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Developing Personas to Improve Emotional Care for Young Children Aged 3-6 and Their Parents: A Mixed Methods Approach

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Abstract

Recent advancements in research techniques have led to the integration of more comprehensive information from mixed methods of persona development. This study used a user-centered design approach to investigate the emotional support provided to children aged 3–6 during medical visits, which involved quantitative and qualitative methods, including questionnaires and in-depth interviews with the primary caregivers of children in this age group. The questionnaire was structured around four main aspects: (1) basic information; (2) reasons for the children's medical visits and parents' anxiety levels; (3) methods and cognitions in caring for the children's illness; and (4) approaches and cognitions regarding caring for the children's psychological and emotional states. One hundred fourteen valid questionnaire responses were collected, and in-depth interviews were conducted with eight pairs of 3-6-year-old children and their primary caregivers, to understand (1) common illnesses of the child, (2) the methods of handling these illnesses, (3) the medical consultation process and common issues encountered, and (4) the child's personal preferences. The results show that over 75% of the participants are raising more than two children. The common reasons for children's medical visits include preventive healthcare, respiratory diseases, vaccinations, and fever. When children fall ill, parents often experience anxiety, tension, and emotional agitation. When seeking medical assistance, the top two priorities for most parents are alleviating their children's symptoms and understanding the causes of illness. Although more than 60% of parents believe recording their children's conditions and symptoms is essential, less than 30% habitually record their children's health conditions. For medical care, the majority of parents prefer pediatric clinics. Three personas representing typical parent-child interactions during children's illnesses were developed: (1) vaccinations, (2) fever with febrile convulsions, and (3) injuries from falls. The critical aspects of emotional care for children include providing reassurance and guidance, acknowledging their emotions, using comforting tools to distract them when necessary, and delivering regular health education.

Keywords: persona; emotional care; preschool children; medical visit; mixed-methods

Introduction

Given Taiwan's declining birth rate, there is a growing realization of the importance of child-related issues and research. When children become ill, their physical discomfort can lead to emotional instability. Unlike adults, children are more likely feel fear and anxiety when encountering unfamiliar medical environments, staff, unknown treatment, and consultation processes. This fear and anxiety can leave children with negative emotions and memories of the medical visit, leading to resistance against treatments such as taking medication. The anxiety and pain caused by medical treatments have long been a focus of pediatric healthcare research [1-4]. Due to children's limited cognitive abilities, unfamiliar situations can cause significant stress, especially when they are unwell. Also, parents' attitudes can significantly affect children's emotions. It is believed that establishing a positive doctor-patient relationship and promoting non-traumatic care can help alleviate children's anxiety.

This study focuses on how design can improve the emotions of children aged 3-6 who need medical treatment and their parents. While developing design strategies, the persona can be used to understand how users feel and perceive information under certain circumstances, which helps designers build design solutions. In general, qualitative research is viewed as more effective for persona development. Nevertheless, as research techniques have progressed, the creation of personas has started integrating more comprehensive information from quantitative and qualitative data. Using mixed methods, we aim to create typical personas for children and their parents to understand their needs better and identify crucial aspects of emotional care for children when they are ill. This approach allows designers and developers to create solutions that meet specific needs, making the medical experience more manageable for children and their parents.

Literature Review
Emotional Care for Children

When children become ill, they may show various symptoms, such as fever, pain, redness, swelling, and vomiting. They might believe that the illness and discomfort are punishment for their actions, leading to guilt and self-blame [5]. The factors mentioned above contribute to emotional instability in children. Due to children's immature cognitive development and their limited ability to cope with stress, unfamiliar environments, medical personnel, and treatment processes can be particularly distressing. This can increase psychological stress, leading to fear, anxiety, negative emotions, and memories of medical encounters. This complexity makes it challenging to effectively address their needs in the design and research process. Therefore, when developing products related to the emotional care of children, it is essential to approach them with understanding and respect and to focus on the user in order to empathize with the challenges children face when they are in discomfort. Only by understanding these challenges can effective solutions be proposed. Parents and children play crucial roles in enhancing children's care and medical quality. With a clear understanding of their needs, subsequent design work can proceed smoothly.

"Non-traumatic care" refers to medical and nursing practices designed to eliminate or reduce psychological and physical pain for children and their family members during therapeutic care, with the ultimate goal of causing no harm. This care viewpoint suggests that healthcare providers should offer appropriate explanations for the patient's appearance and behavior and provide parents with accurate disease-related information to avoid anxiety. It encourages the development of positive attitudes to prevent unnecessary speculation and reduce feelings of helplessness [6-7]. The principles of non-traumatic care include (1) preventing or reducing separation between children and their families, (2) enhancing a sense of control, and (3) preventing or reducing physical injury and pain [8]. Parental involvement in care also facilitates the implementation of non-traumatic care, such as comforting the sick child through physical touch or using music and parental recordings to boost confidence in establishing a sense of attachment [9-10].

Persona

A persona is a method that uses typical user behavior patterns to create hypothetical character profiles. This concept was introduced by Cooper [10] to humanize design and merge common user behaviors into relevant character descriptions. The approach of persona helps designers keep their focus on the target users, establish precise design subjects for products or services, and provide optimal

design solutions. Studies have demonstrated that design teams using personas in the user-centered design process achieve significantly better outcomes than teams not utilizing personas as a design aid [11-12]. Recent research has also highlighted several significant benefits of using personas in design developments, including focusing on the target user, facilitating effective communication and consensus within teams, and promoting empathy [11, 13-17].

Personas are typically created from interviews with real users and summarized in a one or two-page profile. In addition to basic information like gender, age, and occupation, personas usually include behavioral patterns, goals, skills, environment, and detailed representative information [18-19]. The construction of personas typically involves collecting various qualitative data, such as interviews and ethnography. Generally, qualitative research is considered better for constructing personas [20]. However, as research methods have evolved, the development of personas has come to include more detailed content from interviews or ethnographic data collection [21]. Personas are beneficial at different stages of the design process, including planning, problem identification, solution design, and business evaluation [13]. This enables the analysis of user needs and the valid reasons behind their behaviors and needs, helping designers understand the target users and their context [22].

Methods

This study began with a thorough review of the literature on emotional care for children and the concepts and methods for constructing personas as the basis for the subsequent research, survey, and interview frameworks. The study utilized a structured online questionnaire for parents with children aged 3–6 and also included in-depth interviews with eight parent-child pairs. Both qualitative and quantitative user data were gathered through these methods. The data gathered from the interviews and surveys was then analyzed to propose a process for creating personas. This aimed to establish typical personas for children aged 3–6 seeking medical treatment, with the goal of providing a comprehensive profile that captured the complexities of their emotional care needs during medical visits.

Questionnaire

The questionnaire is designed for work analysis or post-system completion phases of a study, offering insights into user preferences and facilitating repeated surveys for tracking changes over time. In this research, the questionnaire aimed to understand the attitudes, behaviors, challenges, and needs of Taiwanese parents when their children, aged 3–6, fell ill. The participants were Taiwanese parents currently raising children within this age group. The questionnaire was distributed through recruitment at kindergartens in New Taipei City, Changhua County, and Tainan City in Taiwan, as well as online recruitment on parent-child forums. All participants were screened through an initial questionnaire, confirming their willingness to participate and verifying that they were raising children aged 3–6 before proceeding to the main questionnaire. The questionnaire included questions with Likert scale ratings, ranking methods, and others that allowed for comprehensive data gathering. The questionnaire was structured around four main aspects: (1) basic information; (2) reasons for the children's medical visits and parents' anxiety levels; (3) methods and cognitions in caring for the children's illness; and (4) approaches and cognitions regarding caring for the children's psychological and emotional states.

User Interview

User interviews are a standard method in qualitative research for gathering information, designed to delve into the participants' personal life experiences and emotions. By engaging in in-depth conversations, researchers aim to understand the participants' viewpoints and perceptions regarding the subject matter [23]. The user interviews for this study were conducted to understand the situations, difficulties, needs, and expectations for emotional care encountered by children aged 3–6 and their parents when experiencing illness or seeking medical treatment. Considering that the verbal expression of children who had just turned three might not have been sufficiently clear and that the content shared by parents could have been based on experiences of raising children younger than 3—which did not align with the age group of this study—eight pairs of children and parents were selected, with the children's ages ranging from 3.5 to 6 years old. The recruitment of participants was done through online platforms and kindergartens. Potential participants were required to complete a recruitment questionnaire to ensure they matched the target user profile set for this study. This involved

having experience visiting a pediatric clinic, stating the reasons for the visit, the duration of their stay in the clinic, and describing any incidents during the children's medical appointments. Table 1 shows the background information of the interviewees.

Code	Parent identity	Age	Interviewed child's age	Recent reason for medical visit
A	Mother	35	6	Enterovirus
B	Father	44	5	Urticaria
C	Mother	46	6	Cold (Respiratory)
D	Mother	43	3	Enterovirus, dental sedation
E	Mother	32	6	Dental caries
F	Mother	36	5	Cold leading to conjunctivitis
G	Father	38	4	Cold, fever
H	Mother	28	3	Cold

Table 1: Background data of user interviews.

After confirming that the participants were eligible and willing to be interviewed, the researchers sent them an interview outline via email one week before the interview. This outline was provided as a guide for the participants to prepare. Additionally, the parents were asked to take photos of their child's favorite toys or objects that provide emotional comfort, which helped expand the interview content.

Interviews with children aged 3-6

Considering children between the ages of 3 and 6 are not fully developed physically and mentally, the interviews in this study were designed to minimize disruption to the children. Each child's interview was divided into two parts, each lasting 20 minutes, with a 10-15 minute break in between. The parent was present throughout to provide comfort and to adapt flexibly to the situation. Various visual aids were used during the interview, such as emotion flashcards, photos of typical pediatric clinic settings, images of medical instruments, and personified images of various characters or animals. These tools helped the children recall their experiences and memories through visual cues. The photos chosen by the children were documented to understand their emotional states and preferences. The interviews were recorded in audio and video to capture the children's facial expressions and body language while answering questions, which served as reference points for subsequent analysis. The interview content was primarily divided into three parts: (1) recent instances or places where the child felt uncomfortable, (2) memorable experiences of illness, and (3) descriptions of the medical consultation process and their feelings about it.

Interviews with parents

Each set of parent and child interviews is arranged with the child being interviewed first and the parent second. Researchers and parents may propose extended questions and discussions based on the content and the child's reaction during the interview. Each interviewee's session lasts between 90 to 120 minutes and is audio-recorded. The interview content is mainly divided into the following five parts: (1) common illnesses of the child, (2) the methods of handling these illnesses, (3) the medical consultation process and common issues encountered, (4) expectations for a child emotional care app, and (5) the child's personal preferences. The interviews were recorded in audio and video for subsequent analysis.

Results
Questionnaire Result

A total of 114 valid questionnaires were collected. Among the parents of children aged 3-6 who responded to the survey, the majority are aged between 31 and 40 (72 respondents, 63.16%), followed by those between 41 and 50 (35 respondents, 30.7%). Regarding the number of children being cared for, over 75% of the participants are raising more than two children (2 children - 71 respondents,

62.28%; 3 children - 12 respondents, 10.53%; more than three children - 1 respondent, 0.88%). This study explored reasons for children's medical visits and parental anxiety. The results indicate that more than half of the parents take their children to medical visits for preventive healthcare (89 respondents, 78.07%), respiratory diseases (88 respondents, 77.19%), vaccinations (86 respondents, 75.44%), and fever (79 respondents, 69.3%), as shown in Table 2. The study also asked parents to reflect on the situation when their children are ill and to rate their level of anxiety on a scale of 1-5, with 1 representing the lowest level of anxiety and 5 representing the highest level of anxiety feeling aroused. The results show that the most common anxiety feelings experienced by parents are nervousness (M=2.81, SD=0.85) and emotional agitation (M=2.80, SD=0.89), as shown in Table 3.

Reason	Number	Percentage
Preventive healthcare	89	78.07%
Respiratory diseases	88	77.19%
Vaccination	86	75.44%
Fever	79	69.3%
Allergies	55	48.25%

Table 2: Top five reasons for children's medical visits (multiple choice).

Feeling	Mean	Standard deviation
Nervousness	2.81	0.85
Emotional agitation	2.80	0.89
Inability to Relax	2.77	0.89
Worry	2.73	0.95
Anxiety	2.62	0.92

Table 3: Top five anxiety feelings of parents when their children are ill.

Regarding how parents manage when their children fall ill. The results indicate that over 90% of parents closely monitor their children's condition when they are unwell (49 people always observe, 42.98%; 57 people often observe, 50%), as shown in Table 4. Additionally, more than 60% of parents believe recording their children's conditions and symptoms is essential (76 respondents, 66.67%), as seen in Table 5. However, the result showed that less than 30% of parents habitually record their children's health conditions (6 respondents always record, 5.26%; 24 respondents often record, 21.05%). Nearly 40% of parents take the initiative to learn about their children's illnesses (13 respondents always seek information, 11.4%; 42 respondents often seek information, 36.8%), and 33.33% of parents actively read the medication instructions every time they medicate their children (see Table 6).

	Observation		Recording	
Frequency	Number	Percentage	Number	Percentage
Always	49	42.98%	6	5.26%
Often	57	50.00%	24	21.05%
Sometimes	5	4.39%	30	26.32%
Rarely	2	1.75%	34	29.82%
Never	1	0.88%	20	17.54%
Total	114	100%	114	100%

Table 4: Parental management when their children fall ill.

	Yes	No	Total
Number	76	38	114
Percentage	66.67%	33.33%	100%

Table 5: Parental opinion on the importance of documenting children's illness.

	Actively seek information		Read medication instructions	
Frequency	Number	Percentage	Number	Percentage
Always	13	11.40%	38	33.33%
Often	42	36.80%	44	38.60%
Sometimes	44	38.50%	23	20.18%
Rarely	14	12.20%	9	7.89%
Never	1	0.80%	0	0%
Total	114	100%	114	100%

Table 6: Attitudes towards information on children's diseases.

When selecting a healthcare facility, this study employed a ranking method where participants were asked to prioritize five types of medical institutions for taking their children for medical visits. The institution ranked first was given 5 points, while the one ranked fifth received 1 point. All participants' total points were added to determine the overall institutional preference order, as shown in Table 7. The results indicate that when children fall ill, parents prefer clinics as their first choice for medical consultation, followed by over-the-counter medicine available at home. Regional hospitals, larger hospitals, and folk remedies were ranked as the third to fifth choices.

Healthcare facility choice	Points
Clinic	506
Over-the-counter medicine	406
Regional hospital	361
Major hospital	293
Folk remedies	144

Table 7: Healthcare facility choice (ranking method).

During medical visits, parents were asked to rank their top concerns, with the most crucial concern receiving 6 points and the least important receiving 1 point. After adding up the scores, it was found that parents are most interested in learning about alleviating their children's illness symptoms (523 points). Their interest followed this in knowing the causes of the illness (490 points) when to seek medical attention, the general duration of the illness (346 points), whether medication should be obtained or given (333 points), and home care precautions (314 points), as shown in Table 8. In terms of where parents typically get information about their children's illnesses, more than half reported relying on medical professionals (77 respondents, 67.54%), medical websites (73 respondents, 64.04%), and relatives and friends (57 respondents, 50%). It is noted that although social media has become a common way for most people to obtain information and communicate, social media ranked last among sources for parents to acquire information on children's diseases, with 43 respondents (37.72%). The result indicates that when a child falls ill, most parents in Taiwan still prefer to rely on professional platforms or sources of information as a reference for making decisions (refer to Table 9).

Information Type	Points
Suggestions for alleviating symptoms	523
Causes of illness	490
Standards for seeking medical attention	388
Duration of illness	346
Necessity of obtaining or taking medication	333
Home care precautions	314

Table 8: Information desired when children are ill (ranking method).

Information Source	Count	Percentage
Professional medical personnel	77	67.54%
Medical information websites	73	64.04%
Relatives and friends	57	50%
Online forums	52	45.61%
Social media	43	37.72%

Table 9: Top five sources for parents to acquire information on children's diseases (multiple choice).

Based on the findings, parents place the highest priority on relieving pain (326 points) in their children's medical consultations, followed by symptom alleviation (322 points) and emergency handling (306 points). However, emotional care (206 points) was identified as the least prioritized area for improvement by parents, as shown in Table 10. Discussions about children's emotional well-being during illness revealed that over 90% of respondents actively attend to and comfort their children's emotions (44 respondents, 38.6% – always actively pay attention; 60 respondents, 52.63% – often actively pay attention; 55 respondents, 48.25% – always actively comfort; 53 respondents, 46.49% – often actively comfort). Most respondents stated that children's emotions occasionally or rarely affect the quality of medical visits, with few cases of children being too afraid of the doctor to seek medical care. When addressing children's emotions, more than 50% of respondents use board games or picture books (59 respondents, 51.75%), electronic gadgets (59 respondents, 51.75%), and dolls or substitutes (55 respondents, 48.25%). Tables 11-12 present the current survey results regarding children's emotional states when ill and methods to alleviate their emotions.

Issue to Address	Points
Pain relief	326
Symptom alleviation	322
Emergency handling	306
Emotional care	206

Table 10: Issues parents most want to address during medical consultations.

Emotional response	Frequency	Number	Percentage
Actively pay attention to the child's emotions	Always	44	38.6%
	Often	60	52.63%
	Sometimes	10	8.77%
	Total	114	100%
Actively comfort	Always	55	48.25%
	Often	53	46.49%
	Sometimes	6	5.26%
	Total	114	100%

Child's crying increases the consultation time	Always	2	1.75%
	Often	11	9.65%
	Sometimes	25	21.93%
	Rarely	59	51.75%
	Never	17	14.91%
	Total	114	100%
Child destroys items due to illness	Often	3	2.63%
	Sometimes	16	14.04%
	Rarely	56	49.12%
	Never	39	34.21%
	Total	114	100%
Child is afraid of the doctor and refuses to visit	Often	6	5.26%
	Sometimes	20	17.54%
	Rarely	54	47.37%
	Never	34	29.82%
	Total	114	100%

Table 11: Emotional states of children when ill.

Method	Count	Percentage
Board games or picture books	59	51.75%
3c products	59	51.75%
Dolls	55	48.25%
Role-playing	49	42.98%
Medical toys	22	19.30%
Other	22	19.30%

Table 12: Methods for alleviating children's emotions (multiple choice).

The result of interviewing parents

The interview results reveal that over half of the parents use medicine available at home when a child develops a fever. They observe the child's temperature for 2-3 days before deciding whether to seek medical consultation. Some parents, prone to anxiety, choose to visit a doctor immediately. Due to the unstable emotional states of children during medical consultation, most parents employ strategies such as communication, companionship, or rewards to provide reassurance. Notably, parents have varying opinions and interpretations regarding 'rewards.' Some believe that if the child cooperates during the consultation, they should be rewarded with small treats like candies or stickers as praise and consolation. In contrast, others believe a medical visit aims to alleviate symptoms rather than for benefit. In addition, some parents prepare their child psychologically before the visit by explaining the process to lessen the child's anxiety during the consultation. Since most interviewees were from families with two to three children, parents tend to feel more nervous and anxious when their first child is ill. However, they handle the situation with more composure if the same illness occurs in their second or third child, except when faced with a new or severe condition. Parents prefer clinics over large hospitals when their children fall ill, seeking clinics with pediatric specialties. The reasons included that they think pediatric specialists are often more patient and empathetic, which helps alleviate the child's anxiety. Additionally, pediatric clinics are often child-friendly, with bright consultation rooms and sometimes equipped with children's books and toys, providing a comfortable and relaxing medical environment.

Regarding common problems encountered during medical visits, parents often find that the wait times are the most challenging, sometimes lasting 1-2 hours, while the consultation may only take five minutes. Furthermore, medical procedures like injections and medicine can be difficult because children often resist cooperating. It was discovered that the interviewed parents generally do not actively seek out information about children's illnesses. Many attribute this to their busy work schedules, while others express a fear that gaining such knowledge might lead to increased anxiety. Consequently, most only seek information on childhood illnesses when symptoms appear or when specific diseases are mentioned in the media.

Result of Interviewing Children Aged 3-6

Based on the interviews with the children, four out of eight children had medical consultations for colds and fevers, while the others went for measles, allergies, teething issues, and gastroenteritis. The children with fevers did not express much discomfort or unhappiness experiences during the interview. In contrast, those who went to the doctor for measles and dental issues shared more about their discomfort during the illness. For example, one child who developed measles symptoms at night and visited the emergency room at a large hospital recalled the crowded waiting area, fear of injections, and feeling unwell as particularly uncomfortable and memorable experiences. The interviews also revealed that half of the children are scared and fearful of vaccinations and intravenous drips, indicating that the actual sensation of the injection is more painful than insect bites. Some children needed to be held or supported by their parents to complete vaccinations. The remaining children expressed fear due to not understanding the consultation process in ophthalmology and dentistry.

In a discussion about how children feel about medical consultation, it was discovered that four out of eight children enjoy going to the doctor. Some children said they liked doctors because they received candy as a reward, while others felt better after the visit. On the other hand, children who do not like visiting the doctor often fear the unfamiliar and unknown aspects of outpatient clinics, which makes them avoid seeking medical care. Children have varying opinions about medical instruments such as tongue depressors, nasal aspirators, stethoscopes, and optometry. Children generally accept painless and non-invasive medical tools like tongue depressors and stethoscopes. At the same time, they tend to dislike more complex and extensive equipment, such as optometry and nasal aspirators. When anxious or nervous, children need their parents to hold their hands or hug them to soothe their emotions. Some children also suggested using electronic gadgets to distract themselves, carrying comfort toys, and receiving appropriate candy rewards to alleviate their tension. Only a few interviewed children could clearly express their experiences and feelings about the medical process. Most of them only described what they saw when they entered the clinic rather than their psychological state. For example, they mentioned being asked to open their mouths for the tongue depressor or listening to their heartbeat and stomach with the stethoscope. Only two children could explain the entire medical process and their feelings. They also mentioned that they were okay with the usual visit process if it did not involve getting vaccinations.

Discussion

Based on research findings, the main reasons for children's medical visits are preventive healthcare, respiratory diseases, vaccinations, and fever. Although falls and injuries are not among the top three statistical reasons, they are still important based on the input from otolaryngologists who frequently encounter such cases. Interviews show that after dealing with their first child's health issues, most parents become more capable of handling subsequent situations calmly. Regarding immediate responses to illness, qualitative and quantitative data indicate that most parents will observe their child before seeking medical care. Few parents have a habit of documenting their children's condition. However, it is a challenge for them to decide when to have a medical consultation. Survey results indicate that parents do not frequently seek to understand the illness, with most doing so only occasionally.

Additionally, the challenges faced by parents with full-time jobs in managing their time will be considered an essential factor in creating personas. Survey data also reveals that most parents prefer choosing a clinic as their first option for medical care, which aligns with the conclusions drawn from interviews. Many parents prioritize addressing their child's emotional well-being during medical consultations, as it directly affects the smoothness of the visit. According to the survey, more than half of the parents reported com-

forting their child actively. The interview results revealed that parents commonly use communication, companionship, rewards, and psychological preparation to soothe their children. Qualitative and quantitative data on the need for information about childhood diseases are similar. Parents primarily focus on understanding and alleviating diseases when it comes to their expectations.

Persona Construction

After evaluating the information gathered from surveys and interviews, we identified specific situations in which children require emotional support when they fall ill, taking into account both timing and location. We also explored the underlying reasons for this need for emotional care. The collected data was analyzed from three perspectives to identify different user archetypes:

1. *Individual similarities*: We examined interaction styles, noting both commonalities and differences in backgrounds or personalities, as well as attitudes and goal completion patterns.
2. *Task and activity performance*: We analyzed the similarities in how users perform tasks and activities, focusing on functional needs, methods of operation, and their levels of experience with the app designed for children's emotional care.
3. *Narratives and experiences*: We considered the personal stories and experiences shared during the interviews.

This study examines character details by exploring various scenarios that children experience during illness and medical visits. Based on a review of relevant research and empirical data, it identifies three common reasons for children's medical visits, along with the corresponding personas associated with each reason.

Getting vaccinations

Interview results indicate that vaccination is a primary reason for medical visits among children aged 3 to 5 years. Many children experience fear, often crying or requiring restraint from family members during these visits. This study presents a scenario based on the real challenges faced during vaccinations, including children's fear of injections, to enhance the authenticity of the developed persona. Additionally, the study outlines the critical emotional and practical challenges working mothers face, who must balance family responsibilities and career demands, necessitating efficient time management. Given the children's anxiety surrounding injections, the focus is on vaccination and effective methods for soothing a child's emotions. Expectations center on guiding children to overcome their fear of injections while gaining substantial knowledge about children's diseases within a limited timeframe. In constructing the child's persona, the narrative draws from interview data highlighting the fear of injections, exploring the underlying reasons for this apprehension. For example, the anesthesia needle is often cited as the most disliked medical instrument due to its similarity in appearance to vaccination needles. The personality profile is further enhanced by considering the child's family background, depicting them as extroverted and independent. An illustrative example of the persona is presented in Figure 1-2.

Fever with febrile convulsions

Fever is one of the primary reasons for medical visits among children aged 3 to 5 years. Febrile convulsions can cause a child's face to turn purple and their body to convulse. The first episode often induces panic and confusion in caregivers, as children experiencing this condition require immediate cooling to prevent a spike in temperature. Consequently, caregivers usually feel frustrated and stressed. The parental profession is often modeled after the service industry, which comprises 21% of survey participants. This profession is characterized by irregular work hours, making time management challenging. Based on interview data, parents in this demographic tend to be outgoing, emotional, and prone to anxiety, particularly concerning febrile convulsions. The specific experiences shared by interviewees illustrate a lack of initial knowledge about how to handle emergencies related to this condition, leading to lasting anxiety during the child's fever episodes.
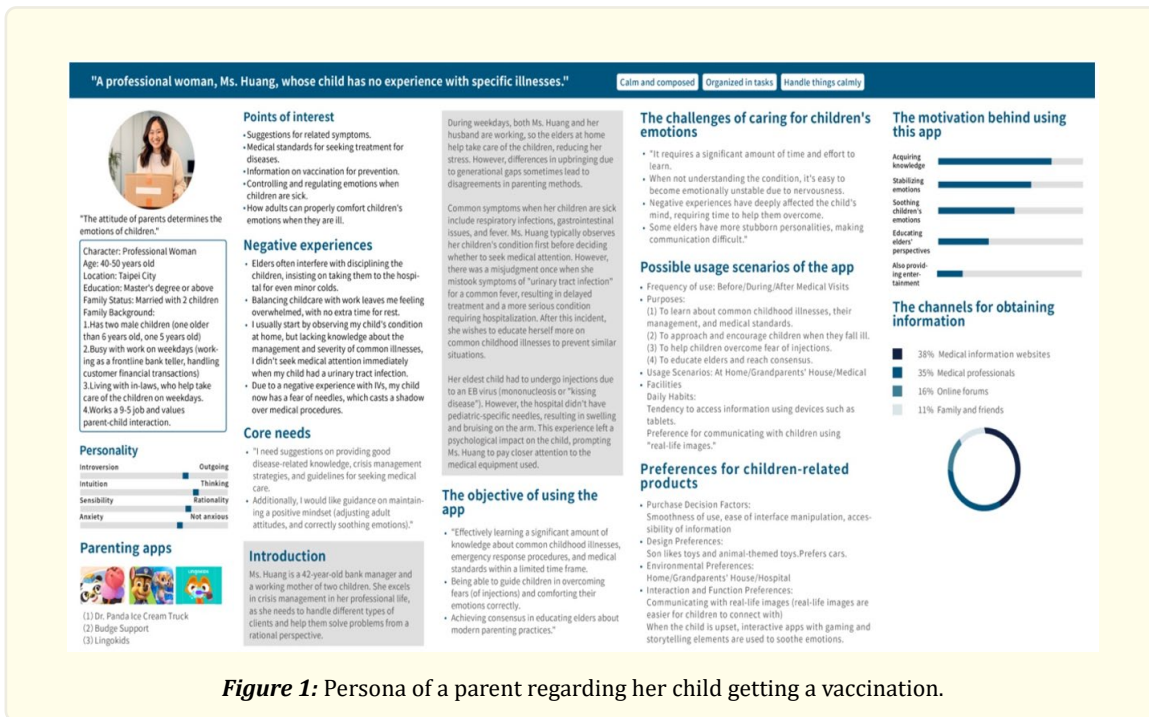
Figure 1: Persona of a parent regarding her child getting a vaccination.
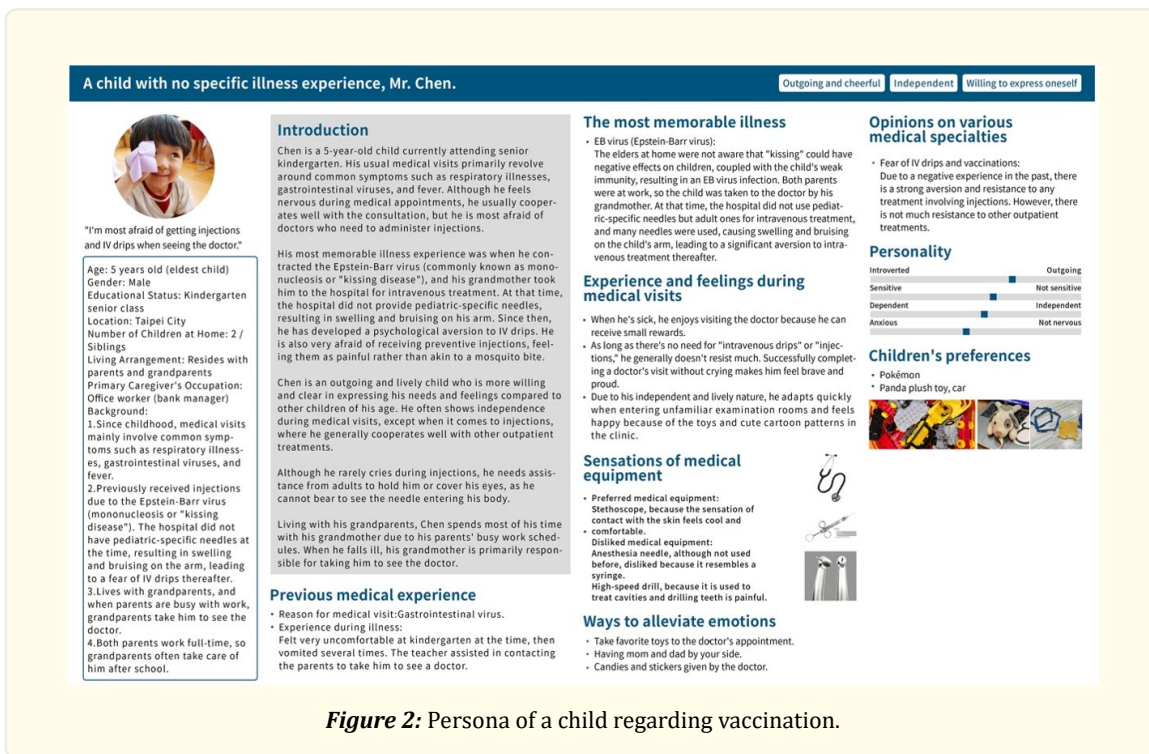

Figure 2: Persona of a child regarding vaccination.

Febrile convulsions characterize the child's persona. Children having an episode are usually unaware of their illness, resulting in a lack of understanding of the overall disease process. They often find the administration of rectal medication uncomfortable. Insights from interviews with girls suggest that they possess extroverted, sensitive, and nervous traits, which are also reflected in their experiences during medical visits. They often feel anxious and scared when confronted with unfamiliar medical situations, but they can be comforted through effective communication.

Falls and bruises

Children's natural curiosity and incomplete development often result in falls and bruises. Interviews with pediatric experts reveal that many medical visits are attributed to injuries from such incidents. Survey findings indicate that the parental persona in this context predominantly involves homemakers. The portrayal of negative experiences underscores children's overdependence on caregivers, complicating matters when other family members attempt to assist with medical visits independently, ultimately heightening the primary caregiver's stress levels. The child persona in this scenario is characterized as shy, dependent, and resistant to new experiences, which significantly impact their overall medical encounters. For example, children frequently require holding or restraint during clinic visits to complete examinations successfully and may dismiss medication due to its unpleasant taste. These situations also highlight the primary caregiver's considerable pain points.

Conclusions

This study used online questionnaires to recruit parents of children aged 3 to 6, collecting data on their behaviors and attitudes when their children are ill. In-depth interviews were conducted to explore the challenges faced by parents and children during medical visits, their expectations regarding healthcare, critical aspects of emotional care, and the process of creating typical personas. By analyzing quantitative and qualitative results, we aimed to align persona construction more closely with user needs, beginning with a broad overview through data collection and refining that understanding with detailed interview information.

The study revealed that vaccinations, fevers, falls, and bruises are common reasons for medical visits among children aged 3 to 6. By constructing personas based on these three typical scenarios, researchers could empathize with the feelings and difficulties experienced by parents while also understanding the genuine reactions of children when they are unwell. This provided valuable references for future related designs and research. The process of developing children's personas indicated that most children feel scared and anxious during illnesses, often resisting visits to unfamiliar clinics. Some children and parents expressed the need for external distractions during medical visits. Additionally, it was observed that parents' attitudes significantly influence their children's emotions. Providing calm and organized guidance can help children articulate their feelings. Therefore, this study emphasizes that critical aspects of children's emotional care include calm guidance, patient listening, distraction when necessary, and a focus on regular health education to prepare both children and parents mentally and physically, ultimately reducing panic when illness occurs.

The issue of persona continuity is one that many scholars highlight as needing resolution. While the construction of typical personas represents only certain common illnesses, it establishes a framework that can help designers cultivate empathy with a user-centered mindset and better understand the needs of this demographic. By integrating quantitative and qualitative data, this study outlines typical personas for children aged 3 to 6 years and their parents. Future work will further explore the content of these personas, considering the specific situations and psychological needs of patients and families, and propose design solutions to improve children's emotional experiences during medical visits.

Acknowledgements

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