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# Religious Healing and the Asclepius Cult: A Case of Placebo Effects

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**Abstract:** This paper suggests a cognitive approach to the Asclepius cult which may throw light on the supplicants' personal experiences of healing during the ritual of incubation. In particular, the possibility of healing at the Asclepius sanctuaries is presented as a potential result of the patients' placebo responses. The prerequisites of placebo effect as determined by Nicholas Humphrey are traced in the wider social and conceptual contexts of Greek antiquity and the specific religious context of the Asclepius cult. In this framework, it is argued that personal experiences of people, social information about the Asclepius' healing powers and the confirmation of this information by human doctors would have influenced how people "lived" an illness or a disease infliction, "appropriated" the religious beliefs in Asclepius, and experienced cures at the asclepieia. These cures could have derived from patients' self-healing mechanisms, but would have been perceived and conceptualized as "healing miracles" performed by the god. This preliminary study intends to show how cognitive approaches can enrich historical knowledge on the Asclepius cult and on supplicants' healing experiences, suggesting that such approaches may contribute to a better understanding of "lived religion" and of multiple religious experiences in various religious contexts.

**Keywords:** Asclepius, cognitive approach, cognitive historiography, placebo effect, religious experience, lived religion, appropriation, self-healing, healing miracles

## Introduction

This paper examines how the universal human experience of sickness and recovery would have been shaped within the specific religious context of the Asclepius cult. Taking the modern 'lived ancient religion' approach,<sup>1</sup> the focus is transferred from the institutional organization of the cult and the various ideas and beliefs in the Asclepius' healing powers to the ways in which people of Greek antiquity would have 'appropriated' these beliefs and might have experienced healing miracles at the asclepieia. Modern research on the embodied cognition shed light on the ways in which these ideas and beliefs could have affected the actual experiences of sickness and recovery by modifying patients' mental and bodily states and reactions. In particular, it is suggested that supplicants might have actual healing experiences at the Asclepius sanctuaries as a result of placebo effects. Attempting a preliminary investigation of this possibility, it is explored whether certain prerequisites of the placebo effect, as determined by the English psychologist Nicholas Humphrey,<sup>2</sup> could be traced in the Asclepius cult.

1 The 'lived religion' approach, suggested by Rubina Raza and Jörg Rüpke ("Individual Appropriation"; "Appropriating Religion") in the first issue of the journal *Religion in the Roman Empire*, transfers the interest of historical research from the institutional organization and official belief systems of the ancient religious traditions to the actual religious experiences of individuals or unofficial groups of people who appropriated and embodied specific religious beliefs and practices in response to situational needs and personal demands.

2 Humphrey, "Great Expectations"; "Placebo Effect".

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## The Placebo Effect

Modern researchers and historians have suggested that the Asclepian therapy might have actual healing powers probably inducing a kind of placebo effect.<sup>3</sup> However, such assumptions have not reached particular conclusions. Cognitive theories and models endorsed by historical research might provide insights into the Asclepius supplicants' personal experiences of healing and offer theoretical ground to the historical hypotheses.<sup>4</sup>

Placebo effect is defined as the reaction of the human body which, while it is suffering from various illnesses or diseases, can start recovering after the administration of certain remedies, before these remedies affect the human organism or even if these remedies are actually inert.<sup>5</sup> Humphrey attributes the possibility of this health improvement to the regular physiological self-healing mechanisms which human species has developed during evolution. These mechanisms enable humans to use their own resources in order to cope with various diseases, injuries and invasions which threaten their personal well-being. The wider external settings (natural, cultural, social etc.) or internal (biological functions, various psychological states etc.) milieu can affect the extent to which patients are able to make more or less extensive use of their internal resources for health restoration.<sup>6</sup>

In particular, humans receive information from their environment about the existing healing possibilities and form certain beliefs about the effectuality of these possibilities. These beliefs can further generate anticipations inspiring hope or despair for the patients' health outcome. Hope in positive outcomes, even if it is grounded on delusive anticipations,<sup>7</sup> is the major motivational power of the *placebo effect*.<sup>8</sup> Negative emotions, like fear and despair, on the other side, can have opposite results, worsening health conditions and generating the so-called *nocebo effect*.<sup>9</sup>

According to Humphrey, humans can form certain beliefs which can further inspire hope based on *their own previous experiences*, the *rational arguments* deriving from *learning associations*<sup>10</sup> which connect certain features of the applied treatments with recovery, and *the assurance offered by some external authority* that this treatment is going to be effective. Particularly the latter is one of the most operative ways of planting an idea in the people's minds which may loosen patients' anxiety and move them to activate their own self-healing processes.<sup>11</sup>

Furthermore, Humphrey<sup>12</sup> argues that a placebo can be a treatment, which, although is not effective through direct impact on the body, operates when and because:

- The patient is aware that he/she receives a medical treatment.
- The patient strongly believes that this treatment can be effective. This belief may derive from his/her previous personal experiences or the reputation of this specific healing method or of the healer who is considered to be an authority.
- This patient's conviction generates the prospect that, if he/she follows this treatment, he/she is going to feel better and recover.
- This prospect affects his/her inherent capacity of self-healing, thereby accelerating the desired recovery.
- The effectiveness of placebos increases when they are applied to specific diseases and especially to the suffering bodily organs or limbs.<sup>13</sup>

3 E.g. Gesler, "Therapeutic Landscapes"; Shapiro and Shapiro, "The Powerful Placebo", 5–6; Lyttkens, "Ancient Greek Medicine", 20–21; Martzavou, "Dream", 186; see Panagiotidou, "Disease and Healing".

4 Panagiotidou, "Disease and Healing", 101–105.

5 E.g. Eisenberg, "The Search of Care"; Blum, "Beyond Medicine", 420; Humphrey, "Placebo Effect", 1.

6 Humphrey, "Great Expectations", 259.

7 Bulbulia, "Nature's Medicine".

8 On hope see e.g. Snyder et al., "The Will and the Ways"; Snyder, "Psychology of Hope"; Snyder et al., "The Role of Hope".

9 E.g. Blum, "Beyond Medicine", 403; Benedetti et al., "The Biochemical and Neuroendocrine Bases"; Kaptchuk et al., "The Placebo Effect Illness", 531.

10 Humphrey, "Great Expectations", 274; cf. Voudouris et al., "Conditioned Placebo Responses"; Colloca et al., "The Role of Learning"; Colloca and Miller, "How Placebo Responses are Formed".

11 Humphrey, "Great Expectations", 274; cf. Blum, "Beyond Medicine", 406; Kaptchuk et al., "Placebo Effect", 531; Campbell–Meiklejohn et al., "How The Opinion of Others", 1168–1169.

12 Humphrey, "Great Expectations", 256.

13 Humphrey, "Placebo Effect", 2.

The Asclepius cult seems to meet all those criteria and parameters set by Humphrey as prerequisites to the generation of placebo responses.<sup>14</sup> Applying his model to supplicants' personal stories, the appropriation of the religious beliefs in Asclepius' healing powers and the patients' bodily and mental journeys from their homelands and illnesses to their visits to the asclepieia and cure can be reconstructed.

## Asclepian Therapy and Mundane Medicine in Greek Antiquity

Health problems and the search for recovery constitute universal human concerns, since they threaten the survival of the human species and individual well-being. Shared ideas, perceptions and beliefs about health and disease, being formulated and established in different social and cultural contexts, affect the cognitive and affective reactions of people who experience an illness, and further form the ranges of practices which they should follow in order to recover. Concerns about health and well-being are quite early documented in ancient Greece where religious healing and mundane medicine underwent almost parallel developments.

Already from the Bronze Age, votive offerings representing bodily parts have been revealed mainly on Crete by the archaeologists, indicating that people very early used to resort to the deities in order to request cure or to thank them for having been cured.<sup>15</sup> The attribution of the causes of diseases to the gods, at least from the Homeric age, prompted patients to seek divine aid for recovery.<sup>16</sup> In the Archaic period, certain healing powers were ascribed to the gods of the Greek pantheon.<sup>17</sup> Among them, Apollo was the archetypical deity who was associated with the human health. He was famous for his healing abilities deriving from his multiple divine powers and he was presented to perform cures in unaccountable ways, without previous training or application of specific medical methods and techniques.<sup>18</sup> Beyond the deities, certain heroes were popular for their healing skills and the cures they offered at their local sanctuaries.<sup>19</sup>

The attribution of healing powers to gods and heroes was associated with the prevalent archaic belief in the divine origins of illnesses and diseases. Such a social belief would have affected the cognitive processing of the experience of sickness. Moving by the common human tendency to look for causes, results and meaning,<sup>20</sup> patients would have attempted to trace the origins of diseases to their own actions which exasperated the gods who in turn send the disease as a means of punishment. Such conceptualization would have activated the cognitive mechanisms of self-responsibility,<sup>21</sup> morality,<sup>22</sup> and social conformity<sup>23</sup> as well

<sup>14</sup> See Panagiotidou, "Disease and Healing", 101–105.

<sup>15</sup> Wickkiser, "Asklepios", 33. On the 'votive limbs' found on the Cretan Peak sanctuaries see e.g. Peatfield, "Minoan Peak Sanctuaries"; Nowicki, "Some Remark"; Jones, "Peak Sanctuaries and Sacred Caves"; Morris and Peatfield, "Health and Healing".

<sup>16</sup> In the *Iliad* (I, 43–67), for instance, Apollo is represented as the one who sent the plague to the Greek camp and the one to whom the Greeks offered sacrifices asking the elimination of the disease.

<sup>17</sup> E.g. Kearns, "The Heroes of Attica", 14; Forsén, "Griechische Gliederweihungen"; Oberhelman, "Anatomical Votive Reliefs", 48–49.

<sup>18</sup> In the sixth century BCE he was called *Apollo Iatros* (doctor) in Asia Minor and the wider region of Black Sea an epithet which was later attached to his name in Athens as well. In 453 BCE he was evoked by the Romans in order to relieve them from the plague which had broken out in their city and he received the epithet *Medicus* for his services. See e.g. Hart, "Asclepius", 19; Wickkiser, "Asklepios", 50–51; Ustinova, "Apollo Iatros".

<sup>19</sup> Better documented are the Attic healing heroes Amphiaraos (e.g. Petrakos, "Oropos"; "The Inscriptions of Oropos"; Schachter, "Cults of Boiotia", 19–26), Amyntos (e.g. Purday, "Minor Healing Cults", 69–102) and Heros Iatros (e.g. Usener, "Götternamen", 149–153; Rohde, "Psyche", 133, 150–151; Kerényi, "Heros Iatros"); see further Kearns, "The Heroes of Attica"; Verbanck-Piérard, "Les héros guérisseurs"; "Gli eroi salutari"; "The Hippocratic Impact on Healing Cults"; Vikela, "Healer Gods"; Wickkiser, "Asklepios", 51–52; Petridou, "Asclepius the Divine Healer", 292.

<sup>20</sup> E.g. Heider, "Social Perception"; Kelley, "The Processes of Causal Attribution"; Shaver, "Defensive Attribution"; Cushman, "Crime and Punishment"; Crisp and Turner, "Attribution", 42–62.

<sup>21</sup> E.g. Shaver, "The Attribution of Blame"; Shaver and Drown, "Causality, responsibility, and self-blame"; Alicke, "The psychology of blame"; Lagnado and Channon, "Judgments of Cause and Blame".

<sup>22</sup> E.g. Shultz et al., "Assignment of Moral Responsibility"; Bandura, "Social Cognitive Theory"; Pizarro, "Causal Deviance"; Baird and Astington, "The role of mental state understanding"; Moll et al., "The Neural Basis of Human Moral Cognition".

<sup>23</sup> E.g. Epley and Gilovich, "Just Going Along"; Cialdini and Goldstein, "Social Influence"; cf. Jensen, "Doing it the Other Way Round".

as the emotions<sup>24</sup> of compunction and awe, and urged personal action. Since diseases were perceived to have divine origins, patients wishing to ameliorate their symptoms should placate the gods. Specific social practices, including sacrifices, prayers, and incantations developed in order to accomplish this task. Such techniques were used by religious healers, like priests, purifiers and magicians, who offered their services for a fee and promised to their potential clients that they could mollify the divine anger.<sup>25</sup>

Along with the beliefs in the divine origins of the diseases and the religious practices for health restoration, an early development of mundane medicine is traced quite early to Greek antiquity. Already from the Bronze Age, epigraphic evidence indicates the early emergence of medicine as a specific field of expertise.<sup>26</sup> In the Homeric *Iliad*, medical healing appears to play a crucial role in battlefield. Despite the cases in which diseases and injuries were presented as deriving from gods and demanding divine cure,<sup>27</sup> Homer describes specific healing methods which were used by professional doctors in order to treat the battle wounds.<sup>28</sup> These practitioners were mentioned to as “those of many drugs” (*polyfarmakoi*)<sup>29</sup> and enjoyed others’ respect because of their training and knowledge. This attitude towards doctors indicates an early distinction between them and the ordinary people and other kinds of healers.<sup>30</sup> The prominent position of doctors became even more evident in the early sixth century BCE. During that time, physicians, studying and possibly trained at the medical schools found mainly in Ionia and Magna Graecia,<sup>31</sup> would have been much in demand in other cities, as the appearance of the first public doctors and the itineration of professional practitioners from city to city indicates.<sup>32</sup>

In the fifth century BCE, the emergence of Hippocratic medicine and the establishment of the medical Hippocratic School by the Hippocrates’ students and descendants brought advances in the medical art which gradually modified the ways in which people perceived and conceptualized illnesses and diseases from the classical period onwards. Instead of attributing the diseases to divine revenge, the Hippocratic doctors looked for the causes of health problems in nature and tried to understand the links between the things in the external world and the human body.<sup>33</sup> The Hippocratic authors perceived the gods as neutral divine forces who control the world and can affect the human body. But in no case these forces intentionally cause diseases and other ordeals because of their will for revenge and punishment of the profane deeds of impious persons.<sup>34</sup> Consequently patients should cease seeking to find the causes of their sickness exclusively in their actions, since they were not so much responsible for it. Such perception of disease further provided alternative ways and task-solving strategies for health restoration.<sup>35</sup> The Hippocratics claimed that health could be restored through diet, adjustments of the environmental conditions and modification of other external elements which may disturb the appropriate function of the human body.<sup>36</sup> In this context,

<sup>24</sup> E.g. Greene et al., “An fMRI Investigation”; Murphy and Tyler, “Procedural Justice and Compliance Behaviour”.

<sup>25</sup> See e.g. Dodds, “The Greeks”, 140, 146; Eijk, “Medicine and Philosophy”, 45, 66; Lyttkens, “Health, Economics”; Rosen, “A History of Public Health”, 8.

<sup>26</sup> E.g. the appearance of the word *i-ja-te*, a forerunner of the Greek word *iatros* (doctor), in a tablet as well as in a Minoan inscription dated around 1550 BCE; see Wickkiser, “Asklepios”, 10–11; see further Arnott, “Healing and Medicine”, 266; “Minoan and Mycenaean Medicine”, 157.

<sup>27</sup> Hankinson, “Pollution and Inflection”; “Magic, Religion and Science”, 1; Wickkiser, “Asklepios”, 11–12.

<sup>28</sup> Homer, *Iliad*, IV, 193–218; V, 902–4; IX, 804–48; see further Wickkiser, “Asklepios”, 12–13; on battle wounds and the treatments described by Homer see e.g. Santos, “Chest Trauma” Salazar, “The Treatment of War Wounds”, 126–158; Sahlas, “Functional Neuroanatomy in the Pre-Hippocratic Era”.

<sup>29</sup> Homer, *Iliad*, XVI, 28.

<sup>30</sup> Homer, *Odyssey*, 17, 382–6; see further Wickkiser, “Asklepios”, 14.

<sup>31</sup> Wickkiser, “Asklepios”, 16.

<sup>32</sup> From the late fifth century annual competitions took place in some cities in order to fill the position of public doctor; Wickkiser, “Asklepios”, 16; 18–21; on public doctors see further e.g. Cohn-Haft, “The Public Physicians”; Pleket, “Arts”; Jouanna, “Hippocrates”, 77–78.

<sup>33</sup> Demand, “Birth”, 34–36; Jouanna, “Hippocrates”, 325–327; Martin, “Inventing Superstition”, 36–39; Nutton, “Ancient Medicine”, 63.

<sup>34</sup> Martin, “Inventing Superstition”, 42–43; Nutton, “Ancient Medicine”, 65; Eijk, “Medicine and Philosophy”, 45; Wickkiser, “Asklepios”, 31.

<sup>35</sup> Wickkiser, “Asklepios”, 31.

<sup>36</sup> On the Sacred Disease, 18.3; Eijk, “Medicine and Philosophy”, 60; Wickkiser, “Asklepios”, 31.

doctors were recognized as authoritative figures which accumulated the knowledge to heal the human diseases. Their skills comprised a kind of craft which was transmitted from seniors to junior physicians and demanded specific training.<sup>37</sup> Trained physicians attempted to differentiate themselves from other kinds of healers, like root-cutters and drug-sellers, who, without formal training, acquired practical knowledge in medicinal herbs and plants and sold drugs to the sick.<sup>38</sup> In addition, they rejected the healing practices employed by religious healers whom they accused of impiety because of their claim that they could cure their clients by manipulating the gods.<sup>39</sup> However, although the Hippocratic doctors disputed the belief that the gods cause diseases to people and therefore the appeasement of the deities as means for health restoration, they recognized the potential salutary effects of some religious practices—like prayers and visits to sanctuaries—employed as supplementary to medical methods.<sup>40</sup> Such attitude of the Hippocratic doctors left some space for the beliefs in the divine healing powers. Especially in cases in which the human medicine was proved unable to achieve the desired health outcome, visiting the temples of healing gods was an alternative healing option for patients who sought cure. Particularly Asclepius was presented as the healing deity par excellence who had a close relationship with the human physicians.<sup>41</sup> The mythical sagas presented Asclepius as a divine doctor with superhuman healing powers. Mortal physicians claimed their descent from Asclepius, for whom they considered to be the founder of medical craft,<sup>42</sup> and called themselves Asclepiades.<sup>43</sup>

From the appearance of the Asclepius cult as an official religious institution in Epidaurus in the sixth century BCE, the flourishing of the Asclepian therapy in the following centuries coincided with the developments in mundane medicine after the birth of Hippocrates. Assimilating the alterations in the perception of health and disease gradually brought by the Hippocratic doctors, Asclepius was not so much presented as a god with multiple superhuman powers. Above all he was a divine healer who was trained in the art of medicine and continually followed the advances in medical practices. In addition, he was not believed to have caused diseases among people. Instead, he was perceived as the benevolent deity who eagerly offered treatments to suffering persons who asked for his intervention.<sup>44</sup>

The Asclepius sanctuary in Epidaurus became a popular healing center and influenced the establishment of asclepieia in other places. Beyond some early sanctuaries devoted to Asclepius in Arcadia and Messene in the archaic era, asclepieia were built in Corinth and Athens in the fifth century BCE under the influence of Epidaurus. Following the Epidaurian models, asclepieia were also established in Pergamon, Lebena and on Kos in the fourth century BCE and developed into pan-Hellenic healing centers. During the Hellenistic and Roman periods, the popularity of Asclepius widely increased and temples were dedicated to him in almost every Greek city of the Greco-Roman world. People used to visit the local asclepieia as part of their ordinary activities in order to pray for their health and well-being and to meet their friends and acquaintances. When, however, they confronted serious health problems, they could decide to visit one of the Asclepius great sanctuaries, where the healing powers of the god were considered to be more effective.<sup>45</sup> Thus, gradually the Asclepius cult developed into a popular healing resort for patients and acquired prominent position in people's lives.

37 Nutton, "Ancient Medicine", 69–70, 87–88; Wickkiser, "Asklepios", 14; see further Temkin, "Greek Medicine".

38 Lloyd, "Science", 119–135; McNamara, "Conjurers", 5; on folk healers see Panagiotidou, "Asclepius: A Divine Doctor".

39 *On Ancient Medicine*, I, 1, 3. See e.g. Martin, "Inventing Superstition", 42–45; McNamara, "Conjurers", 5–7; Nutton, "Ancient Medicine", 114; Eijk, "Medicine and Philosophy", 20, 33, 46, 48, 57–58; Wickkiser, "Asklepios", 30–33; Panagiotidou, "Asclepius: A Divine Doctor".

40 E.g. *On Sacred Disease* 1; *Regimen* IV 87; see Martin, "Inventing Superstition", 39, 46–50; Wickkiser, "Asklepios", 31–32.

41 Nutton, "Ancient Medicine", 113–114.

42 E.g. Diodorus, *Bibliotheca Historica*, V, 74, 6 = Edelstein and Edelstein, "Asclepius", v. I, T. 29, 355; Hippocrates, *Ius Iurandum*, 1 = Edelstein and Edelstein, "Asclepius", v. I, T. 337; Galen, *De Sanitate Tuenda*, I, 8, 20 = Edelstein and Edelstein, "Asclepius", v. I, T. 338; Plato, *Symposium*, 186c–e; Sextus Empiricus, *Adversus Mathematicos*, I, 260 = Edelstein and Edelstein, "Asclepius", v. I, T. 341.

43 Aelius Aristides, *Oratio* XXVIII, 1–24 = Edelstein and Edelstein, "Asclepius", v. I, T. 282; Edelstein and Edelstein, "Asclepius", v. II, 60.

44 E.g. Plutarch, *Quaestiones Convivales*, IX, 14, 4 = Edelstein and Edelstein, "Asclepius", v. I, T. 340.

45 Dillon, "Pilgrims", 76; Edelstein and Edelstein, "Asclepius", v. II, 234; Panagiotidou, "Disease and Healing", 82–91.

## Asclepius' Reputation: Previous Experiences, Learning Associations and Assurance by External Authority

The Asclepius cult was one among other healing alternatives that people of the ancient Greek world could appropriate when they faced various health problems. These alternatives were not mutually exclusive. The same person could consult doctors or folk healers, resort to local healing heroes or deities, and/or ask for Asclepius' help.<sup>46</sup> The orator Aelius Aristides, for instance, who wrote his *Sacred Tales* in the second century CE, suffered from chronic illness and consulted simultaneously human doctors, Asclepius and other divine healers seeking relief.<sup>47</sup>

Patients' choices and decisions would have been influenced by their own previous experiences of treatment provided by different health-providers as well as by the stories of previous healing which they would have heard from their relatives, friends and acquaintances. Aeschines the Rhetor, for example, who suffered from a festering wound on his head for a year, had a negative personal experience of human medicine, and so, in despair, he turned his hope to Asclepius who cured him in three months.<sup>48</sup> Epictetus, in his *Dissertationes*, prompts patients who had been healed by Asclepius to call others to follow their paradigm:

“So is it enough for you yourself to feel no pain unless you proclaim, ‘Come together, all you who are suffering from gout, headaches, fever, who are lame and blind, and look at me who is free from every suffering’? That is a vain and vulgar thing to say, unless, like Asclepius, you are able at once to show by what treatment those others will also become well again, and for this end set you own good health as an example.”<sup>49</sup>

And Marcus Antoninus admits “We have all heard, ‘Asclepius has prescribed for so and so riding, or cold baths, or walking barefoot...’”<sup>50</sup>

In addition to personal stories, the healing narratives recorded in inscriptions and displayed at the asclepieia propagated the healing powers of Asclepius. These inscriptions were presented as individual dedications of patients who had visited the Asclepius' sanctuaries in the past and had personal experiences of healing. The narratives mention the names and the origins of the patients intending to claim that they were real people who had travelled from their motherlands to the asclepieia and were cured by Asclepius. The inscriptions also mention the diseases or injuries from which these named persons suffered. Thereby patients who visited the sanctuaries could read or hear the personal stories of others who suffered from similar health problems and had been cured by the divine physician, giving to newcomers reasons to hope in recovery. Lastly, but not least, the therapeutic practices and treatments applied by Asclepius were described in the inscriptions intending to convince the supplicants that Asclepius effectively used specific medical means.

More elaborated and detailed stories of supplicants who resorted to the asclepieia are presented in literary works. Particularly theatrical plays and comedies contributed to the spread of beliefs in the Asclepius healing powers.<sup>51</sup> The Herondas' *Mimiambos* IV<sup>52</sup> vividly describes the visit of a woman, named Cyno, along with one of her friends and a slave to the asclepieion (possibly of Kos) in order to offer thanks-giving to Asclepius for having previously been healed by him. Aristophanes' comedy, *Ploutos*,<sup>53</sup> presents the servant of the protagonist to narrate the healing experience of his master when the latter participated in the ritual

<sup>46</sup> Nutton, “Ancient Medicine”, 286; Wickkiser, “Asklepios”, 43–44; Panagiotidou, “Disease and Healing”, 108; “Asclepius: A Divine Doctor”.

<sup>47</sup> Aelius Aristides, *Oratio* XLVII, 57, XLVIII, 31–35, XLIX, 46–48 = Edelstein and Edelstein, “Asclepius”, v. I, T. 418, 417, 325; see e.g. Behr, “Aelius Aristides”, 25–27, 44; Wickkiser, “Asklepios”, 57, 43–44.

<sup>48</sup> Cf. *Anthologia Palatina*, VI, 330 = Edelstein and Edelstein, “Asclepius”, v. I, T. 404.

<sup>49</sup> Epictetus, *Dissertationes*, IV, 8, 28–29 = Edelstein and Edelstein, “Asclepius”, v. I, T. 406.

<sup>50</sup> Marcus Antoninus, *In Semet Ipsum*, V, 8 = Edelstein and Edelstein, “Asclepius”, v. I, T. 407.

<sup>51</sup> Wickkiser, “Asklepios”, 38.

<sup>52</sup> Menander, *Mimiambos*, IV, 1–95.

<sup>53</sup> Aristophanes, *Ploutos*, 633–747 = Edelstein and Edelstein 1998, vol. I, T. 421.

of incubation at the asclepieion of Aegina. *Curculio*,<sup>54</sup> a play written by the Roman playwright Plautus, takes place in the temple of Asclepius in Epidaurus. Such public theatrical performances along with the healing narratives, which would have circulated among people of the ancient Greek world, would have increased the Asclepius' reputation as a divine physician. Thereby, the social information about Asclepius' healing powers would have flowed in people's surroundings, being available to frame personal experiences, when individuals succumbed to an illness or a disease.<sup>55</sup>

Personal experiences of treatment, in addition of being a source of information about the effectuality of different healing choices, would have mediated the establishment of learning associations between the applied treatments and health outcomes. These associations are reflected on the healing inscriptions from the asclepieia. The earlier stories, dated in the fourth century BCE, present Asclepius to act as a doctor, but to apply vague remedies and to immediately perform extreme surgeries. It was the time when Hippocratic medicine made its first steps. People had begun to familiarize themselves with Hippocratic doctors, but the perception of health and disease as being dependent on divine will still prevailed. In this conceptual context, Asclepius was presented as the healing god who had supernatural powers to perform miraculous treatments. An early inscription from Epidaurus,<sup>56</sup> however, indicates that patients started to expect from Asclepius the use of mundane medical practices.

"Ambrosia from Athens. She came as a suppliant to the god. As she walked about in the Temple she laughed at some of the cures as incredible and impossible, that the lame and the blind should be healed by merely seeing a dream. In her sleep she had a vision. It seemed to her that the god stood by her and said that he would cure her, but that in payment he would ask her to dedicate to the Temple a silver pig as a memorial of her ignorance. After saying this, he cut the diseased eyeball and poured in some drug. When the day came she walked out sound."

In this story, the suppliant appears to dispute the medical means used by Asclepius.<sup>57</sup> Learning associations generated during patients' encounters with human doctors would have entailed that dreams were diagnostic but not effective therapeutic practices.<sup>58</sup> Thereby, Ambrosia's expectations of healing would have weakened when she read the inscriptions and realized that Asclepius, although he was a physician, did not use the conventional methods of doctors. However, Asclepius appeared in her dream to perform an immediate surgery and to pour 'some' drug on her eyeball. So, it was not the dream of the god *per se*, but the god's actions as a doctor which brought the desired recovery.<sup>59</sup>

As long as the Hippocratic medicine flourished and professional doctors were much more available in Greek cities,<sup>60</sup> patients would have been more familiarized with mundane medical practices and formed certain expectations of how treatments should be performed and how cures could be accomplished.<sup>61</sup> These expectations are reflected in the later inscriptions from the asclepieia—mainly from that in Lebena—in which Asclepius appears to suggest specific prescriptions, drugs and remedies to his supplicants. In these stories, Asclepius acts more as a doctor than as a god—although his healing powers were perceived as superior and more effective than those of his mortal counterparts, since he could cure diseases, and especially chronic ones, that human doctors could not.<sup>62</sup> Poplius Granius Rufus, for example, extensively describes the god's prescription in an inscription dedicated to the asclepieion of Lebena as thanks-giving for having his chronic cough cured by Asclepius:

<sup>54</sup> Plautus, *Curculio*, I, 1, 61–62; II, 1, 216–273; III, 1, 389–390, V, 3, 699, 885–886 = Edelstein and Edelstein, "Asclepius", v. I, T. 429, 430, 579, 741.

<sup>55</sup> Panagiotidou, "Disease and Healing", 26.

<sup>56</sup> IG IV<sup>2</sup> 1, 121, IV = Edelstein and Edelstein, "Asclepius", v. I, T. 423, I 4.

<sup>57</sup> To note that the healing narratives are not taken as literal stories of real patients who experienced actual cures. They are mainly approached as stories which intended to convince supplicants for the effectuality of the Asclepian therapy.

<sup>58</sup> Holowchack, "Ancient Science and Dreams", 382–299; Petridou, "Asclepius the Divine Healer", 297; cf. *Regimen*, IV.

<sup>59</sup> See Panagiotidou, "Asclepius".

<sup>60</sup> Nutton, "Ancient Medicine", 152–155.

<sup>61</sup> On how social learning and cultural conditioning would have formed the supplicants' expectations see Panagiotidou, "Asclepius' Myths and Healing Narratives".

<sup>62</sup> Panagiotidou, "Disease and Healing", 90–91; "Asclepius' Myths and Healing Narratives"; cf. Wickkiser, "Asklepios", 32–33.

“When for two years I had coughed incessantly so that I discharged purulent and bloody pieces of flesh all day long, the god took in hand to cure me... He gave me rocket to nibble on an empty stomach, then Italian wine flavored with pepper to drink, then again starch with hot water, then powder of the holy ashes and some holy water, then an egg and pine-resin, then again moist pitch, then iris with honey, then a quince and a wild purslane to be boiled together – the fluid to be drunk, while the quince was to be eaten – then to eat a fig with holy ashes taken from the altar where they sacrifice to the god. – – – ”<sup>63</sup>

Having a personal experience of healing at the asclepieion, the same supplicant resorted to the Asclepius’ aid for a second time, when he confronted another health problem:

“My right shoulder – – – and the whole from – – – giving me unendurable pains, the god ordered me to be confident and gave me relief. I should apply a plaster of barley-meal mixed with old wine and of a pine cone ground down with olive oil, and at the same time a fig and goat’s fat, then milk with pepper, wax-pitch and olive oil boiled together – – – ”<sup>64</sup>

In addition, the close relationship between Asclepius and the human doctors would have comprised a learning association established in the people’s minds. As aforementioned, doctors venerated Asclepius as their divine ancestor and patron of the medical art.<sup>65</sup> Patients could see the symbols of Asclepius imprinted on the doctors’ rings and medical kits.<sup>66</sup> Since doctors were gradually recognized as authoritative figures in healing the human body, their attitude towards the divine physician would have further contributed to Asclepius’ reputation as supreme authority in the art of medicine.<sup>67</sup>

Particularly, the recognition of Asclepius’ superiority would have played a vital role for those patients who suffered from chronic or fatal diseases and could not find relief by the human doctors. Bronwen Wickkiser underlines the doctors’ tendency to deny treatments to patients whom they believed that they could not cure.<sup>68</sup> The ability to diagnose whether human medical knowledge and techniques would be able to treat a particular disease was considered to be a criterion of competence and skills of good doctors.<sup>69</sup> However, such attitude towards the patients, who would have suffered from sickness, could have intensified the feelings of anxiety and unsafety deriving from the prospect of chronic suffering or even death.<sup>70</sup> Such negative expectations could have suspended patients’ self-healing mechanisms and could have generated nocebo responses corresponding to medical authorities’ anticipations.<sup>71</sup> At this critical turn, Asclepius’ reputation as the supreme medical authority could have inspired to patients new hopes in recovery and new expectations of salvation.<sup>72</sup> These hopes and expectations would have strengthened by Asclepius’ eagerness to provide treatments to all patients who resorted to his temples and asked for his help. Thereby, Asclepius’ attitudes towards his supplicants along with the wide reputation of his healing powers and the expectations deriving from his authority could have induced placebo responses generating actual healing experiences at his temples.

<sup>63</sup> *ICr* I, xvii, 17 = Edelstein and Edelstein, “Asclepius”, v. I, T. 439.

<sup>64</sup> *ICr* I, xvii, 18 = Edelstein and Edelstein, “Asclepius”, v. I, T. 440.

<sup>65</sup> See Sherwin-White, “Ancient Cos”, 275; Aleshire, “The Athenian Asclepeio”; Nutton, “Ancient Medicine”, 216–229; Wickkiser, “Asklepios”, 54–55, 57; Panagiotidou, “Disease and Healing”, 72–76.

<sup>66</sup> Wickkiser, “Asklepios”, 57. Asclepius’ rod with the serpent entwined—the so called caduceus—became the symbol of human medicine; on caduceus see e.g. Rillo, “The Greek Origin of Caduceum”, 389–393; Nayernouri, “Asclepius, Caduceus, and Simurgh”, 61–68.

<sup>67</sup> See Bulbulia, “Nature’s Medicine”, 93; Campbell–Meiklejohn et al., “How The Opinion of Others”, 1168–1169.

<sup>68</sup> Wickkiser, “Asklepios”, 32–33.

<sup>69</sup> Demand, “Birth”, 45; Jouanna, “Hippocrates”, 110; Wickkiser, “Asklepios”, 25.

<sup>70</sup> Cf. Campbell–Meiklejohn et al., “How The Opinion of Others”.

<sup>71</sup> Panagiotidou, “Disease and Healing”, 106–107; cf. Benedetti et al., “Conscious Expectation”; “The Biochemical and Neuroendocrine Bases”; “When Words are Painful”; “How Placebos Change the Patient’s Brain”; Colloca et al., “The Role of Learning”, 211, 216–217.

<sup>72</sup> Panagiotidou, “Disease and Healing”, 107; cf. Kaptchuk, “The Placebo Effect in Alternative Medicine”; Kaptchuk et al., “The Placebo Effect Illness”, 522; Benedetti and Amanzio, “The Placebo Response”.



## Placebo Effect: “Lived” Healing Experiences at the Asclepieia

In Greek antiquity, people who were inflicted by an illness or a disease could make the decision to ask for Asclepius' aid. Those who could afford the journey could decide to travel from their homelands to the great sanctuaries of the god which were more famous as healing centers than the local temples, and attracted visitors even from distant regions. During the journey, supplicants would have been full of hopes and expectations of salvation inspired by the reputation of Asclepius as the supreme medical authority.<sup>73</sup>

Arriving at the sanctuaries, the patients' beliefs and hopes in divine cure would have been amplified. The healing inscriptions intended to convince them about the superhuman healing powers of Asclepius. The anatomical votive offerings displayed in the sanctuaries indicated that the god had the power to cure the inflicted bodily parts—and he has done that many times in the past.<sup>74</sup> Spending some time in the sanctuaries, patients would have socialized themselves with other supplicants sharing common fears and hopes in the Asclepius healing powers. In addition, they would have received instructions by the temple sacristans in order to prepare themselves for the ritual of incubation. Before they approach Asclepius, they should purify themselves taking baths, performing libations and offering sacrifices to the god.<sup>75</sup>

When the night fell, they were to be ready to get into the abaton where they would stay overnight. There they entered alone, without their companion, and stayed in the darkness along with other incubants. They were to lie on pallets and remain silent and still, waiting for Asclepius to appear in their sleep. They expected that the divine healer would perform an immediate treatment or that he would give them prescriptions which they should follow when they woke up in order to gain recovery.<sup>76</sup>

Applying Humphrey's model to the ritual of incubation, the parameters, necessary for placebo responses, seem to hold in the ways in which patients' healing experiences could have been generated:

- Supplicants entered the abaton and were aware that Asclepius used to appear in patients' dreams and to perform immediate treatments or to suggest prescriptions.
- The incubants strongly believed in the effectuality of the treatments applied by Asclepius. This belief was promoted by the universal reputation of the divine healer as medical authority and was testified by the inscriptions and votive offerings.
- The incubants believed in Asclepius and in his divine healing power. For this reason they had visited him. Therefore, they would have expected that, if they followed the god's instructions, they would be cured.
- The therapeutic methods and prescriptions applied by the god mostly focused on the affected bodily parts and not on the general regulation of the patients' bodies. The anatomical votive offerings indicated that Asclepius treated the suffering limbs and organs.
- Under these conditions, patients' expectations could have activated their self-healing systems, inherent in the human species, and in this way they could have cured themselves and felt relief.

Of course we cannot assume that such attitudes, beliefs and reactions were shared by all patients who visited the asclepieia. Besides, not all of the supplicants participated in the ritual of incubation, and in all likelihood even most of those who slept in the abaton never received the desired healing dream or vision. However, the prerequisites of placebo responses set by Humphrey shows that it was possible at least for those patients who were more suggestible to external stimuli and more confident in Asclepius' healing powers, to experience cure or at least a transient relief from the symptoms of illnesses at the asclepieia. Supplicants would have conceptualized these experiences as “healing miracles” performed by the god. The theory of placebo effect, however, shows that these same experiences could have derived by the supplicants' self-healing mechanisms which could have been activated by external stimuli provided in the social context

<sup>73</sup> Panagiotidou, “Divine healings”, 130.

<sup>74</sup> Ibid.

<sup>75</sup> Porphyry, *De abstinentia*, II, 19 = Edelstein and Edelstein 1998, v. I, T. 318; Aristides, *Oratio* I, 6 = Edelstein and Edelstein 1998, v. I, T. 518; Pausanias, *Descriptio Graeciae*, V, 13, 3 = Edelstein and Edelstein 1998, v. I, T. 512; Philostratus, *Vita Apollonii*, I, 10 = Edelstein and Edelstein 1998, v. I, T. 517.

<sup>76</sup> Cf. Aristophanes, *Ploutos*, 653–7 = Edelstein and Edelstein 1998, v. I, T. 421, 659–63.

of the ancient Greek world and the religious context of the Asclepius cult.

## Conclusion

People of the ancient Greek world, who were inflicted by an illness or a disease, would have experienced a violent and stressful disruption of their ordinary lives and planned activities. This disruption would have motivated them to look for solutions in their surroundings. The cultural contexts of Greek antiquity formed the range of solutions which people could seek in order to pursue recovery. Among the healing options which were culturally available for individual appropriations, the Asclepius cult was a prominent alternative. Visiting the asclepieia was a matter of personal choice and selection which would have been based on the social information about the alternative healing options and the feedback received by others and especially by respectful persons about these options.

In particular, in Humphrey's terms, the belief in the healing powers of Asclepius and the hope in recovery by visiting an asclepieion would have been generated by the patients' 'previous experiences' and the stories heard from others, by 'rational associations' between certain treatments and positive health outcomes and the 'assurance' of the effectiveness of the Asclepian therapy offered by human medical authorities. These same social influences and interactions would have mediated the inducement of healing expectations which could have activated supplicants self-healing mechanisms during the ritual of incubation.

The theory of placebo effect articulated by Humphrey suggests a general theoretical framework of the specific external conditions and social interactions as well as of the internal cognitive, bodily and emotional processes which can activate the self-healing mechanisms shared by humans.<sup>77</sup> The application of this theory to the Asclepius cult provides significant insights into the multiple experiences of people of the ancient Greek world who "lived" the actuality of an illness or a disease and "appropriated" various beliefs and actions towards the common goal of survival and well-being.

In this view, the application of modern cognitive theories to the Asclepius cult may enrich historical research providing the theoretical and methodological tools in order to explore how the religious beliefs in Asclepius and his divine powers could have been instantiated into actual healing experiences at his sanctuaries. Particularly, it may throw light into the ways in which supplicants could have "lived" the ritual of incubation and into the impacts that the incubants' potential expectations, hopes, emotions and reasoning could have on their mental and bodily states and experiences.

Further cognitive approaches to ancient Greek religious practices and experiences may provide insights into the processes of internalization of the external religious systems of beliefs and rituals and the ways in which these systems were being "lived" by people. Thereby, cognitive approaches may contribute to the exploration of not only the common origins of human religiosity but also the religious diversity, and the role and significance of individuals and social groups in the production and development of this diversity.

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## References

- Aleshire, Sara B. *The Athenian Asclepeio, The People, Their Dedications and The Inventories*. Amsterdam: J. C. Gieben, 1989.
- Alicke, Mark D. "Culpable Control and the Psychology of Blame." *Psychological Bulletin*, 126 (2000), 556–574.
- Arnott, Robert. "Healing and Medicine in the Aegean Bronze Age." *Historical Review* 89 (1996), 265–270.
- Arnott, Robert (2004), "Minoan and Mycenaean Medicine and its Near Eastern Contacts." In *Magic and Rationality in Ancient Near Eastern and Graeco-Roman Medicine. Studies in Ancient Medicine* edited by Herman F. J. Horstmannshoff and Marten Stol, 153–173. Volume 27. Leiden: Brill.

<sup>77</sup> More specialized research is currently being conducted by cognitive scientists who examine those internal processes and external influences which mediate the universal human experience of sickness and the placebo responses (see e.g. Colloca and Miller, "Placebo responses"; Benedetti, "Placebo Effects"; "Kaptchuk et al., "Placebo Effect"; Blum, "Beyond medicine"; for more references see Panagiotidou, "Disease and Healing").

- Avalos, Hector. *Illness and Health Care in the Ancient Near East: The Role of the Temple in Greece, Mesopotamia, and Israel*. Atlanta: Scholars Press, 1995.
- Baird, Jodie A., and Janet W. Astington. "The Role of Mental State Understanding in the Development of Moral Cognition and Moral Action." *New Directions for Child and Adolescent Development*, 103 (2004), 37–49.
- Bandura, Albert. "Social Cognitive Theory of Moral Thought and Action." In *Handbook of Moral Behavior and Development: Volume 1: Theory*, edited by William M. Kurtines, Jacob Gewirtz, and Jacob L. Lamb, 45–103. New York, NY: Psychology Press, 1991.
- Behr, Charles A. *Aelius Aristides and the Sacred Dream*. Amsterdam: A. M. Hakkert, 1968.
- Benedetti, Fabrizio. *Placebo Effects. Understanding the Mechanisms in Health and Disease*. New York: Oxford University Press, 2009.
- Benedetti, Fabrizio, Antonella Pollo, Leonardo Lopiano, Michele Lanotte, Sergio Vighetti, and Innocenzo Rainero. "Conscious Expectation and Unconscious Conditioning in Analgesic Motor and Hormonal Placebo/Nocebo Responses." *Journal of Neuroscience*, 2 (2003), 4315–4323.
- Benedetti, Fabrizio, Martina Amanzio, Sergio Vighetti, and Giovanni Asteggiano. "The Biochemical and Neuroendocrine Bases of the Hyperalgesic Nocebo Effect." *Journal of Neuroscience*, 26 (2006), 12014–12022.
- Benedetti, Fabrizio, Michele Lanotte, Leonardo Lopiano, and Luana Colloca. "When Words are Painful: Unraveling the Mechanisms of the Nocebo Effect." *Neuroscience*, 147 (2007), 260–271.
- Benedetti, Fabrizio, Elisa Carlino, and Antonella Pollo. "How Placebos Change the Patient's Brain." *Neuropsychopharmacology*, 36 (2011), 339–354. Available from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3055515/>
- Benedetti, Fabrizio, and Martina Amanzio. "The Placebo Response: How Words and Rituals Change the Patient's Brain." *Patient Education and Counseling*, 84:3 (2011), 413–419.
- Blum, Lucille H. "Beyond Medicine: Healing Power in the Doctor–Patient Relationship." *Psychological Reports*, 57 (1985), 399–427.
- Bulbulia, Joseph. "Nature's Medicine: Religiosity as an Adaptation for Health and Cooperation." In *Where God and Science Meet. How Brain and Evolutionary Studies Alter Our Understanding of Religion*, vol. 1: *Evolution, Genes and the Religious Brain*, edited by Patrick McNamara, 87–121. Westport, CT: Praeger Publishing, 2006.
- Campbell–Meiklejohn, Daniel K., Dominik R. Bach, Andreas Roepstorff, Raymond J. Dolan, and Chris D. Frith. "How the Opinion of Others Affects our Valuation of Objects." *Current Biology*, 20 (2010), 1165–1170.
- Cialdini, Robert B. and Noah J. Goldstein. "Social Influence: Compliance and Conformity." *Annual Review of Psychology*, 55 (2004), 591–621. DOI: 10.1146/annurev.psych.55.090902.142015
- Cohn–Haft, Louis. *The Public Physicians of Ancient Greece*. Northampton, Mass.: Smith College, 1956.
- Colloca, Luana, Monica Sigauco, and Fabrizio Benedetti. "The Role of Learning in Nocebo and Placebo Effects." *Pain* 136 (2008), 211–218.
- Colloca, Luana, and Franklin G. Miller. "How Placebo Responses are Formed: A Learning Perspective." *Philosophical Transactions of the Royal Society B* 27, 366:1572 (2011), 1859–1869.
- Crisp, Richard J., and Rhianon N. Turner. "Attribution." In *Essential Social Psychology*, edited by Richard J. Crisp, and Rhianon N. Turner, 42–62. 2nd Edition. London: Sage, 2010.
- Cushman, Fiery. "Crime and Punishment: Distinguishing the Roles of Causal and Intentional Analyses in Moral Judgment." *Cognition*, 108 (2008) 353–380.
- Demand, Nancy. *Birth, Death, and Motherhood in Classical Greece*. Baltimore: The Johns Hopkins University Press, 1994.
- Dillon, Matthew P. J. *Pilgrims and Pilgrimage in Ancient Greece*. New York: Routledge, 1997.
- Dodds, Eric R. *The Greeks and the Irrational*. Berkeley, Los Angeles, Oxford: University of California Press, 1973.
- Edelstein, Emma J., and Ludwig Edelstein. *Asclepius: A Collection and Interpretation of the Testimonies*. Volumes 2. 2nd ed. New York: Arno Press, 1998.
- Eijk, Philip J. van der. *Medicine and Philosophy in Classical Antiquity: Doctors and Philosophers on Nature, Soul, Health and Disease*. Cambridge: Cambridge University Press, 2005.
- Eisenberg, Leon. "The Search of Care." *Daedalus*, 106:1 (1977), 235–246.
- Epley, Nicholas, and Thomas Gilovich. "Just Going Along: Nonconscious Priming and Conformity to Social Pressure." *Journal of Experimental Social Psychology*, 35:6 (1999), 578–589.
- Forsén, Björn. *Griechische Gliederweihungen. Eine Untersuchung zu ihrer Typologie und ihrer religions- und sozialgeschichtlichen Bedeutung*. Helsinki, 1996.
- Gesler, Wilbert M. "Therapeutic Landscapes: Theory and a Case Study of Epidaurus, Greece." *Environment and Planning D: Society and Space* 11:2 (1993), 171–189.
- Gorini, Marilena. "Gli eroi salutari dell'Attica." *ASAtene* 79 (2001), 299–315.
- Gorini, Marilena. "The Hippocratic Impact on Healing Cults: The Archaeological Evidence in Attica." In *Hippocrates in Context*, edited by Philip J. Van der Eijk, 135–156. Leiden: Brill, 2005.
- Greene, Joshua D., Brian R. Sommerville, Leigh E. Nystrom, John M. Darley, and Jonathan D. Cohen. "An fMRI Investigation of Emotional Engagement in Moral Judgment." *Science*, 293 (2001), 2105–2108.
- Hankinson, Robert J. "Pollution and Infection: An Hypothesis Still-born." *Apeiron*, 28:1 (1995), 25–65.
- Hankinson, Robert J. "Magic, Religion and Science: Divine and Human in the Hippocratic Corpus." *Apeiron*, 31:1 (1998), 1–34.

- Hart, Gerald D. *Asclepius, the God of Medicine*. London: Royal Society of Medicine Press, 2000.
- Heider, Fritz. "Social Perception and Phenomenal Causality." *Psychological Review*, 51:6 (1944), 358–374.
- Holowchack, Andrew M. *Ancient Science and Dreams. Oneirology in Graeco–Roman Antiquity*. Lanham, New York, Oxford: University Press of America, 2002.
- Humphrey, Nicholas. "Great Expectations: The Evolutionary Psychology of Faith–Healing and the Placebo Effect." In *The Mind Made Flesh Essays from the Frontiers of Psychology and Evolution*, edited by Nicholas Humphrey, chapter 19, 255–288. Oxford: Oxford University Press, 2002.
- Humphrey, Nicholas. "Placebo Effect." In *Oxford Companion to the Mind*, edited by Richard L. Gregory. Oxford: Oxford University Press, 2005.
- Jensen, Jeppe S. "Doing it the Other Way Round: Religion as a Basic Case of 'Normative Cognition'." *Method and Theory in the Study of Religion*, 22 (2010) 322–329.
- Jones, Donald. W. *Peak Sanctuaries and Sacred Caves in Minoan Crete: Comparison of Artifacts*. Jonsered, Sweden: Åström, 1999.
- Jouanna, Jacques. *Hippocrates*. Translated by M. B. DeBevoise. Baltimore: Johns Hopkins University Press, 1999.
- Kaptschuk, Ted J. "The Placebo Effect in Alternative Medicine: Can the Performance of a Healing Ritual Have Clinical Significance?" *Annals of Internal Medicine*, 136 (2002), 817–825.
- Kaptschuk, Ted J., Franklin G. Miller, and Luana Colloka. "The Placebo Effect Illness and Interpersonal Healing." *Perspectives in Biology and Medicine*, 52:4 (2009), 518–539.
- Kearns, Emily. *The Heroes of Attica*. London: Institute of Classical Studies, 1989.
- Kelley, Harold H. "The Processes of Causal Attribution." *American Psychologist*, 28:2 (1973), 107–128.
- Kerényi, Karl. "Heros Iatros." *Eranos Jahrbuch*, 12 (1945), 33–54.
- Lagnado, David A., and Shelley Channon. "Judgments of Cause and Blame: The Effects of Intentionality and Foreseeability." *Cognition*, 108 (2008), 754–770.
- Lloyd, Geoffrey E. R. *Science, Folklore and Ideology*. Cambridge: Cambridge University Press, 1983.
- Lytckens, Carl H. "Health, Economics and Ancient Greek Medicine." *The Journal of Economic Asymmetries*, 8 (2011), 165–192.
- Martin, Dale. *Inventing Superstition: From the Hippocratics to the Christians*. Cambridge, MA: Harvard University Press, 2004.
- Martzavou, Paraskevi. "Dream, Narrative, and the Construction of Hope in the 'Healing Miracles' of Epidauros." In *Unveiling Emotions: Sources and Methods for the Study of Emotions in the Greek World*, edited by Aggelos Chaniotis, 177–204. Stuttgart: Steiner Verlag, 2012.
- McNamara, Leanne. "Conjurers, Purifiers, Vagabonds and Quacks? The Clinical Roles of the Folk and Hippocratic Healers of Classical Greece." *Journal of the Classical Association of Victoria* 16–17 (2003–4), 2–25.
- Moll, Jorge, Roland Zahn, Ricardo de Oliveira-Souza, Frank Krueger, and Jordan Grafman. "The Neural Basis of Human Moral Cognition." *Nature Reviews Neuroscience*, 6 (2005), 799–809. DOI:10.1038/nrn1768
- Morris, Christine, and Alan Peatfield. "Health and Healing on Cretan Bronze Age Peak Sanctuaries". In *Medicine and Healing in the Ancient Mediterranean World*, edited by Demetrios Michaelides, 54–63. Oxford: Oxford University Press, 2014.
- Murphy, Kristina, and Tom Tyler. "Procedural Justice and Compliance Behaviour: The Mediating Role of Emotions." *European Journal of Social Psychology*, 38:4 (2008), 652–668. DOI: 10.1002/ejsp.502
- Nayernouri, Touraj. "Asclepius, Caduceus, and Simurgh as Medical Symbols." *Archives of Iranian Medicine*, 13:1 (2010), 61–68.
- Nowicki, Krzysztof. "Some Remark on the Pre- and Protoplatian Peak Sanctuaries in Crete". *Aegean Archaeology*, 1 (1994), 31–48.
- Nutton, Vivian. *Ancient Medicine*. USA and Canada: Routledge, 2005.
- Oberhelman, Steven M. "Anatomical Votive Reliefs as Evidence for Specialization at Healing Sanctuaries in the Ancient Mediterranean World." *Athens Journal of Health*, 1:1 (2014), 47–62.
- Panagiotidou, Olympia. "Divine Healings in the Temples of Asklepios as 'Turning Points' in the Life Narratives of Supplicants." *Proceedings of the 2nd Hellenistic Studies Workshop*, 124–136. The Alexandria Center of Hellenistic Studies, Alexandria: Bibliotheca Alexandrina, 2011.
- Panagiotidou, Olympia. *Disease and Healing in the Asclepius Cult: A Cognitive Approach*. Unpublished PhD Dissertation. Thessaloniki: Aristotle University of Thessaloniki, 2014.
- Panagiotidou, Olympia. "Asclepius' Myths and Healing Narratives: Counter-intuitive Concepts and Cultural Expectations." In *Healing Gods, Heroes and Rituals in the Graeco-Roman World*, edited by Athanasios Koutoupas. Open Library of Humanities (forthcoming).
- Panagiotidou, Olympia. "Asclepius: A Divine Doctor, A Popular Healer." *Proceedings of the Conference Popular Medicine in the Graeco-Roman World*. Columbia University (forthcoming).
- Peatfield, Alan A. D. "Minoan Peak Sanctuaries: History and Society". *Opuscula Atheniensi* 18 (1990), 117–131.
- Petrakos, Vasileios C. *Oropos and the Sanctuary of Amphiaraos* (in Greek). Athens: Archaeological Society of Athens, 1968.
- Petrakos, Vasileios C. *The Inscriptions of Oropos* (in Greek). Athens: Archaeological Society of Athens, 1997.
- Petridou, Georgia. "Asclepius the Divine Healer, Asclepius the Divine Physician: Epiphanies as Diagnostic and Therapeutic Tools." In *Medicine and Healing in the Ancient Mediterranean World*, edited by Demetrios Michaelides, 291–301. Oxford, UK: Oxbow Books, 2014.

- Pleket, Harry W. "Arts en maatschappij in het oude Griekenland: De sociale status van de arts." *Tijdschrift voor Geschiedenis* 96 (1983), 325–347.
- Pizarro, David A., Eric Uhlmann, and Paul Bloom. "Causal Deviance and the Attribution of Moral Responsibility." *Journal of Experimental Social Psychology*, 39 (2003), 653–660.
- Purday, Kevin M. *Minor Healing Cults within Athens and its Environs*. PhD dissertation. Southampton: University of Southampton, 1987.
- Raja, Rubina, and Jörg Rüpke, J. (eds.), "Editorial." *Individual Appropriation in Lived Ancient Religion. Religion in the Roman Empire* 1(2015), 1–7.
- Raja, Rubina, and Jörg Rüpke. "Appropriating Religion: Methodological Issues in Testing the 'Lived Ancient Religion' Approach." *Religion in the Roman Empire*, 1 (2015), 11–19. DOI 10.1628/219944615X14234960199632.
- Rohde, Erwin. *Psyche: The Cult of Souls and the Belief in Immortality among the Greeks*. Translated by H. B. Hillis. London: Routledge and Kegan Paul; reprinted by Routledge, (1925) 2000.
- Rosen, George. *A History of Public Health*. Baltimore: Johns Hopkins University Press.
- Rillo, Arturo G. "The Greek Origin of Caduceum: Æsculapius." *Colombia Médica*, 39:4 (2008), 384–388.
- Sahlas, Demetrios. "Functional Neuroanatomy in the Pre-Hippocratic Era: Observations from the Iliad of Homer." *Neurosurgery*, 48:6 (2001), 1352–1357.
- Salazar, Christine F. *The Treatment of War Wounds in Greco-Roman Antiquity*. Leiden: Brill, 2000.
- Santos, Gil H. "Chest Trauma During the Battle of Troy: Ancient Warfare and Chest Trauma." *The Annals of Thoracic Surgery*, 69:4 (2000), 1285–1287.
- Schachter, Albert. *Cults of Boiotia*. 4 vols. London: University of Oxford, 1981–.
- Shapiro, Arthur K., and Elaine Shapiro. *The Powerful Placebo: From Ancient Priest to Modern Physician*. Baltimore: Johns Hopkins University Press, 1997.
- Shaver, Kelly G. "Defensive Attribution: Effects of Severity and Relevance on the Responsibility Assigned for an Accident." *Journal of Personality and Social Psychology (American Psychological Association)*, 14:2 (1970), 101–113. DOI:10.1037/h0028777.
- Shaver, Kelly. G. *The Attribution of Blame: Causality, Responsibility, and Blameworthiness*. New York: Springer-Verlag, 1985.
- Shaver, Kelly G., and Debra Drown. "On Causality, Responsibility, and Self-blame: A Theoretical Note." *Journal of Personality and Social Psychology*, 50:4 (1986), 697–702. DOI: <http://dx.doi.org/10.1037/0022-3514.50.4.697>.
- Sherwin-White, Susan M. *Ancient Cos*. Göttingen: Vandenhoeck und Ruprecht, 1978.
- Shultz, Thomas R., Kevin Wright, and Michael Schleifer. "Assignment of Moral Responsibility and Punishment." *Child Development*, 57:1 (1986), 177–184.
- Snyder, Richard C. *The Psychology of Hope: You Can Get There from Here*. New York: Free Press, 1994.
- Snyder, Richard C., Harris, Cheri, Anderson, John R., Holleran, Sharon A., Irving, Lori M., Sigmon, Sandra T., Yoshinobu, Lauren, Gibb, June, Langelle, Charely, and Pat Harney, "The Will and the Ways: Development and Validation of an Individual-differences Measure of Hope." *Journal of Personality and Social Psychology*, 60 (1991), 570–85.
- Snyder, Richard C., Ilardi, Stephen S., Cheavens, Jen, Michael, Scott T., Yamhure, Laura, and Susie Simpson, "The Role of Hope in Cognitive Behavior Therapies." *Cognitive Therapy and Research*, 24 (2000), 747–776.
- Temkin, Owsei. "Greek Medicine as Science and Craft." *Isis*, 44:3 (1953), 213–225.
- Usener, Hermann. *Götternamen. Versuch einer Lehre von der Religiösen Begriffsbildung*. Bonn: F. Cohen, 1896.
- Ustinova, Yulia. "Apollo Iatros: A Greek God of Pontic Origin." In *Griechen und ihre Nachbarn am Nordrand des Schwarzen Meers*, edited by Klaus Stähler and Gabriele Gudrian, 245–299. Münster: Ugarit-Verlag (2009).
- Verbanck-Piérard, Annie. "Les héros guérisseurs : des dieux comme les autres." In *Héros et héroïnes dans les mythes et les cultes grecs. Actes du colloque de Valladolid*, edited by Vinciane Pirenne-Delforge and Emilio Suárez de la Torre, 281–332. Liège: Centre International d'Etude de la Religion Grecque Antique, 2000.
- Vikela, Evgenia. "Healer Gods and Healing Sanctuaries in Attica: Similarities and Differences." *Archiv für Religionsgeschichte*, 8 (2006), 41–62.
- Voudouris, Nicholas J., Connie L. Peck, and Grahame Coleman. "Conditioned Placebo Responses." *Journal of Personality and Social Psychology*, 48 (1985), 47–53.
- Wickkiser, L. Bronwen. *Asklepios, Medicine, and the Politics of Healing in Fifth-century Greece: Between Craft and Cult*. Baltimore: The Johns Hopkins University Press, 2008.