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What Is Evidence: Truth or "Inventions of Lying"?

Joanne V. Loewy, DA, LCAT, MT-BC,[1] and Ralph Spintge, MD[2,3]

Traveling affords one the opportunity for novel and spontaneous experiences. As editors, we try to attend conferences and events in music and medicine and related fields as often as possible. Our excursions within the past several months have collectively included lectures and attendance at symposia and conferences in China, Germany, Spain, and, in the United States, Minnesota, the Northeast, and California. We attended Music in Palliative Care in Canada; watched new programs in Spain; learned about the effects of music in trauma in Chengdu, China; attended discussions of cutting-edge research in genetics and epigenetics with possible implications for functional music research in Bethesda, Maryland, and Washington, DC; had clinical excursions in Minnesota; and attended conference planning in New York City, Vienna, Minneapolis, and Hamburg; and we were honored and inspired to receive invitations to learn and teach. We recognize how the understanding of music and medicine is growing and that its use in clinical practice and research is continually evolving during a period of heightened international recognition and growth in integrative medicine.

Although one expects to learn, develop, and redefine ideas amidst travels and meetings related to ventures in music and medicine, it is less than usual to expect that an airplane movie would inspire clinical thinking. And yet, such is the case, which will be explicated in short for this editorial. Viewing movies that one might not usually (or ever) select can be seen as a way to pass in-air time painlessly or, one might hope, ease sleep, especially during long international flights. Given that the selections are limited, the chance of encountering a film that one would not usually select exposes new realms of thought and opens up new opportunities that would not typically be expected to be even remotely related to clinical thinking.

An unusual and rather bizarre film written and directed by Ricky Gervais and Stephen Merchant called *The Invention of Lying* is a tongue-in-cheek comedy that makes light of human behavior and prompts its share of in-the-moment chuckles. Yet parts of this movie proposed ideas that went well beyond the laughs and sparked some interesting thoughts about how we practice, research, and understand our clinical endeavors. In short, the film prompts us to ask what truths or assumptions govern our interventions.

The film's intriguing opening shows a society of people who are honest at all cost. There are no "white lies." The downside of this is that feelings are hurt and relationships go only so far before they end. The upside of telling the complete truth is that business is done quickly and efficiently, and when interactions are not useful, new plans are constructed.

The turning point of the film occurs when the main character cannot bear the anxiety he witnesses in his dying elderly mother. As a result, his first alleged lie is telling her what he "knows" about the afterlife. He assures her that heaven includes an afterlife of choice and potential beauty. This lie affords him fame and respect in the community as they learn of his mother's beautiful, peaceful passage. The second lie he tells occurs at the bank. After losing his job and being unable to pay rent, he tells the teller that his balance is incorrect and should be higher than what is reflected in his account. The teller believes him and soon he is living well with fame and fortune, which afford him a new and auspicious position.

This movie can relate to some of the more difficult issues we face as practitioners. One relates to the reality that when disease progresses to a certain point, our interventions may have no impact or cure. Death is an unfathomable result, even though it is as certain as birth. A second issue we face as researchers is that our hypotheses may be prove or disprove a promising intervention. When a foundation or grant agency promotes the efficacy of an intervention and the intervention fails to deliver the desired effect, further support (funding) might be discontinued.

For certain, we can provide care beyond a cure when we offer palliative care. Addressing pain and providing palliative care are indeed important aspects of treatment. And yet, if there has been a relationship of "healing" and "curative" plans of

[1] The Louis Armstrong Center for Music & Medicine, Beth Israel Medical Center, New York, NY, USA
[2] Institute for Music Therapy, University for Music and Drama HfMT, Hamburg, Germany
[3] Department of Algesiology and Interdisciplinary Pain Medicine, Regional Pain Centre DGS, Sportklinik Hellersen, 58515 Lüdenscheid, Germany

Corresponding Author:
Joanne V. Loewy, 13 Arborlea Avenue, Yardley, PA 19067
Email: loewyjoey@aol.com

care, there is a bearing of loss and lack of control we might feel as patients die.

In a research atmosphere, although we do not consciously connect funding to particular interventions, it is often notable that in response to one's relationship to grantors who support research in their belief of a developed product or intervention, one might feel pressure to set up the circumstances for a positive outcome.

In day-to-day practice, most clinicians operate within the norms of their institutions and in conformity with the requirements set forth in their professional practice codes. And yet within these objective norms and codes there is a tremendous variety of interpretation. The scope of our practice is largely influenced by our personal history, the culture of community in which we practice, the beliefs of our teachers, and, perhaps most evident, the current "known truths" of the profession. These include the gathered, researched, and published outcomes. Perhaps most evident are the results we have personally observed during our treatment interventions.

As human beings we are influenced and in some ways limited by our perceptions, and yet as live beings we are in a constant quest for sharper understanding that will allow us to transcend the limitations of our perceptions. Our quest for greater knowledge is undertaken in part as a larger effort to heal, improve, and sustain life amid the disease and pain with which we are confronted in our practices. Given the foregoing, we should periodically assess our clinical truths and the processes by which we have gathered and substantiated evidence that, at times, may be questionable. We do have meta-analyses and reviews to question the questioner, but then who questions the questioner's questions?

The Invention of Lying makes thinking about a world of total truth or even quested truth completely ludicrous. At the same time the movie reminds us that regardless of objective truth, having beliefs affords people comfort in coping with their trials and tribulations. (As Nietzsche famously stated, "He who has a *why* to live for can bear almost any *how*.") As death is inevitable, the development of a belief in an afterlife can seem as fictitious as a cure or, for that matter, even a comfort when terminal illness looms. The development of a lie in *The Invention of Lying* provides people with an immediate option—to create a happier life in the present world as an enduring belief that ultimate happiness can be achieved upon death.

The main character of the film discovers that learning how to lie can make others feel better about their lives. In medicine, we might equate this to a placebo effect, yet those who practice and integrate mind–body medicine realize that placebo is not a substitute for truth or a lie—it is an actual power of the mind and what the mind believes. This may often propel the mind's distinct influence on the body and furthermore may enhance one's endurance and even one's sense of resilience in combating disease.

Maybe the truth means we accept that no matter what we are seeking to measure and however objective or subjective we believe our methods to be, we are human beings who are influenced by our perceptions, biases, and personal experiences. Where people are involved, there are existing incentives and reasons for choosing to investigate one question over another—of which a working hypothesis is a strong element but not the sole element. This remains so even if it falls within the locus of control of what we can measure. Furthermore, the ultimate, noble, and agreed-upon goal, especially within a medical realm, remains helping the patient to lead a life as healthy and full as possible. This is the affirmed quest of the human condition: to enhance the quantity and quality of life. However, proving that any of our interventions achieve a desired effect may mean that our methods and outcome will have biases and that even under the most blinded, regimented conditions surrounding our tests, we must acknowledge that we are driven by the desire and belief in our *human* ability to discern and prove truths and untruths. Like medicine, the legal profession seeks to discern and prove truths. Unlike medicine, the legal profession asks that we govern with recognition of our perception and biases and that we do so by principles established over time and proven not so much by first-hand experience as by the history of what is "fair" based on trial and error driven by civilized behavior in the ideal case.

For example, the following is a typical oath taken by lawyers upon joining the bar:

I will not counsel or maintain any suit or proceeding which shall appear to me to be unjust, nor any defense except such as I believe to be honestly debatable under the law of the land; I will employ for the purpose of maintaining the causes confided to me such means only as consistent with truth and honor, and will never seek to mislead the judge or jury by any artifice or false statement of fact or law.[1]

One may question whether and how the typical lawyer adheres to this standard. Furthermore, it does make us wonder whether we translate and apply the ideal and ethic of this part of the legal oath into medicine, where the Hippocratic Oath, our most well-known prophesy of Greek medical text, asks physicians to swear to uphold a number of professional ethical standards, the most adhered to being "to do no harm."

To do so means, on one hand, that we have knowledge of the literature and that which can reduce or extinguish pain and enhance healing. In addition it means that we treat each person as a unique being, representative of a culture and an individual life-world. On the other hand, what may be the most accountable and believable is that which we have seen with our own eyes as "working" and as "curable." In medicine, the outcomes of treatment have the potential to harm directly, where in law harm is the outcome in relationship between people of honest or dishonest judgment (see note 1).

Law is rooted in Chinese, Greek, and Roman philosophy that is influenced by society and has evolved to the extent that codes and rules have developed, and this has enabled peaceful collaborations between human beings. One of the earliest set of laws was the Code of Hammurabi, which was codified by the Mesopotamian King Hammurabi in approximately 1700 BCE. In 13th century England, Edward I set a legal system in place which made provision for moral legal practice. For example, legal representatives were formally licensed to ensure that

standards were met and legal representatives who practiced in a collusive or deceitful manner were themselves subject to imprisonment. The importance of legal representation was recognized very early in the history of the United States. The Bill of Rights, which was ratified in 1791, provided in the Sixth Amendment for the right to legal representation in criminal proceedings (see note 2).

Since the inception of medicine and law, people have complained about poor treatment by doctors and how the truth has been distorted by lawyers. However, there are shining examples of the ideal. For example, when Socrates was sentenced to death in 400 BCE, he held the law in such high esteem that when given the choice of going into exile instead of carrying out the death sentence (which was suicide), he obeyed the ruling and chose death rather than bringing dishonor to the law by avoiding his sentence.

In *The Invention of Lying*, institutions are humorously labeled in a bluntly honest way that tickles our funny bone about how we order and group humans within our society. For example, the retirement community in which the lead character's mother resides is called "A Sad Place for Hopeless Old People."

The power the main character and others take to his evolving prophecy of the next phase of thinking, which eases safety during death, is not unlike the way real-life research findings with positive outcomes are perceived and lauded as "proof" and "just cause" to sustain and support more of x, y, and z because we have proof and measured controls of the outcomes. Furthermore, "sustainability" and "evidence" imply that the principle investigator has targeted the obstacles and loopholes that will cross both the path of law and medical oath, hence the term *evidence-based medicine*. The treatment works until proven faulty (or guilty).

In our research, we seek to find that which can sustain life, and at the same time the unspoken truth is that we are seeking to extend that which can sustain and build our clinical activity. Interestingly, as the lover of the main character in the movie develops, she eventually wants to see the world through the inventor of lies, the liar's vision. As her affection grows and her reliance upon him to guide her becomes more evident, she pleads with him to make something that is clearly unreal into a reality to her, so that she then can convince herself of it and live a happier life.

Although researchers are not inventors of lies, this movie is a reminder that where hope, humans, and health are at stake, there is great potential for skewing human vision and even greater potential for a growing capacity to rely on human vision. In a world where we have limited control of variables, the tendency to keep truth in experimental conditions at times presents unforeseen risks and impossible circumstances.

The implementation of mixed methods is not the end answer but does afford a medium where all elements of design and findings can be reported, with respect to the many aspects of investigatory asides, in an efficient way. In this journal issue, excellent examples for well-designed and openly communicated studies are presented to our readers. Authors from various fields and regions of the world contribute significant findings and outstanding experiences about music and health.

Noise pollution at workplaces is of growing relevance in occupational health care but receives much too little attention in health care settings. This holds true for both sides—the person taken care of and the person taking care. We measured average noise levels of above 88 dBA in operating theaters and above 86 dBA in incubators used in 2 NICUs. Peak levels were even higher for short periods of time (minutes). Noise pollution obviously is often above internationally recommended levels in operating theater, recovery room, and ICU. Occupational health care for professionals working in such noisy environments in industry has not yet been transferred to clinical settings. Sources are, for instance, equipment (running sounds of machines, alarm signals), doors slamming, staff behavior and conversation, and handling of equipment.[2,3] Thus, Alison Short, Nicole Ahern, Anna Holdgate, Jenny Morris, and Balwinder Sidhu have identified an area that desperately needs further attention: the issue of how much stress and annoyance we place on our patients treated in an emergency department and what can be done to reduce it. These authors propose to use music via earphones. In their study they found a trend toward positive affective impact that was welcomed by patients. Clearly, further investigation is necessary and urgent. Future studies should include expertise from occupational health care and focus attention to staff members as well.

In another pilot study, Gwyneth Jeyes and Caroline Newton address the use of a listening program for children with Down syndrome. The authors describe a proposed program that has the possibility to provide benefits such as improved auditory processing and language development with music as an adjunct. Although limitations of appropriate testing methods for such capacities in children with Down syndrome become clear, there is a need to address this topic in more detail through further study.

Care for elderly people with dementia is a rapidly rising issue in modern society on a global scale. Scott Harrison, Marie Cooke, Wendy Moyle, David Shum, and Jenny Murfield's article focuses on musicians' experiences delivering music interventions to this population. A stringent music intervention protocol was developed that meets state-of-the-art standards of research for studies evaluating functional capacities of music interventions. The editors welcome such a vigorous approach, as many studies lack a strict design including clear description of the intervening variable: the music.

Mental illness during pregnancy is often associated with such disorders post partum. Although about 25% to 35% of all pregnant women report some degree of depressive disturbances, only 20% meet the criteria for mental illness. Children of women experiencing such depressive episodes often develop similar mental disorders.[4] Susan Friedman, Ronna Kaplan, Miriam Rosenthal, and Patty Console demonstrate how lullabies can be used during pregnancy and post partum to reduce mental disorders such as depression in mothers and infant emotional distress behavior as well. Saving medication necessary to treat mental disorders during pregnancy and after birth is

always an issue in obstetrical care, and every complementary approach is more than welcomed. The authors' developing program is part of a community-based music project, which underlines the significance of music therapy's impact in community health.

Anita Fuhrmann, Graham Hall, and Peter Franklin describe findings of a study investigating possible airway inflammation in wind players without evidence of respiratory disease. The authors found a small increase in exhaled nitric oxide in the wind players compared with non–wind-playing musicians; in healthy wind musicians this is a marker of airway inflammation. Occupational health in musicians is an issue receiving growing attention since musicians, at least at a professional level, perform under the same conditions of stress and strain as high-performance athletes. In addition, hearing loss and overuse syndromes are increasing both in number and in intensity in this population. A textbook of occupational health for musicians still has to be written, and only a couple of scattered institutions are addressing such issues. Conducting and publishing studies such as this will help build necessary expertise and public interest as well.

The history of earthquakes in China goes back as early as 1290, with as many as 100 000 fatalities, and shows a series of devastating events over the course of the centuries to follow up to the present day. The last big hit occurred in southern Qinghai in April 2010, with 2267 fatalities officially counted. In her 2-part article, Jennifer Hsiao-Ying Tiao Shih describes a stabilizing music therapy model and a process offered to victims of last year's Sichuan earthquake crisis. Trauma therapy after such an outstanding natural catastrophe demands special methods, instruments, and personal sacrifice on the part of personal and professional caregivers. The authenticity of the report and the significance of the concept developed demonstrate the survival value of music in a very special sense.

In Central Europe, stroke causes about 15% of all fatal events. Prevalence is about 600 cases in 100 000 people. Stroke is the leading cause of death in the United States, with about 140 000 deaths per year. It is the main cause for severe long-term disability, and 25% to 40% of all patients who experience a stroke acquire aphasia. In a longitudinal single-case study, Meghan Hartley, Alan Turry, and Preeti Raghavan report about the role of music and music therapy in treating aphasia. The article gives an example of how results of basic research can be transferred to music therapy practice and rehabilitation.

The patient's point of view is elaborated by Anita Forsblom, Teppo Särkämö, Sari Laitinen, and Mari Tervaniemi in their article about the effect of music and audiobook listening on people recovering from a stroke. Both qualitative and quantitative measures were taken to demonstrate the stimulating effects on mood, motor activity, and memory that can enhance stroke rehabilitation.

The editors extend their gratitude again to all contributors of this issue. By submitting their manuscripts to the publication process, they foster our common goal to implement music in health care.

We would like to open a forum for discussions in the journal through letters to the editor. If you would like to send your reactions to articles or propose discussions related to topics that interest you, please send us your thoughts and opinions: musicandmedicine@comcast.net. Your reactions to articles and sharing of debates in music and medicine will ensure that the truth involves a continued dialogue, one that is transparent and open to all of our readers.

Notes

1. See, for example, Rule 3.3 of the New York Rule of Professional Conduct (effective April 1, 2009, as amended on May 4, 2010). This rule requires that an attorney act with complete candor before the court. An attorney should not make false statements to the court and must not present false evidence to the court. The honesty is crucial to the integrity of the judicial process. Indeed, even the duty to maintain client confidences is tempered by the duty to be honest in front of a court.
2. The Sixth Amendment to the United States Constitution provides that "in all criminal prosecutions, the accused shall . . . have the Assistance of Counsel for his defence."

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