Appendix 1 Qualitative interview guide for caregivers and adolescent/transitional age youth

Interview domains	Questions*
Using a smartphone app to improve safety monitoring and connection to mental healthcare	Thank you for taking time to talk with us. We would like to show you an app this group has been developing to track experiences of suicidal thoughts and behaviors, family conflict and discrimination. The goal of the app is to learn more about how these experiences occur among youth and young adults with unsafe thoughts or behaviors. The app is called "Geomood" because it asks about mood and it also tracks changes in location. The app has two versions: one for young adults and one for caregivers (parents/guardians). The app is not a treatment or an intervention. Rather, it keeps track of experiences that researchers can use to design tools to identify youth at risk. Do you have any questions about what I just shared with you? What do you think about using an app that helps you keep track of your (your child's) experiences with suicidal thoughts and behaviors, relationships with your family, or experiences of discrimination? We are designing this app so health care providers can understand how these things are related. It is designed to be friendly and easy to use.
Feedback on app	The next questions that I have for you are related to your impressions about the actual app. I am going to show you some of the app's features and functions and I want you to tell me which ones you like and which ones you don't like. Let me show you the app's features. *I will ask you to rank them on a scale from zero to ten in terms of how appealing the features are to you (10 = Extremely appealing, 0 = Not appealing at all).*
App's layout and acceptability	After reviewing the app's features, what do you like most and what do you like least? What would you change? What would you add or take away? *(Probe for colors, graphics, images, use of emojis to respond to questions and assessments, frequency of assessments, use of incentives for completing assessments)* Using a scale from 0 to 10, where 0 is you would not download such an app in your phone and 10 is you would definitely download it in your phone, what would you do? *(Probe meaning of rating score)*
Personal safety issues	The app collects information that could indicate whether you (your child) feels safe or not in certain places and situations. For example, this app can track changes in location, the number of texts that are sent, and the number of times the phone is opened. What concerns do you have about the use of the data that the app will collect? What would be the best way(s) to use that information to help you (your child) if you feel unsafe or think that you could harm yourself? What kind of information would you like to get from the app for those instances in which you (your child) feel unsafe?
Experiences of discrimination, family conflict, and suicidality	As a reminder, this project is trying to understand how unsafe thoughts and behaviors are connected to difficult life experiences. The difficult experiences we'll ask about are discrimination and family conflict. We hope to measure these with the app we will show you. These can be hard things to talk about and we appreciate you answering as best you can. We can stop or skip questions if you need to. What comes to mind when you hear the word "discrimination"? How would you describe your experiences with discrimination or with being treated unfairly? How did these make you feel? How would you describe your experience dealing with family conflict? (for example, arguments, fighting between family members) How does this make you feel? If you feel that you need help for suicidal thoughts or behaviors, how do you reach out for help? What do you usually do when you don't feel safe and you start having thoughts of harming yourself?
Next steps in study	If you are interested and have an Android phone, the next step in this study is to try out the app for a week so that you can become familiar with how it works.

*, Youth/Caregiver: Caregiver adaptations listed as "your child" to indicate questions about suicidality refer to the youth. The caregiver version will measure caregiver experiences of family conflict and discrimination.

Appendix 2 Qualitative interview code tree

Interview domain	Level 1 Code	Level 2 Codes	Level 3 Codes
GeoMood Visuals	Appearance	Attractive	
		Boring	
		Medical	
		Suggestions	
	Dislikes		
	Emojis	Appearance	Attractive
			Communicative
			Confusing
			Dislike
			Like
			Unattractive
		Frequency	Agree
			Disagree
		Suggestions	
GeoMood Content	Discrimination questions	Frequency	
		Wording	
	Discrimination experience	Coping	
		Personal definition	
		Personal experience	
		Reaction	
		Relevance	
		Source	
		Unsafe feelings	
		Witnessed experiences	
	Family conflict questions	Managing	
		Personal experiences	
		Relevance	
		Unsafe feelings	Managing
	Family experiences questions	Frequency	
		Wording	Comprehension
			Specific relatives
	Killing yourself questions	Desire versus intent	Clear
			Unclear
		Follow-up questions on frequency	Alternative wording
		Follow-up safety questions	Strong
		Randomize order of questions	Triggering
	Thinking about attempting suicide/ hurt self questions	Follow-up questions	
		Wording	
	Safety plan	Modification	
		Wording	
	Monthly summary	Modification	
Collection of passive data	Privacy		