NEW INTERPRETATIONS OF THE PLACEBO EFFECT:

THE INFLUENCE OF EXPECTATION ON HEALTHCARE IN COLLEGE

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Abstract

Understandings of the placebo effect have emerged from traditional explanations that rely on the use of deception and the administration of a physical placebo, often in the form of a pill. However, more recent research has begun to uncover the existence of the placebo effect in varying conditions and contexts that do not operate under the same processes. Working within a framework of expectations and the presence or absence of certain social characteristics or interpersonal qualities, the current study highlights promising directions for the placebo effect to inform patient-provider relationships and clinical outcomes in the domain of healthcare.

Keywords: placebo effect, expectation, gender, empathy

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At the height of the COVID-19 pandemic, the United States surpassed 150,000

hospitalizations at one time (Ritchie et al., 2020). These cases refer exclusively to those

hospitalized as a result of contracting COVID-19; these data does not additionally cover

individuals hospitalized for other medical reasons. Following trends from June 2020 to April

2020, a collaborative effort from researchers around the world, including those on the Center for

Disease Control COVID-19 Response Team, concluded that non-COVID-19 hospitalizations

were decreasing rapidly. Whether on the part of individuals, hospital capacity constraints, or

government stay-at-home orders, this decrease reflects the delaying or foregoing of healthcare

(Czeisler et al., 2020). Avoidance behaviors at this national volume can be attributed to collective

desirability for safety. They detail a shift in priorities, such that protecting oneself from a highly

infectious and widely unknown disease began to outweigh other health-related concerns. Among

the most frequent avoiders of healthcare during the COVID-19 pandemic were adults with two or

more underlying medical conditions (Czeisler et al., 2020). The relation between avoidance and

safety is clarified here, since those with underlying medical conditions constitute a significant

portion of the population most vulnerable to symptom severity, hospitalization, and mortality as

a result of COVID-19 (Kompaniyets et al., 2021).

This research about the willingness to forgo healthcare for fear of being exposed to

COVID-19 provides evidence that one's perceptions, in this case, about their physical safety, can

influence clinical decisions and outcomes; it is estimated that 12% of non-COVID-19 medical

emergencies could have been avoided had they been treated at the emergency department

(Czeisler et al., 2020). Recent interpretations of the placebo effect, wherein outcomes change as

a result of influences on cognition, may provide a framework to explain this phenomenon. The current study aims to expand our understanding of the placebo effect in the healthcare domain by also investigating the effects of interpersonal factors and expectations on a variety of health conditions in college students.

Placebo Effect

History

The term "placebo" first appeared in medical jargon in the late 18th-century (Jütte, 2013). Medical practices of this period administered placebos to placate demanding or anxious patients in lieu of drugs that could chemically affect their procedures (Jütte, 2013). As anticipated by distinguished scientific thinkers, such as the English bishop John Douglas, today's researchers understand that placebos operate under the premise of expectancy effects (Jütte, 2013). Placebos became a mainstay of modern medicine as controls in clinical drug trials, which relied exclusively on deception to eliminate biases of expectancy towards the main trial drug (Colagiuri et al., 2015). During attempts to lower COVID-19 hospitalizations, the efficacy of potential treatments was determined in part by how they compared to placebos; associations between fluvoxamine and reductions in clinical deterioration for adults with COVID-19 were concluded following the completion of a double-blind, placebo-controlled, randomized clinical trial (Lenze et al., 2020). While 18th-century practices were not as sophisticated as contemporary research designs, they documented the working foundation that placebos alter cognition.

Following the implementation and popularization of placebos in clinical trials, researchers began to recognize the potential for the placebo effect to serve as a larger psychological theory. Renowned medical ethicist Henry K. Beecher was critical in demonstrating that placebos could play a bigger role than placation and controlled comparisons. After

synthesizing the data from placebo groups in 15 diverse studies, Beecher calculated that placebos independently led to a 35% improvement in symptoms across the board (Colagiuri et al., 2015). He concluded that placebos have a high degree of therapeutic effectiveness when treating subjective responses to conditions ranging from preoperative wound pain to the common cold to anxiety and tension, which could eclipse the success of the placebo in eliciting cooperation from neurotic patients or determining the potency of a promising drug (Beecher, 1995). Beecher emphasized the psychological component of the physical changes he reviewed—that there was something clinically beneficial in convincing a patient about the efficacy of a treatment, regardless of the workings of said treatment (1995). Historical findings of the placebo effect identified deception as the mechanism underlying its functioning, but as Beecher began to explore, emotion induction, social influence, and the cognition of expectations may similarly contribute to its phenomenon.

Open-Label Placebos

After testing the efficacy of fluvoxamine as a treatment for COVID-19, Lenze et al. (2020) gave participants the option to continue to take the placebo; however, they did not collect data for this phase. In doing so, the participants learned of the lack of prescriptive qualities of the placebo, and without the data, researchers adhered to traditional explanations of the placebo effect, drawing their conclusions exclusively from their earlier use of deception (Miller et al., 2005). Regardless, participants showed interest in maintaining the placebo regime, demonstrating the persuasiveness and advantageousness of placebos, even when their true makings are known. Accordingly, while navigating accumulating questions about the ethics of deception, more recent work has corroborated Beecher's 1995 investigation and made intriguing discoveries about the placebo effect persisting with open-label placebos (Colagiuri et al., 2015).

Open-label placebos are those that are given to participants honestly, wherein participants are made aware of what they are and are not taking. In one of the first open-label placebo studies, Kaptchuk et al. (2010) studied two randomized groups of participants, all of whom had been diagnosed with Irritable Bowel Syndrome (IBS) and scored high on a scale of IBS symptom severity. Unlike previous IBS treatment studies, participants were told that the placebo pills contained an inert substance and had healing effects solely because of the mind-body connection, with which a positive attitude would help them see results (Kaptchuk et al., 2010). Even when participants knew there was nothing active in the placebo pills, they still experienced significant and global improvements in their symptoms (Kaptchuk et al., 2010). It was the participants' ability to suspend their misbeliefs about the placebo and foster a positive expectancy towards its benefits, not biological processes, that made such improvements. Studies on attention-deficit/hyperactivity disorder (ADHD) have also utilized open-label placebos. Sandler et al. (2008) openly told participants as young as six about the placebo, through a script that read in part: "It has no drug in it. I can promise you that it won't hurt you at all[...]But it may help you to help yourself." Their findings showed an excellent treatment response that was well-maintained over time. The majority of participants—80% of the children—found the placebo to be effective, and most parents reported wanting to increase the placebo's dosage because of how well it appeared to manage their children's ADHD (Sandler et al., 2008). The potency of the placebo effect is maintained across gastrointestinal (Kaptchuk et al., 2010), neurodevelopmental (Sandler et al., 2008), pain (Klinger et al., 2018), and anxiety disorders, such as obsessive-compulsive disorder (Mansur et al., 2011), as well as Parkinson's disease (de la Fuente-Fernández & Stoessl, 2002). Findings of this nature challenge conventional wisdom that placebos only work with deception and offer encouragement to look deeper into the

psychological dimensions of healing.

Emotion Induction

   With greater acknowledgement of the psychological workings of the placebo effect, which persists regardless of the placebo's presentation, it follows that states beyond the physical may be similarly altered. In 2020, Haas et al. performed the first experimental study investigating how the placebo effect may protect against sadness, using participants diagnosed with major depressive disorder. The researchers found that after sadness was induced via the viewing of a paradigmatically sorrowful film clip, the participants who had received the placebo saw either no change or a positive change in their sadness (Haas et al., 2020). In other words, the only participants who saw a decrease in sadness were those under the impression that they received an antidepressant. The preservation of the placebo effect during emotion induction, in addition to drug therapy for a physical ailment, such as IBS, allows for the consideration of placebos as treatment for mental illness.

   While placebo responses related to depression are gaining momentum, whether the same holds true for placebo-induced positive emotions remains largely untested. As one of the first to examine probable mood enhancement, Baker et al. (2022) ran a controlled crossover study, where they feigned inducing a positive mood using an "oxytocin" nasal spray that was actually saline, and assessed emotion classification. Results demonstrated that the participants in the placebo condition more accurately identified happy faces and displayed a positivity bias towards neutral faces than those in the control condition (Baker et al., 2022). Thus, in addition to decreasing sadness in a clinical population, the placebo effect may also be able to improve moods in healthy individuals. Having previously been thought to operate as a result of simple beliefs, contemporary findings support Beecher's suggestion that placebos may influence or treat

mental illnesses and emotional states, through more complex psychological processes.

Social Influence

As the uses of placebos rapidly evolve, opportunities to explore different ways the placebo effect is induced are emerging. Experimental placebos are often administered in a social manner, either by engagement with a researcher or a research assistant. These social interactions may encourage participants to trust the experiment, believe the treatment is being administered as described, and even behave in ways they suppose align with the researcher's motivations, known as the social desirability bias (McCall et al., 2011). Thus, beliefs, or more specifically, expectations, can be affected by social influence, occurring as a result of interacting with another individual or group (Walker, 2007). Other theories propose that expectations instead result from associative learning, which captures making connections between stimuli and is the premise for classical conditioning (Moustafa et al., 2009). A toddler who touches a hot stove will eventually associate pain with the appliance and hopefully, learn to not touch it while an adult is cooking. To elucidate between these origins of expectations, Koban et al. (2019) assigned participants to a social influence condition or an associative learning condition. Their social influence condition presented participants with pain ratings from 10 fictive participants, while their associative learning condition showed participants two conditioning stimuli that were predictive of either low or high pain (Koban et al., 2019). After participants were exposed to one of the two conditions, they indicated how much pain they expected before receiving intense heat from a thermal pain stimulation. Although both social influence and associative learning had some effect on pain expectations, the researchers concluded that their effects are related to different brain areas. Source-dependent areas, or those activated by social influence, are also those often activated by the placebo effect, such as the dorsolateral prefrontal cortex (dlPFC) and parietal

lobe (Koban et al., 2019). Conversely, associative learning activated "limbic" areas in the brain, such as the hippocampus, which has been previously associated with conditioning (Koban et al., 2019). Thus, both socially influenced and learned expectations modulate pain, but they do so via different neural pathways. Using this information, Koban et al. (2019) maintain it is the intervention performed (social influence versus associative learning) that yields any differences in pain modulation, based on someone's expectations. While a toddler may eventually approach a hot stove expecting pain, a parent grimacing at the stove may further increase the toddler's pain expectations and subsequent avoidance behaviors. The researchers shy away from explaining their results using a placebo framework, but I argue that their findings are consistent with the direct effects other studies explicitly investigating placebos have found (Zunhammer et al., 2018).

Social influences on the placebo effect have also been studied outside of a laboratory and in a "real-world" setting. To explore whether a socially induced placebo has an effect on alcohol consumption, Bodnár et al. (2021) supplied individuals with either an alcoholic, pseudo-alcoholic, or non-alcoholic cocktail while they were by themselves or in large groups at a conference. The study demonstrated a trending social expectation-induced placebo effect, in that the large group setting enhanced both true and believed expectancies of drinking alcohol (Bodnár et al., 2021). While around other people, those who had received the placebo but expected alcohol, reported increasing symptoms of inebriation, such as confusion and impulsiveness (Bodnár et al., 2021). Physiological states of pain or inebriation may then be altered, not by conventionally-induced placebos, but by socially-induced ones.

Cognition

While past research has used the "placebo effect" and "expectations" interchangeably, the

current study aims to refine these definitions as distinct but related phenomena, which could impact placebo implementation in healthcare settings (Denkinger et al., 2021). Expectations, through a cognitive psychological lens, are predictions of intervention-related outcomes; therefore, placebo induction can be measured by examining changes in expectations (Denkinger et al., 2021). At the same time, expectations are necessary for the placebo effect to be successful and maintained. Participants in clinical drug trials must expect a placebo can heal them to experience the placebo effect, regardless of whether or not they were deceived.

Contemporary research empirically supports expectations as the driving force behind the placebo effect. In 2006, Benedetti et al. conducted the first study to show that a disruption in expectation-related brain areas makes placebo treatment less effective. As described by Koban et al. (2019), the prefrontal cortex is critical in managing social and other communications throughout the rest of the brain. Therefore, impairment of this area is theorized to lead to the absence of a triggered expectation mechanism. A year following the start of the aforementioned study, Frontal Assessment Battery (FAB) scores decreased significantly in the patients with Alzheimer's disease (AD) but not in the control group, indicating a successful manipulation check for impaired prefrontal connectivity as a result of Alzheimer's (Benedetti et al., 2006). Interestingly enough, the researchers found not only a decrease in the difference between the open and hidden lidocaine conditions, meaning that, the longer the study went on, the fewer expectations in the AD group relied on placebo presentation, but also a positive correlation between FAB scores and pain reduction, suggesting that lower prefrontal connectivity is associated with a diminished placebo effect (Benedetti et al., 2006). Seeing a diminished placebo effect in a clinical population with a disrupted expectation network allows researchers to hypothesize that a preserved expectation network in a healthy population is the necessary

foundation for someone to experience what we term the placebo effect.

Current Study Definition

The ways in which contemporary literature has explored different interpretations of the placebo effect have led to the current study's move to a new definition that posits the placebo effect as the phenomenon in which social characteristics influence clinical outcomes (Howe et al., 2017; Blasini et al., 2018). It has been shown that, while historical administrations and explanations are still in use today, research beyond pill placebos and physical conditions is just as, if not more, meaningful for understanding and disseminating the placebo effect. Koban et al. (2019), for one, indicate that social information indirectly provided to an individual, such as seeing how someone reacts to pain, can have a powerful influence on one's pain expectations. This potential for social information to communicate how an individual could or should experience treatment is highly relevant to the healthcare domain.

With any social interaction, individual characteristics from one person can influence the other (Magen & Konasewich, 2011). In healthcare, these types of influences may be partially responsible for patient outcomes. The hypothesis that a treatment's effectiveness, as viewed by an attending doctor, can be subconsciously transmitted to their patients, was confirmed in a double-blind study (Chen et al., 2019). Participants assigned to the "patient" role in conditions where participants in the "doctor" role held greater beliefs about the efficacy of the cream being used as the treatment, reported experiencing less pain in response to a pain simulator (Chen et al. 2019). Suspicious of the role of nonverbal communication, the researchers replicated their study by instructing the "doctors" to either increase or decrease the visibility of their facial expressions in the direction of how they perceived the treatment (Chen et al., 2019). Findings matched the social influence condition in Koban et al. (2019), thus exemplifying the placebo effect being

induced via social information. Because the "doctors" with more visibly painful facial expressions were reported by "patients" as appearing more empathetic, there is also a possibility that patient perceptions of high provider empathy have therapeutic effects on perceptions of self-reported health, as will be explored later (Chen et al., 2019). Importantly, demonstrating that interpersonal (verbal and nonverbal) communication has the ability to increase patient well-being validates the current study's working definition of the placebo effect, that social information transmitted to patients has a significant impact on clinical outcomes.

Patient Expectations

Following cognitive psychology, the current study is operating under the existence of a mutual relationship between the placebo effect and expectations (Peciña et al., 2014). For the placebo effect to influence clinical outcomes, patients must first have something to expect; however, expectations can be changed by the presence of a placebo or social characteristic, as is used in the current study.

Studies on patients undergoing elective therapy or surgery support this cognitive rendering of the placebo effect, such that patients' expectations are integrally associated with clinical outcomes post-intervention. In the world of physical therapy, clinical outcomes are often operationalized as increased mobility, but noncompliance rates, indicative of failed outcomes, have reached upwards of 70% (Jack et al., 2010). A study investigating the role of positive expectations for treatment by a physical therapist found that, at six months of therapy, patients who held unsure expectations for complete pain relief during movement had lowered odds of success and subsequent compliance, while those who held definite expectations significantly increased their odds of success (Bishop et al., 2013). When defined as joint and muscle mobility, or pain relief, success sees a positive association with expectations. Importantly, in line with

focusing on social characteristics in the current interpretation of the placebo effect, clinical outcomes do not have to be objective measures. Subjective measures of satisfaction also often appear in the literature.

For select orthopedic surgeries—hip arthroplasty, knee arthroplasty, rotator cuff repairs, and spine surgery—postoperative satisfaction increased only when preoperative expectations were met (Swarup et al., 2019). In other words, patients were satisfied when they were able to go up and down stairs after their operation, *if* they had expected they would be able to do so. Similarly, among chronic patients undergoing sinus surgeries, only the fulfillment of expected resolution of condition-related symptoms pre-surgery predicted post-surgery satisfaction (Mattos et al., 2019). There is an implication then, that not all participants expect the same or even any clinical outcomes.

A recent study completed by El-Haddad et al. (2020) found that patient expectations fall into one of three categories: expectations for clinical outcomes, expectations for individual providers, and expectations for the healthcare system as a whole. While this operationalization helps distinguish between individual providers and the system they work under, and may better distribute blame when patients are dissatisfied, it is not fit for the current study. I am arguing for the existence of interconnectivity between providers and clinical outcomes. Additionally, this work neglects the influence of individual differences on expectations. Earlier research has found that age moderates the relationship between patient expectation and satisfaction, such that older patients have both higher expectations and higher levels of satisfaction (Bowling et al., 2013). In addition, this study found that patients attending general practice had higher expectations than those in the hospital, suggesting that clinical context also factors into the expectations one has about healthcare (Bowling et al., 2013). Remaining mindful of these influences, the current study

pays particular attention to the demographic factors reported by its participants and asks that future research do the same.

Medical professionals, such as physical therapists, tend to prioritize and measure clinical outcomes that are physical in nature, such as greater mobility or a return to baseline mobility following an injury (Haley & Fragala-Pinkham, 2006). However, the literature between patient expectations and clinical outcomes has utilized a broader range of operationalizations. In recognition of the wealth of research that has been seemingly unable to untangle satisfaction from healthcare expectations, both in and outside of the United States, the current study has chosen to move forward with satisfaction as its measure of clinical outcomes (Abdel Maqsood et al., 2012; Ogunfowokan & Mora, 2012; Al-Mohrej et al., 2017).

Patient Satisfaction

There is a long history of patient satisfaction guiding evaluations of healthcare facilities. In 2005, the federal government gave its final approval for the usage of the Hospital Consumer Assessment of Healthcare Providers and Systems survey, or HCAHPS, for short, which was created through the partnering of The Centers for Medicare & Medicaid Services and The Agency for Healthcare Research and Quality (Siegrist, 2013). The HCAHPS covers a wide range of items pertaining to satisfaction, such as wait times, hospital cleanliness, and pain management, to name a few, but a general consensus on which items are the best indicators of patient satisfaction and/or hospital quality has yet to be reached. Based on patient individual differences, provider individual differences, and contextual information, including the type of medical condition and treatment, researchers differently weigh all items measuring patient satisfaction. However, there are patterns that persist in research and across clinical settings varying from specialized treatment to emergency services to elective surgery. These patterns

definitively emerge from the time spent face-to-face with a provider, or what will be broadly categorized into "interpersonal qualities" and "gender."

Interpersonal Qualities

Provider Timeliness

Although time is not an interpersonal quality, the timeliness of a provider for a scheduled appointment is. Out of two time-based measures, Anderson et al. (2007) found that time spent with a provider was a considerably more powerful determinant of overall patient satisfaction than the amount of time a patient spent waiting. This was seen in a patient's willingness to report good satisfaction levels on lengthy wait times as long as they felt they received enough quality time with the provider themselves (Anderson et al., 2007). These results may suggest that the content, rather than the timing, of a given appointment is more predictive of patient satisfaction. In support of patients willing to forgive wait times after a good appointment, a study of ambulatory patients discovered that negative responses to wait times were reflective of patient-perceived quality of care (Bleustein et al., 2014). When a patient had to wait a long time, they attributed the factor of time duration to a predictor of care, thus expecting less competence in a late provider (Bleustein et al., 2014). This is due to an assumption patients make between consultation length and a provider's ability to diagnose, problem-solve, and treat (Howie et al., 1991). More time devoted to administrative work lessens the time afforded to consultation, leading patients to believe that their examinations or discussions are not thorough enough, or that a fast consultation will leave more room for provider error (Howie et al., 1991). Even if the content of an appointment—a patient's experience, a provider's diagnosis, and their treatment plan—is found to be more impactful than other measures, those factors may have already been perceived as more or less satisfactory, depending on the time it takes for a patient's appointment

to begin.

Patient Loneliness

Although timeliness is a quality held by a single individual, it is clear how it may affect another person—for example, by making them wait. There are other individual qualities that appear to operate in isolation but are just as important in interpersonal relations. One such quality is a patient's level of loneliness. Loneliness is significantly and positively associated with the total number of hospital appointments a given patient attends (Geller et al., 1999). Although there are ways that loneliness, perhaps as a symptom of mental illness, may contribute to hospital appointments, it is important to note that lonely people are not necessarily more ill (Geller et al., 1999). This indicates a capacity for loneliness to contribute to the patient expectation-patient satisfaction relationship in ways external to having a particular medical condition. It has been found that patient satisfaction decreases by upwards of 60% with severe loneliness, and similarly decreases with moderate levels of loneliness that are commonly self-reported in non-clinical populations (Musich et al., 2015). Additionally, the relationship between patient loneliness and satisfaction has been found to be moderated by age, such that over half of the older adult population suffers from severe loneliness, a strong predictor of patient satisfaction (Musich et al., 2015). However, loneliness may also indirectly predict satisfaction by affecting the rapport between a patient and their provider.

Using interpersonal qualities to define the placebo effect, much like the definition the current study uses, Necka & Atlas (2018) argue that psychosocial orientation can exaggerate the influence of the patient-provider relationship on placebo effects. One of the psychosocial orientations they suggest investigating is loneliness. Loneliness could decrease the likelihood that positive social interactions occur, thus dysregulating how the placebo effect functions

(Necka & Atlas, 2018). In other words, loneliness may alter the dynamics of the patient-provider rapport by triggering hypervigilance to social threats and increasing attention to negative social behaviors (Necka & Atlas, 2018). If a provider notices a patient being hypervigilant, they may speak more patronizingly to that patient in an attempt to focus their attention, or become more agitated with the patient's decrease in mood. Whatever the reaction may be, there remains a tendency to respond negatively to lonely people, and negativity has the ability, Necka & Atlas (2018) speculate, to diminish confidence in the provider or the treatment, thus diminishing the placebo effect. Loneliness, as a quality of the patient, provides an additional perspective on the usefulness of the current definition of the placebo effect in acknowledging social influences on patient outcomes.

Provider Empathy

As a feat that emerges out of relations with others, empathy is an interpersonal quality. Empathy enables actions that communicate prosocial motivations to a target individual; it communicates an understanding of the target's situation, a response to the target's emotional distress, familiarity with the target's situation, and compassion (Håkansson & Montgomery, 2003). Thus, empathy interpersonally shares experiences acknowledged by the empathizer and received by the target (Håkansson & Montgomery, 2003). When a patient is tasked with expressing the status of their physical and mental health to a provider, therein lies an opportunity for their provider to empathize with them. In a seven-month-long study conducted at a spine clinic, the provider's clarity in explaining a patient's medical condition, as well as the patient-perceived empathy from their provider were the strongest predictors of satisfaction (Bible et al., 2017). A spine clinic provides specialized treatment to a certain clientele, but empathy remains a key player in other clinical settings. Notably, empathy is a strong predictor of

satisfaction after the deployment of emergency services, which are utilized in faster-paced, less forgiving, and more stressful environments. As measured using the Jefferson Scale of Empathy (JSE), empathy was positively associated with patient-to-provider satisfaction (Wang et al., 2018). Specifically, immediately following the resolution of an emergency situation, patient satisfaction saw an approximate 5% relative increase for every 1-point increase on the JSE (Wang et al., 2018). Since emergency medicine providers are often granted less unrushed time with their patients, it is possible that patients are more sensitive to small improvements in their mood and general well-being as a result of provider empathy being shown during a time when it is not always expected (Pelaccia et al., 2020). Empathy's ability to help patients feel seen and heard during frightening situations marks a direct association between its deployment and healthcare satisfaction.

Perceived provider empathy also facilitates positive expectations. When a provider extends empathy to a patient, both bottom-up sensory input (a warm gaze or gentle touch) and top-down sensory input (knowledge of medical interventions) can help patients expect that healing will take place (Decety, 2020). In some cases, patient satisfaction appears to be a mediating factor for the relationship between empathy and objective clinical outcomes. From observations of preventive and chronic care encounters between primary care providers and overweight or obese patients, Pollack et al. (2011) determined that, when providers are more empathetic, patients are more satisfied. Then, when patients are more satisfied, they feel more confident and autonomous in their ability to lose weight (Pollack et al., 2011). Therefore, the providers' demonstration of empathy led to behavior changes in their patients that substituted the need for further medical intervention. Especially for conditions that require intensive and consistent treatment, noncompliance can result in the loss of mobility, function, and even life.

One such condition is diabetes, which, if left improperly or completely untreated, can lead to heart failure, nerve damage, blindness, and limb amputation (Mayo Clinic, n.d.). For diabetic patients, provider empathy has been associated with compliance behaviors that lead to desirable hemoglobin test results (Hojat et al., 2011).

The placebo effect also appears to maintain a direct relationship between empathy and objective clinical outcomes. In a 10-year longitudinal study following patients after they were newly diagnosed with type two diabetes, those who reported greater empathy from their provider in the first year, had a significantly lower mortality risk than those who reported low provider empathy (Dambha-Miller et al., 2019). In conditions with less mortal risk, empathy and positive expectations during healthcare consultations consistently reduce pain and anxiety; patients who perceived their providers as empathetic saw a greater decrease in both the severity and duration of their common cold symptoms than those who did not (Howick et al., 2021; Rakel et al., 2011). Empathy, therefore, is an important interpersonal quality that has links to objective clinical outcomes, as they relate to symptom management and longevity, as well as to satisfaction, as measured in the current study.

Gender

Gender identity, a distinguishing attribute that an individual chooses and expresses, has a similar effect on patient-provider communication and patient satisfaction. Years of research demonstrates that a provider's gender influences their communication style. The stereotypical, yet nonetheless empirically supported, hypothesis that women providers are more likely than men providers to engage in counseling behaviors and ask about a patient's social determinants (their family situation, work stressors, etc) has been confirmed in many studies (Bertakis, 2009; Jefferson et al., 2013). Conversely, men providers are more likely to focus their communication

on the technical and logistical aspects of healthcare (Bertakis, 2009; Jefferson et al., 2013). In addition to the content differences in communication between women and men providers, studied above, communication also differs based on the tones providers use, how they show or do not show they are listening, the amount of collaboration they encourage with their patients, and so on (Mast et al., 2008). With significant findings that similar moods in relational conversations are enough to dictate interactional satisfaction, it follows that provider communication style could contribute to patient satisfaction as well (Locke & Horowitz, 1990).

If a patient expects they would benefit from counseling, they may be more satisfied being treated by a woman provider (Mast et al., 2007). A similar pattern may emerge between concrete-thinking patients and men providers. However, to incur satisfaction as a function of nonverbal behavior, there must be recognition that patients expect different patterns of said behavior depending on their provider's gender. Patients were more satisfied when women providers showed nonverbal behaviors driven by societal gender stereotypes, such as gazing at, sitting closer to, and leaning forwards toward the patient (Mast et al., 2008). These forms of nonverbal behavior indicate showing care, warmth, and low assertiveness, as is desired by the woman gender. For men providers, patients were more satisfied with nonverbal behaviors such as granting greater interpersonal distance and less orientation toward the patient, while at the same time, satisfaction held when men providers practiced behaviors unrelated to their gender role, such as less frowning and more gesturing (Mast et al., 2008). In sum, if a patient feels that a woman provider's verbal and/or nonverbal behavior does not perform in line with their gender identity, they will feel less satisfied (Mast et al., 2008). The implication is that there is less leeway for women providers to communicate in gender-incongruent ways than men providers, since the role of provider is often associated with men. On average, gender and societal

expectations for gender create differences in communication that will be more or less satisfying for a given patient.

Given that communication is influenced by multiple factors other than gender, such as the presence of an accent (Gluszek & Dovidio, 2010), it is striking to look at how gender identity itself may contribute to a patient's level of satisfaction with their provider. Despite disparate findings in past literature on provider gender preference, a recent study found that both women and men patients prefer to be treated by a primary care provider of their same gender identity, known as gender concordance (Fink et al., 2020). Gender-based assumptions about expertise and professionalism, however, did not determine the patients' preferences (Fink et al., 2020). Although the researchers did not offer an alternate explanation, the literature points, perhaps, to lived experience influencing the preference for gender concordance. Nolen et al. (2016) found that preferences for gender concordance during emergency treatment only occurred for situations concerning sensitive issues, like those involving a patient's genitalia. Sensitive issues may require empathy in the form of familiarity to make patients feel more safe and satisfied, as seen in a majority preference for women nurses to assist during childbirth, due to patient-reported factors of comfort, self-consciousness, and personal aftercare (Howell et al., 2002). Nevertheless, the previous literature demonstrates that, for many patients, there is a preference for provider gender.

Studies on patient-centered care (PCC) corroborate these preferences for gender concordance. With a large representative sample, Bertakis and Azari (2012) found that the best determinant for successful implementation of PCC was when a woman patient was seen by a woman provider. Because of the nature of PCC, women providers, who, on average, exhibit more counseling and collaboration, may be more apt for this type of healthcare delivery

(Bertakis, 2009). Conversely, the worst determinant of PCC was gender discordant appointments, or when patients were seen by a provider who did not identify as the same gender as they did (Bertakis & Azari, 2012). More specifically, PCC did not occur when men providers treated women patients; men providers were reported as visibly tense and/or bored by their women patients (Bertakis & Azari, 2012). Finite differences of experiencing covert—clandestine unequal and harmful treatment towards individuals—or overt—clear and obvious discrimination—sexism may contribute to a patient's preference for provider gender (Swim & Cohen, 1997).

Up until this point, the focus on social characteristics that influence patient expectations and satisfaction has been mostly on provider individual differences. It is important to add that patient individual differences also have an influence on healthcare appointments. For example, patients with high levels of hostile sexism are more likely to express a desire to make decisions about their treatment by themselves after being treated by a woman (Monzani et al., 2020). Since sexist patients harbor negative views of women, they may have less trust in a woman provider and prefer to take an active role in their treatment rather than deferring to the provider herself (Monzani et al., 2020). Sexism has also been found to interact with gender-concordance. Women treating women were more likely to play an active and engaged role in their appointments but took on a defensive and passive role when confronted with men patients (Monzani et al., 2020). Although these findings are limited by their participants perceiving and/or assuming the biological sex of their providers, and assuming so on a binary, they contribute valuable knowledge on the positive and negative effects gender has on healthcare satisfaction, as is wordlessly communicated from provider to patient or vice versa.

Overview of the Current Study

The current study aims to contribute to the ongoing research diversifying the definition and extrapolation of the placebo effect. Slowly, research is broadening the placebo effect outside of the use of deception, physical placebos, and physical clinical outcomes. Adding to the growing body of literature, the current study investigates the placebo effect as the phenomenon explaining the influence expectations for social characteristics have on a clinical outcome with subjective properties: satisfaction. By advancing the trajectory of the placebo effect in this direction, the current study similarly aims to fill gaps in the existing healthcare literature. Although previous studies have researched patient expectations and satisfaction in both public and private medical facilities, it has not yet ventured onto the college campus.

College campuses offer unique environments for healthcare services. Exclusively residential college campuses, as is the research site for the current study, mean that in addition to students eating, working, learning, sleeping, and playing at the same institution, they may also receive healthcare there. This is unlike most researched medical facilities that must consider information about distance and parking availability in their measures of patient satisfaction (Afshari & Peng, 2014; Smith et al., 2018). Although college health centers may avoid such additional considerations, they are limited in arguably more crucial terms of patient agency and choice. College students may not have the resources to choose to receive treatment at an outside facility because of a lack of transportation or health insurance, and this is especially true for international and low socioeconomic status students (Sherry & Chui, 2010; Cox, 2016). This forces many college students to go to their on-campus health center, which likely does not contain the full spectrum of facilities and abilities as is available in their local town or city hospital. College students may also have little to no say in appointment times or the providers they see. Although data were not collected to investigate this particular speculation, this

grievance has been reported anecdotally by the students enrolled at the current site of study.

This study also aims to fill gaps in the healthcare literature existing as a result of narrowed focuses on condition types. The current study did not ask participants to disclose the reasons why they were visiting the Health Center, in an attempt to protect participant privacy, but also to clarify that a relationship between expectation and satisfaction may exist regardless of medical condition or procedures performed. Similarly, the current study has chosen not to control for the level of education and training the students' providers may have received. This is reflected in the discussion of the current study's results, where all doctors, physician assistants, and nurse practitioners are collectively referred to as "providers." This choice reflects the limited staffing at the health center in question, which employs one medical professional for every 300 students, and that authority and expertise were not selected as social characteristics to be tested in the current study. Lastly, this study looks to investigate how individual difference variables interact in ways to increase or decrease satisfaction that has not been studied before. The measured individual difference variables include that of both the patient and the provider, building on previous studies that have focused on one or the other.

I hypothesized that meeting expectations for patient-provider gender concordance would result in higher levels of patient satisfaction. This was supposed from combining previous studies on provider gender, wherein, for one, not all patients desire and subsequently expect gender concordance with their provider (Fink et al., 2020), and two, that gender concordance is linked to satisfaction through other interpersonal measures, such as provider communication (Jefferson et al., 2013). This hypothesized relationship relies on the enactment of the current study's definition of the placebo effect, such that satisfaction, as a result of interactions with a specifically gendered provider, is impacted by the expectations a patient has prior to their appointment.

I also hypothesized that meeting expectations for positive interpersonal interactions would result in higher levels of patient satisfaction. Positive interpersonal interactions are operationalized in the current study by the presence or absence of empathy. This hypothesis was supposed by integrating previous research on the direct relationship between empathy and satisfaction (Bible et al., 2017; Wang et al., 2018), and on the relationship between patient perceptions of provider empathy and behavior changes in patients (Pollack et al., 2011; Hojat et al., 2011; Dambha-Miller et al., 2019). Therefore, the current study hypothesized that the placebo effect, in the form of interpersonal expectations, would influence satisfaction.

In addition to the primary hypotheses, I am extending the literature by measuring other interpersonal qualities of provider timeliness and patient loneliness on their separate effects on overall satisfaction. These variables were selected because of their supposed but not determined relationship with patient satisfaction. Although previous research suggests that wait times are willing to be forgiven upon certain criteria being met for consultation time (Anderson et al., 2007; Bleustein et al., 2014), I am one of the first to explore how schedule time, wait time, and appointment time may have differing influences on patient satisfaction. Similarly, the exploratory analyses conducted for the current study aimed to elucidate the speculation that patient loneliness disrupts patient-provider satisfaction (Necka & Atlas, 2018), in addition to the previous findings that loneliness affects overall satisfaction in healthcare (Musich et al., 2015). The current study chose qualities of timeliness and loneliness, reflecting traits of both the provider and the patient, for exploratory analysis to add to the healthcare literature.

To investigate these hypotheses and research questions, the current study analyzed self-report measures from 44 patients at the Health Center on a small liberal arts college campus. Participants were asked to complete a pre- and post-appointment survey in-person at the Health

Center or online via a QR code also on display at the Health Center. The pre-appointment survey

asked about the participant's expectations, while the post-appointment survey asked about their

satisfaction with the appointment, as well as their self-reported loneliness.

Method

Participants

Sixty-seven participants were recruited for this study, but the incomplete data of 23

participants were removed (gender: 81.8% Women, 15.9% Men, 2.3% Non-binary; race: 38.6%

White, 36.4% Asian/Pacific Islander, 13.6% Hispanic/Latinx, 6.8% Black/African American,

4.5% Other). Participants were students attending a small liberal arts college, and they

represented an age range of 18 to 23 years. Inclusionary criteria included having an appointment

at the Health Center near the time of participation. Participants were recruited using convenience

sampling with campus-wide email advertisements and were compensated through one of two

options. Psychology and neuroscience students were able to receive up to two extra credit points

in their related courses. Participants received one extra credit point per completed survey;

completion of both the pre- and post-appointment surveys resulted in two extra credit points.

Non-psychology or neuroscience students were automatically entered into a raffle to win one of

two $50 GrubHub gift cards.

It is important to note that the current study is informed by feminist theory, which speaks

to the selection of patient and provider gender for analysis and the implications of what it means

that gender may influence a relationship in healthcare. Feminist theory also accounts for the

wording used in this manuscript when discussing the results as they pertain to gender. In feminist

activist Simone de Beauvoir's seminal work, *The Second Sex*, she argues that the word "female"

denotes biological sex, while the word "woman" better encapsulates the social world's influence

on gender identity (2014). Following de Beauvoir's highly cited and widely circulating theorization, I have chosen to identify patients' and providers' genders using the terms "woman" and "man".

Measures/Materials

Healthcare Demographics

Patients' healthcare demographics, prior to and while attending college, were collected using an original scale: Pre-Appointment Healthcare Demographics. This questionnaire contains seven items, two of which have a follow-up item. Participants responded to each item using an answer set that pertains specifically to that item. When asked if they had recently tested positive for COVID-19, participants were required to answer with one of the following options: "In the past year," "6 months," "3 months," "1 month," or "currently." Three items were answered using "yes," "no," and an "other" option, an example being: "Do you have a primary care physician at college?" There were also two open-ended items. An example of an open-ended item for this scale is: "How many times have you visited the Health Center while at college?" Scores represented nominal measures of demographics ("Appendix A").

Expectations

Expectations for the Health Center appointment were assessed using a modified version of The Expectation for Treatment Scale (Barth et al., 2019). Items that were relevant to treatments for specific spinal conditions, as per the focus of the original study, were removed and replaced with three original items. After modification, The Expectation for Treatment Scale included eight items that assessed expectations relevant to a broad spectrum of ailments. Each item was rated on a Likert scale ranging from 1 ("*strongly disagree*") to 4 ("*definitely agree*"). An example of a non-replaced item for this scale is: "I expect the treatment will help me to cope

with my complaints." An example of an original item is: "I expect I will receive a diagnosis during my appointment." Higher scores indicated higher pre-appointment expectations ("Appendix B").

Satisfaction

Satisfaction following a Health Center appointment was assessed using a modified version of the Patient Satisfaction Phone Survey (Bible et al., 2018). After modification, the scale included 23 items, not counting any follow-up items. Items were added to best capture the hypotheses being tested. Each item was rated on a Likert scale ranging from 0 ("*unsatisfied*") to 10 ("*very satisfied*"). An example of an original item for this scale is: "How would you rate the provider on the respect and dignity shown to you?" Higher scores indicated higher post-appointment satisfaction ("Appendix C").

Loneliness

Loneliness was measured using the UCLA Three-Item Loneliness Scale (Hughes et al., 2004). This measurement includes three items, and participants answered each item on a Likert scale of 1 ("*hardly*"), 2 ("*some of the time*"), and 3 ("*often*"). An example of an item in this measure is: "How often do you feel isolated from others?" Higher scores indicated greater feelings of loneliness ("Appendix D").

Procedure

Informed consent was obtained voluntarily through the participant's signature on paper or through the participant's electronic signature on an online survey. Participants opted into the pre-appointment survey by filling out either a paper copy, as provided in a manilla folder in the waiting room of the Health Center, or online, via a QR code presented on the same manilla

folder. The pre-appointment survey included questions from the Pre-Appointment Healthcare Demographics and Modified Expectation for Treatment scales.

After completing the pre-appointment survey, participants attended their appointment as directed by the staff at the Health Center, and as they would normally. Following their appointment at the Health Center, regardless of whether they opted into the pre-appointment survey or not, participants were given the option to fill out the main questionnaire for this research. They were invited to fill out the back page of the paper copy provided to them at the Health Center or were directed to the second survey via the QR code and how they answered the directional question: "Is this before or after your appointment?" In-person and online options were provided so that the entire student population had an equal opportunity to participate in this research, regardless of accommodations required for medical conditions, such as limited technology usage for concussion protocol. After the Modified Patient Satisfaction Phone Survey was completed, they were asked to partake in a brief word task that would gather data for potential future research on perceived vulnerability to disease ("Appendix E").

Participants then submitted their survey to the researcher in the manner most convenient for them. If they filled out a paper copy, they placed their completed surveys in a locked document folder (the code to which was provided on the last page). I collected any completed paper surveys in the Health Center once a week. If the participant filled out an online survey, they submitted the questionnaire(s) via Qualtrics software. Participants were thoroughly debriefed about the true nature of the experiment, thanked for their time, and directed to compensation.

Statistical Analyses Plan

I hypothesized that meeting expectations for patient-provider gender concordance would

result in higher levels of patient satisfaction. This hypothesis was tested in two different ways.

Firstly, expectations for provider gender were coded as met or unmet and analyzed as the

independent variable. Secondly, provider and patient gender were coded for gender concordance

or discordance (0 = discordant, 1 = man-man concordant, 2 = woman-woman concordant) and

analyzed as the independent variable. Both independent variables were assessed separately on

the dependent variable for this hypothesis: "Overall, how would you rate your level of

satisfaction with your clinic visit?", which has a score range of 0-10, with the higher numbers

indicating higher levels of satisfaction. The independent and dependent variables were analyzed

continuously.

I also hypothesized that meeting expectations for positive interpersonal interactions

would result in higher levels of patient satisfaction. The dependent variable for this hypothesis

remained the same: "Overall, how would you rate your level of satisfaction with your clinic

visit?". The independent variables were three survey items: "How would you rate the provider on

the courtesy and friendliness shown to you?," "how would you rate the provider on the respect

and dignity shown to you?," and "how would you rate the provider on understanding what you

are experiencing?," all with a score range of 0-10. Higher scores indicated higher levels of

empathy, operationalized by separate components of courtesy, respect, and understanding.

Variables were analyzed continuously. Regression analyses were conducted separately for each

of the three items standing in for the independent variable.

For exploratory analyses, I conducted a correlation matrix, investigating how provider

timeliness and patient loneliness covary with the same question that assessed participant overall

satisfaction. Provider timeliness covered three items: "How would you rate this clinic on ease of

scheduling an appointment in a timely manner?", "how would you rate the amount of time you

waited before being seen by the provider?", and "how would you rate the provider on spending time with you during the appointment?" to gain a fuller understanding of what time measures are most valuable by patients. Self-reported loneliness was analyzed as a total sum variable of the UCLA Three-Item Loneliness Scale.

All analyses were run in R Studio (version #2022.12.0+353), with and without age, gender, and race/ethnicity covariates.

Results

Gender

Expectations

A simple linear regression was run examining the effect of (un)met expectations for the gender of a given participant's provider ($M = 0.68$, $SD = 0.47$) on overall satisfaction with the Health Center appointment ($M = 7.14$, $SD = 2.04$). Inconsistent with Hypothesis 1, the regression was not statistically significant $F(1,42) = 1.67$, $R^2 = 0.01$, $p = .203$). The gender of the provider being what the patient expected did not predict overall satisfaction with the appointment.

The same linear regression was applied to (un)met expectations for provider gender on different dimensions of satisfaction, including satisfaction with treatment ($M = 6.89$, $SD = 2.55$), satisfaction with the provider themself ($M = 7.59$, $SD = 1.85$), and satisfaction with care provided during the Health Center appointment ($M = 7.57$, $SD = 1.82$), none of which produced significant results $F(1,42) = 0.20$, $R^2 = -0.02$, $p = .654$; $F(1,42) = 1.00$, $R^2 = 0.00$ $p = .321$; $F(1,42) = 1.59$, $R^2 = 0.01$, $p = .215$). Having met expectations for the gender of one's provider did not predict satisfaction of any type.

The addition of covariates did not change the nonsignificant status of the results.

Concordance

A simple linear regression was run examining the effect of (dis)concordance for the genders of the patient and the provider ($M = 1.09$, $SD = 0.96$) on overall satisfaction with the Health Center appointment. Also inconsistent with hypothesis one, the regression was not statistically significant $F(1,42) = 1.48$, $R^2 = 0.01$, $p = .231$). Identifying as the same gender as one's provider did not predict overall satisfaction.

The same linear regression was applied to the patient-provider gender (dis)concordance variable on dimensions of treatment satisfaction and care satisfaction. Neither of the aforementioned regression models produced significant results $F(1,42) = 0.35$, $R^2 = -0.02$ $p = .559$; $F(1,42) = 2.06$, $R^2 = 0.02$, $p = .159$). The regression model examining the effect of (dis)concordance for the gender of the patient and the provider on satisfaction with the provider themself is trending towards significance $F(1,42) = 2.30$, $R^2 = 0.03$, $p = .137$). How easy it is to associate a person with their gender identity may speak to this trend.

Again, all regressions were run with and without age, gender, and race/ethnicity covariates. The addition of covariates did not change the nonsignificant status of the results.

Empathy

A simple linear regression was run examining the effect of (un)met expectations for provider empathy offered by a given patient's provider ($M = 0.98$, $SD = 0.15$) on different elements of empathy, including self-reported provider understanding ($M = 7.68$, $SD = 1.93$), self-reported provider courtesy ($M = 8.02$, $SD = 1.76$), and self-reported provider respect ($M = 8.07$, $SD = 1.91$). Inconsistent with Hypothesis 2, these regressions were not statistically significant $F(1,41) = 0.78$, $R^2 = -0.00$, $p = .383$; $F(1,41) = 0.34$, $R^2 = -0.02$, $p = .563$; $F(1,41) = 1.21$, $R^2 = 0.00$, $p = .277$). Having met expectations for provider empathy did not predict satisfaction with displays of empathy.

When regressions were run with and without age, gender, and race/ethnicity covariates, the nonsignificant status of the results did not change.

Exploratory Analysis

Self-reported ratings on the ease of scheduling an appointment in a timely manner ($M = 6.73$, $SD = 2.4$) was significantly positively correlated with overall satisfaction ($r(6) = .70$, $p < .001$). How well the provider spent time with a patient during their appointment ($M = 7.54$, $SD = 2.09$) was also significantly positively correlated with overall satisfaction ($r(6) = .65$, $p < .001$). These perceptions of scheduling and provider timeliness were positively correlated with one another, $r(6) = .55$, $p < .001$. However, self-reported ratings of time spent waiting for an appointment ($M = 6.64$, $SD = 2.75$) was not significantly correlated with overall satisfaction ($r(6) = .25$, $p = .0103$).

Self-reported loneliness ($M = 5.30$, $SD = 1.59$) was not significantly correlated with provider satisfaction ($r(6) = .04$, $p = .672l$).

Discussion

The results of the study reported here do not generally support the hypotheses. Although regression analysis did not result in statistically significant predictions of satisfaction arising from the variable of expectation, there remain real-world implications for such nonsignificant findings. The first hypothesis, that meeting expectations for gender-concordance between the patient and the provider would increase overall appointment satisfaction, was not supported. With a p-value greater than 0.20, it is also not enough to conclude that these results are trending significance (Nead et al., 2018). However, the regression output indicates the necessity for future research to confirm these findings. When comparing Health Center patients who differ in whether their expectations were met or not met, there is a correlated difference of less than one

point on the 11-point satisfaction scale, as reported by the adjusted R^2 value. Additionally, the mean deviance from the regression model is 2.03, a relatively small value indicating a relatively good fit. I suggest that the lack of significant findings relating to Hypothesis 1 may be due to the small sample size in relation to the variability in the data, as a potential result of individual differences. This suggestion is supported by additional regression analysis. While the original output for expecting gender concordance as it predicted participants' satisfaction with care resulted in a large p-value of 0.654, the addition of covariates of age, gender, and race/ethnicity resulted in a much smaller p-value of 0.19. Clearly, this work argues for future research and more attention to individual differences.

The second hypothesis, that meeting expectations for provider empathy would predict higher satisfaction scores, was similarly unsupported. Regression analyses investigating the relationship between expectations for an empathetic provider and self-report satisfaction with displays of provider courtesy, respect, and understanding were not statistically significant. I suggest that this was highly influenced by the majority of the sample expecting empathy, leading to unbalanced groups of comparison between expectation met and expectation unmet. While this could be an indicator of the climate of the patient-provider relationship changing in a positive and more interpersonally involved direction, it is important to note that the sample was overwhelmingly underclassmen respondents, and that age and previous experience may influence satisfaction averages.

In an attempt to give similar attention to qualitative data analysis as I have given to quantitative data analysis, I measured average overall satisfaction as broken down by class year. The upperclassmen were, on the whole, more satisfied with their appointment (2023/senior = 7.8, 2024/junior = 7.3) than the underclassmen (2025/sophomore = 7.1, 2026/freshmen = 6.6).

However, the underclassmen were oversampled as compared to the upperclassmen, skewing the averages, as they were based on fewer participants. That said, I suggest that the upperclassmen, being both older and more experienced with the Health Center, would generally have higher expectations and higher levels of satisfaction (Bowling et al., 2013). Underclassmen, on the other hand, were welcomed onto a campus outspoken about their negative opinions towards the Health Center, seen in articles for student-run publications. Therefore, they may have been primed for unsatisfactory experiences, or they simply did not know what to expect in the transition from their medical provider in their hometown to the on-campus Health Center. This potentially resulted in more dissatisfaction if the Health Center appointment did not fulfill expectations they had established as a result of their previous healthcare experiences.

Additionally, the majority of participants in this study identified as either White (38.6%) or Asian/Pacific Islander (36.4%). Therefore, I was interested in investigating the differences in healthcare satisfaction that may occur as a result of patient racial/ethnic identity. In my aforementioned qualitative data analysis, I demonstrated that those who were oversampled were also the most satisfied, on average, with their Health Center appointments (White = 7.4, Asian = 7.2). Conversely, those of minority racial status in this sample were, on average, less satisfied with their Health Center appointments (Black = 7.0, Hispanic/Latinx = 6.5). This breakdown by race suggests that demographic factors may be a mediator in the relationship between expectation and satisfaction in the healthcare domain. Previous literature has concluded that black patients are more likely to express dissatisfaction than white patients with end-of-life care (Koffmann & Higginson, 2001) and during cardiac treatment (LaVeist et al., 2000). Therefore, I suggest that additional variables that highlight individual differences, such as evaluating a patient's level of medical mistrust, may better inform the proposed relationship between

expectation and overall satisfaction.

Exploratory analyses indicate that additional individual differences interact in ways to affect satisfaction. The finding that the time a provider spent with a patient during their appointment was significantly correlated with overall satisfaction while wait time was not, is supported by the previous literature (Anderson et al., 2007; Bleustein et al., 2014). Wait times were potentially disregarded when patients returned to complete their self-reported rates of satisfaction, if they felt they had had an adequate amount of time with their provider. Loneliness, however, was not statistically significantly correlated with overall satisfaction. One explanation for these lack of findings could be due to the global increases in loneliness during the COVID-19 pandemic (Ernst et al., 2022). College students were especially impacted by loneliness, as mental health concerns of anxiety and depression were amplified as a result of reported COVID-19-related loneliness levels (Werner et al., 2021; Haikalis et al., 2022; Lee et al., 2020). The college students in the current sample are averaging "not lonely", when compared to how researchers have grouped participants on the UCLA Three-Point Loneliness Scale in the past (Steptoe et al., 2013). I suggest that this sample is navigating a post-COVID-19 college experience that may be perceived as more socially invigorating, in comparison to the abnormal levels of loneliness suffered in the recent past. Therefore, the lack of a more lonely sample as a result of emergence from a notable lonely period of a couple years, may explain the lack of findings in the current study.

Limitations

One limitation of this study is its adherence to frequentist statistical inference, with which conclusions are drawn by emphasizing the frequency or proportion of sample data, as opposed to considering parameter estimates. In other terms, any conclusions drawn in the current paper rely

on the sole use of the *p*-value. This incurs the issues that the *p*-value has. When dealing with large samples, there is a potential for spurious differences to become statistically significant. This is not a concern for the current study, as all analyses were hypothesis-driven. However, outliers in small samples may similarly influence the directionality of relationships and the occurrence of statistical significance, due to the use of only one summary statistic. To account for this issue, researchers can give equal attention to multiple summary statistics and gain a greater picture of their data, as the extrapolation of the R_2 and standard error values above has attempted to do. I encourage psychological researchers to question their long-standing reliance on statistical significance and expand qualitative and other means of analysis.

The generalizability of this study is also a limitation. This population was originally chosen to address a gap in healthcare literature, which has not yet explored findings on college campuses. However, the current research site is a small, liberal arts, majority white college in rural upstate New York. Had this study been conducted within a larger university, the sample would not only have likely been larger, but the results could have been more generalizable across races/ethnicities, socioeconomic statuses, and political affiliations. It is difficult to draw strong conclusions when the college in question is as isolated and homogeneous as the sample for the current study. Furthermore, while conducting this experiment in the Health Center may increase the external validity of the results, it also decreases the internal validity. I did not monitor my participants while they were completing the surveys; therefore, I was unable to keep track of the delicate timing of my procedure. This leads to a lack of ability to verify adherence to instructions and full completion of the questionnaires. Lastly, the small student population made it difficult to recruit enough participants to reach the amount required to detect an effect at 80% power, as determined by a power analysis in R Studio. This limitation is also readily apparent in the lack of

variability in responses in the regression analysis for Hypothesis 2, with only one participant reporting that their expectations for empathy were not met.

Although self-report is often criticized as a method in psychological research, I do not similarly regard this as a limitation in the current study. Given the subjective nature of both variables under investigation (expectation and satisfaction), and the investigation of these variables in the context of healthcare, I argue that self-report is a valid measurement for the current study. This follows years of research that has found correlations between subjective and objective measures of health, for specific conditions, such as multiple sclerosis (Gosney et al., 2007), as well as assessments of sleep (O'Donoghue et al., 2009; Palermo et al., 2007) and pain (Granovsky et al., 2008; Coghill et al., 2003). The moderate to high correlates revealed in these clinical populations give researchers greater confidence to conclude that some subjective scales have the ability to perform as the primary measurements for the medical condition under investigation. Therefore, self-report is not only a valid measure for this type of research, but it is also an important component of the research design, in how it prioritizes perception as a function of the placebo effect, and individual experience as a factor in healthcare delivery.

Lastly, the current study is limited in its vague definition of empathy. Empathy was assessed by asking participants to reflect on their provider's use of courtesy, respect, and understanding. While this approach attempts to engage with the complexity of empathy and in ways that distinguish it from sympathy (Wispé, 1986), it neither tackles further issues of cognitive versus affective empathy, nor did it present participants with the word "empathy", and without a manipulation check, I was unable to verify how they interpreted the questions. Recent research advocates that the involvement of several components in human empathy are all enacted through different developmental trajectories and neural networks (Shamay-Tsoory et al., 2009;

Decety, 2010). Although the current study is psychologically and not neuroscientifically based, by not properly assessing for each of the components of empathy, and by not recognizing their neural and bodily processes, my analysis cannot reach its full potential for capturing and understanding human empathy.

Future Research

Future directions for this research must first address the aforementioned limitations. I suggest conducting similar research at larger institutions and potentially utilizing a confederate to ease the timing and instruction compliance of the self-report surveys. With respect to the exploratory analysis on the breakdowns of race/ethnicity, future research would benefit from the addition of the Medical Mistrust Multiformat Scale (Sanford & Clifton, 2022), which would acknowledge how minority patients differently approach healthcare and may be able to clarify the relationship between healthcare expectations and satisfaction as mediated by demographics and identities.

Although the current study was conducted using survey methods, future research could broaden our understanding of the other factors that determine healthcare satisfaction with the use of observational data. Building on research that has observed, transcribed, and coded interactions between patients and providers to investigate communication (Tenfelde et al., 2023), trust (Jongerius et al., 2021), and decision-making (Vromans et al., 2022), witnessing how providers' verbal and nonverbal communication affects a patient may be better able to speak to the role of communication that was discussed in the literature for the current study's hypotheses. Observational data may also better emphasize and make accessible this research in ways that could be used by teaching hospitals and public health officials to stimulate patient-centered changes to the healthcare system.

Implications

The patient-provider relationship has gone through many iterations over the years. During the "Golden Age" (1920s-1960s), the relationship was portrayed as asymmetrical and paternalistic, meaning that the provider held all the knowledge, and that the patient had no authority to question them. In the contemporary era, which operates more as a provider-client model, mutual participation is valued, but relationships are short-term, increasingly impersonal, and ultimately dictated by the will of health insurance companies. Even as we continue to lose time and personal investment from providers, due to a variety of systemic issues, work, such as the current study, aims to advocate for better recognition and implementation of the biopsychosocial model in healthcare. The biopsychosocial model, which emerged following critiques of the biomedical model, provides a framework for integral inclusion and interaction of biological, psychological, and social processes in healthcare (Suls & Rothman, 2004). I do not claim that the biopsychosocial model in its current clinical applications is without fault, but it has been shown to outperform the biomedical model in cases of conduct disorder diagnosis (Chan et al., 2022), cancer-treatment-related pain prediction (Syrjala & Chapko, 1995), and clinical improvement for chronic diseases (Kusnanto et al., 2018). When we experience losses in the interpersonal component of the patient-provider relationship, we also lose time spent on variables beyond the biological. This calls for advocacy of our expectations and needs as patients to bring the biopsychosocial model to the forefront of clinical decision-making (Groopman, 2007).

Conclusion

Despite not finding significant results, the current study contributes a new perspective on the placebo effect that removes it from traditional uses of pill placebos on physical conditions

and translates it into perceptions that have the ability to affect interactions with one's healthcare provider and one's clinical outcomes. While the healthcare domain is already aware of the importance of patient satisfaction as it relates to hospital performance, competence, and monetary gain, the current study argues that healthcare providers and administrators are not knowledgeable enough about how the placebo effect factors into these reports of satisfaction. Especially for college health centers and urban medical centers that are often required to perform with limited resources, insufficient staffing, and inundated schedules, I argue that paying particular attention to patients' expectations as well as how they are communicated to by their providers, could see better clinical outcomes for the patients themselves and greater satisfaction with the healthcare facility. Additionally, the current study contributes an important message to the larger workings of psychological research, in that there is a need for more careful attention to statistical choices and diversity in data analysis. How imperative publication has become for psychological scientists to achieve tenure and a living wage, as well as for undergraduate students to further their education, has begun to promote a field that prioritizes research quantity over quality, leading to questionable research practices, discouragement, and the neglect of nonsignificant studies such as this one (John et al., 2012; Aczel et al., 2018; Lakens & Etz, 2017; Giuliano et al., 2022). For the preservation of psychology students and high-impact psychology research, the field must attend to these pitfalls and reward both creative thought and statistical advancements. In sum, both those delivering and those receiving healthcare have an awesome ability to see the results they desire by remaining focused on positive interpersonal communication and granting more attention to their cognitive functioning.

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Appendix A

Pre-Appointment Healthcare Demographics

Have you had COVID-19?
In the past year   6 months   3 months   1 month   Currently

Do you have a primary physician in your hometown?
Yes   No   Other_____

Do you have a primary physician at college?
Yes   No   Other_____

What is the gender of your primary physician(s)?
Female   Male   Other_____

Did you desire a specific gender for your primary physician?
Yes   No   Other_____
If yes, what?
Female   Male   Other_____

How many times have you visited the Health Center while at college? _____

Did you explore other treatment options before coming to the Health Center?
Yes   No   Sometimes   Other
Which ones? _____

Appendix B

The Expectation for Treatment Scale (Modified)

There are several statements below that capture your expectations about the treatment. Please indicate to what extent these statements apply to you personally. There are no right or wrong answers. We are only interested in your current personal thoughts.

1. I expect the treatment will help me to cope with my complaints.

strongly disagree   disagree   agree   strongly agree

2. I expect the treatment will make my complaints disappear.

strongly disagree   disagree   agree   strongly agree

3. I expect the treatment will improve my physical performance.

strongly disagree   disagree   agree   strongly agree

4. I expect I will know my next steps after my appointment.

strongly disagree   disagree   agree   strongly agree

5. I expect I will receive a diagnosis during my appointment.

strongly disagree   disagree   agree   strongly agree

6. I expect I will receive the diagnosis I self-diagnosed myself with already.

strongly disagree   disagree   agree   strongly agree

7. I expect I will be prescribed medication during my appointment.

strongly disagree   disagree   agree   strongly agree

8. I expect I will be told to seek treatment/resources elsewhere after my appointment.

strongly disagree   disagree   agree   strongly agree

9. I expect I will be treated by a male provider.

strongly disagree   disagree   agree   strongly agree

10. I expect I will be treated by a female provider.

strongly disagree   disagree   agree   strongly agree

11. I expect my provider will be understanding towards me.

strongly disagree   disagree   agree   strongly agree

Appendix C

Patient Satisfaction Phone Survey (Modified)

Using a scale of 0 to 11 with 0 being very poor or unsatisfied and 11 being excellent or very satisfied.

How would rate this clinic on the ease of scheduling an appointment in a timely manner?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate this clinic on the courtesy and friendliness shown by the nurses and office staff?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the overall teamwork between doctors, medical providers, nurses, and staff?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the amount of time you waited before being seen by the provider?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the provider on spending time with you during the appointment?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the provider on the courtesy and friendliness shown to you?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the provider on the respect and dignity shown to you?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the provider on understanding what you were experiencing?
0   1   2   3   4   5   6   7   8   9   10   11

Did the provider give you a diagnosis?
Please answer yes, no, or other (explain)_____.

Did the provider confirm the diagnosis you expected?
Please answer yes, no, or other (explain)_____.

How would you rate the provider on explaining your medical condition?
0   1   2   3   4   5   6   7   8   9   10   11

How would you rate the provider on positivity and reassurance about your medical condition?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

How would you rate this provider on involving you in the decision-making process?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

What treatment options were offered to you today? Please circle all that apply.

Nothing

Home Exercise Program

Physical Therapy

Injections

Medications

Surgery

How would you rate the provider on explaining the treatment options?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

How would you rate your satisfaction with the prescribed treatment plan?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

Overall, how would you rate the doctor or medical provider that you saw in the clinic?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

Overall, how would you rate the quality of care provided to you during your clinic visit?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

Overall, how would you rate your level of satisfaction with your clinic visit?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

Overall, were your expectations for this appointment met?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

How likely are you to use the Health Center again?

0　　1　　2　　3　　4　　5　　6　　7　　8　　9　　10　　11

How likely are you to seek treatment elsewhere, following this appointment?

0   1   2   3   4   5   6   7   8   9   10   11

Please rate how sick you feel from not at all sick to extremely sick.

10   20   30   40   50   60   70   80   90   100

Please rate how contagious your medical condition is from not at all contagious to extremely contagious.

10   20   30   40   50   60   70   80   90   100

Appendix D

UCLA Three-Item Loneliness Scale

	Hardly	Some of the Time	Often
How often do you feel you lack companionship?	1	2	3
How often do you feel left out?	1	2	3
How often do you feel isolated from others?	1	2	3

Appendix E

Word Association Task

Please fill in the blanks of the provided strings of letters into meaningful words.

W ___ ___ H

S ___ ___ P

S H ___ ___ E R

T R ___ ___

___ O O ___

___ ___ L D

Appendix F

Demographics

What is your sex?

Male

Female

Non-binary

Other

Prefer not to say

What is your class year?

_____

What is your race/ethnicity?

White

Black or African American

American Indian or Alaskan Native

Asian

Native Hawaiian or Pacific Islander

Hispanic/Latino

Other

Prefer not to say

What was your provider's sex?

Male

Female

Non-binary

Other

Prefer not to say