

## ŞADAQA AND ‘SPIRITUALITY GENE’ EXPRESSION: The Qur’an and Advances in Epigenetics

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### Abstract:

*Charity (şadaqa) is commonly given for religious reasons: Muslims donate voluntarily to earn Allah’s pleasure and receive His blessings. However, there have been changes in the way Muslims perceive charity and what significance it has in their life. Many studies have addressed this issue but failed to explore the connection between şadaqa and mental state. This paper was aimed to complement the existing studies by analyzing the process of the shifting interpretation of charity and its positive effects on the donors. This study used qualitative analysis of primary and secondary data. The data was processed through descriptive methods and content analysis. In particular, it focused on analyzing the religious background of the donors, including the biological processes underlying their tendency to give generously. The study concluded that the practice of giving şadaqa increases social, emotional, and spiritual wellbeing, depending on the level of spirituality of the donors and their intention.*

**Keywords:** *Şadaqa, interpretation, Qur’anic exegesis, epigenetics, gene expression*

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### A. Introduction

In Islam, charity (*şadaqa*) is defined as a person’s giving to another person something voluntarily and with the intention of being rewarded by God.<sup>1</sup> Alms can be given in any form (food, clothing, money, etc.) and amount, throughout the year. *Şadaqa* is the giving away some of one’s wealth to the poor, those in need, or other parties who are entitled to receive alms, without expecting any form of compensation.<sup>2</sup> Giving charity is a central teaching in Islam and is described in the

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<sup>1</sup> Ali bin Muhammad bin Ali al-Zayn al-Jurjani, *Kitab al-Ta’rifat*, 1st ed. (Beirut: Dar al-Kutub al-Ilmiyyah, 1983), 132.

<sup>2</sup> Wahbah Al-Zuhayli, *Al-Fiqh Al-Islami wa Adillatuhu*, II (Damascus: Dar al-Fikr, 1985), 916.

Qur'an as a sign of true believers: "Who is he that will loan to Allah a beautiful loan, which Allah will double unto his credit and multiply it many times?" (Q.S. 2:245).<sup>3</sup> This well-known Qur'anic verse has been extensively studied and commented upon, and its exegesis ranges from purely textual to highly advanced philosophical interpretations.

There are several types of donations: material, non-material (even a smile or a kind word is considered charity), and *jānīya* donations. Material alms are usually donations given in the form of food, money, and movable goods. As for *ṣadaqa al-jānīya*, this is a lasting donation whose rewards continue, even after the donor has died and as long as the donation is still used by the intended group of recipients. Such perpetual donations may include funds allocated for the construction of mosques, schools, and hospitals (hadith narrated by Muslim).<sup>4</sup> The third type of donation is considered the most significant because both donor and receiver of the donation benefit from it continually. It follows that charity in Islam is not only diverse in meaning but also multi-leveled in application and practice.

The above-cited Qur'anic verse is commonly understood in the sense that donations are given purely for pious reasons and with no other intention than to earn Allah's blessings and rewards.<sup>5</sup>

So far, present studies have ignored the relationship between charity and its deeper meaning. Most scholarly research focused on the motivation for making charitable donations and the factors that influence motivation such as education, wealth, and gender. Among the motivational factors for charity are internal and external factors as observed by Gofur and Erawati,<sup>6</sup> religious beliefs as reported by Teah and Lwin,<sup>7</sup> and Amos.<sup>8</sup> Furthermore, Baqutayan et al.<sup>9</sup> argued that the psychology of making permanent donations (*waqf*) was motivated by behavior, attitudes, beliefs, and education. The donors are rewarded twice, first through

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<sup>3</sup> Abdullah Yusuf Ali, *The Holy Qur'an: Text, Translation and Commentary* (Lahore, Pakistan, Kasymir, iBazar: Ashraf Printing Pres, 1980).

<sup>4</sup> Muslim bin Hujjaj, *Sahih Muslim* (Beirut: Dar Ihya al Turath al-Arabi, n.d.), vol. 3, 1255.

<sup>5</sup> Bodo B; Schlegelmilch, Adamantios; Diamantopoulos, and Alix Love, "Characteristics Affecting Charitable Donations: Empirical Evidence from Britain," *Journal of Marketing Practice: Applied Marketing Science* 3 (1997): 14-28(15), <https://doi.org/https://doi.org/10.1108/EUM0000000004318>.

<sup>6</sup> Desi Erawati Mohammad Abdul Gofur, "Faktor Pendorong Sedekah Dan Upaya Maintaning Sedekah Pada Lembaga Sosial," *Dialogia: Jurnal Studi Islam Dan Sosial* 18, no.2 (2020): 377-94, <https://doi.org/DOI: https://doi.org/10.21154/dialogia.v18i2.2040>.

<sup>7</sup> Min Teah and Michael Lwin, "Moderating Role of Religious Beliefs on Attitudes towards Charities and Motivation to Donate," *Asia Pacific Journal of Marketing and Logistics, Issac Cheah* 26(5) (2014): 738-60, <https://doi.org/10.1108/APJML-09-2014-041>.

<sup>8</sup> Orley M. Amos Jr, "Empirical Analysis of Motives Underlying Individual Contributions to Charity," *Atlantic Economic Journal* 10 (1982): 45-52, <https://link.springer.com/article/10.1007/BF02300194>.

<sup>9</sup> Shadiya Mohamed S Baqutayan et al., "The Psychology of Giving Behavior in Islam," *Sociology International Journal* 2, no. 2 (2018): 88-92, <https://doi.org/DOI: 10.15406/sij.2018.02.00037>.

receiving blessings from God and second through the happiness and joy they experience in giving, in addition to increased self-satisfaction.<sup>10</sup> However, to our knowledge, there were no studies that elucidated the role of interpretation and meaningfulness of *ṣadaqa* in relation to its underlying biological processes.

This study aimed to complement the existing research by analyzing the shift in the interpretation of charity and the changes in the actor's orientation; in particular, the background factors influencing the donors. Furthermore, the implications of the shift in interpretation and orientation of charity will be discussed. This study also elucidated the probable interaction mechanisms between the shifts in interpretation, orientation, and spirituality of charity, and the underlying epigenetic processes leading to the control of spirituality-gene expression.

Part of this paper is based on the argument that there has been a shift in the orientation and meaning of charity. The orientation and meaning given by a group of people are defined as a reflection of their beliefs and experiences. In other words, the shift in orientation and meaning of charity can become the background of religious beliefs. At the same time, a shift in orientation and meaning affects the actions that are manifested by the actors.

This relationship between charity and its perception was examined through qualitative analysis of primary and secondary data. The collected interview data was used for analyzing the relationship between *ṣadaqa* and its meaning as perceived by the donors. This study involved three Muslim businesses in Purbalingga, Central Java, namely: R-1 (IR), R-2 (EP), and R-3 (NK). The data were analyzed through descriptive and content analysis. Then formulated were the conclusions on the relationship of charity and its meaning.

## **B. Religious Meaning of *Ṣadaqa***

Islamic teachings motivate Muslims to give *ṣadaqa*. The motivation can be driven by the level of how meaningful the act of giving *ṣadaqa* is to the giver. It can be perceived as a response to the threat of punishment (*tarhīb*) but also a promise of reward (*targhīb*). *Tarhīb* means a threat or punishment as a result of a harmful or sinful act.<sup>11</sup> Among examples of *tarhīb* in the Qur'an is the example of the miserly sinners who will have their hands shackled to their neck, be given blood and pus to drink (Q.S. 9:35), with their worldly possessions draped around their neck (Q.S. 3:180). Sinners who have been hoarding their wealth and refusing to share it with others in their lifetime will be punished for their greed and lack of empathy. *Targhīb*, on the other hand, means giving hope to those who will be rewarded with eternal pleasure, love, and

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<sup>10</sup> Baqutayan et al., 88–92.

<sup>11</sup> Mohamad Isa Abd Jalil, "Giving in an Islamic Perspective," *Miqat: Jurnal Ilmu-Ilmu Keislaman* 44, no. 1 (2020): 1, <https://doi.org/10.30821/miqot.v44i1.696>.

happiness. In many verses of the Qur'an Muslims are encouraged to do good deeds, including giving charity, with the promise of eternal reward.<sup>12</sup> Again and again, Allah promises those who give away their possessions *fī sabīl-i-llāh* (in the path of Allah), as in Q.S. 2:245. Allah's recompense for a single act of charity can be 700 times more (Q.S. 2:261), and "for them is a great reward" (Q.S. 57:7).

There is, of course, a clear distinction between the threat of punishment and the promise of reward. Threats are usually associated with refusal or reluctance to carry out an obligatory act (daily prayers, fasting in Ramadhan, pay *zakat*, and *hajj*). In this study, the respondents, who were Muslim entrepreneurs, paid the yearly *zakat* as stipulated in Islamic law. The researcher made it clear to all the participants that this study focused on charity in the sense of *ṣadaqa*, and not *zakat*. R-1 said:

*Zakat is a priority because it's an obligation. I don't want my wealth to cause me to be tortured in Hell in the Hereafter for failing to pay zakat. For paying zakat, I have allocated it by saving a certain amount every day so that in the month of Ramadhan I'll have the funds ready....*<sup>13</sup>

R-2 (EP) explained that he always paid *zakat* according to what was due because he believed that other people had rights to a share of the assets he owned. He added, "Those who don't fulfill it, they'll get tormented, *na'ūdhu bi-llāh* [may Allah protect us].<sup>14</sup> The same view was shared by R-3 (NK), namely that he had to pay *zakat* to obey God and avoid His punishment. Their statements indicate that the respondents understood that the reluctance or even failure to fulfill the obligation to pay *zakat* was identical to being punished in the future.

On the other hand, reward (*targhīb*) associated with the charity was interpreted by the respondents in various ways. For Muslims, charity does not only mean social welfare but also financial and spiritual purification and happiness. R-1 (IR) stated:

*I'm used to giving charity, but it's not programmed, that is, from time to time, when there're family, employees, and neighbors who ask, for their personal needs and for the institutions they handle, such as land needed for schools and hospitals. However, when my family decided to build a great Islamic educational institution, I started the initial physical construction with a fund of four-hundred-and-fifty-million rupiah. Then, to meet the operational needs of the school in the first year, I decided to donate regularly, by setting aside one million rupiahs from the gold shop, every morning before the shop opened. Also, to fund buildings for the next generation, I continue to give charity funds to schools, according to development needs, which means I divide it into three-hundred-and sixty days. Once up to ten million per day, now it's fifty million per week. Even though I spent more money on donations, it turned out that my business didn't go down, in fact, it has gone up, a lot. Initially, I had only one gold shop, then my business continued to grow*

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<sup>12</sup> Abd Jalil.

<sup>13</sup> Naqiyah and Edi Basuki, Interview with R-1 (IR) (2021).

<sup>14</sup> Naqiyah and Edi Basuki, Interview with R-2 (EP) (2021).

until it became ten [shops], although not as big as the first shop. When I can donate, I'm very happy.<sup>15</sup>

R-2 (EP) gave a similar statement:

*I used to donate to my family, employees, and neighbors who asked for it. However, I was once trapped in billions of rupiah debt related to my business. Then I saw the records of people who were in debt to me, quite a lot, who owed me money, ranging from five million to a hundred-and-fifty million rupiah. At that time, I could feel how hard life can be for people in debt. Then I decided to free the ones who had no hope of paying the money back to me. Miraculously, within five years, it turned out that my business was starting to recover and growing bigger and bigger, and finally I managed to pay all my debt. Alhamdulillah (thank God), I could give this kind of şadaqa. Hopefully, Allah will accept it and give me more and more rewards.*

R-3 (NK) shared a similar experience, namely that giving şadaqa increased his rizq (sustenance provided by Allah):

*Initially, I worked as a salesman at Yamaha motorcycles, with a salary of two-million-five-hundred-thousand rupiah per month. I told my mom that I wanted to earn at least five million rupiahs. Then my mom said, "If you want to have a lot of income, give şadaqa often. God willing, your rizq [sustenance] will come easily. Then I started to donate more to charity. Alhamdulillah (thanks to Allah), not long after, I was appointed as an area manager, so that my income increased to more than five million rupiahs. At first, I donated because I wanted to earn more money. Now, thank God, that thought is gone. I'm grateful that I no longer work in someone else's company, now I run my own business, with a lot of income I'd never had imagined before. Allah has given me a lot of rizq [sustenance], so now I must donate more and more. Especially to family, both near and far, and to my old friends from my previous team, their situation is still not that good.*

Tabel 1. Summary of Meaning and Impact of Şadaqa as Perceived by Respondents

Respondent	Meaning/Impact of Şadaqa			
	Social	Material	Spiritual	Happiness
(R-1/IR)				
(R-2/EP))				
(R-3/NK)				

The results as summarized in the above table show that the three respondents, who were Muslim entrepreneurs living in Purbalingga, interpreted the meaning of şadaqa according to their own personal experience. R-1(IR) perceived charity as a way to gain social, financial, spiritual, and psychological wellbeing, while R-2 (EP) and R-3 (NK) perceived it as a means to gain social, financial, and spiritual benefits. All

<sup>15</sup> Naqiyah and Basuki, Interview with R-1 (IR).

respondents agreed that among the meanings of charity are social and interpersonal relationships and a sense of solidarity with others, which is called *ukhuwwa* (brotherhood) in Islam.

The belief in a universal brotherhood is an important part of faith and a source of spiritual strength for Muslims. The bond of *ukhuwwa* is manifested in deep feelings of affection, love, and mutual trust for one's fellow human beings, bound by religion, faith, and piety. In conventional theory, *ukhuwwa* can be understood as social consumption behavior, meaning that all members are committed to supporting each other.<sup>16</sup> Unlike *ukhuwwa* and *targhīb*, the meaning of happiness can be conceptualized as *ihsān*. *Ihsān* is defined as the willingness to achieve perfection in one's character and deeds. It is related to purifying one's intentions and freeing them from any form of self-gratification (altruism). The giver of charity does not aim to obtain any profit except to please God and earn His blessings.

The result of this study reflects the diversity of meanings that the respondents perceive about charitable practices. This diversity is a result of the different conditions of those participating in acts of charity, depending on their level of economic capability, religious understanding and commitment, experience, and faith. In addition, this diversity of meanings is caused by the variety of religious teachings and interpretations, textually, contextually, and conditionally. Each individual tends to prefer a different mode of interpretation, which gives rise to a variety of meanings and resulting actions.

### C. *Ṣadaqa* and Spirituality

The variety in worship (including voluntary acts of charity) can also be viewed from a Sufist perspective. Here there are two groups of worshippers, the *'arifīn* and the *ghayru 'arifīn*, according to Ibn 'Arabi. For the *'arif* (gnostic) every act of worship is offered to Allah alone (*al-Ḥaqq*), while the *ghayru 'arif* (non-gnostic) performs acts of worship to gain benefits in the Hereafter.<sup>17</sup> Al-Sharqawi explains in his *Sharḥ al-Ḥikam* (Commentary on the Wisdom) that, when understood in terms of the sincerity of the heart, there are three categories of worshippers: the *'awām* (those worshipping for fear of punishment, hoping for Heaven, and God's mercy and protection), the *muḥibbīn* or *'ashiqīn* (those filled with love and solely longing to be close to Allah), and, lastly, the

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<sup>16</sup> Jane R. Ziedler Sojka, "Understanding Donor Behavior: A Classification Paradigm," in *In NA - Advances in Consumer Research*, vol. 13, 1985, 240–45. The word 'brother' (akh; pl. ikhwa) as used in the Qur'an has various meanings: blood brother (QS 4:23); male relative (QS 20: 29–30); fellow countryman (QS 7:65), a fellow member in the community (QS 38:23), and member of the brotherhood of Islam (QS 49:10). *Ukhuwwa islāmīya* means 'Islamic brotherhood' in the sense of a shared commitment to support one another and being honest and righteous in their dealings with each other. Biyanto Biyanto, "Berdamai Dengan Pluralitas Paham Keberagamaan," *Teosofi* 5, no.1 (2015): 164–89, <https://doi.org/https://doi.org/10.15642/teosofi.20155.1.164-189>.

<sup>17</sup> Hussayn bin Abdullah Ibn Sina, *Al-Isharat wa al-Tanbihat*, 2nd ed. (Dar al-Nashr wa al-Balaghah, 1383), vol. 3, p. 370.

ṣādiqīn ‘arīfīn (those solely wishing to fulfill their religious obligations to avoid punishment).<sup>18</sup>

Tabel 2. Summary of the Levels of Spirituality of Donors

Respondent	Spirituality Levels of Ṣadaqa			
	For stronger social bonds	For material rewards	For immaterial rewards (hereafter)	For the sake of Allah only
(R-1/IR)				
(R-2/EP))				
(R-3/NK)		(initially)		

Based on the above table, it appears that the three respondents exhibit the following levels of spirituality: R-1 has no other motivation than to please Allah, R-2 hopes for social rewards in addition to rewards from Allah, and R-3 hopes for social, material, and spiritual rewards from Allah.

From a Sufist point of view, R-1 falls in the *muḥbbīn* category, while R-2 and R-3 fall in the lower *‘awām* category. All levels are legitimate levels of piety because Islam teaches Muslims to be charitable to others, and those who give alms have God’s promise that they will be rewarded for their good deeds (Q.S. 18: 88).

This pedagogic mechanism is widely propagated in the Muslim communities, and Muslims are in general encouraged to be charitable. This is characteristic among the Sufi communities as well, including the Chishti order (predominant in Southeast Asia) who calls for people to embrace the religion with a decidedly ethical vision of serving God by serving others, especially the weak and the marginalized.<sup>19</sup>

The result of this study reflects the differences in the spiritual levels experienced by the respondents studied. These differences in conditions were probably due to their differences in economic conditions, religious understanding, experience in charity, and their perceived meaning of charity. In addition, these differences may be part of the spiritual development of the donors. These diverse conditions also reflect the diversity of religious practices and individual preferences. There are differences in the way religious obligations can be fulfilled and certain propositions used and applied in everyday life.

#### D. Ṣadaqa and ‘Spirituality Gene’ Expressions

It is important to understand the biological, bio-psychological, and sociological processes underlying the mechanism of epigenetic pathways. Certain conditions can

<sup>18</sup> Ibn Ibad al-Nafazi and Abdullah al-Sharqawi, *Sharh al-Hikam* (Beirut: Dar al-Kutub al-Ilmiyyah li-l-Haramayn, n.d.), vol. 1., p 69-70.

<sup>19</sup> Khurshid Khan, “Charity in Medieval Sufi Islam: Spiritual Dimensions,” *International Journal of Linguistics, Literature and Translation* 4, no. 5 (2021): 279–86, <https://doi.org/10.32996/ijllt>.

result in the expression of the so-called ‘Generosity Gene’. In other words, the tendency to be charitable is more strongly developed in those people.

Humans, as a biological entity, are part of the global ecosystem and must interact with and adapt to their environment to survive. This concept of evolutionary survival, as initially observed by Darwin, is commonly understood as the physical or genetic survival strategy of a species.<sup>20</sup> Humans have the most highly developed nervous system among the species, and the need for survival may not only be ingrained in the physical setup but may also have a psychological and spiritual dimension. In the context of religiosity and spirituality, the concept of survival may be applied to wellbeing in this life as well as the afterlife.

Every species has a specific genetic makeup; however, intraspecific phenotypic or character variation does occur naturally. These genetic variants may change over time and space, depending on the changes in the environment and without changes to the DNA sequence or genotype. This phenomenon is called phenotypic plasticity, and human DNA is no exception. Phenotypic plasticity entails non-permanent reversible changes in the personality. These adaptive changes may involve physical, physiological, and psychological or behavioral changes.<sup>21</sup>

Human behavior is constructed as a result of interaction between the genome and the environment. These interactions involve the transmission of data in form of various kinds of signals from the environment, including physical and psychological changes. The psychological changes include learning in the form of mental and spiritual training. These exogenous signals are transmitted through auditory and vision organs before being processed in the brain as information. This information can be in the form of electric impulses, chemicals, or hormones that are transmitted through various human organs, and tissue, and body cells. It is responded to by histone modification, DNA methylation, and non-coding RNA that lead to the expression or silencing of genes without changing the genotypic character. These interactions between genes and the environment are known as epigenetics. The received information is responded to by the body and brain cells and results in various types of behavior, including various states of mind and consciousness as reflected in belief and spirituality.<sup>22</sup>

Acts of *ṣadaqa*, as discussed earlier, may result in higher states of consciousness that heighten mental and spiritual wellbeing.<sup>23</sup> These states of mind can now be shown

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<sup>20</sup> See C Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859).

<sup>21</sup> Irwin DE Price TD, Qvarnström A, “The Role of Phenotypic Plasticity in Driving Genetic Evolution,” in *Proceedings Biological Sciences*. 270 (1523), 2003, <https://doi.org/DOI:10.1098/rspb.2003.2372>. PMC 1691402. PMID 12965006.

<sup>22</sup> BH Lipto, *The Biology of Belief: Unleashing the Power of Consciousness, Matter and Miracles* (.ReadHowYouWant.com, 2010).

<sup>23</sup> Baqutayan et al., “The Psychology of Giving Behavior in Islam,” 88–92.

graphically by electronically recording the brainwave (electroencephalogram or EEG). The various brain waves can be beta, alpha, theta, delta, or gamma waves depending on the level of motivation and contentment of the actor. Beta waves comprise a range of brain states from low (e.g., feeling safe), medium (e.g., more vigilant or good stress), and high or survival state (e.g., anger, anxiety, suffering, depression). Alpha brain waves represent relaxation, creativity, and intuition. Theta waves are associated with the states of deep meditation (or *dhikr* as in the Muslim context). Delta waves are one level higher and are manifested in certain spiritual states such as experiencing oneness with the universe and oneness with the Creator. Gamma waves are associated with bliss or the highest state of happiness and spirituality or feelings of being close to God.

The human brain and almost all cells in the human body respond electromagnetically, but also by producing substances specific to these states of mind. These chemicals or hormones inside our body act as external signals to the cells. Through the cell receptors in the cell membrane, these signals are conveyed to the DNA via the processes of epigenetics by switching the genes on and off. Thus, these processes control how genes are expressed to produce a certain structure and function of our body and soul.<sup>24</sup> Regarding the functionality associated with the expression of genes, especially to mental and physical health, it may vary depending on the level of the mental status.

Thus, mental and spiritual wellness resulting from engaging in acts of *ṣadaqa* may activate certain brain wave energy which results in a specific response that influences the condition of the donor. This, however, depends on the specific meaning *ṣadaqa* has to the donor. The most meaningful *ṣadaqa* conditions the giver's mind in such a way that it creates higher brain waves, in some cases even gamma energy. Faith, hope, gratitude, appreciation, love, freedom, and bliss can create higher levels of electromagnetic energy in our brain, and high spirituality can create quantum energy in the realm of infinite possibility beyond time and space.<sup>25</sup>

As mentioned above, *ṣadaqa* may result in higher levels of spirituality that influence the processes in the brain which cause epigenetic changes that lead to gene activation and expression. In addition, giving behavior driven by love and caring will create a peaceful mind for the givers and the whole society. This condition will increase fitness and survival in the community. Certain genes or gene interactions may be responsible for fitness improvement to increase the survival rate of the human species in the form of higher states of 'God Consciousness'.<sup>26</sup>

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<sup>24</sup> J Dispenza, *Becoming Supernatural: How Common People Are Doing the Uncommon*. (Hay House, Inc, 2017).

<sup>25</sup> J Dispenza.

<sup>26</sup> J. J. J. Davis, "The Brain of Melchizedek: A Cognitive Neuroscience Approach to Spirituality - Appendix C - A Brief Introduction to the Neuro-Genetics of Spirituality," 2009, 211–18.

Anderson et al.<sup>27</sup> proposed that DRD2 (dopamine genes), 5-HT1B and 5-HT2A (Serotonin genes), VMAT1 (vesicular monoamine transporter genes), OXTR (oxytocin genes) may express as spirituality phenotype. However, more detailed studies on these genes are still lacking. Among those genes, particular attention has been paid to oxytocin<sup>28</sup> and monoamine vesicular transporter genes (VMAT2).<sup>29</sup>

Şadaqa may also be considered as prosocial behavior. It was found that oxytocin affected prosocial behavior in humans. Zak found that the Empathy–Generosity–Punishment model revealed moral sentiments in producing prosocial behaviors. This author also proved the brain mechanisms that produce prosociality in a brain circuit called human oxytocin-mediated empathy (HOME),<sup>30</sup> Since şadaqa is a kind of emphatic behavior, so this may be regulated by oxytocin (OXTR) gene expression, and depending on the level of oxytocin, and thus determine the level of the donor’s spirituality.

Asadi et al.<sup>31</sup> reported that religiosity may be controlled by the expression of VMAT2 genes and proposed religion and belief in God and the hereafter as the factors influencing it. However, environment and lifestyle may also control the expression of this gene. In some challenging situations, such as social or environmental damage, learning is more evident on the gene. Several candidates of these were proposed by Anderson et al.<sup>32</sup> They also discovered a specific gene that seems to play a particular role in faith and spirituality, VMAT2 or the so-called “God Gene”.<sup>33</sup>

The evidence that this so-called ‘God Gene’ is related to spiritual and altruistic behavior was demonstrated by Barraza et al.<sup>34</sup> Their simulation study found that the application of OXTR on the donating participants resulted in them donating 48 percent more to charity than those that had been given a placebo. The study concluded

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<sup>27</sup> M.M. Anderson, M.R., Miller, L, Wickramaratne, P., Svob, C., Odgerel, Z., Zhao R., and Weissman, “Genetic Correlate of Spirituality Religion and Depression: A Study in Offspring and Grandchildren at High and Low Familial Risk for Depression,” *Spirituality in Clinical Practice* 4(1) (2017): 43–63, <https://doi.org/http://dx.doi.org/10.1037/scp0000125>.

<sup>28</sup> P.J. Zak, “The Physiology of Moral Sentiments,” *J. Econ. Behav. Organ* 77 (2011): 53–65.

<sup>29</sup> S. Habibi Asadi S, Gholizadeh Z, Jamali M, Nazizadeh A, “VMAT2 Gene Molecular Study Religious Behavior and Belief in God of the Citizens of the City of Tabriz in Iran,” *SOJ Genit Sci* 3(1) (2016): 1–6.

<sup>30</sup> Zak, “The Physiology of Moral Sentiments,” 53–65.

<sup>31</sup> Asadi S, Gholizadeh Z, Jamali M, Nazizadeh A, “VMAT2 Gene Molecular Study Religious Behavior and Belief in God of the Citizens of the City of Tabriz in Iran,” 1–6.

<sup>32</sup> Anderson, M.R., Miller, L, Wickramaratne, P., Svob, C., Odgerel, Z., Zhao R., and Weissman, “Genetic Correlate of Spirituality Religion and Depression: A Study in Offspring and Grandchildren at High and Low Familial Risk for Depression,” 43–63.

<sup>33</sup> jAsadi S, Gholizadeh Z, Jamali M, Nazizadeh A, “VMAT2 Gene Molecular Study Religious Behavior and Belief in God of the Citizens of the City of Tabriz in Iran.”

<sup>34</sup> SP. Barraza, JA, McCullough, ME, Ahmadi, S, Zak, “Oxytocin Infusion Increases Charitable Donations Regardless of Monetary.,” *Hormones and Behavior* 60 (2011): 148–51, <https://doi.org/doi:10.1016/j.yhbeh>.

that there was a significant positive relationship between oxytocin level and increased generosity.

Similarly, Van Ijzendoorn et al.<sup>35</sup> studied the effects of oxytocin on charity giving behavior based on a double-blind randomized trial. They also concluded that oxytocin appeared to increase willingness to exhibit charitable behavior.

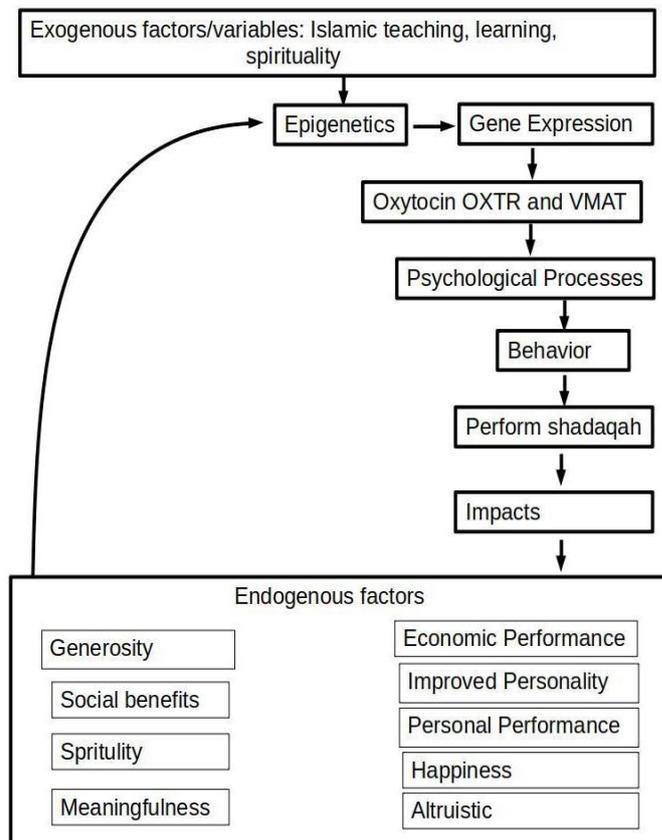


Fig. 1. The hypothetical underlying process of şadaqa.

Exogenous factors (e.g., Islamic teaching, education, social interaction) through epigenetic pathways may lead to the expression of spirituality genes (VMAT2) and oxytocin (OXTR) genes, which will increase willingness to give şadaqa. Various impacts of şadaqa will become the endogenous factors that affect the epigenetics reprogramming that leads to the reactivation of VMAT2 and OXTR genes. This hypothetical positive feedback mechanism may explain why the donors tend to give şadaqa more frequently and more generously over time. However, the real mechanisms might be much more complicated. Thus, further investigations are needed, especially

<sup>35</sup> M. Van IJzendoorn, MH, Huffmeijer, R, Alink, LRA, Bakermans-Kranenburg, MJ, and Tops, "The Impact of Oxytocin Administration on Charitable Donating Is Moderated by Experiences of Parental Love-Withdrawal," *Frontiers in Psychology* 2, no. 258 (2011), <https://doi.org/DOI:10.3389/fpsyg.2011.00258>.

studies about the detailed mechanisms of the environmental conditions that lead to the expression of hypothetical spirituality genes as proposed by Anderson et al. (2016) and their impact on bio-psychological characteristics.

#### **D. Conclusion**

In conclusion, *ṣadaqa* may have various positive personal and social effects on the donors. At the personal level, this includes improved overall performance manifested in increased gratitude, meaningfulness, satisfaction, and happiness, and becoming more altruistic and spiritually aware. At the social level, this may include reduced suffering and economic distress, improved social wellbeing, and stronger social bonds. These characteristics depend on the level of spirituality on part of the donor. Spirituality affects the epigenetic status that leads to the expression of certain ‘Spirituality genes’ that manifest as prosocial and altruistic behavior.

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