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# Simulations to Explore a Popular Use of AI and the Internet: Learning About One's Medical Condition and Conducting Medical Diagnoses

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**ABSTRACT**

**Using generative artificial intelligence (AI) in the Mind Genomics platform, BimiLeap.com (Idea Coach feature), the authors simulated the use of AI (ChatGPT-3.5) and the internet to learn about one's medical conditions and diagnose one's symptoms. The paper presents four simulations: simulation 1 uses the "fly on the wall" approach to listen in at a local breakfast where ordinary people openly discuss how they use the internet to learn about their medical conditions and use AI to diagnose their symptoms. Simulation 2 uses AI to synthesize three mind-sets: Casual Web Researcher, Information Seeker, and Anxious Seeker, respectively. Simulation 3 presents a set of 10 generated questions and corresponding answers that broadly examine how the three synthesized mind-sets interact with the internet when seeking medical information. Simulation 4 presents a close observation of the mind-sets searching for information on the internet, relating to general medical information and diagnostic signs. The paper shows the value of AI as a way to interactively educate students, especially medical students. The paper concludes by striking a note of caution to the audience for the potential of over-reliance on unvetted online information, which may lead to avoidance of seeking appropriate medical care.**

**Keywords:** Mind Genomics, Artificial Intelligence (AI), Health Information Behavior, Self-diagnosis, AI-assisted Diagnosis.

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## Introduction

In the digital age, many people turn to the internet and AI technology for self-diagnosis before seeking professional medical help. This trend raises concerns about the reasons behind this behavior and the potential dangers associated with self-diagnosis using AI. Common reasons include the need for control over health, fear, convenience, autonomy, skepticism towards traditional medicine, curiosity, aversion to healthcare professionals, financial constraints, and a history of medical trauma or mistreatment [1-3]. Fear-driven mindsets can lead to excessive worry and stress, while convenience may make it easier to find information online. Autonomy and self-sufficiency may also motivate individuals to diagnose their symptoms online. Skepticism towards traditional medicine may also lead to a cycle of heightened anxiety and increased reliance on self-diagnosis [4-7].

The focus of this paper is to explore the foregoing, using the power of AI to simulate a person's mind when using the internet and AI for medical issues. We are interested in

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studying what people do and their thoughts while doing such things. The emergence of AI as a working tool allows us to go one step further, namely, to simulate what they are thinking, and bring that to the public proscenium. With the increasing power of generative AI, as represented by systems such as ChatGPT3.5, it may well turn out that our knowledge about the way people research issues in medicine and their own health could be noticeably enhanced by simulation exercises [8-9].

## Simulation 1 – The World of the Ordinary

The internet is now used by many people to learn about their symptoms and diseases. Table 1 shows an AI-generated simulation of different people sitting in a diner, talking about how they use the internet for medical purposes. The importance of the AI simulation is that it brings stories of people, putting a "human face" onto the topic. We are all familiar with the topic and might be satisfied with a list of different uses of the internet. When AI expands these different uses in the form of the discussion at the diner, we end up learning more and getting a sense of the topic from a human-interest perspective, closer to the way we would ordinarily deal with the topic [10-12].

**Table 1: Simulating a "fly on the wall" at a local breakfast where ordinary people openly discuss how they use the internet to learn about their medical conditions and use AI to diagnose their symptoms.**

**INSTRUCTIONS PROVIDED TO AI**

For this simulation, imagine that you are a fly on the wall in the local diner where these people get together for their breakfast on Monday mornings. The breakfasts are early so those who have other activities can do these activities (e.g., work). Those who are retired can sit around leisurely. You can listen to what is said and know what is going on in the mind of the person who is doing the talking. For each person who talks, please provide the following information:

1. Describe the person who is talking and their topic. The topic is what they know about using the internet to learn about disease and health, and what they know/do to use the internet and AI (e.g., ChatGPT) to diagnose their own symptoms before going to their doctor. Preface by WHO IS TALKING.
2. Describe what the person says, why they say it, and their private thoughts regarding what they said. Preface by PRIVATE THOUGHTS.
3. How do other people react to what they say and why? Preface by REACTIONS TO COMMENTS.
4. Summarize possible reasons that this person is using the internet to understand their condition, and specifically what they will do after they use AI to diagnose their problem. Preface by SUMMARY.

**SIMULATIONS RETURNED BY AI (PARTIAL LIST)**

[RESEARCH]: Sarah is a middle-aged woman who works as a nurse in a busy hospital. She is talking about how she uses the internet to research different diseases and symptoms. She also mentions using AI tools like ChatGPT to help diagnose her own symptoms before seeing a doctor.
PRIVATE THOUGHTS: Sarah is sharing this information because she wants to show off her knowledge and expertise in the medical field. She also wants to appear proactive and informed about her own health. However, deep down, she sometimes doubts the accuracy of the information she finds online.
REACTIONS TO COMMENTS: Other diners politely listen to Sarah's stories, nodding along as she speaks. Some show interest in learning more about using AI for health purposes, while others seem skeptical of relying on the internet for medical information.
SUMMARY: Sarah uses the Internet to understand her condition better and then uses AI tools to help identify potential health issues. After using AI to diagnose her symptoms, she plans to schedule an appointment with her doctor to get a professional opinion.

[SELF ANALYSIS & CURIOSITY]: John is a retired professor who has a background in health sciences. He shares his experiences of using online resources to research various health topics. He also mentions using AI algorithms to analyze his symptoms.
PRIVATE THOUGHTS: John enjoys discussing medical topics and showcasing his expertise in the field. He believes that self-education is crucial for staying informed about one's health. However, he is wary of self-diagnosing and always seeks confirmation from a medical professional.
REACTIONS TO COMMENTS: The other diners at the table are impressed by John's knowledge and engage in a lively discussion about different health conditions. Some ask for recommendations on reliable websites for health information, while others express their concerns about the accuracy of online sources.
SUMMARY: John uses the internet to research health topics and utilizes AI algorithms to analyze his symptoms. After using AI for diagnosis, he follows up with a visit to his doctor for an expert opinion and proper treatment plan.

[INFORMATION ABOUT "WHAT'S GOING AROUND"]: Emily is a young mother who is juggling her job and caring for her family. She talks about how she relies on the internet to quickly access information about common illnesses and symptoms. She mentions using AI tools to help narrow down potential causes of her symptoms.
PRIVATE THOUGHTS: Emily shares her experiences with using online resources because she wants to find efficient ways to

manage her family's health. She feels overwhelmed by her responsibilities and sees the internet as a valuable resource for quick answers. However, she worries about the reliability of online information.
REACTIONS TO COMMENTS: The other diners empathize with Emily's struggles and offer tips on finding trustworthy health websites. Some share their own experiences with using AI for health purposes, while others caution against self-diagnosing and emphasize the importance of consulting a healthcare professional.
SUMMARY: Emily turns to the internet for fast answers about health issues and uses AI tools to help identify possible causes of her symptoms. After using AI for diagnosis, she plans to consult her family doctor for further evaluation and treatment recommendations

[TECH-SAVVY PROFESSIONAL USING THE NEW TOOLS]: Mark is a tech-savvy young man who shares how he uses AI algorithms to analyze his symptoms before deciding whether to see a doctor.
PRIVATE THOUGHTS: Mark enjoys sharing his expertise in technology and AI and believes in the power of data-driven decision-making. He sees self-diagnosing as a way to take control of his health and make informed choices. However, he sometimes worries about the risks of relying too heavily on AI for medical advice.
REACTIONS TO COMMENTS: The other diners are intrigued by Mark's insights into using AI for health purposes and ask for recommendations on AI tools they can use. Some express admiration for Mark's proactive approach to healthcare, while others voice concerns about the limitations of AI in diagnosing complex medical conditions.
SUMMARY: Mark leverages AI technology to analyze his symptoms and make informed decisions about seeking medical help. After using AI for diagnosis, he plans to consult with his healthcare provider for confirmation and guidance on treatment options.

[NURSING STUDENT]: Lisa is a young student studying to become a nurse. She shares her experiences of using online resources to learn about various health conditions and symptoms. She mentions using AI chatbots to help identify potential causes of her symptoms.
PRIVATE THOUGHTS: Lisa is eager to showcase her growing knowledge in the healthcare field and seeks validation from others. She believes that self-education plays a crucial role in becoming a competent healthcare professional. However, she sometimes struggles with the overwhelming amount of information available online.
REACTIONS TO COMMENTS: The other diners encourage Lisa's pursuit of knowledge and offer suggestions on reputable sources of healthcare information. Some share their own experiences with using AI for health purposes, while others emphasize the importance of seeking guidance from experienced healthcare professionals.
SUMMARY: Lisa uses online resources to expand her knowledge of health conditions and symptoms and relies on AI chatbots to assist in identifying potential causes of symptoms.
After using AI for diagnosis, she plans to discuss her findings with her instructors and seek mentorship from experienced nurses for further guidance.

[MIDDLE-AGED MAN DISCOVEING UNUSUAL SYMPTOMS]: Michael is a middle-aged man who recently experienced unusual symptoms and turned to the internet for answers. He discusses his search for information online and his use of AI tools to help pinpoint the possible causes of his symptoms.
PRIVATE THOUGHTS: Michael feels anxious about his health concerns and seeks reassurance from others by sharing his experiences. He acknowledges the limitations of self-diagnosing but finds comfort in taking proactive steps towards understanding his symptoms. However, he worries about the accuracy of online information and the reliability of AI algorithms.
REACTIONS TO COMMENTS: The other diners show concern for Michael's well-being and offer words of support and encouragement. Some share their own experiences with using online resources for health information, while others caution against relying solely on AI for medical advice.
SUMMARY: Michael turns to the Internet for information on his unusual symptoms and uses AI tools to help narrow down potential causes. After using AI for diagnosis, he plans to schedule an appointment with his doctor for a thorough evaluation and appropriate treatment recommendations.

[MOTHER WHO USES INTERNET TO GET HEALTH INFORMATION]: Rebecca is a busy working mother who struggles to find time for her own health needs. She discusses how she uses the internet to research various health topics and relies on AI chatbots to help identify potential causes of her symptoms.
PRIVATE THOUGHTS: Rebecca feels overwhelmed by her responsibilities and sees self-education as a way to manage her family's health efficiently. She values the convenience of using AI tools for quick symptom analysis but worries about the accuracy of online information. However, she finds comfort in taking proactive steps towards understanding her symptoms.
REACTIONS TO COMMENTS: The other diners empathize with Rebecca's challenges as a working mother and offer tips on balancing family and personal health needs. Some share their own strategies for utilizing online resources for health information, while others emphasize the importance of consulting with healthcare professionals for accurate diagnosis and treatment.
SUMMARY: Rebecca relies on the internet to research health topics and uses AI chatbots to assist in identifying potential causes of her symptoms. After using AI for diagnosis, she plans to prioritize her health needs and schedule a consultation with her doctor for further evaluation and guidance on treatment options.
[RETIRED PHYSICIAN THE INTERNET AS A GOOD SOURCE OF INFORMATION]: David is a retired physician who now

enjoys sharing his knowledge and experiences with others. He talks about the benefits and limitations of using the internet for health information and the role of AI in assisting with symptom analysis.
PRIVATE THOUGHTS: David values evidence-based medicine and strives to educate others on responsible health information seeking. He believes in the importance of consulting healthcare professionals for accurate diagnosis and treatment. However, he acknowledges the value of using AI as a supplemental tool for symptom analysis.
REACTIONS TO COMMENTS: The other diners respect David's expertise in the medical field and engage in thoughtful discussions about the integration of technology in healthcare. Some seek David's advice on reliable sources for health information, while others share their own experiences with using AI for health-related purposes.
SUMMARY: David shares insights on the benefits and limitations of using the internet for health information and the role of AI in assisting with symptom analysis. He emphasizes the importance of consulting healthcare professionals for accurate diagnosis and treatment and encourages others to approach online resources with caution and skepticism.

[WOMAN WHO USES INTERNET TO DIAGNOSE HER OWN SYMPTOMS]: Karen is a young professional who leads a busy lifestyle and values efficiency in managing her health. She discusses how she uses the internet to research different health conditions and relies on AI chatbots to help analyze her symptoms before seeking medical advice.
PRIVATE THOUGHTS: Karen views self-education as a way to take control of her health and make informed decisions about her well-being. She appreciates the convenience of using AI for quick symptom analysis but worries about the reliability of online information. Nonetheless, she finds comfort in being proactive about understanding her symptoms.
REACTIONS TO COMMENTS: The other diners admire Karen's proactive approach to health management and seek tips on using online resources effectively. Some express curiosity about using AI for symptom analysis, while others caution against self-diagnosing and stress the importance of consulting healthcare professionals for accurate diagnosis and treatment.
SUMMARY: Karen utilizes the internet for researching health conditions and employs AI chatbots for analyzing her symptoms. After using AI for diagnosis, she plans to schedule a consultation with her healthcare provider for further evaluation and guidance on treatment options.

## Simulation 2 – Mind-set of People Who Use the Internet to Explore Their Symptoms

Mind-sets are deep-seated beliefs and attitudes that shape how individuals view and understand their environment. It is fascinating to observe how people with different mind-sets approach the same everyday problem in unique ways. The differences are important when closely examined in daily life. Each person's methods of using the internet to understand medical conditions and diagnose symptoms vary with their mind-sets. A person with a growth mind-set explores diverse information and viewpoints, while someone with a fixed mind-set tends to stick to one source and resist alternative interpretations. The concept of mind-sets stems from Carol Dweck's research in the 1980s. Dweck's mind-set theory differentiates fixed mind-sets, which see abilities as unchangeable, from growth mind-sets, which view abilities as improvable through effort [13].

The emerging science of Mind Genomics focuses on understanding individuals by examining specific situations rather than relying on broad generalizations. Author Malcolm Gladwell refers to this as "horizontal segmentation", which classifies people by their mind-sets rather than traditional demographics, and doing so for the specifics of a situation, not for the general situation [14-16].

Grasping patients' mind-sets is crucial in medicine. It helps healthcare providers tailor communication and treatment plans to meet individual patient needs and preferences. The dual focus of mind-sets, first on generalities in the way that Dweck formulates it, and then on specifics the way Mind Genomics formulates it, improves our understanding of behaviors and preferences in healthcare and medicine. Patients with a fixed mind-set may require clear explanations, whereas those with a growth mind-set might favor conversations about progress and improvement. When we move down from the generalities to specifics, we end up with deep insights into the way people use the internet for their medical conditions.

Table 2 shows how AI synthesizes three mind-sets. Simulating these mind-sets provides medical practitioners with valuable insights into patient healthcare approaches. Recognizing the beliefs and behaviors associated with different mind-sets aids healthcare providers in anticipating challenges patients encounter in self-diagnosing or self-treating.

**Table 2: Three AI-synthesized mind-sets focusing on the way people use the internet to explore their symptoms and conditions.**

**INSTRUCTIONS GIVEN TO THE AI**

There are different mind-sets of people who use the internet to explore their symptoms. Please describe the different mind-sets, using the following:
1. What is the name of the mind-set? Preface by NAME OF MIND-SET.
2. What specifically does this person do when navigating the internet to find out about their symptoms or medical condition?

Provide composition about this mind-set's activity when using the internet to find out information about their condition. Preface by USING THE INTERNET TO DISCOVER WHAT IS COMMONLY KNOWN ABOUT THEIR CONDITION.

3. What does this person think about using AI to diagnose their symptoms? Provide a composition of this person using AI to diagnose their own symptoms. What goes through their minds about what they are doing? And how will they tell the doctor what they discovered? Give us a sense of being in their mind as they diagnose themselves. Preface by USING AI TO DIAGNOSE THEIR ACTUAL SYMPTOMS.
4. How does this mind-set tell the doctor what they discovered when they diagnosed themselves? And what are the doctor's thoughts, feelings, and responses to the patient? Preface by INTERACTING WITH THE DOCTOR AFTER GAINING INSIGHT FROM THE INTERNET AND FROM SELF-DIAGNOSIS WITH AI.

**THREE MIND-SETS SYNTHESIZED BY AI**

**Mind-set #1: Casual Web Researcher**

USING THE INTERNET TO DISCOVER WHAT IS COMMONLY KNOWN ABOUT THEIR CONDITION: The Casual Web Researcher will typically search for their symptoms on search engines and browse through general medical websites to see what information is available. They may also visit online forums or social media groups to see if others have experienced similar symptoms. This person may spend a significant amount of time reading various articles and watching videos to gather information about their condition. However, they may not fully understand or critically analyze the information they come across.

USING AI TO DIAGNOSE THEIR ACTUAL SYMPTOMS: When using AI to diagnose their symptoms, the Casual Web Researcher may input their symptoms into online symptom checkers or medical apps. They may feel a sense of empowerment and control as they try to narrow down possible diagnoses. They may also feel a bit anxious or uncertain about the accuracy of the AI diagnosis and how to communicate this information to their doctor. The idea of being able to self-diagnose can be both reassuring and overwhelming for them.

INTERACTING WITH THE DOCTOR AFTER GAINING INSIGHT FROM THE INTERNET AND FROM SELF-DIAGNOSIS WITH AI: The Casual Web Researcher may try to explain to their doctor what they have discovered from their online research and self-diagnosis using AI tools. The doctor may appreciate the patient's effort to educate themselves but may also be cautious about the accuracy of the information found online.

The doctor may need to spend additional time discussing the information with the patient and guiding them towards a proper diagnosis and treatment plan.

**Mind-set #2: Information Seeker**

USING THE INTERNET TO DISCOVER WHAT IS COMMONLY KNOWN ABOUT THEIR CONDITION: The Information Seeker is constantly browsing online forums, medical websites, and social media for information about their symptoms or medical condition. They read articles, watch videos, and participate in online discussions to try to understand what may be causing their symptoms. They may also search for personal testimonies from others who have similar experiences to compare and validate their own.

USING AI TO DIAGNOSE THEIR ACTUAL SYMPTOMS: The Information Seeker is intrigued by the idea of using AI to diagnose their symptoms. They input their symptoms into symptom checker apps or websites and analyze the results to see what conditions are suggested. They feel a mix of excitement and apprehension as they try to match their symptoms to potential diagnoses. They consider how they will bring this information to their doctor and think about the importance of advocating for themselves in the healthcare system.

INTERACTING WITH THE DOCTOR AFTER GAINING INSIGHT FROM THE INTERNET AND FROM SELF-DIAGNOSIS WITH AI: The Information Seeker confidently shares the information they have gathered from the internet and their self-diagnosis with the doctor. They explain their thought process and reasoning behind their conclusions, hoping to engage in a collaborative discussion with their healthcare provider. The doctor listens attentively, taking note of the patient's concerns and findings, but also reminds the patient of the limitations of internet research and the importance of professional medical evaluation. The doctor appreciates the patient's proactive approach but emphasizes the need for a thorough examination and proper diagnosis.

**Mind-set #3: Anxious Seeker**

USING THE INTERNET TO DISCOVER WHAT IS COMMONLY KNOWN ABOUT THEIR CONDITION: The Anxious Seeker spends hours scouring the internet for information about their symptoms, often jumping from website to website and reading numerous articles and forums. They constantly search for validation of their fears and anxieties, sometimes becoming overwhelmed by the amount of information available. They may even self-diagnose based on what they find online, leading to heightened anxiety.

USING AI TO DIAGNOSE THEIR ACTUAL SYMPTOMS: When the Anxious Seeker turns to AI for a diagnosis, they feel a mix of relief and apprehension. They may second-guess the AI's assessment and continue searching for more information online. As they prepare to tell the doctor about their self-diagnosis, they worry about being dismissed or not taken seriously. The fear of being wrong or misunderstood looms large in their mind.

INTERACTING WITH THE DOCTOR AFTER GAINING INSIGHT FROM THE INTERNET AND FROM SELF-DIAGNOSIS WITH AI: The Anxious Seeker may approach the doctor with a list of possible diagnoses based on their internet research and AI diagnosis. The doctor may feel frustrated or concerned about the patient's reliance on internet sources and unverified information.

They may have to spend extra time debunking myths or calming the patient's anxieties. Overall, the doctor may appreciate the patient's proactive approach but also caution them against self-diagnosing in the future.

## Simulation 3 – Using AI to Simulate How Each of the Three Mind-Sets Would Answer the Same Question Regarding a Specific Action Seeking Health-Related Information on the Internet

The advancement of artificial intelligence highlights the growing importance of AI in synthesizing answers for various mind-sets when searching for medical information online. AI can customize responses based on how people seek medical information, resulting in more personalized and accurate retrieval. A key aspect of this approach is asking specific questions to mind-sets and getting synthesized answers. Targeted questions enable AI to deliver focused, relevant responses, enhancing the efficiency of information retrieval [17-20]. Table 3 shows a set of 10 general questions, both generated and answered by AI based on the three mind-sets (Casual Web Researcher, Information Seeker, Anxious Seeker), along with a synthesis. The tonality of Table 3 is instructional, suggesting general principles.

**Table 3: A set of 10 AI-generated questions and answers of a general nature about how the three synthesized mind-sets interact with the internet in their search for medical-related information.**

**INSTRUCTIONS GIVEN TO THE AI**

There are three mind-sets which use the internet to find out information about their symptoms online. These are the CASUAL WEB RESEARCHER, the INFORMATION SEEKER, and the ANXIOUS SEEKER.
For each mind-set, please repeat the question.
Then give a four-sentence answer for the CASUAL WEB RESEARCHER.
Then give a four-sentence answer for the INFORMATION SEEKER.
Then give a four-sentence answer for the ANXIOUS SEEKER.
Summarize all the information in a paragraph, calling it SYNTHESIS.

**TEN AI-GENERATED QUESTIONS AND ANSWERS OF A GENERAL NATURE ABOUT HOW THE THREE MIND-SETS INTERACT WITH THE AI IN THEIR SEARCH FOR MEDICAL-RELATED INFORMATION**

**Question 1: What are some common misconceptions a mind-set may encounter when researching medical conditions online?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may come across inaccurate information from unreliable sources, leading to misconceptions about their symptoms or conditions.
INFORMATION SEEKER: The Information Seeker may mistakenly believe that all information found online is accurate and trustworthy, leading to potential misunderstandings about their health.
ANXIOUS SEEKER: The Anxious Seeker may jump to conclusions and assume the worst based on information found online, leading to unnecessary anxiety and stress.
SYNTHESIS: Each mind-set may encounter misconceptions when researching medical conditions online, with the Casual Web Researcher potentially relying on unreliable sources, the Information Seeker assuming all information is accurate, and the Anxious Seeker jumping to worst-case scenarios.

**Question 2: How does the use of AI in self-diagnosis affect a mind-set's trust in medical professionals?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may view AI as a helpful tool for gathering information but may still ultimately trust the expertise of medical professionals.
INFORMATION SEEKER: The Information Seeker may feel more confident in self-diagnosing with the help of AI, potentially leading to a decrease in trust in medical professionals.
ANXIOUS SEEKER: The Anxious Seeker may rely heavily on AI for self-diagnosis, leading to a decreased trust in medical professionals due to perceived accuracy of AI technology.
SYNTHESIS: The use of AI in self-diagnosis can impact an individual's trust in medical professionals differently based on their mind-set, with the Casual Web Researcher maintaining trust, the Information Seeker potentially losing trust, and the Anxious Seeker heavily relying on AI instead.

**Question 3: What potential risks or drawbacks are associated with relying on internet research for medical information?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may encounter risks such as misinformation, misinterpretation of symptoms, and self-diagnosing incorrectly without professional guidance.
INFORMATION SEEKER: The Information Seeker may face drawbacks like heightened anxiety, unnecessary concern over minor symptoms, and self-treatment based on potentially inaccurate information found online.
ANXIOUS SEEKER: The Anxious Seeker may experience risks such as heightened anxiety, amplification of fears, and unnecessary stress due to seeking out worst-case scenarios online.
SYNTHESIS: Relying on internet research for medical information can pose risks for all mind-sets, including encountering misinformation, worsening anxiety, and potentially self-diagnosing incorrectly without professional guidance.

**Question 4: How does a mind-set navigate conflicting information or diagnoses they find online?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may compare multiple sources, consult with a healthcare professional for clarification, and weigh the credibility of each information source to navigate conflicting information.
INFORMATION SEEKER: The Information Seeker may seek out reputable sources, consider the majority consensus among different sources, and reach out to healthcare providers for clarity when faced with conflicting information.
ANXIOUS SEEKER: The Anxious Seeker may struggle with processing conflicting information, leading to increased anxiety and uncertainty about their condition, potentially exacerbating stress and fear.
SYNTHESIS: When faced with conflicting information or diagnoses found online, each mind-set may navigate the uncertainty differently by comparing sources, consulting professionals, and managing anxiety levels to find clarity and understanding in their health research.

**Question 5: What strategies can a mind-set use to effectively communicate their findings to a healthcare provider?**
CASUAL WEB RESEARCHER: The Casual Web Researcher can organize their findings in a clear format, present them to the healthcare provider in a concise manner, seek clarification on any unclear information, and be open to discussion and guidance.
INFORMATION SEEKER: The Information Seeker may compile a list of sources used for research, bring up specific concerns or questions based on their findings, actively listen to the healthcare provider's perspective, and engage in open communication to ensure mutual understanding.
ANXIOUS SEEKER: The Anxious Seeker can share their online research findings with the healthcare provider while expressing their concerns and fears, actively engaging in discussion to address uncertainties, and seeking reassurance and guidance from the professional.
SYNTHESIS: Effectively communicating findings to a healthcare provider involves organizing information, presenting concerns clearly, engaging in open dialogue, and being receptive to guidance and clarification from the professional, with each mind-set adapting their communication strategies based on their research habits and concerns.

**Question 6: How does a healthcare provider typically respond to a patient who has self-diagnosed based on internet research?**
CASUAL WEB RESEARCHER: Healthcare providers may acknowledge and appreciate the patient's efforts in researching their symptoms, provide additional context or information not found online, and offer guidance or clarification on the self-diagnosis.
INFORMATION SEEKER: Healthcare providers may address the patient's self-diagnosis with understanding, validate their concerns, offer reassurance or further evaluation, and emphasize the importance of professional assessment for accurate diagnosis and treatment.
ANXIOUS SEEKER: Healthcare providers may need to address the anxious patient's heightened fears or concerns resulting from self-diagnosis, provide education on reliable sources of information, offer emotional support, and guide them towards appropriate next steps for evaluation and care.
SYNTHESIS: Healthcare providers typically respond to patients who have self-diagnosed based on internet research with understanding, validation of concerns, offering guidance or clarification, and emphasizing the importance of professional evaluation, tailoring their approach based on the patient's mind-set and level of anxiety.

**Question 7: How does a mind-set's online research habits influence their personal health decisions?**
CASUAL WEB RESEARCHER: The Casual Web Researcher's online research habits may lead to informed decisions based on a balanced approach of gathering information, consulting professionals, and using technology as a supplementary tool in understanding their health conditions.
INFORMATION SEEKER: The Information Seeker's research habits may sometimes result in over-reliance on online sources, impacting personal health decisions by potentially leading to self-diagnosis, unnecessary worry, or treatment based on inaccurate information without professional input.
ANXIOUS SEEKER: The Anxious Seeker's online research habits can intensify anxiety and stress, influencing personal health decisions by potentially driving them to seek out worst-case scenarios, engage in excessive self-diagnosis, or delay seeking proper medical attention out of fear.
SYNTHESIS: An individual's online research habits can influence personal health decisions differently, with the Casual Web Researcher using a balanced approach, the Information Seeker potentially over-relying on online sources, and the Anxious Seeker experiencing heightened anxiety and potentially negative impacts on decision-making based on their research habits.

**Question 8: What are some common misconceptions a mind-set may encounter when researching medical conditions online?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may come across inaccurate information from unreliable sources, leading to misconceptions about their symptoms or conditions.
INFORMATION SEEKER: The Information Seeker may mistakenly believe that all information found online is accurate and trustworthy, leading to potential misunderstandings about their health.
ANXIOUS SEEKER: The Anxious Seeker may jump to conclusions and assume the worst based on information found online, leading to unnecessary anxiety and stress.
SYNTHESIS: Each mind-set may encounter misconceptions when researching medical conditions online, with the Casual Web

Researcher potentially relying on unreliable sources, the Information Seeker assuming all information is accurate, and the Anxious Seeker jumping to worst-case scenarios.

**Question 9: How does the use of AI in self-diagnosis affect a mind-set's trust in medical professionals?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may view AI as a helpful tool for gathering information but may still ultimately trust the expertise of medical professionals.
INFORMATION SEEKER: The Information Seeker may feel more confident in self-diagnosing with the help of AI, potentially leading to a decrease in trust in medical professionals.
ANXIOUS SEEKER: The Anxious Seeker may rely heavily on AI for self-diagnosis, leading to a decreased trust in medical professionals due to perceived accuracy of AI technology.
SYNTHESIS: The use of AI in self-diagnosis can impact an individual's trust in medical professionals differently based on their mind-set, with the Casual Web Researcher maintaining trust, the Information Seeker potentially losing trust, and the Anxious Seeker heavily relying on AI instead.

**Question 10: What potential risks or drawbacks are associated with relying on internet research for medical information?**
CASUAL WEB RESEARCHER: The Casual Web Researcher may encounter risks such as misinformation, misinterpretation of symptoms, and self-diagnosing incorrectly without professional guidance.
INFORMATION SEEKER: The Information Seeker may face drawbacks like heightened anxiety, unnecessary concern over minor symptoms, and self-treatment based on potentially inaccurate information found online.
ANXIOUS SEEKER: The Anxious Seeker may experience risks such as heightened anxiety, amplification of fears, and unnecessary stress due to seeking out worst-case scenarios online.
SYNTHESIS: Relying on internet research for medical information can pose risks for all mind-sets, including encountering misinformation, worsening anxiety, and potentially self-diagnosing incorrectly without professional guidance.

## Simulation 4 – Sitting Side by Side as the Mind-Set Uses the Internet for a Specific Purpose

The simulation of a mind-set search for medical information online can become an instructional demonstration of how AI technology can be used for everyday inquiries. The simulation becomes an educational tool for individuals seeking knowledge about various medical topics and highlights the potential of AI in enhancing the way we gather information. By observing the simulated mind-set navigate through complex medical topics, individuals can gain a better understanding of the capabilities of AI in the field of medicine. Table 4 shows how AI can generate questions and answers dealing with the way mind-sets approach health information on the internet and how they might differ in the way they seek information about the same health topic [21-24].

**Table 4: AI-generated questions and answers simulating sitting side-by-side and observing what the mind-set thinks and does.**

**Process Question 1: How do you typically approach researching your symptoms online?**
Casual Web Researcher: The Casual Web Researcher will casually look up their symptoms online to get a general idea of what could be going on, without delving too deeply into the research. They may consult a few websites or forums for information.
Information Seeker: The Information Seeker will conduct thorough research on their symptoms online, looking for reliable sources such as medical websites or articles. They will gather as much information as possible to understand their symptoms better.
Anxious Seeker: The Anxious Seeker will frantically search for information about their symptoms online, often jumping to worst-case scenarios and causing themselves unnecessary stress. They may visit multiple websites, seeking reassurance or confirmation of their fears.
Synthesis: Each mind-set uses the internet for symptom research in different ways, with varying levels of depth and anxiety.

**Process Question 2: How do you determine the credibility of the sources you find online?**
Casual Web Researcher: The Casual Web Researcher may not pay close attention to the credibility of the sources they find online, relying on easily accessible websites or forums for information. They may not verify the information they come across.
Information Seeker: The Information Seeker will prioritize credibility when researching their symptoms online, seeking reputable sources such as medical journals or websites. They will cross-reference information and consult multiple sources to ensure accuracy.
Anxious Seeker: The Anxious Seeker may struggle to determine the credibility of the sources they find online, often falling into the trap of misinformation or fear-mongering websites. They may be more susceptible to believing unreliable sources due to their heightened anxiety.
Synthesis: The three mind-sets vary in their approaches to determining the credibility of online sources, with the Information Seeker being the most diligent in verifying information.

**Process Question 3: How do you handle conflicting information about your symptoms that you find online?**
Casual Web Researcher: The Casual Web Researcher may not be too bothered by conflicting information about their symptoms online, as they are more interested in getting a general idea rather than definitive answers. They may brush off conflicting information and move on.
Information Seeker: The Information Seeker will carefully analyze conflicting information about their symptoms online, trying to discern the most accurate and reliable sources. They may seek out professional medical advice to help clarify any discrepancies.
Anxious Seeker: The Anxious Seeker may struggle to handle conflicting information about their symptoms online, leading to increased anxiety and confusion. They may fixate on the most alarming information they come across, worsening their fears.
Synthesis: The three mind-sets handle conflicting information about their symptoms online differently, with the Information Seeker being more critical and seeking clarification from medical professionals.

**Process Question 4: What steps do you take to ensure your online research is helping rather than harming your understanding of your symptoms?**
Casual Web Researcher: The Casual Web Researcher may not take specific steps to ensure their online research is helpful, as they are more interested in a cursory understanding of their symptoms. They may not engage in follow-up research or consult a healthcare provider.
Information Seeker: The Information Seeker will take steps to ensure their online research is helpful, such as verifying sources, cross-referencing information, and seeking out professional medical advice. They will actively seek to improve their understanding of their symptoms based on reliable information.
Anxious Seeker: The Anxious Seeker may struggle to ensure their online research is helping rather than harming their understanding of their symptoms, as they may gravitate towards sensationalized or fear-inducing content. They may benefit from setting limits on their online research or seeking support from a healthcare professional.
Synthesis: The three mind-sets differ in the steps they take to ensure their online research about their symptoms is beneficial, with the Information Seeker being the most proactive in seeking reliable information.

**Search Question 1: How can I differentiate between cold and flu symptoms?**
Casual Web Researcher: The Casual Web Researcher may search for "cold vs. flu symptoms" to understand the key differences between the two illnesses, such as flu symptoms being more severe and sudden onset compared to a cold.
Information Seeker: The Information Seeker will likely seek detailed information on the distinct symptoms of colds and flu, including laboratory tests available for accurate diagnosis and recommended treatments for each. They may also look for preventive measures to minimize the risk of contracting these illnesses.
Anxious Seeker: The Anxious Seeker may catastrophize common cold and flu symptoms, worrying about potential complications or misdiagnosing themselves with a more serious condition. They may seek repeated reassurance or consult numerous sources for confirmation of their symptoms.
Synthesis: The three mind-sets exhibit different approaches to researching the differentiation between cold and flu symptoms, with Casual Web Researchers seeking basic distinctions, Information Seekers exploring detailed information and treatments, and Anxious Seekers experiencing heightened worry and seeking repeated reassurance.
own.

**Search Question 2: What are the symptoms of anxiety?**
Casual Web Researcher: The Casual Web Researcher may look up "anxiety symptoms" to get a general understanding of what anxiety feels like, such as racing thoughts or physical symptoms like sweating.
Information Seeker: The Information Seeker will likely look for detailed information on various types of anxiety disorders, specific symptoms associated with each, and potential treatment options. They may also explore coping mechanisms and self-help strategies.
Anxious Seeker: The Anxious Seeker may fixate on severe or rare symptoms of anxiety, leading to an escalation of their existing anxiety levels. They may continuously search for reassurance and validation of their symptoms or seek immediate medical attention.
Synthesis: Casual Web Researchers search for general symptom information, Information Seekers dive into specifics and treatments, and Anxious Seekers may spiral into heightened anxiety levels when researching symptoms online.

**Search Question 3: Can stress cause physical symptoms?**
Casual Web Researcher: The Casual Web Researcher may search for "stress physical symptoms" to understand the connection between stress and physical health, finding basic information on how stress can manifest physically like headaches or stomach issues.
Information Seeker: The Information Seeker will likely explore in-depth articles or studies on the physiological effects of stress on the body, including how chronic stress can impact various bodily systems and lead to long-term health issues. They may also seek advice on managing stress levels effectively.
Anxious Seeker: The Anxious Seeker may hyper-focus on potential severe or life-threatening physical symptoms caused by stress, leading to increased worry and anxiety. They may obsessively research different medical conditions associated with stress or seek frequent reassurance from medical professionals.

Synthesis: Different mind-sets approach researching stress-related physical symptoms with varying depths, with Casual Web Researchers seeking general information, Information Seekers delving into detailed effects, and Anxious Seekers fixating on severe outcomes and seeking constant reassurance.

**Search Question 4: What are the symptoms of depression?**
Casual Web Researcher: The Casual Web Researcher may look up "depression symptoms" to gain a basic understanding of what depression can feel like, such as persistent sadness or loss of interest in activities.
Information Seeker: The Information Seeker will likely research specific symptoms of depression, diagnostic criteria, various types of depression, and available treatment options such as therapy or medication. They may also explore personal stories or forums for insights on managing depression.
Anxious Seeker: The Anxious Seeker may become overwhelmed by the potential severity of depression symptoms, leading to heightened anxiety and fear. They may excessively research worst-case scenarios or seek immediate help out of concerns for their mental health.
Synthesis: Each mind-set approaches researching depression symptoms differently, with Casual Web Researchers seeking general descriptions, Information Seekers delving into specifics and treatments, and Anxious Seekers experiencing heightened anxiety and fear when dealing with depression symptoms.

## Discussion and Conclusions

The study conducted simulations, which enhances medical information, making it more engaging and adding a new dimension to its presentation. AI improves learning by catering to different mind-sets and merging responses for a more engaging experience.

Interactive learning methods significantly improve understanding and retention of complex medical concepts in education. This method is a useful educational tool for high school and college students, developing critical thinking and problem-solving abilities. Providing information that promotes analysis and synthesis from different viewpoints effectively boosts students' analytical and critical thinking skills. This method produces engaging and insightful outcomes. AI enhances the learning experience of medical topics by making it more engaging and interactive. This can enhance interest and engagement in medical education, leading to a more informed society. AI's ability to synthesize answers for different mind-sets in medical information searches is evident. It improves learning through targeted questions, tailored answers, and information synthesis for a more engaging experience. This approach could change how medical information is shared and understood, acting as a useful tool for education and information access in today's digital world.

## A Cautionary Note

Generative AI has rapidly advanced, offering potential solutions to many problems.

Employing generative AI for medical symptom diagnosis may be unwise. Using this technology for medical purposes can pose several issues, including inaccuracy. This technology has potential but is prone to errors and misinterpretations. Accuracy in healthcare is vital; a flawed system can lead to serious consequences. Generative AI also lacks the crucial human touch needed in medical care. A machine cannot understand the subtleties of a patient's symptoms or provide the empathy of a human healthcare provider. This can lead to impersonal care and missed diagnoses. Generative AI in medical diagnoses presents major ethical concerns. Who is responsible for an incorrect diagnosis or a failure in technology to identify a serious medical condition? The legal and ethical issues of AI in healthcare are uncertain, presenting major risks.

Generative AI may miss the full context of a patient's health history. A diagnosis should consider the person's medical history, lifestyle, and relevant details. AI may not provide personalized care, leading to potential oversights in diagnosis and treatment. There are also risks related to data privacy and security when using generative AI in medicine.

Patient information is sensitive and must be safeguarded against unauthorized access or misuse. Data breaches or leaks from AI technology are a legitimate concern that must be addressed. Relying only on generative AI for medical diagnoses could diminish the expertise of healthcare professionals. AI is a useful tool in diagnostics, but it cannot replace the expertise of experienced medical professionals in patient care and treatment. The cost of implementing generative AI in healthcare can be high. Some healthcare organizations lack the resources or infrastructure for this technology, resulting in unequal access to vital diagnostic tools. The rapid evolution of AI technology can render medical diagnosis algorithms outdated or inaccurate swiftly. This may lead to misdiagnoses or unnecessary treatments, complicating healthcare further. Additionally, generative AI's diagnostic processes lack transparency. Patients often struggle to grasp how the technology functions or how it reaches a diagnosis, resulting in confusion and distrust in healthcare [25-28].

In summary, generative AI holds potential, but its application in medical diagnoses presents serious risks and challenges. Concerns like accuracy, human touch, ethics, privacy, expertise, cost, technological limitations, transparency, and outdated algorithms must be addressed for the safe and effective adoption of AI in healthcare. Approaching generative AI in medical settings requires caution and careful consideration of potential drawbacks.

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