




Chatbot Design: Artificial Intelligence Support for Postpartum Depression

Presenter: Huanran Peng
Instructor: Min Kyung Lee, Islam Akef Ebeid
Course: Human-AI Interaction



AGENDA



01

WHY POSTPARTUM
DEPRESSION IS
IMPORTANT?

02

WHAT I LEARNED
FROM HUMAN
INTERACTION?

03

WHAT I LEARNED
FROM EXISTING
APPLICATIONS?

04

HOW TO BUILD A
CHATBOT FOR
PARENTS?



01

WHY POSTPARTUM
DEPRESSION IS IMPORTANT?



POSTPARTUM DEPRESSION

SYMPTOMS



Feelings of guilt, shame or hopelessness



Feelings of anger, rage, or irritability, or scary and unwanted thoughts



Lack of interest in the baby or difficulty bonding with baby



Loss of interest, joy or pleasure in things you used to enjoy



Disturbances of sleep and appetite



Crying and sadness, constant worry or racing thoughts



Physical symptoms like dizziness, hot flashes, and nausea



Possible thoughts of harming the baby or yourself



TREATMENT OPTIONS

Counseling

Medication

Support from others

Exercise

Adequate sleep

Healthy diet

Bright light therapy

Yoga

Relaxation techniques

A GLOBAL CRISIS



- **Postpartum depression** affects up to one in five women globally, which can have major **negative effects** on both maternal and child health.
- While effective treatments are available, nearly 60% of mothers with Postpartum depression symptoms are **undiagnosed**, and 50% of diagnosed mothers are left **untreated**.
- **Cost**, time, stigma, and **lack of childcare and information** constitute major barriers to treatment.



02

WHAT I LEARNT FROM
HUMAN INTERACTION?





The mission of Postpartum Support International is to **promote awareness, prevention** and **treatment** of mental health issues related to childbearing in every country worldwide.



You are not alone.
You are not to blame.
With help, you will be well.

DATA ANALYSIS

12:36 pm PSI00006

Hello. I found your website online. I wondered if someone could reach out to me for support. I delivered my baby on 10/9 and I am not doing well. Hoping to be able to connect to local resources. I am in Colorado- zip code PSI_ZIP. Thank you

12:42 pm psi helpline

Hello. My name is PSI_PLACE. I am a volunteer. Have you talked with your provider about how you are feeling? What city in PSI_PLACE are you in? It will only take me a couple of minutes to check to see if there is a PSI coordinator in your area...

12:43 pm PSI00006

I left a message for Dr- waiting for call back and have an appointment on Monday with SW at PSI_PLACE office. I am in PSI_PLACE

12:44 pm psi helpline

I am going to send you some online resources as well:

<https://www.postpartum.net/learn-more/pregnancy-postpartum-mental-health/>

Fantastic! Let me check PSI_PLACE...

12:45 pm PSI00006


Thank you

- PSI has a **24/7 helpline** where anyone can call or text to get basic **support of information** and **trained volunteers**.
- More than **7000 text conversations** between support-seekers and trained volunteers.
- **21 interview records** with people who had experienced postpartum depression.
- **6 interview records** of the volunteers work in PSI about their experience in the process.

DATA ANALYSIS



Concerns from the parents	Number	Percentage
Emotional validation	17	38.6%
Support problems	10	22.7%
Seeking resources	39	88.6%

- **Emotional validation:** want to have some validations about their feelings.
 - **Support problems:** there is weak or no support system around them.
 - **Seeking resources:** get some information related to postpartum depression
- 

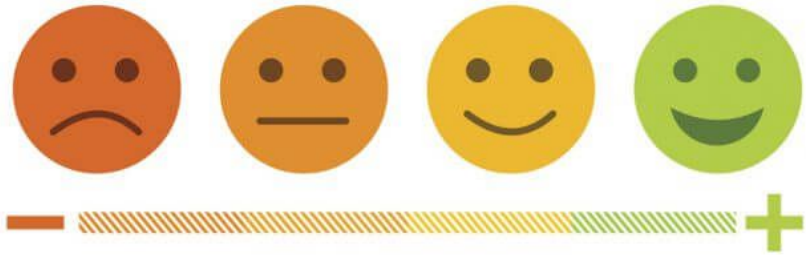
SEEKING FOR RESOURCES



- “I'm hoping to get a **referral for a therapist** that specializes in PPA/PPD in my area”
- “Hello! I am a first time mom of a 16-week-old and am definitely struggling with anxiety. Could you please help me **find a coordinator or therapist in my area?**”

-----Quotes from support seekers

EMOTIONAL VALIDATION



- “I just wanted to talk to someone because I feel like **my depression is getting worse**. I've never opened up about it and wanted to start somewhere”
- “I feel like **crying** all the time”
- “What are the signs of **postpartum depression** and How do I seek help?”

-----Quotes from support seekers

SUPPORT PROBLEMS



- “my husband **doesn't make himself available** throughout the week until it's bedtime.”
- “Well I've been being verbally and sometimes physically **abused by my mother** and today it got out of hand in front of my daughter who is only a year old”

-----Quotes from support seekers

DATA ANALYSIS

Int1_1

not aware of their mood
no sleeping
new location
no support system
silently and misery
what questions to ask as a diagnostician
have to have a will

isolated
Being in society
checklist
past can not define a person
interaction is important
sensitive and empathic

Int1_2

alone
on medication
my husband and his family are supportive
belonging in the community
no way you could have actually prepare for it
I need to be able to take care of myself and my family
It happens to all of us, and you're never alone.

Int2_1

my parents have a very odd relationship
hated pregnancy
scared about what was going to happen
I feel with regard to my mother, I feel like I'm not really her son, I feel like I'm not really her son
I remember, just for you, the feelings were for the hospital
feel guilt
feeling being being someone who someone who someone

some tips can be an article or some sources
ask the right question
be more social and open about your experience
you are not ashamed
you are not the only one
say something and ask for help

Int2_2

people don't admit to themselves
No support from friends or social networks
It looked fine for me, but it was really hard
I need someone in the house with me
don't know how to ask for help
ask like I was under water at all the time
more anxiety and rage

instant connection and feedback are important
Art or information that are evidence based
a safe space to say things
Under normal fluctuations, doesn't mean your bad room

Int2_3

extra precaution
I make city and no family near me
fear of the dark
feel like someone is watching me
don't handle things as well as I thought it was
I am not the only one
no one that can give me advice

let's keep quiet and everything we're counting on
Do not try to do it alone

Int3_1

they'd never discussed anything with me
My mother and my husband are very involved
fear of the dark
It's pretty isolated if you can't drive
I never taken my hub on public transportation
I wasn't capable of taking care of it
people don't care about you, the therapist, the real care about you.

makes me feel invisible

Int3_2

they wanted to put me in medication
My mother and my husband's are very involved
fear of the dark
It's pretty isolated if you can't drive
I never taken my hub on public transportation
I wasn't capable of taking care of it
people don't care about you, the therapist, the real care about you.

makes me feel invisible
Do not try to do it alone
a safe space to say things
Under normal fluctuations, doesn't mean your bad room
you are not the only one
say something and ask for help
no support system

silently and misery
what questions to ask as a diagnostician
have to have a will
isolated
Being in society
silently and misery

DATA ANALYSIS



- **Situations:** move to a new city / single mother / no support system
- **Problems:** not aware of their mood / hated pregnancy / don't know how to ask for help
- **Feelings:** guilty / shame / anxiety / sad / lonely
- **Suggestions:** open / connect with society / exercise / you are not alone / just talk to someone

PERSONAS

Jade Miller



Occupation
Graduate student



Location
Sanfrancisco, California



Age
28



Family
Married.

Characteristics

Internet



Social Media



Tech Savy



Biography

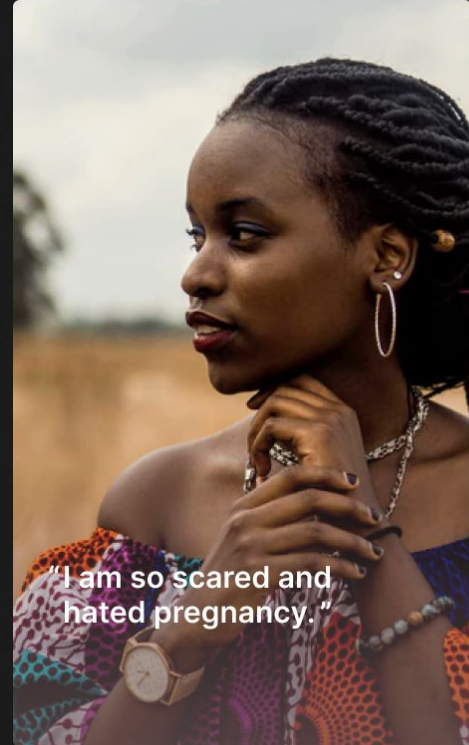
Jade recently graduated from university as a graduate student major in social work, medical anthropology and psychology. Her husband is in navy and she is very scared about what was going to happen during pregnancy. She doesn't have a good relationship with her parents, so there would be no support from them after her child given birth.

Needs

- Get some information about postpartum depression.
- Prepare for the incoming pregnancy.
- Have some advice about how to deal with the relationship between her families.

Pain points

Jade is deeply influenced by her original family, so she is scared to have a child. She is also afraid of not having any support from her family if she has a child in the future.



"I am so scared and hated pregnancy."

PERSONAS

Kate Wright



Occupation

Stay-at-home mother



Location

Chicago, Illinois



Age

44

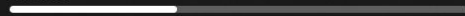


Family

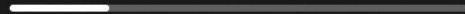
Married. 2 children.

Characteristics

Internet



Social Media



Tech Savy



Biography

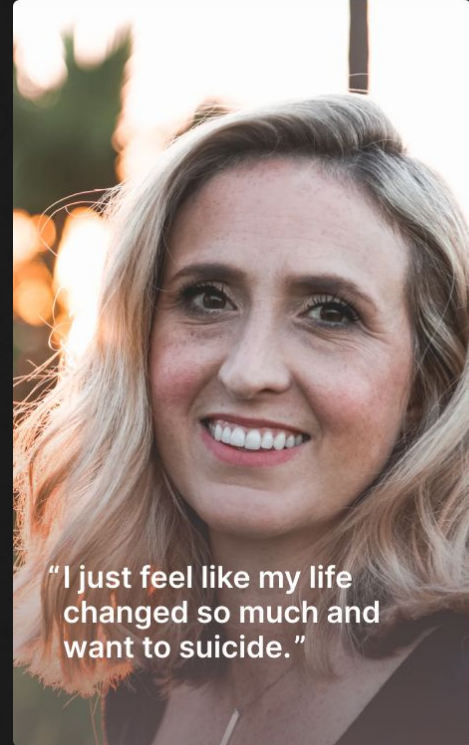
Kate is a former electrical engineer who is currently a stay-at-home mother. Her husband is very supportive and will spend time to stay with her and their children. She is also on medication to manage her bipolar disorder for many years. Sometimes she feels sorry for her children and has thought about suicide.

Needs

- Connect with some professional therapy to accommodate her situation.
- Get some advice on how to deal with the tendency of suicide.
- Have the validation of emotions related to postpartum depression.

Pain points

Kate usually feels guilty and has no idea about how to ask for help.



"I just feel like my life changed so much and want to suicide."

PERSONAS

Chloe Johnson



Occupation
Sales



Location
Kansas, Missouri



Age
38



Family
Single mother. 1 child.

Characteristics

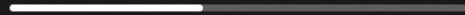
Internet



Social Media



Tech Savy



Biography

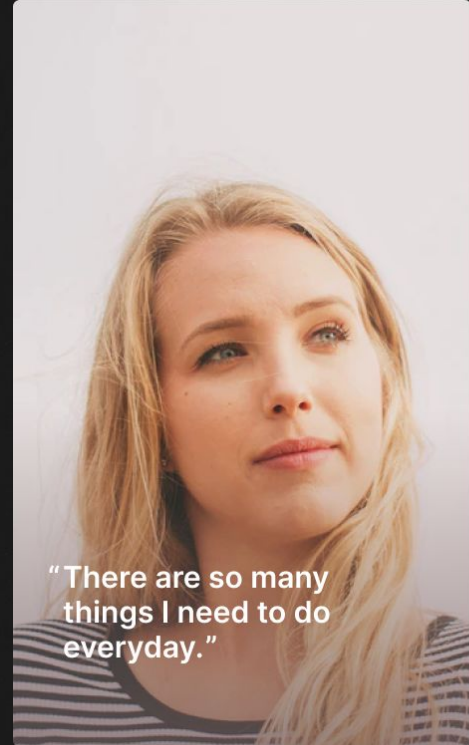
Chloe is a single mother who just moved to Kansas last month, so there are no friends or families near her. She juggles two jobs doing sales during the week and English-French translation works part-time during weekends. She usually has little sleep at night since her child often needs to be taken care of.

Needs

- Be able to connect with some people.
- Get some advices on how to deal with the emotion that happened during postpartum period.
- Have the validation of emotions related to postpartum depression.

Pain points

Chloe is an independent mother, but she also needs to get some emotional support from others.





03

WHAT I LEARNT FROM
EXISTING APPLICATIONS?

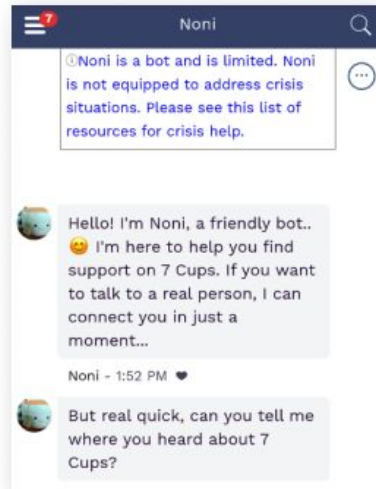
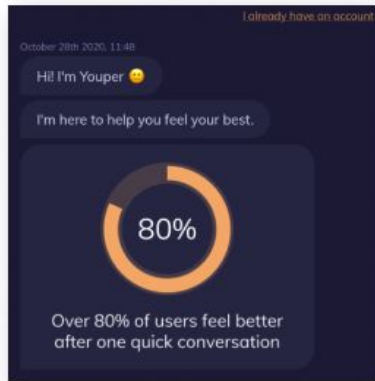


COMPARATIVE ANALYSIS



Applications	GENERAL		FEATURES										TERMINOLOGY		VISUAL			
	Purpose	Availability	Self-assessment / Identify the difficulty	Recommended Activities	Conversation types	Voice recognition	Connect to therapist	Mood tracker	Group support	Therapy plan	Charge / Free	Check-in	Other Features	Theoretical framework	Technology	Color	Feel	
Weeobot	Making therapy accessible to all	Mobile	✓	✓	Text / Emojis	✓	✓	✓	✓	✗	Charge / Free	✓	4 tasks provided every week		Cognitive behavior Therapy / Dialectical Behavioral Therapy / Interpersonal Psychotherapy / Mindfulness	AI / Natural Language Processing (NLP)	Blue green	Active
7 Cups	On-demand emotional health service and online therapy provider	Mobile / Web	✗	✓	Text / Emojis	✗	✓	✗	✓	✗	Free	✗	Tasks provided	Provider listens to users.	Research-Backed, Evidence-Based Online Emotional Support	Review your progress, Report your status	Purple / blue / green	Sober
Wysa	AI Chat that makes you feel heard	Mobile	✗	✓	Text / Emojis / Picture	✓	✓	✗	✗	✓	Charge / Free	✓	Journey reminder in the end of the conversation.	self-care exercises	CBT, DBT, meditation, breathing, yoga, motivational interviewing and micro-actions	AI-based 'emotionally intelligent' bot	Blue / White	Calm
Inner hour	Deliver mental healthcare through technology. Help people live happier, healthier, and more fulfilling lives.	Mobile / Web (Online self-assessment)	✓	✓	Text / Picture	✗	✗	✓	✗	✓	Charge / Free	✓	Recall the content of the previous conversation / Possible to reset the bot data / Goals setting		Cognitive Behaviour Therapy / Positive Psychology / Mindfulness	algorithms and intelligent software to build customised, self-care programmes for	Purple / Blue / White	Calm

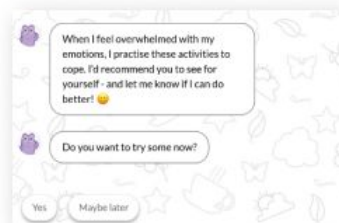
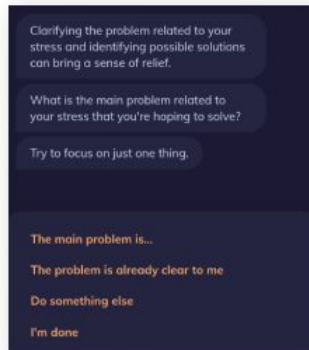
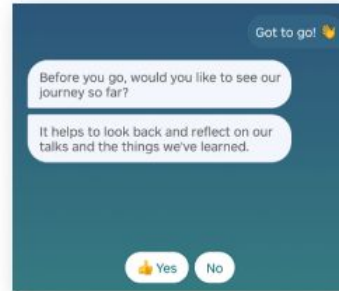
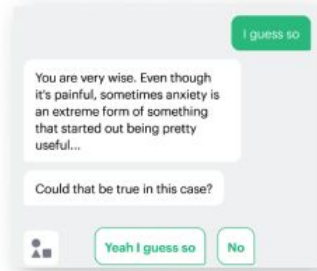
PERSONALITY GREETINGS



Polite/ Chatty / Warm

- It is important to set a tone, a pace, a level of politeness patterns to have a **personality** in speaking.
- Consistency creates **trust** in the system.

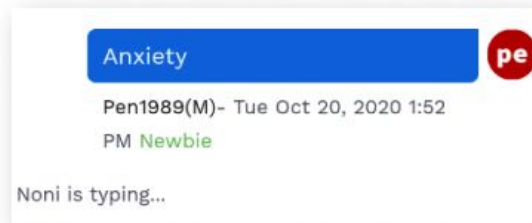
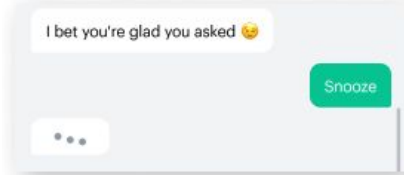
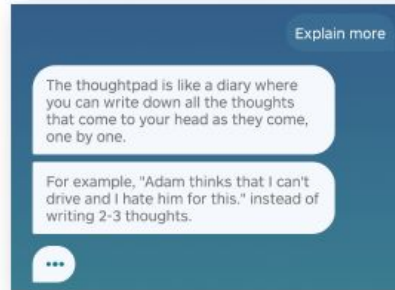
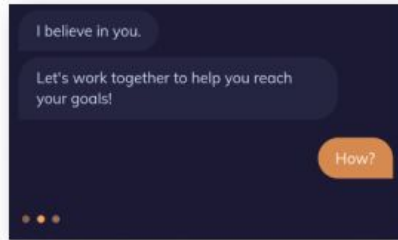
SUGGESTED REPLIES



Box / List

- Eliminating the need to type it out manually.
- Saving **time and energy**.

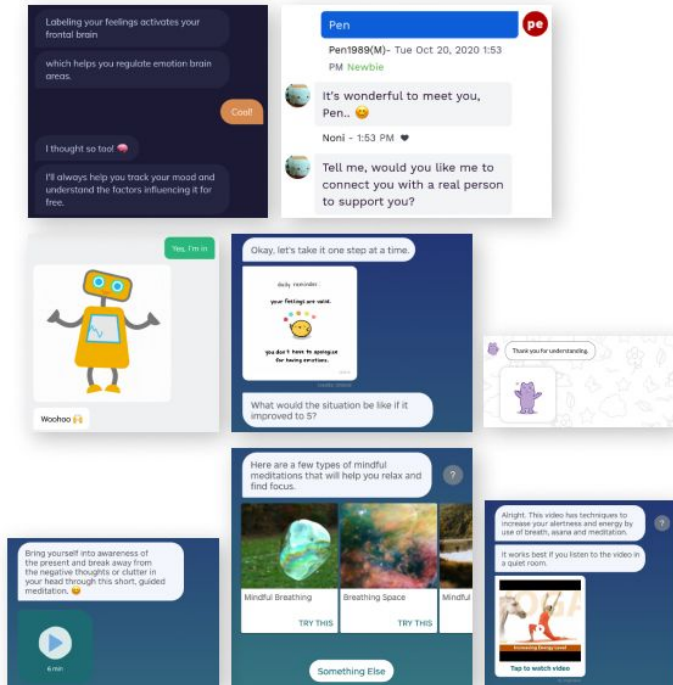
DELAYED RESPONSES



Dots / Text

- Delaying the system response to a user input makes it feel **more human-like**
- **Visibility of system** status can help users to understand the process.

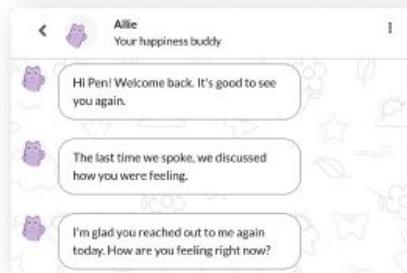
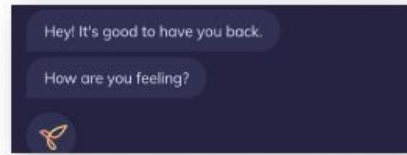
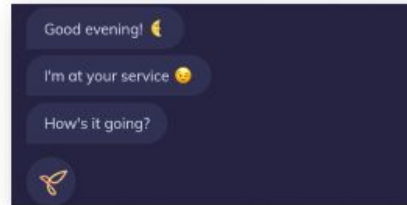
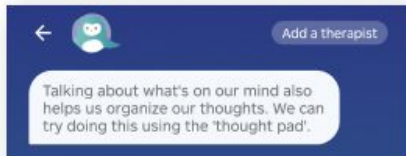
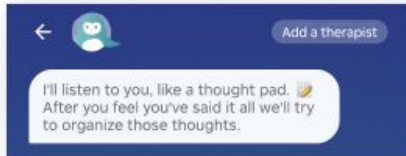
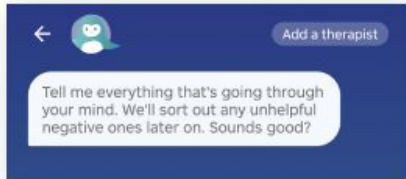
TYPES OF RESPONSES



Text / Emoji / Visual / Media

- Text and emoji are the common way to reply by a chatbot which can provide a kind of personality.
- Visual or media reply can interestingly give the information.

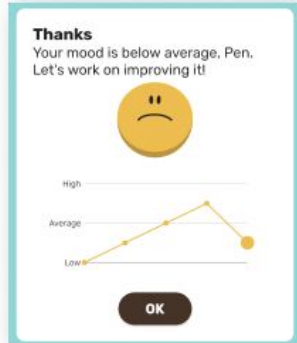
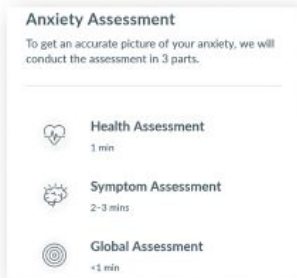
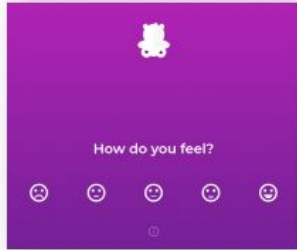
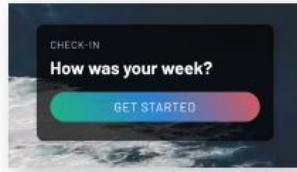
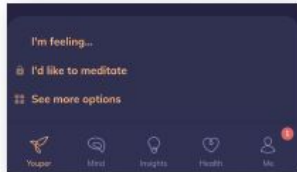
DELAYED RESPONSES



Different / Check / Recall

- Providing **different responses** in different situations makes chatbot more human-like.

EMOTION CHECKING IN



List / Emoji / Card

- Track the mood of users is a method for applications to analyze and provide more accurate suggestions.

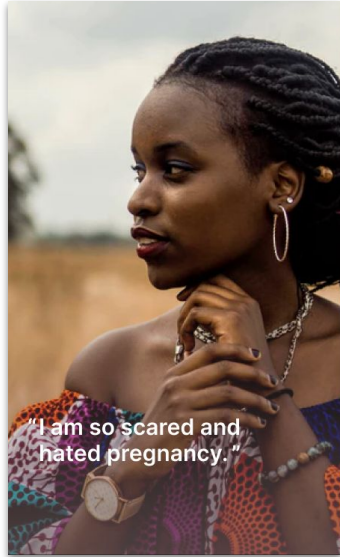


04

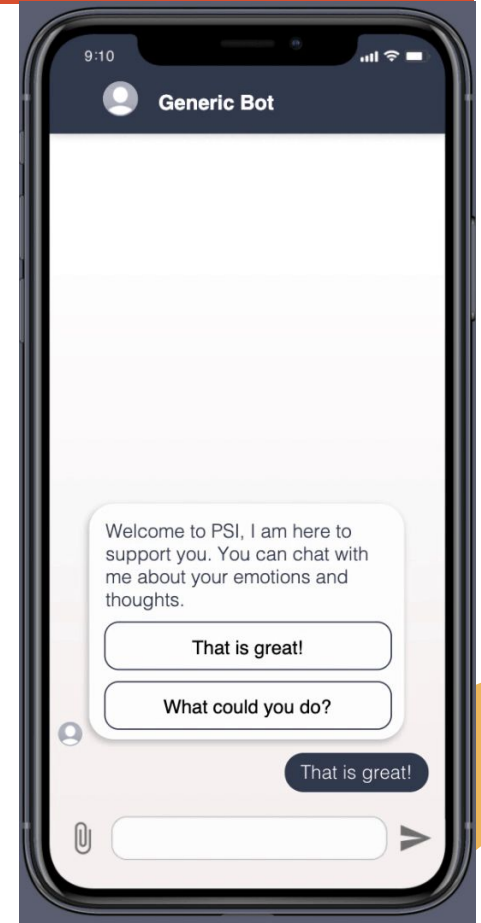
HOW TO BUILD A
CHATBOT FOR PARENTS?



PROTOTYPES



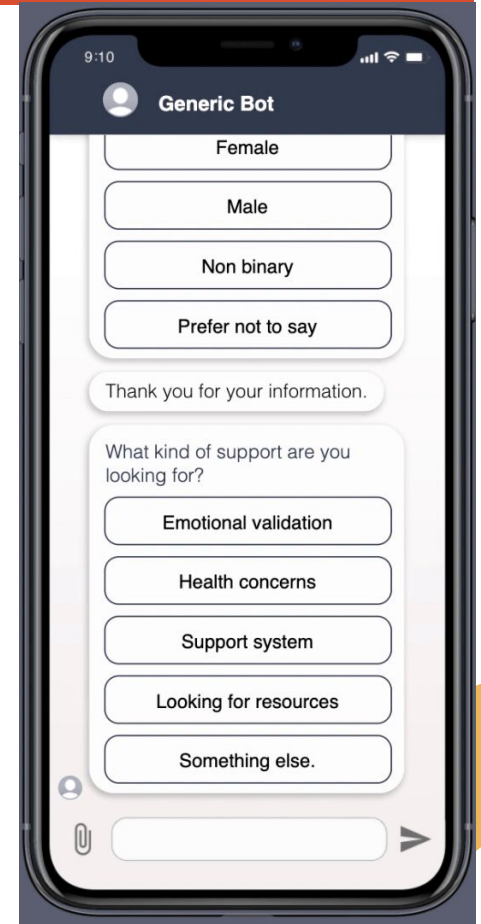
Jade is **seeking some information** related to postpartum depression because the result of the questionnaire shows that she has a high risk of mental health problems.



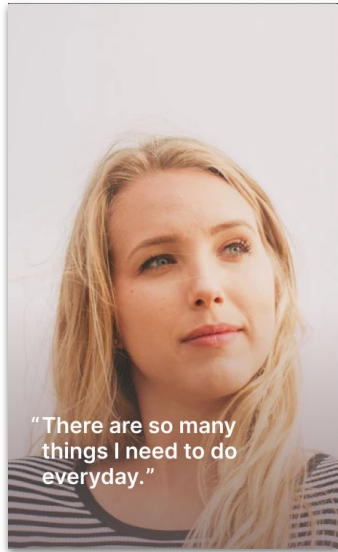
PROTOTYPES



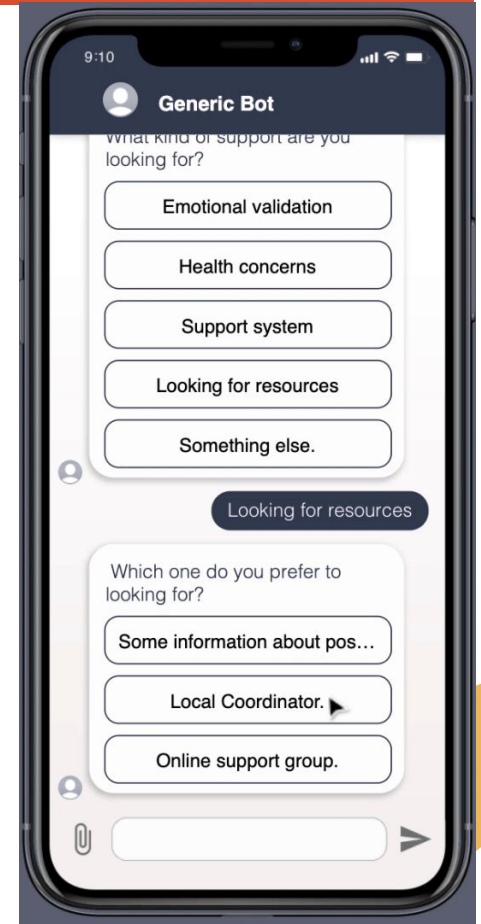
Kate has no knowledge about postpartum depression, so she want to get the **validation** about her feelings and emotions.



PROTOTYPES



Chloe just moved to a new city and has no friends or families around her. She wants to meet some **local therapy** to have professional advice about her mental health related issues.





Thanks!

