The Language of Healthcare: How Communication in Pediatrics Affects Patient Satisfaction and Adherence

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The communication between a pediatrician and their patients greatly impacts the efficacy of a healthcare system during medical interviews by improving health outcomes like a patient's understanding of their condition, quality of life, mood, and resolution of medical issues. While past research has shown examples of effective communicative factors that improve these health outcomes, this study asks which of these factors have the highest impact on specifically patient satisfaction and treatment adherence in the realm of pediatrics, an intersection not previously researched. A digital survey that included a sample pediatrician-patient dialogue, seven Likert-scale questions, and four short-answer questions was administered to 31 voluntary, parent participants in a local school district. The data was analyzed using a comparison of the quantitative measures of central tendency and qualitative thematic content analysis. Quantitatively, factors like the pediatrician's friendliness, language, and ability to form trusting relationships performed well while factors related to the pediatrician's ability to educate and investigate the patient's medical condition performed below average. Participants were also critical of these factors qualitatively but were still willing to adhere to the treatment recommended. By comparing these datasets, it was assessed that the use of effective patient education, investigative questions and responses, and a welcoming atmosphere had the strongest correlations with increased patient satisfaction and adherence. While these factors must be greatly emphasized during medical interviews, further research must assess how they can be optimized and integrated within training or guidance for medical workers.

Introduction

Healthcare systems worldwide stress the importance of effective communication between healthcare professionals and their patients, a skill that requires both parties to be able to clearly explain their thoughts, opinions, and circumstances while listening to and understanding exactly what the other party says. Effective communication is demonstrated when both parties obtain a common understanding of the topic of discussion. Likewise, this conversation is the most essential medium for transferring medical information and creating a trusting relationship between a patient and their physician throughout a medical interview, during which physicians meet with their patients and are responsible for educating them, defining relevant medical terms, recommending possible treatment options for the patient, and aiding the patient in making informed decisions about their health[1]. As such, it is essential for physicians to ensure that they are using effective communication practices, especially in pediatrics when physicians are discussing complicated medical information with patients who may need to interpret this information in a simpler, more digestible manner. While physicians may currently practice effective communication, it's important to understand the specific communicative techniques and skills that would allow them to optimize it and increase how much medical information would be effectively transferred between both parties if improved.

While past literature has shown examples of important communicative skills as well as the effect of communication on positive health outcomes in pediatrics, there is limited research on the intersection between these variables. This study aims to determine which communicative skills and factors determined by past literature have the greatest correlation with a patient's satisfaction and treatment adherence when utilized by a pediatrician during a medical interview. Doing so can help pediatricians understand how to effectively communicate so they can assist their patients in achieving positive health outcomes.

REVIEW OF LITERATURE

There is a prevalent issue regarding communication in healthcare: many medical workers are not adequately trained in communication skills, resulting in less patient satisfaction, shorter appointments, and a lesser overall patient understanding of their medical circumstances[2]. Poor communication during medical interviews has been proven to harm the patient's trust in the medical system and ultimately, their willingness to adhere to their physician's recommendations. According to a 2009 meta-analysis study, across many medical conditions, adherence to treatment options averages around 75%, with some

conditions dropping below 50%, stressing the need for effective physician-patient communication[3]. This study specifically is integral in understanding the role of communication in the healthcare system historically as it analyzes the association between communication and adherence using studies within a span of 59 years.

On the other hand, a physician with effective communication skills can have a profound positive impact on the patient. Past studies have shown a positive correlation between effective communication and patient satisfaction, adherence to treatment plans, resolution of issues and problems, quality of life, understanding of their medical condition, as well as positive psychosocial outcomes impacting the patient's mood[4,5,6,7].

Having better communication skills would result in a more efficient medical interview and a healthcare system that more effectively treats patients' medical issues and conditions. As such, physicians and healthcare experts must be effectively trained in communication and interpersonal skills[8].

The Effects of the Electronic Health Record

One recent innovation that has greatly affected the way physicians interact with their patients is the Electronic Health Record (EHR) – a database that stores and organizes patient medical information. This technology showed the potential to improve communication efficiency and accuracy by allowing the physician to quickly access the patient's medical history[9].

However, two survey-based studies from 2009 and 2019 respectively showed that a physician's constant reliance on the EHR resulted in a negative impact on patient-centeredness since physicians had to divide their attention between two objects, deteriorating the ability of the physician to multitask and thus, the quality of the physician-patient conversation[10,11]. In addition, a literature review conducted in 2016 showed that many studies resulted in mixed responses regarding the correlation between the use of EHR and patient satisfaction[9].

Due to the difficulty of multitasking without sacrificing the efficacy of a physician's communication, a 2013 study proposed a strategy that divides the interview into patient-focused and EHR-focused stages due to the difficulty of multitasking[4]. While potential pitfalls and limitations with this strategy exist, it could be an effective way of integrating and introducing the EHR into the physician-patient conversation. Overall, the EHR is a powerful tool to organize patient information but physicians need to ensure that their ability to connect with and communicate to the patient is not sacrificed by their use of the EHR.

Essential Communicative Skills in Medical Interviews

The most important communicative skills a physician must utilize during a medical interview stem from the key purposes of such a conversation. For example, effectively educating the patient is not simply providing information, but rather explaining the information and how it applies to the patient's situation[12,13]. In addition to these "content-based" skills, non-content-based skills include how the physician presents: their demeanor, their responses to questions, as well as their delivery of information. A 2002 study showed that patients perceive a confident, caring, straightforward, and helpful physician as the most desirable traits a physician can have during a medical interview[1]. Conversely, undesirable traits include nervousness and being uncomfortable while delivering information. Desirable and undesirable traits must be maximized and minimized respectively during a medical expert's pre-professional training. Being able to do so can make each stage and purpose of the medical interview more effective. The following are major communicative factors present in medical interviews, which may greatly increase the satisfaction and adherence of their patients, benefitting the healthcare system as a whole.

- One of the most important objectives of the physician during a medical interview is to build a trusting relationship with the patient[14]. This is because a patient will be significantly more transparent with their medical information and issues if they trust the physician. In addition, they are more likely to take the physician's recommendations seriously and adhere to their treatment plan.

- A key component of how a physician presents is their confidence in presenting medical information. This confidence results in a patient who is more confident about the physician and the information given to them, causing higher levels of satisfaction and adherence[1,15].

- A physician must keep the medical interview focused on the patient by effectively responding to their concerns, questions, and problems. By doing so, physicians increase the emotional and social support they are giving to help the patient fulfill their fundamental medical needs[6,16].

- The main purpose of a medical interview is to educate the patient about the condition or issue that they are having. By understanding one's medical condition, a patient may be able to form their own conclusion about potential treatments and align their thoughts with those of the physician, increasing the likelihood of that patient following through with their treatment.

- In addition to educating the patient, physicians must provide effective responses and recommendations on their patients' ideas, medical information, and beliefs in order to provide them with potential treatment pathways they can pursue[14]. By addressing their concerns and questions, the physician helps their patient make their own informed decisions about medical care[6].

The Role of a Pediatrician

Analyzing pediatrician-patient communication compared to general physician-patient communication offers a unique perspective on the skills necessary to optimize patient satisfaction and adherence. This is because pediatricians have two patients rather than one – a child and their parent(s)[17]. As a result, they need to educate both parties and because of differences in education and age, this may require two separate levels of speech. The importance of other communicative skills including the use of gestures and eye contact also differs depending on which patient the pediatrician is interacting with. Furthermore, pediatricians should build a trusting relationship with both the child and the parent(s) in order to communicate effectively. This extra complexity places a higher emphasis on communication skills in pediatricians' jobs when compared to other medical specialties[8,18]

Gaps in Existing Research

Past research has presented essential factors of physician-patient communication and has hypothesized the correlation between effective communication and positive patient health outcomes. In addition, it has analyzed the use of different strategies, models, and technologies like the EHR and their effect on the structure and efficacy of the medical interview.

However, studies have not analyzed the relationships between (1) the major communicative skills and factors present in medical interviews, (2) patient satisfaction, and (3) adherence to treatment options through the lens of pediatrics, which considers both a child and parent-focused perspective.

Firstly, much of the research on physician-patient communication was conducted before the introduction of the Electronic Health Record, which drastically changed the layout of medical interviews. In addition, a small portion of such studies focus on pediatrics specifically; those that do study pediatricians' communication skills do not include the parental perspective of the conversation, a lens that is entirely separate from the medical expert's viewpoint. Furthermore, the communication skills studied by past research also vary from study to study, making it hard to pinpoint which factors specifically have provided the greatest contribution to the optimization of patient adherence and satisfaction. As a result of these shortcomings and inconsistencies, recent studies have not bridged these gaps completely and effectively to address issues regarding pediatrician-patient communication and its impact on patient health outcomes.

Methods

This study's unique approach in investigating the relationship between a pediatrician's communication skills and their patient's satisfaction and likelihood of adherence through a parental perspective requires me to assess how parents evaluate these skills and form conclusions based on their perception of how effective this communication was on the patient.

Participants

The participant pool included parents of third to fifth-grade students in local elementary schools in a suburban school district. As such, these individuals had experience with accompanying their child to a pediatrician before participating in the study, integral to the credibility of the participant pool. They were required to complete a digital consent form in order to participate (see Appendix A).

A target sample size of 30 to 40 participants was chosen out of a total pool of about 1,500 parents in the school district since this size likely results in enough qualitative data points to reach saturation and create a well-supported conclusion in the context of my inquiry. Due to the nature of this mixed-methods study and the fact that I am comparing the quantitative dataset with the qualitative dataset, I can create well-supported associations between the variables studied and determine which associations were stronger based on how prevalent these associations were in the individual comparisons. As such, I believe a sample size of 30 to 40 participants is sufficient.

Apparatus

The survey was conducted through a digital Google Form that took participants roughly five to seven minutes to fill out (see Appendix B). The email with the survey also included background information about the study and a local Institutional Review Board had approved the use of this type of survey prior to collecting data from participants. Initially, an in-person observational study was also considered in which I would gather patients' opinions about their actual pediatrician's communication skills through a survey or interview. However, studies such as this one were scrapped due to limitations in the ethicality and privacy of the procedure.

Procedure

The first step of the survey is to read a dialogue I created, which was meant to mimic a conversation between a pediatrician and their patient. This was used instead of a transcript of a real conversation since it would be shorter and easier to embed the pediatrician's specific communicative skills. However, transcripts of public conversations between a physician and their patient were used to inspire linguistic choices in the dialogue as well as the way the pediatrician presented medical information, responded to the patient, and used each communicative skill[19]. This would also negate any privacy issues I could have faced with using in-person interviews.

After reading the dialogue, the participant must answer a series of seven questions using a five-point Likert scale relating to how well the pediatrician incorporated specific communicative skills and factors such as friendliness, trust, and accessibility of information to the patient. The Likert scale was chosen as it allows the participant to easily quantify their opinion about the efficacy of each communicative factor with 1 meaning "largely ineffective" and 5 meaning "extremely effective" in the case of this study[20]. The purpose of the quantitative Likert-scale questions was to develop a baseline for how each of the participants perceived the communicative factors in order to derive accurate conclusions from the qualitative section. In addition, it shows how the participants perceive each skill in the context of the dialogue and thus, the correlation between the presentation and perception of each skill in the dialogue.

Lastly, participants are instructed to complete four short-answer questions that address how these communicative factors are related to patient satisfaction and adherence from the parental perspective. Each question asks for a two to three-sentence response, showing which skills impact patients the most and in what ways. This section of the survey is used to create a correlation between the independent and dependent variables. Table 1 displays both the quantitative and qualitative questions found in the survey shown below.

Data Analysis

By finding the average response value of each Likert-scale question, the efficacy of each communicative skill with respect to the dialogue can be determined. The percentage of participants that found it effective versus ineffective can also be used to discover significant trends regarding each skill.

Responses from the short-answer questions yielded core themes that emerged throughout the entire participant pool. These themes encompassed question-specific subjects, themes about the relationships between communicative skills and external variables, as well as ideas that addressed the pediatrician's communication overall. Subthemes were also created by reading through the qualitative data and analyzing nuances or possible perspectives on each theme in order to label and organize qualitative responses. This helped me make associations between each communicative skill and its impact on these core themes as well as how all of the themes are in relation with one another.

Using baselines from the quantitative data analysis and the themes from the qualitative data analysis for each participant, I explored the relationship between each of the communicative factors found in the dialogue and their impact on patient adherence and satisfaction from the lens of each participant. After doing so, I was able to synthesize the individual correlations and analyze which factors were more prevalent throughout the participant pool to create a larger conclusion. Furthermore, any removal of collected data was considered using statistical outlier detection for quantitative data and an evaluation of the quantity, specificity, and relevance of the information for all qualitative responses. Two pilot studies were conducted with 17 and 36 participants respectively before sending out the finalized study. The first study was conducted in a high school classroom while the second was conducted with parents of third to fifth-grade students at a different local elementary school.

In the first pilot study, the communicative factors performed very well quantitatively. However, since the aim of the dialogue was to show a more ambiguous representation of the communicative factors, meaning that their quantitative rating should be centered around a value of 3, I used this pilot study's data to streamline the pediatrician's use of each communicative factor by altering the dialogue given. This would allow me to form better associations between independent and dependent variables since it would be easier to identify if communicative skills were perceived as not effective versus effective if their average rating was centered around 3. In terms of qualitative data, I noticed significant variation in the response length of participants. As a result, I made it clear that I desired roughly two to three sentences of qualitative response per question. I also reworded the questions to make them more open-ended rather than streamlined yes-or-no questions due to the qualitative data I found in this pilot study.

In my second pilot study, I made sure the participant pool and method of delivering my research survey was identical to the way I would be delivering it in my final study. After analyzing the data qualitatively, I found that it matched my criteria of being more centered around a value of 3. In addition, each participant's average response value was also varied from 1.57 to 5.00, which, when compared to their qualitative data, allowed me to make meaningful associations between the datasets. In the qualitative dataset, there were responses that had varied lengths, which led me to adjust the wording in my short-answer questions once again.

Results

The survey was completed by 31 participants from three local elementary schools over the span of two weeks. These schools provided a variable number of participants, with School A containing nineteen of the participants, School B containing eight participants, and School C containing four participants. While there was a significant difference in the number of participants collected from each school, the process in which each of these participants received the initial email, survey, and consent form was the exact same. As such, the individual participant count per elementary school does not affect the data in any significant manner.

Originally, there were two additional participants from School A; however, they were removed from any analysis of data as a

Table 1: Quantitative and qualitative questions found in the survey

Quantitative Likert-Scale Questions	Q1: How friendly and welcoming did you feel that the pediatrician's greeting was to the patient?
	Q2: How well did the pediatrician attempt to connect with the patient?
	Q3: To what extent do you believe the patient trusts their pediatrician's opinions and recommendations?
	Q4: Was the medical information presented by the pediatrician easy to understand from the lens of the patient?
	Q5: Does the pediatrician respond to the patient's questions and concerns effectively?
	Q6: How well would you say the patient understands their condition?
	Q7: How well does the pediatrician explain to the patient about possible treatment options they can follow through with?
Qualitative Short-Answer Questions	Q8: As a parent, how likely would you be to trust the pediatrician and allow your child to continue with the treatment described?
	Q9: Were you satisfied with the pediatrician interaction during the visit?
	Q10: What communicative factor do you value the most in a medical interview with your child and their pediatrician?
	Q11: If possible, how could the pediatrician improve their communication with the patient?

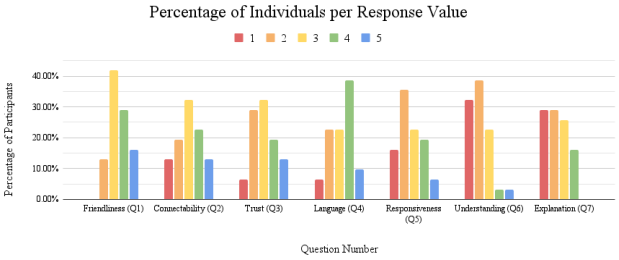

Figure 1: Graphical representation of Likert-scale data distribution

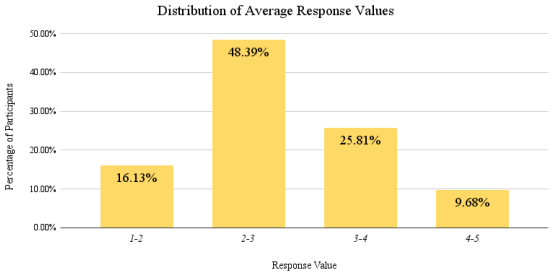

Figure 2: Graphical distribution of mean response values

result of displaying a clear misunderstanding of the structure and purpose of the survey by citing their own experiences with pediatricians in place of the pediatrician depicted in the survey's dialogue.

Quantitative Results

Using a Likert Scale, quantitative data was presented from a range of 1 to 5 for each of the seven questions. Table 2 depicts the percentage of participants who answered with a response value of 1, 2, 3, 4, or 5 respectively across each of the seven questions labeled across the top row. This value was obtained by dividing the number of participants who responded with each value by the total number of participants, 31. In addition, it depicts the average value (in red), median value (in yellow), and the standard deviation (in blue) of the dataset for each question. Since the Likert Scale I used contains values from 1 to 5, an average response value of above 3 may indicate that a communicative factor was used efficiently in the dialogue while a value of below 3 may indicate that a communicative factor was not used appropriately in the dialogue. All average response values were between 2.00 and 4.00. In addition, the standard deviation of each question's dataset shows generally how consistent the efficacy of the communicative skill was perceived to be. Once again, this value was only used to help visualize the spread of the data rather than be used to assess a relationship between the quantitative and qualitative data trends. Figure 1 displays the frequency of each response value graphically to easily identify possible trends and patterns for each question.

Among the highest-rated factors were the pediatrician's friendliness (Q1: $\bar{x} = 3.484$) and the ability of the pediatrician to present information that is easy to understand from the point of view of the patient (Q4: $\bar{x} = 3.226$). In contrast, the patient's level of understanding regarding their condition (Q6: $\bar{x} = 2.065$) and the pediatrician's ability to explain possible treatment options (Q7: $\bar{x} = 2.290$) were rated as the lowest factors.

Receiving the highest mean response value of the seven questions, Q1 was rated a 1 or 2, denoting that the pediatrician was not very friendly and welcoming during their greeting, 12.90% (n = 4) of the time while the percentage who rated it a 4 or 5, denoting that the pediatrician was friendly and welcoming during their greeting, was 45.16% (n = 14).

Conversely, Q6 received the lowest average out of the seven questions. The percentage of participants who rated it a 1 or 2, denoting that the patient does not appear to understand their condition well, was recorded to be 70.97% (n = 22), and the percentage of participants who rated it a 4 or 5, denoting that the patient appears to understand their condition well, was only 6.45% (n = 2).

The results of these questions showed that they had the lowest standard deviations 0.926 and 0.998 respectively, indicating a dataset that was more clustered around the mean response value when compared to the other questions. Such trends were visualized using curves created with polynomial regression for each of the seven questions (see Appendix C). This method was used simply to visually determine the shape of each communicative skill's distribution graph, showing where the quantitative data is centralized. Understanding how centralized or spread out the data for each communicative skill showed if the participants had mostly similar or contrasting opinions about each factor.

The mean response values ranged from 1.429, scored by participants 20 and 28, to 4.286, scored by participants 17 and 27 (see Appendix D). Figure 2 displays the distribution of mean response values through a histogram in 4 intervals of 1. Participants with an average response value between 2 and 3 represented 48.39% of the data (n = 15), showing a clear concentration around such values.

Qualitative Results

Each of the 31 participants responded to four short-answer questions, averaging a response length of 25.8 words. In order to discover a relationship between specific communicative factors and patient satisfaction or adherence, eight core themes and 54 subthemes were discovered using the data and used to categorize each participant's response (see Appendix E). All of these themes are grounded in the dialogue itself as each of the questions prompts a synthesis of the communicative factors

Table 2: Distribution of responses in the Likert-scale data

Question	Friendliness (Q1)	Connectability (Q2)	Trust (Q3)	Language (Q4)	Responsiveness (Q5)	Understanding (Q6)	Explanation (Q7)
1	0.00%	12.90%	6.45%	6.45%	16.13%	32.26%	29.03%
2	12.90%	19.35%	29.03%	22.58%	35.48%	38.71%	29.03%
3	41.94%	32.26%	32.26%	22.58%	22.58%	22.58%	25.81%
4	29.03%	22.58%	19.35%	38.71%	19.35%	3.23%	16.13%
5	16.13%	12.90%	12.90%	9.68%	6.45%	3.23%	0.00%
MEAN	3.484	3.032	3.032	3.226	2.645	2.065	2.29
MEDIAN	3	3	3	3	2	2	2
STANDARD DEVIATION	0.926	1.224	1.14	1.117	1.17	0.998	1.071

presented throughout it, which were also tested quantitatively. In addition, all subthemes were explicitly determined based on the wording of each qualitative response in the raw data and were finalized by a research mentor. For each theme, all possible and relevant subthemes were included as many core themes were based on a spectrum (e.g. satisfaction with the visit) or an overarching topic with multiple examples (e.g. most valued communicative factor). If a response contained language that directly supported a subtheme, it would be coded with that subtheme. As such, one response could contain multiple codes. However, not all subthemes contained responses that related to them. To analyze patterns in each of the themes, a frequency table and pie charts were created to determine which subthemes were prevalent throughout the data (see Appendix F). Since not every response contained information about every theme and one response could be categorized as multiple subthemes in a singular theme, the sample size for each theme may vary.

- Perception of Trust in the Pediatrician (Theme A): Regarding the participant's trust in the pediatrician, 45.45% of responses expressed distrust through subthemes A1 and A2 (n = 10) and the same quantity expressed that they trusted the pediatrician to serve the patient through subthemes A4 and A5 (n = 10). There was no overwhelming trend or majority in Theme A due to the high deviation of responses.

- Satisfaction with Visit (Theme B): A majority of responses indicated that they were not satisfied with the visit through subthemes B1 and B2, 60.87% (n = 14), compared to the 26.09% of responses who showed satisfaction with the visit (n = 6), shown through subthemes B4 and B5.

- Likelihood to Continue with Treatment Plan (Theme C): Despite a sample size of only 9 responses, Theme C showed an overwhelming majority as 77.78% of responses showed that the individual was likely to adhere to the treatment plan provided (n = 6) while only 11.11% of responses showed sentiment against continuing with the treatment plan provided (n = 1).

- The Pediatrician's Method of Educating the Patient (Theme D): The main subthemes that emerged regarding the way the pediatrician educated the patient were critical of it: 25.71% of responses showed that the pediatrician was not specific or thorough enough (n = 9) and 20.00% of responses reported that they were too complicated and confusing for the patient (n = 7). Only one out of 35 responses was shown to praise the way the pediatrician educated the patient.

- Exchange of Respect and Politeness in Conversation (Theme E): Participants expressed a variety of perspectives and subthemes when discussing the exchange of respect and politeness in the dialogue. The two most prominent themes were the following: 21.74% of responses showed that the pediatrician made the patient feel uncomfortable or dismissed with their remarks (n = 10) and 17.39% of responses explained that the pediatrician did not try to connect and listen to the patient (n = 8).

- Structure of Conversation (Theme F): A large majority, 91.67% of responses, expressed that the pediatrician displayed an inappropriate approach to investigating the patient's condition (n = 11) while the other 8.33% stated that the conversation was too one-sided and focused on the pediatrician (n = 1).

- Parental Involvement (Theme G): Every response that mentioned parental involvement stated that the conversation lacked this necessary component (n = 7). However, the other 24 participants did not comment on this aspect.

- Most Valued Communicative Factor (Theme H): The participants displayed a strong diversity of which communicative factors they valued the most. Among the most popular were accurate and appropriate language when educating the patient, creating a welcoming and comfortable relationship, and maintaining a direct conversation with the patient, which all amassed 17.07% of responses each (n = 7). In addition, the ability to effectively listen to and respond to the patient as well as the approach taken to investigate the patient's condition by asking questions were emphasized by 14.63% of responses each (n = 6).

Discussion

Through an analysis of the quantitative and qualitative data, correlations can be made to assess the relationship between how participants perceived each communicative factor, patient satisfaction, and adherence to their treatment plan (see Appendix G). This is possible as the quantitative data describes what the participants thought of the efficacy of each communicative factor in the dialogue and the qualitative data describes what the participants thought of the effect of the dependent variables studied on a patient.

Main Findings and Implications

The data has shown that satisfaction and adherence were strengthened through an overall increase in all communication factors. However, the most prevalent factors include effective patient education, respectful responses to questions and concerns, investigating the patient's condition, and creating a welcoming and friendly atmosphere. These factors must be emphasized when pediatricians interact with patients and family members during medical interviews. The following conclusions regarding communicative factors were determined by assessing the prevalence and strength of the associations found in each individual participant's data. For example, if Participant X reported extremely low ratings of a pediatrician's ability to create a welcoming atmosphere but qualitatively showed that they were likely to adhere to the pediatrician's treatment recommendations, it can be concluded that this participant shows a strong disassociation between a welcoming atmosphere and treatment adherence. If more participants have similar associations, this general conclusion is treated to be stronger and more well-supported by the evidence provided in this study. As such, the following communicative factors and associations are listed in order of how prevalent they were within the data analysis.

- Patient Education: Effective patient education emerged as the most prevalent communicative factor found in the data. It greatly impacted levels of satisfaction and trust because participants who thought that the pediatrician was ineffective in explaining medical information and possible treatment options hurt the pediatrician's credibility in general. It improved levels of adherence as well.

- Effective Responses: Many participants also explained that if the pediatrician was effective in listening to the patient and responding to them, this helped build a stronger relationship between the two parties and as a result, increased trust and treatment adherence. Since these responses also help educate the patient, they are more likely to trust the pediatrician's suggestions in adhering to the treatment plan.

- Questioning the Patient: The way in which a pediatrician investigated the patient's condition by questioning the patient and discussing medical history or habits greatly impacted both satisfaction and adherence.

- Welcoming Atmosphere: A welcoming and friendly atmosphere resulted in a strong correlation with a higher level of satisfaction and adherence to the treatment plan in the study. This may be a result of a higher level of trust associated with a more friendly relationship and environment.

While a pediatrician's use of uncomfortable and dismissive language as well as their ability to involve the patient's parent(s) or guardian(s) were initially considered as key factors that influenced satisfaction and treatment adherence, there was limited evidence from the data that showed that these two factors alone had a significant correlation with the measured dependent variables. This is because other factors like patient education and the ability to articulate effective responses to questions had a stronger effect on satisfaction and adherence, allowing them to take priority over the usage of dismissive language and involvement of family members when considering such correlations. This claim is supported by the fact that when comparing the quantitative and qualitative data, more participants showed an association between the prior two factors on satisfaction and adherence than the latter two on the same dependent variables. For example, patient education and the efficacy of the pediatrician's responses were displayed in associations found in a majority of the participants.

Comparison with Past Literature

Past literature, such as one 2013 paper authored by professor of medicine and psychiatry Dr. Douglas A. Drossman, shows that the way physicians questioned the patient, provided health education during their discussion, and clarified or summarized information if needed directly increased patient satisfaction, adherence, and comprehension[14]. This aligns with the findings discovered through this study as patient education was found to be the most prominent factor. In addition, other studies ranging from 2009 to 2018 have shown that providing information about treatment options and the condition the patient has in a clear but easy-to-understand manner was also integral in creating effective conversation because patients must be able to make informed decisions regarding their health, which is directly dependent on their understanding of their condition and the treatment options that the physician provided[6,21,22]. It is important to note that these studies' methodologies revolved around a systematic review of literature, providing more evidence to support this claim.

Other findings showed that the linguistic choices used by the physician also had a positive correlation with the patient's

perception of the physician's communicative skills in general. This included showing empathy, reassurance, humor, and friendliness, which was also shown to be important in this current study by looking at the quantitative data, particularly regarding the first question [14].

While it was not deemed as an essential communicative factor that influenced the dependent variables investigated in this study, family involvement during the medical interview has been shown to be associated with effective structure and communication throughout the conversation, a sentiment that a few of the participants shared through their qualitative responses [21] However, some studies also displayed results that were not found in the conclusions of my study. For example, one study that analyzed communication among oncology clinicians explained that these healthcare experts need to review the patient's medical information and history before the interview [21]. Their rationale for doing so is because this would create goals and expectations for the conversation that follows.

Furthermore, other studies concluded that the friendly and welcoming attitude that a physician provides is more important than the precision of the information they give to the patient, contrasting the prevalence of these two factors within my study [1, 23]. One of these studies, however, was focused on the application of a friendly attitude when comparing non-Black physicians and Black patients, which may be a niche that would affect the results of the study when in comparison to this one.

Alternative Possible Findings and Analysis Methods

Alternative methods of analyzing the data collected exist. One such method involves using the third short-answer question found on the survey, which discusses which communicative factor the participant values the most in a medical interview. By analyzing the connections between this question and the first two short-answer questions that discussed patient satisfaction, trust, and adherence to treatment, a correlation could be made between these variables. However, this does not provide the larger, holistic approach that comparing the qualitative and quantitative datasets provides as it limits the pool of possible factors that may impact the dependent variables.

Limitations

In the study conducted, only 31 individuals gave voluntary consent to participate. With a larger participant pool, more distinct trends in quantitative and qualitative data would exist, resulting in statistically stronger correlations and thus, a more confident conclusion. For example, participants gathered from School C responded with an average response value of 1.929, which was 0.896 less than the average response value of the entire dataset despite using the same method of participation (n = 4).

By using a digital survey as an apparatus for the study, no in-person factors were able to be effectively studied. These included body language, eye contact, tone, and confidence while presenting. While these factors were deemed to be important and present to improve physician-patient communication in past studies, it was not feasible to conduct an in-person study that would address them [1, 14]. As such, future studies should ensure that these factors are implemented by providing a demonstration or example of a medical interview rather than a dialogue.

The dialogue used to conduct the survey was streamlined and simplistic, which was beneficial to ensure that participants would be willing to complete the survey but may negatively affect how realistic the structure of the conversation would be in comparison to real life. A longer dialogue would also have allowed for more evidence to connect the individual skills with the text, reducing the frequency of any guesses made by participants.

Suggestions and Next Steps

The correlations between communicative factors, patient satisfaction, and treatment adherence can be implemented in the present healthcare system. Physicians who are formally trained in communication skills have an increased chance of efficient and effective medical interviews, which takes patient satisfaction and adherence into consideration [3]((K. B. H. Zolnierek, M. R. DiMatteo. Physician communication and patient adherence to treatment: a meta-analysis. Medical care. 47(8), 826 (2009).)), [21].

Further research needs to be conducted to explain how these communication factors can be implemented into training for not just pediatricians, but all medical experts. As the way in which the physician educated the patient emerged as the most prominent factor, specific methods of doing so should also be researched in the future in order to optimize any medical training programs or procedures used in the United States. Future studies should specifically emphasize optimizing a medical expert's ability to educate the patient effectively and appropriately. However, while non-content-based communication skills such as the way the physician questions and responds to the patient are highlighted in many communication classes found in American universities, it is also important that they are emphasized enough to prepare students pursuing a career in healthcare to improve their communication with their patient.

For example, a majority of participants in this study valued a pediatrician who is knowledgeable and walks the patient through their process of diagnosing the issue – which improves patient education as well as both their satisfaction and adherence to the treatment recommended. This is because the patient is likely more confident in the information provided and can better form their own opinion in support of the treatment and diagnosis process. Regarding the patient education communicative skill,

training programs could ensure that the medical expert can deliver appropriate responses to the patient that help them understand their medical situation. Many other participants also stated that they valued simple language and friendliness in a pediatrician. This could increase patient satisfaction because the patient would be more likely aware of their medical situation and more involved with the treatment process. In this case, training programs could ensure that the medical expert understands how to address different demographics of patients in a manner that they would most prefer. Ultimately, the way in which the medical expert delivers information and how they interact with the patient in order to do so must be a central focus of potential training programs or classes.

Conclusion

Using effective communication allows individuals to share information, ideas, and opinions in a manner that allows both parties to improve their knowledge as well as their ability to learn and solve problems. These principles apply to the world of medicine and healthcare as communication is an integral part of medical interviews that allows patients to understand their condition and future treatment plans. Two of the most important effects of a physician's communication with their patient are on their satisfaction and likelihood to continue with their treatment plan. The added nuance of the patient being a child who is new to medical conditions and terminology also emphasizes the importance and effect of communication in healthcare.

By researching how core communicative factors and goals such as (1) educating a patient, (2) building a trusting relationship, (3) creating a welcoming environment, and (4) responding to a patient's questions and concerns affect patient satisfaction and adherence to treatment, training programs can be created or improved in order to help medical experts optimize their communication.

While many studies have been conducted to identify key communicative factors, this study explains the correlation between such factors and patient satisfaction and adherence levels. Future studies will be able to apply these correlations to methods of medical training that could improve such communicative factors and recommendations for how these training programs should operate and educate medical experts. Through further research regarding physician-patient communication and its application in pediatric institutions, children and those under the age of 18 may ultimately receive positive health benefits as a result of improved communication and medical communication training programs.

Acknowledgements

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Appendix A

Consent Form Sent Out With Survey

Research Survey Invitation

Researcher:

Student at

We're inviting you to take a survey for research. This survey is completely voluntary. There are no negative consequences if you don't want to take it and also no significant physical, emotional, or financial risks you may encounter. With any survey, however, you may be exposed to slight discomfort. If you start the survey, you can always change your mind and stop at any time.

Suggested Time: 5 to 7 minutes

Purpose

We are trying to assess parents' opinions on communication in medical practice and how certain communication skills can be improved.

Procedure

This survey will consist of questions in which you can write brief responses. This will take about 10 minutes.

Confidentiality Risks

- We'll store all electronic data on a password-protected, encrypted computer.
- We'll keep your identifying information separate from your research data, but we will be able to link it to you.

Who Can See My Data?

- We (the researchers) will have access to coded data (names removed and labeled with a study ID). This is so we can analyze the data and conduct the study.
- The Institutional Review Board (IRB) at
- We may share our findings in publications or presentations. If we do, the results will be aggregated so you will not have any traceable data.
- Since the study is part of the AP Research course, data will be shared with The College Board.

Possible Benefits

By participating in this study, your responses could affect how experts and researchers in the field of healthcare and communication view the conversation between pediatricians and patients.

Future Research

De-identified data (all identifying information removed) may be shared with other researchers. Data will be kept and displayed in a research paper until August 1st, 2024.

Contact Information

- Contact at (Researcher)
- Contact at (AP Research Advisor)

Agreement to Participate

By participating in the online survey, you consent to any information shared above and agree to:

- Being at least 18 years old
- Being a parent of a child in

Appendix B

Survey Conducted on Google Form

Pediatrician-Patient Communication Survey

Please read the following short dialogue between a pediatrician and their patient (child). Afterwards, please answer the questions about communication in healthcare based on the dialogue. As a parent, you may pretend that you are watching the conversation take place and the patient is YOUR child. In addition, please consider how you may perceive the child's experience in your responses.

DIALOGUE:

Pediatrician: Good afternoon.

Patient: Hi.

Pediatrician: So, I'm Dr. Smith and I heard your tummy's been acting up. Can you tell me more about it?

Patient: Yeah, my tummy hurts sometimes.

Pediatrician: Got it. We'll figure it out together. By the way, have you been getting in your fruits and veggies?

Patient: Yeah, but not all the time.

Pediatrician: Well, we should work on that. Now, I'm going to check your tummy. It might feel a bit cold by the way.

Patient: Okay, Dr. Smith.

Pediatrician: (While examining) You're doing fine. Now, let's talk about why your tummy might be feeling this way. Does it hurt when you have to go to the bathroom?

Patient: Um, maybe a little bit -- but I haven't had to go to the bathroom in a few days.

Pediatrician: Ah, that figures. Sometimes, our bodies need a bit more fiber, like a superhero for our tummies.

Patient: What's fiber?

Pediatrician: Yeah, so it's in foods like apples, carrots, and whole grains. And water is like a trusty sidekick, helping everything move smoothly.

Patient: Water is a sidekick?

Pediatrician: Yeah, yeah. Now, if your tummy still feels off, there's other things we can do like trying a different diet plan with more fiber-rich foods. We can also look into some other medicines.

Patient: Medicine? Is it yucky?

1. You have read the following consent form and agree to participate in the study based on the information provided: *

Researcher: [REDACTED], AP Research Student at [REDACTED]

We're inviting you to take a survey for research. This survey is completely voluntary. There are no negative consequences if you don't want to take it and also no significant physical, emotional, or financial risks you may encounter. With any survey, however, you may be exposed to slight discomfort. If you start the survey, you can always change your mind and stop at any time.

Suggested Time: 5 to 7 minutes

Purpose:
We are trying to assess parents' opinions on communication in medical practice and how certain communication skills can be improved.

Procedure:
This survey will consist of questions in which you can write brief responses to. This will take about 10 minutes

Confidentiality Risks:

We'll store all electronic data on a password-protected, encrypted computer.

We'll keep your identifying information separate from your research data, but we will be able to link it to you.

Who Can See My Data?

We (the researchers) will have access to coded data (names removed and labeled with a study ID). This is so we can analyze the data and conduct the study.

The Institutional Review Board (IRB) at [REDACTED]

We may share our findings in publications or presentations. If we do, the results will be aggregated so you will not have any traceable data.

Since the study is part of the AP Research course, data will be shared with The College Board.

Possible Benefits:
By participating in this study, your responses could affect how experts and researchers in the field of healthcare and communication view the conversation between pediatricians and patients.

Future Research:

De-identified data (all identifying information removed) may be shared with other researchers. Data will be kept and displayed in a research paper until August 1st, 2024.

Contact Information:

Contact [REDACTED] at [REDACTED] (Researcher)

Contact [REDACTED] at [REDACTED] (AP Research Advisor)

Agreement to Participate:

By participating in the online survey, you consent to any information shared above and agree to:

Being at least 18 years old

Being a parent of a child in [REDACTED]

Mark only one oval.

- Yes
- No

2. What school does your child(ren) go to? *

Mark only one oval.

- [REDACTED] -- School A
- [REDACTED] -- School B
- [REDACTED] -- School C

3. Have you ever visited a pediatrician with your child? *

Mark only one oval.

- Yes, often
- Yes, infrequently
- No

4. How friendly and welcoming did you feel that the pediatrician's greeting was to the patient? *
Scale: "not friendly at all" to "very friendly"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

5. How well did the pediatrician attempt to connect with the patient? *
Scale: "minimal attempt" to "maximal attempt"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

6. To what extent do you believe the patient trusts their pediatrician's opinions and recommendations? *
Scale: "very low" to "very high"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

7. Was the medical information presented by the pediatrician easy to understand from the lens of the patient? *
Scale: "difficult to understand" to "easy to understand"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

8. Does the pediatrician respond to the patient's questions and concerns effectively? *
Scale: "not at all" to "very well"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

9. How well would you say the patient understands their condition? *
Scale: "not at all" to "very well"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

10. How does the pediatrician explain to the patient about possible treatment options they can follow through with? *
Scale: "not at all" to "very well"

Mark only one oval.

1	2	3	4	5
◯	◯	◯	◯	◯

11. As a parent, how likely would you be to trust the pediatrician and allow your child to continue with the treatment described? * (please answer in a **2-3 sentence** response explaining your answer)

12. Were you satisfied with the pediatrician interaction during the visit? (please answer in a **2-3 sentence** response explaining your answer) *

13. What communicative factor do you value the most in a medical interview with your child and their pediatrician? (please answer in a **2-3 sentence** response explaining your answer) *

14. If possible, how could the pediatrician improve their communication with the patient? (please answer in a **2-3 sentence** response explaining your answer) *

Appendix C

Question-Based Graphical Analysis of Raw Quantitative Data Table C1: Frequency of Likert-scale values in quantitative data

Question	Friendliness (Q1)	Connectability (Q2)	Trust (Q3)	Language (Q4)	Responsiveness (Q5)	Understanding (Q6)	Explanation (Q7)
1	0.00%	12.90%	6.45%	6.45%	16.13%	32.26%	29.03%
2	12.90%	19.35%	29.03%	22.58%	35.48%	38.71%	29.03%
3	41.94%	32.26%	32.26%	22.58%	22.58%	22.58%	25.81%
4	29.03%	22.58%	19.35%	38.71%	19.35%	3.23%	16.13%
5	16.13%	12.90%	12.90%	9.68%	6.45%	3.23%	0.00%
MEAN	3.484	3.032	3.032	3.226	2.645	2.065	2.29
MEDIAN	3	3	3	3	2	2	2
STANDARD DEVIATION	0.926	1.224	1.14	1.117	1.17	0.998	1.071

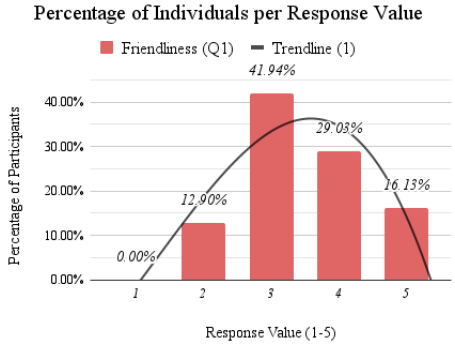

Figure C1: Question 1 quantitative data distribution

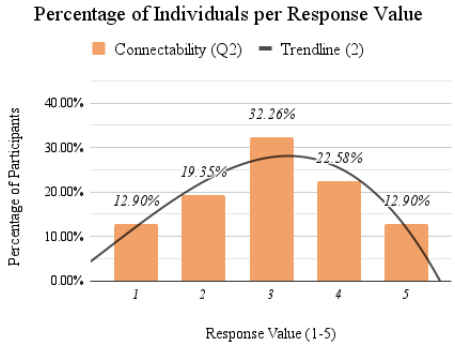

Figure C2: Question 2 quantitative data distribution

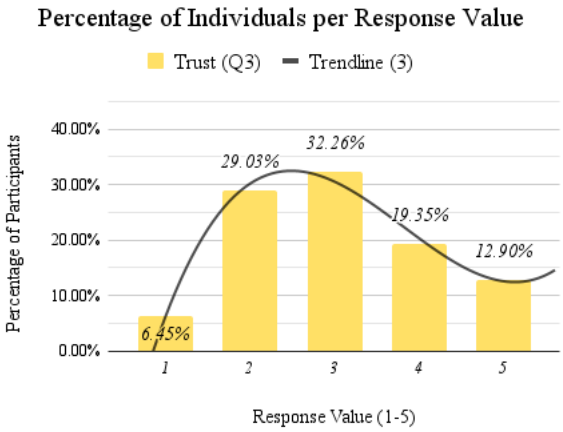

Figure C3: Question 3 quantitative data distribution

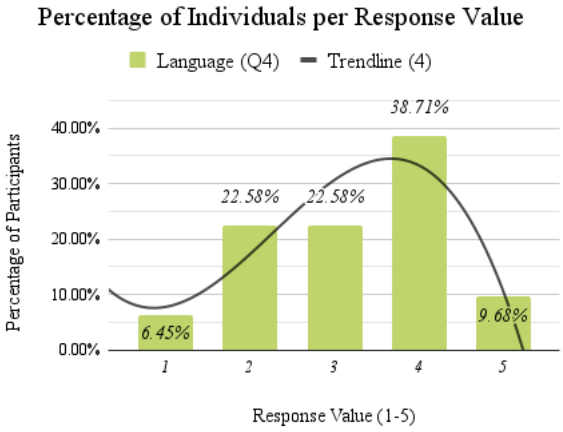

Figure C4: Question 4 quantitative data distribution

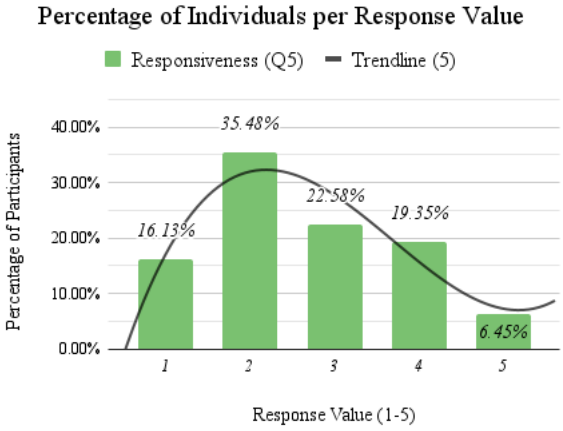

Figure C5: Question 5 quantitative data distribution

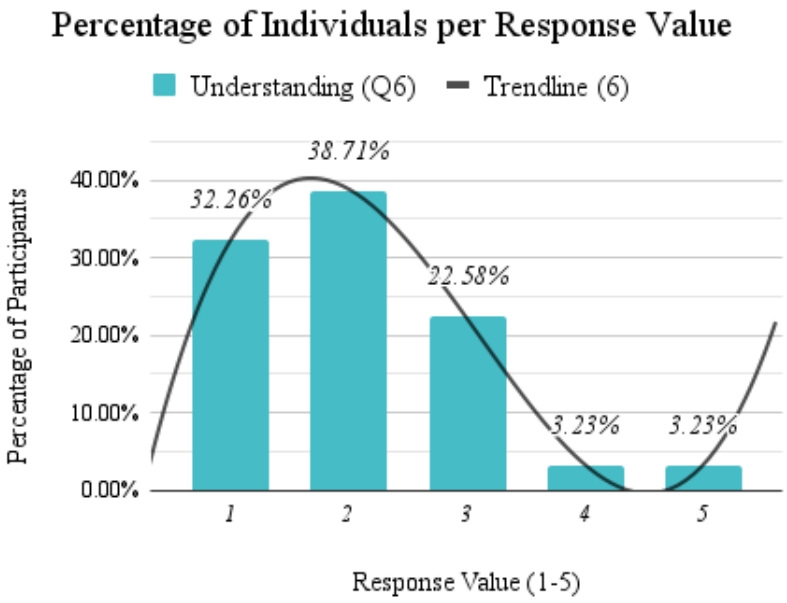

Figure C6: Question 6 quantitative data distribution

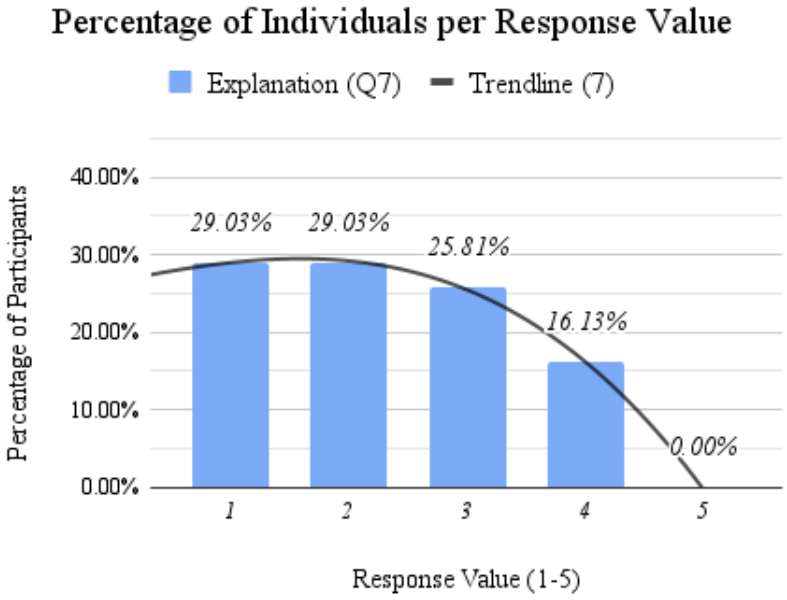

Figure C7: Question 7 quantitative data distribution

Appendix D

Participant-Based Numerical Representation of Raw Quantitative Data

PARTICIPANT #	AVERAGE RESPONSE VALUE	STANDARD DEVIATION
17	4.286	0.488
27	4.286	0.756
1	4.143	0.69
16	3.857	0.9
9	3.857	1.069
25	3.857	1.069
24	3.714	0.951
19	3.714	1.113
10	3.571	0.535
2	3.429	0.976
4	3.429	1.134
7	2.857	0.378
18	2.857	0.378
21	2.857	0.69
14	2.857	1.069
6	2.714	0.951
22	2.571	0.535
12	2.571	1.134
13	2.571	1.397
8	2.429	0.535
23	2.429	0.535
15	2.286	0.756
31	2.143	0.69
30	2.143	0.9
26	2.143	1.069
29	2	1.155
3	1.714	0.756
5	1.714	0.951
11	1.714	1.254
20	1.429	0.535
28	1.429	0.535

Appendix E

Core Themes and Coding Framework for Thematic Content Analysis

Theme A: Perception of Trust in the Pediatrician	**Theme B:** Satisfaction with Visit	**Theme C:** Likelihood to Continue with Treatment Plan	**Theme D:** The Pediatrician's Method of Educating the Patient
A1: Absolutely does not trust the pediatrician to serve the patient	B1: Absolutely not satisfied with the pediatrician to patient interaction during the visit	C1: Extremely unlikely to continue with the treatment plan that the pediatrician described	D1: Did not adequately explain treatment options to the patient
A2: Vaguely does not trust the pediatrician to serve the patient	B2: Vaguely unsatisfied with the pediatrician to patient interaction during the visit	C2: Likely to not continue with the treatment plan that the pediatrician described	D2: Did not adequately explain definitions and terminology to the patient
A3: Is unsure of the trust they put in the pediatrician	B3: Is unsure of how satisfied they are with the pediatrician to patient interaction during the visit	C3: Is unsure about how likely they are to continue with the treatment plan	D3: Inappropriate approach to answering the patient's questions and concerns
A4: Vaguely trusts the pediatrician to serve the patient	B4: Is vaguely satisfied with the pediatrician to patient interaction during the visit	C4: Likely to continue with the treatment plan that the pediatrician described	D4: Was not specific and thorough enough
A5: Trusts the pediatrician to serve the patient very well	B5: Is absolutely satisfied with the pediatrician to patient interaction during the visit	C5: Extremely likely to continue with the treatment plan that the pediatrician described	D5: Was too complicated and confusing for the patient
			D6: Too much emphasis on the alternative treatments if the primary treatment option is not successful
			D7: Is unsure of how effective the pediatrician's method of educating the patient was
			D8: Explains treatment options to the patient well
			D9: Explains definitions and terminology to the patient well
			D10: Well-executed approach to answering the patient's questions and concerns
			D11: Was specific and detailed
			D12: Spoke in simple and easy to understand terms

Theme E: Exchange of Respect and Politeness in Conversation	**Theme F:** Structure of Conversation	**Theme G:** Parental Involvement	**Theme H:** Most Valued Communicative Factor
E1: Interrupts patient frequently	F1: Inappropriate approach to investigating the patient's condition	G1: Conversation needed more parent involvement	H1: Listening to and responding to the patient
E2: Is rude to the patient	F2: Conversation was too one-sided and was too focused on the pediatrician instead of the patient	G2: The parent involvement provided in the conversation is sufficient	H2: The ability of the pediatrician to accurately educate the patient in a way that makes sense to them
E3: Conversation was very rushed	F3: Moderately effective approach to the structure of the conversation	G3: Parent involvement in such conversations are not essential	H3: The approach to investigating the patient's condition through asking and answering questions
E4: Makes patient uncomfortable, upset, or feel dismissed with remarks and comments	F4: Well-executed approach to investigating the patient's condition		H4: A welcoming and comfortable relationship with the patient
E5: Does not communicate in an age-appropriate manner			H5: Non-content based communication skills like body language, listening, and eye-contact
E6: Does not try to connect and listen to with the patient			H6: Parental involvement and input
E7: Can be confusing and misleading to the patient			H7: Direct conversation with the patient
E8: Unsuccessfully tries to comfort the patient when they are concerned			H8: Effectively explains the next steps to take
E9: Neither welcoming nor rude to the patient			
E10: Is friendly to the patient and engages them			
E11: Is extremely welcoming and comforting to the patient			
E12: Deeply connects with the patient			

Appendix F

Numerical and Graphical Representation of Thematic Content Analysis

Raw Data

Table F1: Raw thematic content analysis coding data

Participant	*Theme A*	*Theme B*	*Theme C*	*Theme D*	*Theme E*	*Theme F*	*Theme G*	*Theme H*
1	A5	B4		D1, D3	E4			H1, H6
2	A2	B2		D4	E4			H3
3	A2	B1		D1, D4	E5, E8		G1	H2
4	A1	B1		D4	E3, E5	F1		H3, H8
5	A1	B1			E4, E6	F1		
6		B2	C2	D1, D4	E10	F1	G1	H2
7	A3	B1		D3	E5			H1
8		B4	C4	D6	E10		G1	H1
9	A4			D6	E10			H7
10	A4	B4		D3, D5, D6	E5		G1	H4
11	A1	B1		D5	E6			H1, H2
12	A1	B2		D5, D6	E4, E8		G1	H2
13	A1	B1				F1		H5
14					E4	F1	G1	H3, H6, H7
15	A5	B2		D5	E3, E4, E6. E8			H4, H5
16	A5	B3		D3				H4
17		B5		D1	E4			H4
18	A3				E4, E6, E8		G1	H4, H7
19			C5		E10	F1, F2		H1, H6
20			C5	D3, D4		F1		H3
21	A4	B3		D5	E4			H3, H8
22	A5		C5			F1		H3, H6
23	A1	B3			E2, E4			H7
24	A4	B5	C3	D4				H1
25				D6	E10	F1		H2
26	A4	B2			E3, E5, E6	F1		H2, H4
27	A5	B5	C5	D4, D10	E10			H7
28	A1	B1		D3, D4	E3, E6	F1		H4
29			C5	D1, D5	E6			H2
30		B1	C5	D5				H7
31	A1	B1		D4, D6	E3, E5, E6			H7

Table F2: Frequency of subthemes found by major theme

Totals

	Theme A	Theme B	Theme C	Theme D	Theme E	Theme F	Theme G	Theme H
X1	8	9	0	6	6	11	7	6
X2	2	5	1	0	1	1	0	7
X3	2	3	1	6	5	0	0	6
X4	5	3	1	9	10	0		7
X5	5	3	6	7	6			2
X6				6	8			4
X7				0	0			7
X8				0	4			2
X9				0	0			
X10				1	6			
X11				0	0			
X12				0	0			

Pie Charts:

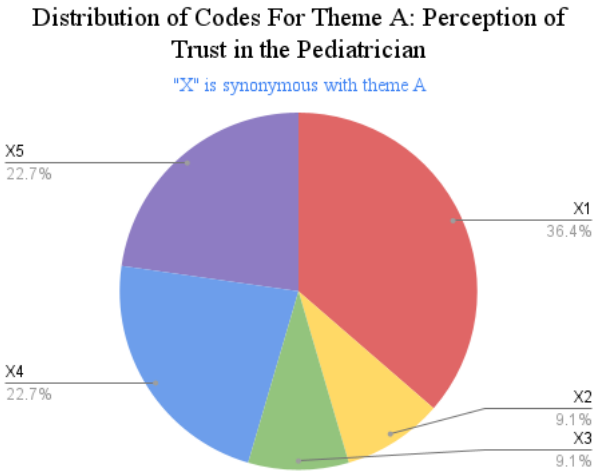

Figure F1: Theme A qualitative data distribution

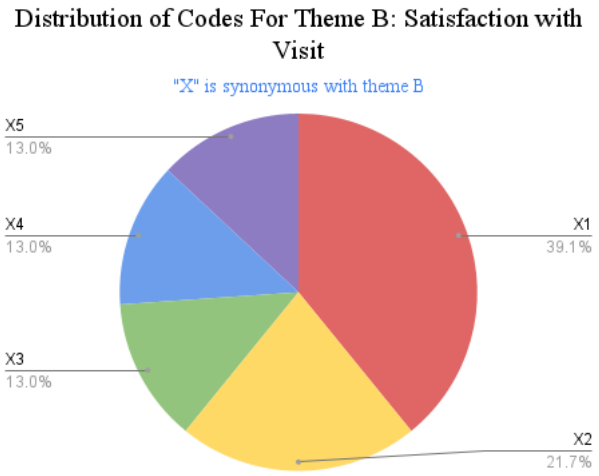

Figure F2: Theme B qualitative data distribution

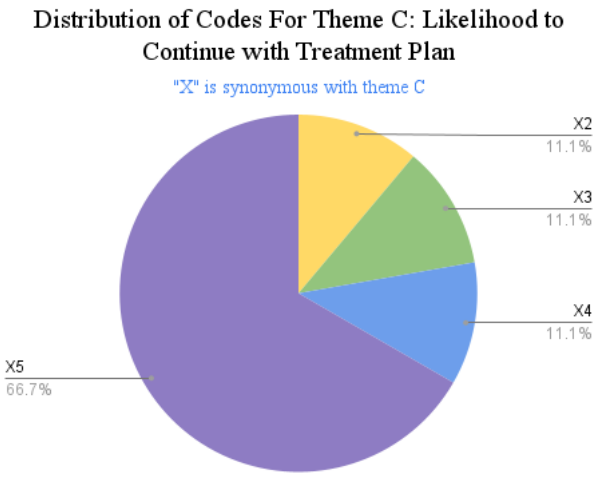

Figure F3: Theme C qualitative data distribution

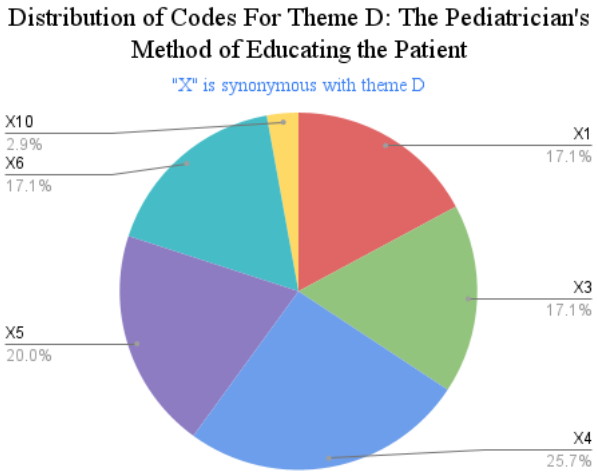

Figure F4: Theme D qualitative data distribution

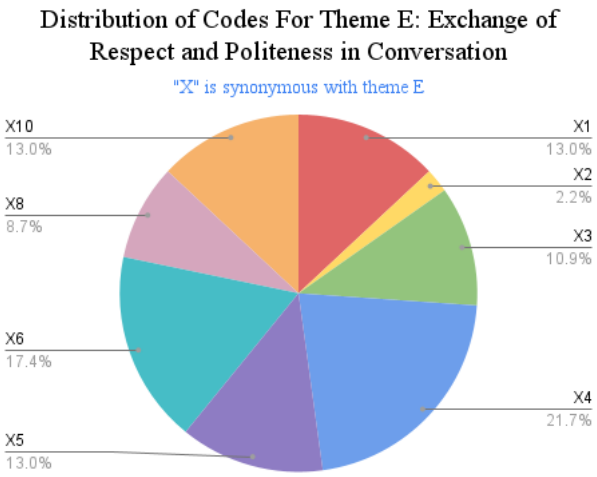

Figure F5: Theme E qualitative data distribution

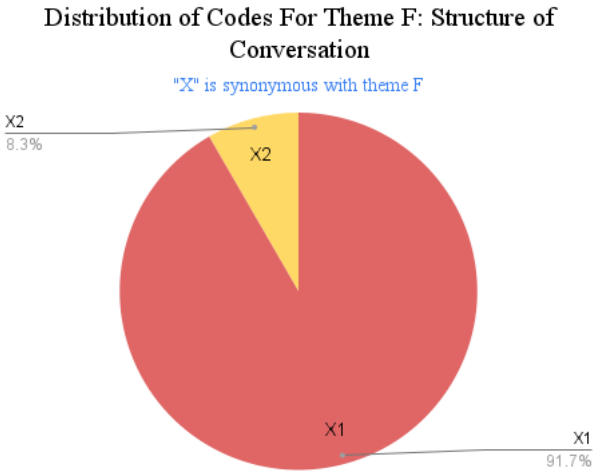

Figure F6: Theme F qualitative data distribution

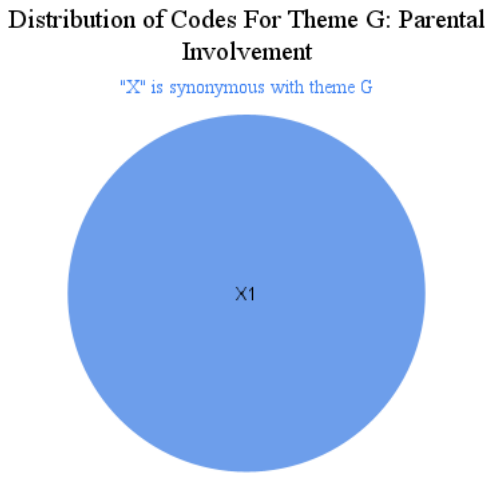

Figure F7: Theme G qualitative data distribution

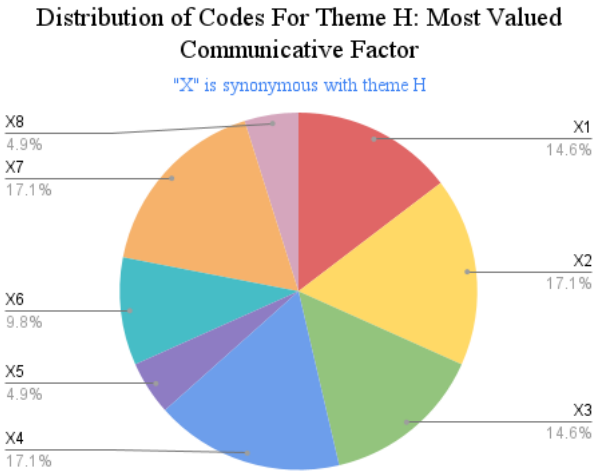

Figure F8: Theme H qualitative data distribution

Appendix G

Participant	Quantitative Findings	Qualitative Findings	Analysis
1	Participant 1 displayed mostly positive responses, especially considering the ability of the pediatrician to connect with the patient and answer their questions.	Participant 1 trusted the pediatrician and was satisfied with them. However, they displayed an inappropriate method of responding to the patient and explaining the treatment. They value listening to and responding to the patient and including the parent in the conversation the most.	Despite the issues with the way the pediatrician explained the treatment, Participant 1 still rated values of trust and satisfaction highly because they value the way the pediatrician responded with the patient and perceived this to be effective.
2	Participant 2 displayed positive responses besides the values given to the patient's ability to understand the condition and how well the pediatrician explains treatment plans, showing how they didn't think that the pediatrician's ability to educate the patient was done well.	Participant 2 was not trusting or satisfied with the patient because he felt that the pediatrician's method of educating wasn't specific enough and he made the patient feel uncomfortable or dismissed. They believe that the pediatrician's approach to questioning and probing the issue is the most important factor in a conversation.	Overall, Participant 2 wasn't satisfied with how the medical interview went but was satisfied with the individual communicative factors used. The main exception to this was the pediatrician's ability to educate the patient, which was the main reason why they weren't satisfied with it.
3	Participant 3 expressed mostly negative values, especially regarding how well the pediatrician educated the patient in terms they would understand.	Participant 3 is not trusting or satisfied with the pediatrician during the interview because they did not adequately explain the treatment thoroughly enough and did not communicate with the patient in an effective and age-appropriate tone. Patient education emerged as the most important factor but there should have been more parent involvement during the interview.	Participant 3 rated patient satisfaction extremely low as a result of the poor attempt to educate the patient. While other factors were also rated low, the way in which the pediatrician tried to communicate the issue with the patient was the most important theme that led to their overall perception.
4	Participant 4 expressed mostly positive values, except when discussing how effective the pediatrician was to respond to the patient and, as a result, how well the patient understands their condition.	Participant 4 was not trusting of the pediatrician and also wasn't satisfied with the visit because they felt like the information provided felt rushed, vague, and not appropriate for the age of the child. The pediatrician also should've asked more questions to understand the patient's condition because Participant 4's most valued factors included an effective method of investigating the condition and explaining the next steps.	Participant 4 was unsatisfied and untrusting with the pediatrician's skills and this was mainly due to the ineffectiveness of how they explained information and how they probed the patient's condition through questions.

5	Participant 5 expressed mainly negative values, especially when considering any communication factor relating to educating the patient and discussing possible treatment options.	Participant 5 did not trust the pediatrician and was unsatisfied with the visit because of the way the pediatrician treated the patient by making them uncomfortable and disconnected. They also felt that the pediatrician had an inappropriate approach to probing the patient's condition.	Participant 5's lack of trust and satisfaction regarding the visit was due to the pediatrician's inability to ask questions well and educate the patient in a way that was effective to them.
6	Participant 6 had mixed reactions to the communicative factors, with the highest rated factor being the patient's trust in the pediatrician and the lowest rated factor being how well the patient understands their condition.	Participant 6 was vaguely unsatisfied with the conversation and would be likely to not continue with the treatment plan that the pediatrician provided. They explained how the pediatrician did not adequately explain treatment options, which was the participant's most valued factor, and the questions as well as responses to the patient's questions were sub-par. However, they also noted that the pediatrician was friendly to the patient but there should have been more parent involvement.	Despite trust being highly rated, Participant 6 was not satisfied and was not likely to continue the treatment as a result of the pediatrician's poor method of educating the patient and investigating their condition.
7	Participant 7 provided consistently mediocre values for each question, with a small dip when discussing if the medical information was easy to understand.	Participant 7 may place trust in the pediatrician but was not satisfied with them during the visit because they used an inappropriate approach to responding to the patient's questions and didn't communicate in an age appropriate manner. Their most valued factor was the pediatrician's ability to listen and respond to the patient.	Participant 7 was not satisfied with the pediatrician's communicative skills because they did not respond to the patient effectively and adequately.
8	Participant 8 provided consistently mediocre values for each question, with a small dip when discussing the way the pediatrician explained the condition and educated the patient through responses to the patient's questions.	Participant 8 was moderately satisfied with the visit and was likely to continue with the treatment plan provided as a result of how friendly the pediatrician was to the patient. However, the participant felt that the pediatrician discussed further treatment options too much and didn't incorporate the parent enough. The participant's most valued communicative factor was listening to and responding to the patient.	Despite Participant 8's lower scores given regarding patient education, they were still moderately satisfied in the visit and were willing to continue the treatment because of the way the pediatrician listened to and responded to the patient.

9	Participant 9 provided many mediocre values in addition to a few high values regarding how friendly the pediatrician was and how they connected with the patient. In addition, they noted that the patient had a very sufficient understanding of their condition.	Participant 9 trusted the pediatrician because they were friendly to the patient and prioritized a direct conversation between the two parties. However, they placed too much emphasis on the alternative treatments.	Participant 9 trusted the pediatrician because of how friendly they were and how they connected to the patient.
10	Participant 10 provided mostly mediocre to slightly positive response values, especially considering the information the pediatrician stated in response to the patient.	Participant 10 trusted the pediatrician and was satisfied with the visit. However, they believed that the pediatrician had an inappropriate approach to responding to patient questions, was too complicated, and had too much of an emphasis on the alternative treatments. In addition, they didn't communicate in an age-appropriate manner. This participant values non-content based communication skills in a conversation.	All of the communication skills that Participant 10 assessed showed effective communication skills barring a few issues. These issues seemed to not pose that much of a threat to the overall efficacy of the visit.
11	Participant 11 provided mostly negative values in patient connection, trust, and education with the pediatrician. However, there was a spike in how welcoming the pediatrician was and how easy the information presented was to understand.	Participant 11 strongly did not trust the pediatrician and was not satisfied with the visit since what the pediatrician was saying was too complicated and confusing. In addition, they don't connect with the patient well. This is especially important since the participant's most valued communicative factors are the ability to respond and the ability to accurately and effectively educate the patient.	Participant 11 reported low levels of satisfaction because the pediatrician exhibited a poor performance in responding to questions as well as educating the patient in an effective way that allowed for the patient to remember it.
12	Participant 12 provided mixed values for each communicative skill, with friendliness, responsivity, pediatrician education, and patient understanding scoring the lowest and the ease of understanding the medical information being the key outlier.	Participant 12 did not trust the pediatrician and vaguely was unsatisfied with the communication displayed by the pediatrician during the visit. This is because the pediatrician dismissed the patient and didn't try to connect with them as well as the fact that their method of educating the patient was too complicated with too much emphasis on alternative treatments. The participant highlighted how important it was for the pediatrician to educate the patient in a way that makes sense to them and that the parent should be involved as well.	Participant 12's quantitative data showed that the pediatrician did not explain medical information in a way that was appropriate for the patient. Since this participant emphasizes the importance of educating the patient effectively, this weakness is what caused the participant to be unsatisfied with the visit and untrusting of the pediatrician.

13	Participant 13 provided mostly negative values for each skill besides how friendly and welcoming the pediatrician was and how easy to understand the medical information presented was.	Participant 13 strongly did not trust the pediatrician and was not satisfied with the visit since they used an inappropriate approach to investigating the patient's condition. In addition, the participant's most valued factor was non-content based skills.	Participant 13 had a negative perception of the pediatrician and the visit because they didn't educate the patient in a way that was appropriate and also didn't probe the patient's condition with adequate questioning.
14	Participant 14 provided positive values for non-content based skills such as building trust and a connection. However, they provided negative values for skills relating to how well the pediatrician educated the patient.	Participant 14 stated that the pediatrician made the patient uncomfortable and dismissed. In addition, they didn't integrate the parent and probe the patient's condition appropriately. Their most valued communicative factors were the pediatrician's approach to investigating the patient's condition, parental input, and a direct conversation with the patient.	Participant 14 explained that the pediatrician did not educate the patient appropriately and ask appropriate questions to understand the patient's condition.
15	Participant 15 provided negative to mediocre values for each of the communicative factors, with the worst factor theme being how well the patient understands their condition.	Participant 15 trusted the pediatrician very well but was vaguely unsatisfied with the visit. This is because they were too complicated for the patient, the conversation was rushed, the patient was uncomfortable or dismissed, they did not try to connect with the patient, and unsuccessfully tried to comfort the patient. The participant's most valued communicative factor is a welcoming relationship and non-content based communicative skills.	Since Participant 15's most valued factor was to create a welcoming atmosphere, they were not satisfied with the visit because the pediatrician's dialogue was unfriendly and inappropriate.
16	Participant 16 provided mediocre to positive values, stressing how friendly the pediatrician was and how easy the medical information was presented.	Participant 16 trusted the pediatrician very well but was unsure of how satisfied they were during the visit. The pediatrician had an inappropriate approach to responding to the patient. Their most valued communicative factor was maintaining a welcoming relationship with the patient.	Despite receiving a perfect score on how friendly the pediatrician's greeting was, Participant 16 was unsure of how satisfied they were because of the influence of having ineffective and inappropriate responses to the patient.
17	Participant 17 provided overly positive values throughout each of the communicative factors.	Participant 17 was extremely satisfied with the visit despite the fact that the pediatrician did not adequately explain treatment options and made the patient uncomfortable or feel dismissed. Their most valued communicative factor was to have a welcoming relationship with the patient.	Participant 17 was satisfied with the pediatrician because of how friendly and welcoming they were during the medical interview.

18	Participant 18 provided mediocre values throughout each of the communicative factors.	Participant 18 was unsure of the trust they put in the pediatrician because they made the patient uncomfortable, did not try to connect with the patient, and unsuccessfully tried to comfort the patient. The most important communicative values were to have a welcoming relationship with the patient and to directly have a conversation with the patient.	Participant 18 believed that the pediatrician wasn't effective in connecting with the patient and creating a welcoming atmosphere. As a result, they were unsure of how trusting they were of the pediatrician.
19	Participant 19 provided varied responses, with higher responses regarding how friendly the pediatrician was and how well they connected with the patient and lower responses regarding how well the pediatrician was able to educate the patient.	Participant 19 was very likely to have the patient continue with the treatment plan because the pediatrician was friendly to the patient. The pediatrician used an inappropriate approach to investigating the patient's condition and it was too one-sided on the pediatrician's side. This participant's most valued communicative factors were to listen to and respond to the patient as well as parental involvement.	How friendly the patient was directly influenced how likely Participant 19 was to continue with the treatment plan. Skills like investigating the patient's condition did not seem to affect this.
20	Participant 20 provided extremely low values throughout each of the communicative factors.	Participant 20 was very likely to have the patient continue with the treatment plan. However, the pediatrician had an inappropriate approach to asking and answering the patient's questions and was not specific enough when doing so, which was also this participant's most valued communicative factor.	Issues with the way the pediatrician asked and answered questions during the visit did not affect how likely Participant 20 was to continue the treatment plan.
21	Participant 21 provided mediocre values throughout each of the communicative factors, with a dip in how the pediatrician responded to the patient's questions and concerns.	Participant 21 vaguely trusted the pediatrician and was unsure if they were satisfied with the visit. This is because the pediatrician's method of educating the patient was too complicated and they made the patient uncomfortable or dismissed. This participant's most valued communicative factor was the approach to probing the patient's condition and how effective the pediatrician explained the next steps to take.	Participant 21's most valued factor was how the pediatrician asked questions to understand the patient's condition. The pediatrician's ineffectiveness in doing so is why the participant wasn't fully satisfied with the visit.

22	Participant 22 provided mediocre values regarding non-content based communicative factors and lower values regarding content based communicative factors like how the pediatrician was able to educate the patient.	Participant 22 fully trusted the pediatrician and was extremely likely to continue the treatment plan described. However, the pediatrician used an inappropriate approach to investigating the patient's condition, which was the participant's most valued communicative factor in addition to parental involvement with the visit.	Participant 22 was extremely likely to continue with the treatment plan not as a result to the patient's approach to probing the patient's condition because these were perceived to be less effective during the visit.
23	Participant 23 provided mediocre values regarding non-content based communicative factors and lower values regarding content based communicative factors like how the pediatrician was able to educate the patient.	Participant 23 did not trust the pediatrician at all and was unsure of how satisfied they were with the visit. They sensed that the pediatrician was rude to the patient and made them uncomfortable and dismissed. Their most valued factor was having a direct conversation with the patient.	Despite using rude and dismissive language, the pediatrician still provided a direct conversation with the patient, which Participant 23 used to increase the satisfaction perceived from the visit.
24	Participant 24 provided positive responses regarding non-content based communicative skills but had significantly lower responses regarding content-based communicative skills like how well the pediatrician was able to explain medical information and treatment options to the patient.	Participant 24 trusted the pediatrician and was very satisfied with the visit and was unsure if they would continue with the treatment. This is because they may have made the patient uncomfortable or dismissed. Their most valued factor was listening to and responding to the patient.	Participant 24 showed that the fact that the pediatrician may have made the patient uncomfortable to be dismissed didn't lower their satisfaction of rating but may have decreased their adherence rating because the pediatrician did not listen to and respond to the patient appropriately.
25	Participant 25 gave high valued responses overall besides how well the patient understood their condition and how well the pediatrician explained the different treatment plans.	Participant 25 noted that the pediatrician put too much emphasis on alternative treatments but was friendly and engaged the patient. In addition, the pediatrician had an inappropriate approach of probing the patient's condition, which was also the participant's most valued factor.	Participant 25 had a more negative perspective of the pediatrician's communicative skill primarily based on how ineffective they were in investigating the patient's condition.

26	Participant 26 gave mixed values throughout the communicative factors, with the highest rated factor being how friendly the pediatrician was and the lower rated factors being related to how the pediatrician explained and educated the patient about the medical information and treatment options.	Participant 26 trusted the pediatrician but was not satisfied with them because the conversation was rushed, the pediatrician did not communicate in an age-appropriate manner, and there wasn't a large effort to connect with the patient. The pediatrician also did not probe the patient's condition with questions. The most valued communicative factors that this participant explained were the ability of the pediatrician to appropriately educate the patient and the ability of the pediatrician to create a welcoming and comfortable relationship with the patient.	Participant 26 trusted the pediatrician despite issues with non-content based factors like how they connected with the patient as well as inefficiencies with content-based factors like the pediatrician's ability to investigate the patient's condition with questions.
27	Participant 27 gave extremely high values for every communicative factor besides how well the patient understands their condition, which was rated as a 3.	Participant 27 was extremely trusting and satisfied with the pediatrician's communication. In addition, they were also extremely likely to continue with the treatment plan provided. Despite the fact that the pediatrician's method of educating the patient wasn't specific enough, it contained a well-executed way to answer the patient's questions while being friendly to the patient. The most important factor for this participant was to have a direct conversation with the patient.	Participant 27 reported high levels of satisfaction and adherence because the pediatrician was friendly to the patient and educated them effectively.
28	Participant 28 provided extremely low values for every communicative factor displayed by the pediatrician.	Participant 28 was not satisfied with the visit and did not trust the pediatrician because they used an inappropriate approach to answering the patient's questions and concerns and they also were not specific and thorough enough, making the conversation very rushed. In addition, the pediatrician did not try to connect and listen to the patient, which was the participant's most valued communicative factor.	Participant 28 reported extremely low levels of satisfaction and trust due to low levels of trust and a lack of a relationship built between the pediatrician and the patient. In addition, the ineffective method of probing the patient's condition also led to a low level of satisfaction and trust.

29	Participant 29 provided mostly low values, especially for education-based communicative skills, besides how easy the medical information presented was to understand from the patient's perspective.	Participant 29 was extremely likely to continue with the treatment plan despite the fact that he did not adequately explain treatment options and was too confusing for the patient. The participant felt that the conversation was rushed and the pediatrician did not try to connect with the patient, which was the participant's most valued communicative factor. In addition, the approach to investigating the patient's condition was poor.	Since Participant 29 did not note any positive qualitative notes and only showed that the pediatrician effectively presented the medical information in an easy to understand lens, it can be assumed that this participant was likely to continue with the treatment plan because of how the pediatrician easily explained the information.
30	Participant 30 provided mostly mediocre values for non-content based communicative skills and lower values for content-based communicative skills like how well the pediatrician educated the patient.	Participant 30 was not satisfied with how the visit went but was still likely to continue with the treatment plan. The method of educating the patient was too complicated for the patient as the participant's most valued communicative factor was to have a direct conversation with the patient.	Participant 30's satisfaction with the visit was negatively impacted by how the pediatrician ineffectively educated the patient. However, the fact that the pediatrician was able to have a direct conversation with the patient may have increased this participant's likelihood of adhering to the treatment plan.
31	Participant 31 provided mostly mediocre values for non-content based communicative skills and lower values for content-based communicative skills like how well the pediatrician educated the patient.	Participant 31 was not at all trusting of the pediatrician and was also not satisfied with the visit. This was because the pediatrician wasn't specific enough and yet there was too much emphasis on alternative treatments. In addition, the conversation felt rushed, the pediatrician did not communicate in an age-appropriate manner, and they did not try to connect and listen to the patient. The participant's most valued communicative factor was to have a direct conversation with the patient.	Participant 31's low satisfaction is due to education-based factors like how well the pediatrician explained treatment options to the patient and in what manner they did so.