

Midterm - INTD262

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1 Unit 3

1. Recall the fascinating story about psychological research, in which the author shares that 67 percent of psychologists who were asked to share their data did not share it. (a) Were the rates of error higher or lower in the studies for which the authors did not share data? (b) In whose favor were the errors?
(a) The rates of error were higher in the studies where the authors did not share their data.
(b) the errors were in favor of the researchers because the studies favored the researchers' initial hypotheses which demonstrated bias/a lack of scrutiny.
2. "Recent research in behavioral economics has shown that groups are often better than individuals at finding errors in reasoning." (a) Why do you think this is the case? (b) Can you give an example of the wisdom of crowds thus far in our study of Latin American science?
(a) Groups are better at finding errors due to collective feedback, decision making, and multiple perspectives which helps challenge and examine reasoning so as to lessen mistakes made.
(b) one example can be seen in the research and work done surrounding yellow fever, in which multiple people were able to share differing approaches/perspectives to demonstrate more accurate conclusions/findings.
3. Recall the story of cold fusion. (a) List three facets of the peer review process that went wrong in this episode.
(b) How long, from start to finish, did it take for the scientific community to sort out the errors in the cold fusion research?
(a) They could not be reproduced by other scientists, the researchers published their findings in a press conference without a adequate peer review process which led to many unverified claims, and some journals published the finding without properly examining or addressing flaws/inconsistencies in the experiments.
(b) two years to sort out errors.
4. Note that we encountered several examples of viceregal engineers becoming Latin American leaders. (a) What are some examples of professions that involved modern technical skill in Río de la Plata and Perú? (b) What is the primary profession of modern US leaders, for example, elected to The United States Congress?
(a) those involved in building the infrastructure for the development of colonial settlers like bridges and roads, architects, and military engineers.
(b) Professions within the realm of law such as lawyers, attorneys, or judges.
5. José Mariano Mociño and others were ordered by the Mexican viceroy on an expedition to Nootka Island. What was the purpose of the expedition? (Take INTD255 to learn more!)
The purpose was to explore/chart the Pacific coastline of North America and gather information on the geographical, botanical, and ethnographic understandings of the area. They also documented the natural environment.
6. In Perú, we must take note of the work of Hipólito Unanue. (a) What are some of his other scientific contributions?
(b) In Nueva Granada, we must take note of the work of José Celestino Mutis. What are some of his main contributions?
(a) Contributions to the scientific study of local flora and fauna, research on medicinal plants, and the founding of the National University of San Marcos in Lima. In addition, he made large contributions to medicine/public health and the use of indigenous plants in medical treatment.
(b) Mutis led the Royal Botanical Expedition to the new Kingdom of Granada studying/aiding in knowledge of botany/diverse plant species in Latin America.
7. (a) When did Latin American wars of independence begin, approximately? (b) Give some examples of scientists and engineers who fought and died for their countries.
(a) in 1810
(b) José Mariano Mociño in natural sciences, José Luis Montaña in medicine/chemistry (1755-1820), and Manuel Coto in chemistry.

2 Unit 4

1. How long after Semmelweis's solution to childbed fever was germ theory introduced?

About 15 to 20 years after Semmelweis's solution to childbed fever.

2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude?

Autopsies originated in Paris, in order to verify the person had indeed died from what they were diagnosed with. They fit the scientific attitude as they include examination in order to understand/test hypotheses so as to correct theories/beliefs and seek objective knowledge through evidence.

(C) Scientific

because it was through their approach,

(a) although partly, careful observation/study of the findings was key in recognizing the importance of what those findings meant. Therefore, adequate research/the findings/work put into the discovery was only possible because of experimentation, the preparation attention the scientists gave to the detail of the findings, that allowed (b) being prepared enables us to see more potential/significance and knowledge helps us recognize real/true meanings of what appears accidental.

3. (a) Do you think the discovery of penicillin was an accident? Why or why not? (b) Louis Pasteur is quoted as saying "chance favors the prepared mind." What did he mean by this? (c) In light of (a) and (b) do you regard the discovery of cinchona as accidental or scientific?

it as a valuable treatment.

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4. What event catalyzed the formation of the Establecimiento de Ciencias de Médicas in 1833?

The cholera epidemic, which highlighted the need/importance of better medical knowledge and approach to public health/education.

5. (a) List some reasons the authors give to explain why medical reforms were slow to materialize in Nueva Granada, relative to the struggle for reform in Nueva España. (b) Who led the medical reform process in Nueva Granada in the 18th century? (c) When and where was the Facultad de Medicina reestablished in Nueva Granada, and what happened next?

(a) weaker institutions, lacking proper reforms, more political turmoil/conflict and resistance to conservative elites/the church slowing the adoption of new medical beliefs/reforms.

(b) José Celestino Mutis.

(c) It was reestablished in 1826 in Bogotá after Colombia gained independence, where the staff were essential in advocating medical education/aiding the development of structured medical profession/modernizing healthcare.

6. (a) How many medical schools were there in Brazil in the eighteenth century? (b) What happened to the Portuguese Crown in 1807? What influence did this have on medical reform?

(a) there were two, Bahia (1808) and one in Rio de Janeiro (1808).

(b) It was forced to flee Brazil due to the Napoleonic wars, when Napoleon's forces invaded Portugal, leading to a shift in colonial relationship and increased investment in infrastructure, incorporating new educational institutions like the medical schools in Rio de Janeiro and Spain.

7. As the generation of doctors in Colombia returned from France in the late 19th century, what three cultural institutions did they establish to enhance medical practice?

1. Sociedad de medicina de Bogotá

2. Facultad de medicina de la Universidad Nacional de Colombia

3. Academia Nacional de Medicina

8. **Triangulation** Suppose you observe a distant mountain from a flat plain. Suppose you walk a baseline of 1 km, perpendicular to the direction towards the mountain. The difference between the compass headings to the mountain at either end of the baseline is 5 degrees. How far away is the mountain?

$$\frac{DA}{\sin(5^\circ)} = \frac{1 \text{ km}}{\sin(175^\circ)} = \frac{DA}{\sin(5^\circ)} = \frac{1 \text{ km}}{\sin(5^\circ)} = DA = 1 \text{ km}$$

Distance = $0.5 \times 111 \text{ km} = 55.5 \text{ km}$

9. **Latitude and Longitude** (a) Suppose two cities lie along a constant line of longitude. If we measure a change of 30 minutes (0.5 degree latitude) between them, how far apart are they, in km? (b) Suppose two cities lie along a constant latitude of 45 degrees North. If they are 600 km apart, what is the change in longitude between them?

$$\text{Distance} = 111 \times \cos(\text{latitude}) \times \Delta \text{longitude}$$

$$^\circ \text{latitude} = 45^\circ \text{N}$$

$$^\circ \text{cities} = 600 \text{ km apart}$$

$$\Delta \text{longitude} = \frac{\text{Distance}}{111 \times \cos(\text{latitude})}$$

$$= \cos(45^\circ) \approx 0.7071$$

$$= \Delta \text{longitude} = \frac{600}{111 \times 0.7071}$$

$$\frac{600}{78.6} \approx 7.63^\circ$$

3 Unit 5

1. (a) When were the first medical journals published in Columbia? (Give a few examples). (b) Compare this time frame to the publication of the first mining, chemistry, and physics journals in Mexico. (c) How, or through whom, were these journals connected to medical schools in Columbia?
(a) La Gaceta Médica in 1865, and La Lanterna in 1862
(b) comparatively, the first mining, chemistry, & physics journals came much later.
(C) Through Dr. Antonio Vargas Reyes who worked with journals to take the knowledge and teach it to students in medical schools.
2. In 1833, two Enlightenment period institutions were merged into the beginnings of a modern medical school in Mexico. What were the three institutions?
 1. Real Escuela de Cirugía
 2. Facultad de Medicina
 3. Establecimiento de Ciencias Medicina
3. Consider our major in kinesiology and nutrition science (KNS). To what extent would we consider this medicine, in the absence of modern germ theory? That is, are there other holistic forms of medical development we encountered in Latin American history besides vaccines and drugs that fight bacteria and viruses?
We would consider KNS medicine, as it is a body science that includes benefits for physical pain in the use of acupuncture, cupping, or physical therapy to alleviate injuries/work like medicine. Other holistic forms of medical development we encounter include indigenous medicines/healing practices, and herbal medicine such as plants used for their medicinal properties.
4. (a) What historical event in 1808 led to the creation of the first medical and surgical schools in Brazil (b) When did Brazil declare independence from Portugal? (c) How long after independence did the Brazilians introduce modern reforms into the medical schools in Bahia and Rio de Janeiro?
(a) the court of Portugal moving to Rio de Janeiro in 1808.
(b) in 1822 Brazil declared independence from Portugal.
(C) introduced 7 years after in 1832, which was a very transitional time for Brazil and their understanding of medical education.
5. In Columbia, the Escuela de Medicina was founded in 1865. It was centered on hospital-based anatomy and physiology. Consider the following quote from the text: "The second phase is notable for the slow progress of laboratory-based medicine, especially etiopathological procedures. Its final stage, starting in the 1950s, is defined by the introduction of Flexnerian reforms from North American technological medicine." What does quote mean by Flexnerian? Think back to our reading in The Scientific Attitude.
the quote means that there was slow progress in medicine towards laboratory-based methods/etiopathological procedures in Latin America with the Report demonstrating how many medical schools were fake, ultimately revealing how important labs/evidence-based practices are for scientific research and the expansion of the field of medicine.
6. (a) What was a major driver of modern epidemiology in 19th Century Brazil? (b) What was the purpose of the Tropicalist School of medicine? (c) When did the bubonic plague enter Brazil, and how did the Brazilians respond?
(a) epidemics/the diseases that ultimately cause them, with the tropical environment playing a key role in the modern epidemiology in 19th C. Brazil, and the discovery of how the hot dry weather was used, regarding the treatment of tuberculosis.
(b) to prove how tropical disease could be understood/considered in the same way as diseases that occur in cooler climates. The school therefore developed an original theory, proposing a nonstandard knowledge set.
(C) It entered in 1899, in which figures such as Dr. Oswaldo Cruz had been influential in his creation of an autochthonous cure for the plague, which was essentially a vaccine.