].
- Dummy medications:** For examples, identical packaging, labeling, etc. like a study on blood pressure management using identical-looking placebo tablets

(Veterans Administration Cooperative Study, 1970) ^[29].

2. Non-Pharmaceutical Placebo: They are interventions or treatments that lack specific therapeutic activity but produce benefits due to psychological, social, or cultural factors. The examples are:

- Sham Acupuncture:** involving fake needles or non-insertive techniques (Sherman *et al*, 2005) ^[28]
- Herbal Remedies:** Inert herbal supplements or teas with no bioactive ingredients (Moerman, 2002) ^[16].
- Sham Device:** Inert devices, such as wristbands or magnets, claimed to have therapeutic effects (Zhang *et al*, 2012) ^[31]
- Social Support:** It is a placebo-controlled study on social support for mental health outcomes.
- Spiritual or religious interventions:** It is a placebo-controlled study on spiritual or religious practices for mental health (Koenig, 2015) ^[12].

3. Psychological Placebo: It can be seen as a treatment or intervention that leverage psychological factors to produce positive outcomes without any inherent therapeutic values. In another way, conceived psychological placebo as “a treatment or intervention that harnesses psychological factors such as expectation, conditioning, and suggestion to produce beneficial effects”. The examples are:

- Mindset manipulation:** It involves changing patients’ mindsets to improve outcome. (Dweck, 2006) ^[6].
- Positive Thinking:** The process is used to encourage positive thinking and optimism (Seligman, 1991) ^[27].
- Emotional Support:** This is based on the use of providing emotional supports to patients
- Social influence:** It is based on utilizing social influence to enhance treatment adherence.
- Conditioning:** It refers to the use of classical conditioning techniques to associate stimuli with therapeutic responses.

Having explore the possibility of defining the concept of placebo and its effects, coupled with the various examples and the types of placebos that is inherent according to the scholars of the concept, what is deduced or the lesson learned from these diverse discussions and orientations is that placebos highlight the complex relationship between mind and body. By this understanding, the placebo effect, researchers can develop more effective treatment and also provides enlightenment as well as improve patients’ outcomes.

Unpacking the Interplay Between Belief, Expectation and Perception

There is no doubt to state that the knowledge of placebo and its effects have been very fascinating and educative, and had found to be useful in all facets of human endeavors, but the fact remains that what is projected for us is not true as regards the actual state of things looking at it from the enlightenment and philosophical point of views, among others. The motive of this segment is to look at the specification and the knowledge of placebo critically side -by side religious and philosophical and to x-ray it. The salient question that readily comes to mind is; how can you juxtapose placebo effect with the biblical or philosophical points of view? In this wise, there is need to free ourselves from the problem of delusion

and illusionary disorder that has to do with the problem of not been able to differentiate between what is real and unreal. There is an urgent need to seek knowledge and free ourselves from illusion. It also boils down to the problem of religious trauma syndrome which encapsulate the placebo effect and the religious aspect of it.

Church Business and Placebo

A lot of illusions are being found in the church as far as placebo is concerned. It has to do with the issue of miracle in the Church. The way we conduct ourselves in our place of worship, the way we organize ourselves coupled with the financial aspects of these religious institutions need to be examined. Are miracles real? Since miracles happen to everyone- in spite of been a Christian, Pagan, Muslim, Buddhist, Taoist, etc., the point of emphasis here is our mentality in this part of the world where Church miracles have been turned to comedy. A situation where selling of miracle water, miracle soap, special anointing oil and the likes and the fragrant professing of miracles at will, in contradistinction to the reality on ground is viewed very seriously. Our mind is powerful enough to induce us to miracles as the power of the mind is enough to invoke us into miracle. That is how placebo works! In all, our mind is very powerful in realizing our goals and aspirations.

In looking at the placebo effects on Church business, we are beaming our searchlights on Spiritual Placebo, Pastoral Care, Faith-based intervention, Religious Coping Mechanisms and Worship and Rituals. The purpose of this, among others, is to provide enlightenment and clarifications to those who blindly supports these teachings but needed to be guided for the sake of posterity and humanity.

- Spiritual Placebo:** These are religious rituals, practices, or services that provide comfort, reassurance or emotional benefits without necessarily addressing underline spiritual issues. (Koenig, 2015) ^[12]
- Pastoral Care:** These are emotional support and guidance from Church leaders, potentially leveraging placebo effect (McMinn, 2015) ^[14]
- Faith-Based Interventions:** These are church programs or services claiming to improve physical or mental health, but lacking empirical evidences.
- Religious Coping Mechanisms:** It is a Church-based strategy for dealing with stress, anxiety, and or adversity which may have placebo effect (Pargament, 1997) ^[22].
- Worship and Ritual:** It is an act of participating in collective worship or ritual which can elicit placebo effects through social influence and emotional arousal. (Hood, 2012) ^[8].

Yoga and Placebo Effect

Studies have shown that there are some correlation between Yoga and Placebo effect. To this, it is shows that there are some characteristics in Yoga that goes along with Placebo. The definition of Yoga will provide whether there is correlation or not here. By definition, Yoga is physical, mental, and spiritual practices that originate from ancient India. The aim is to integrate the body, the spirit and the mind. It combines physical postures (asanas), breathing techniques (pranayama) and meditation to promote well-being. It is based on this clarification that research shown that yoga's therapeutic benefits may be partially attributed to Placebo effects. The examples of yoga and its Placebo effects are:

- Cardiovascular Health:** Yoga's benefits for cardiovascular health may be influenced by Placebo effects (Innes *et al*, 2012) ^[12]
- Pain Management:** Study has shown that Yoga has been useful in reducing chronic pain, potentially due to Placebo effects. (Morone *et al*, 2008) ^[17].
- Anxiety and Depression:** Yoga's anxiolytic and antidepressant effects may be partially attributed to Placebo effects (Hofmann *et al*, 2010) ^[9].

The Biological Mechanisms of Placebo Effect

The Biological mechanisms of placebo refer to the physiological and neurobiological process that underlie the Placebo effect, including changes in neurotransmitter release, hormone regulation, immune response, and brain activity, which contribute to the perceived or actual therapeutic benefits of a Placebo treatment. \This can be seen in the following:

- Activation of Brain Regions:** Functional MRI studies show that Placebo treatments can activate the same brain regions as actual treatments. For example, areas involved in pain processing, such as the prefrontal cortex, are activated in response to Placebo analgesia (Wager *et al*, 2004) ^[30]
- Physiological Mechanisms:** Reduction of Stress and Anxiety Receiving a Placebo can decrease levels of stress and anxiety, which in turn may lead to reductions in symptoms that are worsened by stress, such as pain and inflammation. Not only that, it can also stimulate the release of neurotransmitters such as dopamine, endorphins, and serotonin which contribute to the feelings of pleasure, relaxation and pain relief. (Benedetti, 2013) ^[3].
- Neurobiological Mechanisms:** Endogenous Opioids and Dopamine Release The expectation of pain relief or other health benefits can trigger the release of natural chemicals in the brain, such as endorphins (endogenous Opioids) and dopamine. These chemicals play key roles in pain reduction and feelings of well-being (Scott, *et al*, 2008) ^[25].
- Psychological Mechanisms:** Expectation and Conditioning The Placebo effect often stems from the patient's expectation that they will get better. Studies suggest that when people expect a treatment to work, their body may produce responses that mimic those of effective treatments (e.g. Pain relief) (Stewart-Williams & Podd, 2004) ^[26].
- Classical Conditioning:** Prior experiences with treatment can condition patients to respond to Placebo treatments. For instance, if a person associates taking pills with relief from symptoms, they may experience similar relief with a Placebo pills (Price, *et al*, 2008) ^[24]

Music and Placebo Effects

The place of music particularly of the gospel artist has been seen to be widely noticed in the placebo effect Gospel artists and their songs plays a prominent role in placebo effects, especially in the context of spiritual emotional healings. The point we are drawing home, among others, is that studies have shown that gospel music provides spiritual comfort, reducing anxiety and stress, promotes relaxation, provides social support and enhancing feelings of belonging as well as wellbeing. It also promotes positive thinking and optimism.

Here are some examples of these gospel songs, the artists and the significance of their songs to the placebo effects:

- a. **“Stand”**: a song by Donnie McClurkin. This uplifting song that commands one to stand up from depression and hopelessness has been linked to improve mood and reduced symptom of depression.
- b. **“Brighter Day”**: a song by Kirk Franklin. The song has been associated with improved mood as well as reduced stress level as a result of the assurance of a brighter day by Franklin.
- c. **“Break Every Chain”**: a song by Tasha Cobbs Leonard. This powerful worship song rendered by Leonard has been linked to enhanced spiritual experiences and emotional healing. It serves as a great command and inspiration to break forth from all barriers and chains that are debarring one from progressing.
- d. **“I’ll Fly Away”**: a song by Hezekiah Walker. It represents a fly away from depression and stress. It is a classic gospel song that has been linked to reducing stress and anxiety.
- e. **“What a Beautiful Name”**: a Hillsong Worship Song. It has been used in studies to enhance spiritual well-being and reduce anxiety because of a particular name that solves one’s problem.

A Critical Look at Placebo Effects on Spirituality & Religion

Having considered the Placebo effects and some of the accomplishments and postulations in the fields of psychology, philosophy and religion, some pertinent questions will continue to arise for our considerations. Before this, let us do a little recapitulation to bring out the essence of placebo in order to enable us do the analysis appropriately.

LeWine (2024) ^[13] contributing to Placebo effects, bring about the workings of Placebo saying: “Your mind can be a powerful healing tool when given the chance. The idea that your brain can convince your body a fake treatment is the real thing - the so-called Placebo effect – and thus stimulate healing has been around for millennia. Now science has found that under the right circumstances, a Placebo can be just as effective as traditional treatments.

The Placebo effect is more than positive-thinking –believing a treatment or procedure will work. It’s about creating a stronger connection between the brain and body and how they work together.

In all these accounts, we can learn and provide clarifications and examples on the following:

- Placebo work because of the power of the mind. The power of the mind is enough to invoke miracles as a milk tablet given to you as antibiotic in which you take with faith works.
- Does the holy water contain anti-cancer drug?
- What is the mixture of the water that makes it holy?
- What are the impacts of spiritual songs on people?
- What are the places of spirituality as regards life changing decisions?

It is on this premise of various issues raised above that we are considering the exploitation of Placebo alongside the issue of spirituality and Placebo. The essence of this is to shape our understanding and provide guidelines for us to live happily and shun the dogmatism associated with the erroneous beliefs on some spiritual doctrines and Placebo effects that are

unfounded and unreal. In driving it home, to provoke our thought, everyone in spite of the fact that he/she is a Muslim, Christian, Pagan, Buddhist, atheist, etc. experiences miracle. Some various salient examples will bring out our thoughts succinctly here:

- a. **On miracle**: Miracles in the continent of Africa is a dicey phenomenon. We are poor today in Africa because of miracle. We ascribe so much to the dictate of miracle. We failed to allude to the development of science that is evolving as a result of its advancement over religion but hold tenaciously to miracles. How does one explain the drinking of miracle water and anointing oil that one consumed and cancer disappeared? How on earth do you drink miracle water and used miracle ring to receive your miracle baby? What are the workings and how does it come to manifestation is what cannot be explained? It is pertinent to state that miracle is shielded in mysteries in this part of the world.

The effect of placebo on Church businesses is nothing more than sheer exploitation of people by the religious leaders which are meant to achieve purely for commercial gains. The exploitation and mortgaging of people’s destiny as a result of a life-changing decision is very alarming and need to be discouraged. A woman, for instance, who is having a life-threatening situation from her abode in Canada is being told to come for a miracle bath in Nigeria to ensure the stability of her home. In the process of coming over, she was given a Placebo treatment which ultimately led her to get engaged with the pastor that invited her and thereby lost the home she is striving to keep! The point is that some of these religious leaders have turned themselves to miracle merchants and have turned it to commercial gains.

The placebo effect can also be likened to African own traditional ways of maintaining peace and unity in homes. A situation where we have a troublesome wife who is always on her husband’s throat anytime there are disagreements. In order to resolve the problem at home, the wife sort for help outside where she was given an object wrapped with a cloth with the instruction that when a heated disagreement happens at home where she needed to voiced out on her husband, she should take the object and speak to it and shout be silent henceforth. Unknown to her, the object does not contain anything rather than sand, which does not contain any medicine for maintaining harmony in the home. That is another Placebo effect.

- b. The placebo effect of songs and the song artists has also been felt where the songs have an impact on the people. While studies have shown that songs have a strong impact on the people in the context of spiritual and emotional healing, it cannot be deduced that it is the effect of the song that removed the ailments. How can one prove that “Stand” as rendered by Donnie McClurkin will uplift one soul and improve the mood thereby reducing the symptoms of depression? Definitely if it works, it means that there are strange powers behind the songs.

The psychological effect of Placebo on the songs, which you simply listened to by echoing “iyanu a sele” (literally translated there must be miracle) or “oku a dide” (the dead will rise) is nothing but not real as they made us to believe. The fact remains that there is nothing special about the spiritual

songs.

Conclusion

Placebo and its effect cannot be exhausted in a single write-up because it is of many parts and endeavors. How does one capture the effect of placebo on religion and spirituality, spiritual songs, Yoga, miracles, Church business and organizations; commercialization of Church businesses and miracles, disappearance of companies that ushered in magnificent Church buildings like the Citadel Global Community Church, CGCC (formerly Latter Rain Assembly) owned by Pastor Tunde Bakare in Oregun, Lagos State, Nigeria or that of Daystar Christian Centre owned by Sam Adeyemi in the same Oregun of Lagos?

What can we say of the place of miracles in the Church of God where testimonies are being given at will like what is experience in The Lord Chosen Charismatic Renewal Church of Pastor Lazarus Muoka, in Lagos Nigeria? There was a testimony of One Jerry Osakwe based in Italy who narrated how he was healed of Covid -19 virus while in isolation centre after listened to the cable television network of the church “when Pastor Lazarus Mouka voice entered his body like electricity and his immobile legs instantly became straightened” (This account can be found in The Lord Chosen Charismatic Renewal Church’s platform) or various testimonies trending on the social media which went viral lately which the spoke person of the Church, Pastor Chidi Louis alleged that the footages oof the testimonies were doctored to mock the Church.

Consequently, the concept of Placebo which is seen as a dummy treatment, medication, or intervention that has no actual therapeutic effect but is designed to mimic the appearance and feel of a real treatment. The workability of it is the expectation from the patients believing that the treatment will work, that the treatment is real, and that the treatment will lead into improvement. A situation where a patient receives a sugar pill for headaches and experiences reduced symptoms is nothing but the complex relationship and the connectivity between the workings of the mind and body. In the working of placebo, there is variability in response as the experiences of the symptoms after taken the sugar pill are different and that there is difficulty in replicating results. All these boils down to our belief system. Not only that, Placebo effect is being challenged in the areas of critical thinking by promoting critical evaluation of treatment efficacy, raising pertinent questions on understanding the placebo effects on patient’s autonomy, informed consent and deception as well as carrying out an interdisciplinary approach on integrating psychology, philosophy, religion and medicine.

Placebo had been shown to be useful in heath; management of health-related diseases, pain and stress management, maintenance of home and keeping family in unity, maintaining psychological balance and well-being as well as being a powerful instrument in the hands of the spiritual artists but how do we explain the workability of this in spirituality, religion and in the songs of spiritual artists? Can I say that when I listen to songs that offer me “better day” that I am positive of having a better day? What is the correlation of these songs to my body and spirit? This is the place of critical thinking and enlightenment that this work is sparking reactions of.

We affirmed that miracles are real but is not limited to

Christians and Muslims alone as pagans, Buddhists, Taoist, Confusionists, and Hinduists too, etc. also experience miracle but that we must be conscious of how we spread these miracles especially of it being viral on social media. There must be a way of shuffling these miracles with the power of our mind by jettison mediocre and dogmatism toward having our own independent mind that will not be tosses away at will. We should also be conscious of the advancement of science over religion and be our brothers’ keeper at all times. We should allow love to reign in our midst and that is when we can overcome the undue over-reliance on miracles, especially in this African continent.

In conclusion, the work recognizes Placebo and its usefulness but Question knowledge claims and evidence-based medicine, balance the benefits and harms of placebo and also frown at the commercialization of miracles by the religious leaders. It is aimed at providing enlightenment and a guide to a peaceful and real living consciousness where one will be freed from the machination of the miracle workers and provides a strong mind that works.

References

1. American Psychological Association. Placebo effect. 2020.
2. Beecher HK. The powerful placebo. *Journal of the American Medical Association*. 1955;159(17):1602-1606.
3. Benedetti F. Placebo effects: Understanding the mechanisms in health and disease. Oxford University Press; 2013.
4. Cohen S, Janicki-Deverts D, Doyle WJ, Miller GE, Frank E, Rabin BS, *et al*. Chronic stress, glucocorticoid receptor resistance, inflammation, and disease risk. *Proceedings of the National Academy of Sciences of the United States of America*. 2012;109(16):5995–5999.
5. Dossey L. The power of prayer and the placebo effect. *Explore*. 2013;9(1):57–58.
6. Dweck CS. *Mindset: The new psychology of success*. Random House; 2006.
7. Flamelly KJ. Religion, coping, and mental health: A review. *Journal of Psychology and Theology*. 1997;25(1):17-30.
8. Hood RW. *The psychology of religion: An empirical approach*. 4th ed. Guilford Press; 2012.
9. Hofmann SG, Sawyer AT, Witt AA, Oh D. The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*. 2010;78(2):169-183.
10. Innes KE, Bourguignon C, Taylor AG. Yoga in the management of cardiovascular disease: A systematic review of the literature and meta-analysis. *European Journal of Preventive Cardiology*. 2012;19(4):557-564.
11. Kaptchuk JT. The placebo effect in alternative medicine: Can the performance of a healing ritual have clinical significance? *Annals of Internal Medicine*. 2002;136(6):817-825.
12. Koenig HG. *Spirituality and health*. Academic Press; 2015.
13. LeWine HE. *The power of the placebo effect*. Harvard Health Publishing. 2024. Available from: <https://www.health.harvard.edu/newsletter-article/the-power-of-the-placebo-effect>
14. McMinn MR. *Pastoral care and counseling: Psychology*

- integration in therapy. Zondervan; 2015.
15. Merriam-Webster Dictionary. Placebo. 2020. Available from: <https://www.merriam-webster.com>
 16. Moerman DE. Meaning, medicine and the placebo effect. Cambridge University Press; 2002.
 17. Morone NE, Greco CM. Meditation and mindfulness-based stress reduction in patients with chronic pain. *Journal of the American Medical Association*. 2008;300(11):1447-1454.
 18. Moseley JB, O'Malley K, Petersen NJ, Menke TJ, Brody BA, Kuykendall D, *et al.* A controlled trial of arthroscopic surgery for osteoarthritis of the knee. *New England Journal of Medicine*. 2002;347(2):81-88.
 19. National Institute of Health. Placebo effect. 2020.
 20. Omoregbe JI. Knowing philosophy. Joja Educational Research and Publishers; 1990.
 21. Pavlov IP. Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex. Oxford University Press; 1927.
 22. Pargament KJ. The psychology of religion and coping: Theory, research, practice. Guilford Press; 1997.
 23. Polio Vaccine Study. Field trial of poliomyelitis vaccine. *Journal of the American Medical Association*. 1955;158(14):1297-1314.
 24. Price DD, Finniss DG, Benedetti F. A comprehensive review of the placebo effect: Recent advances and current thought. *Annual Review of Psychology*. 2008;59:565-590.
 25. Scott DJ, Stohler CS, Egnatuk CM, Wang H, Koeppe RA, Zubieta JK. Individual differences in reward responding explain placebo-induced expectations and effects. *Neuron*. 2008;55(2):325-336.
 26. Stewart-Williams S, Podd J. The placebo effect: Dissolving the expectancy versus conditioning debate. *Psychological Bulletin*. 2004;130(2):324-340.
 27. Seligman MEP. Learned optimism: How to change your mind and your life. Free Press; 1991.
 28. Sherman KJ, Cherkin DC, Avins AL, Pressman A, Barlow WE, Delaney K, *et al.* A randomized trial comparing acupuncture, simulated acupuncture, and usual care for chronic low back pain. *Archives of Internal Medicine*. 2005;165(8):837-844.
 29. Veterans Administration Cooperative Study. Effects of treatments on morbidity in hypertension. *Journal of the American Medical Association*. 1970;213(7):1143-1152.
 30. Wager TD, Scott DJ, Zubieta JK. Placebo-induced changes in fMRI in the anticipation and experience of pain. *Science*. 2004;303(5661):1162-1167.
 31. Zhang Y, Zhou F, Tian Y, Song Y, Liu X. Sham devices and the placebo effect: A review. *Current Pharmaceutical Design*. 2012;18(39):6206-6213.