

IntroBot: Exploring the Use of Chatbot-assisted Familiarization in Online Collaborative Groups



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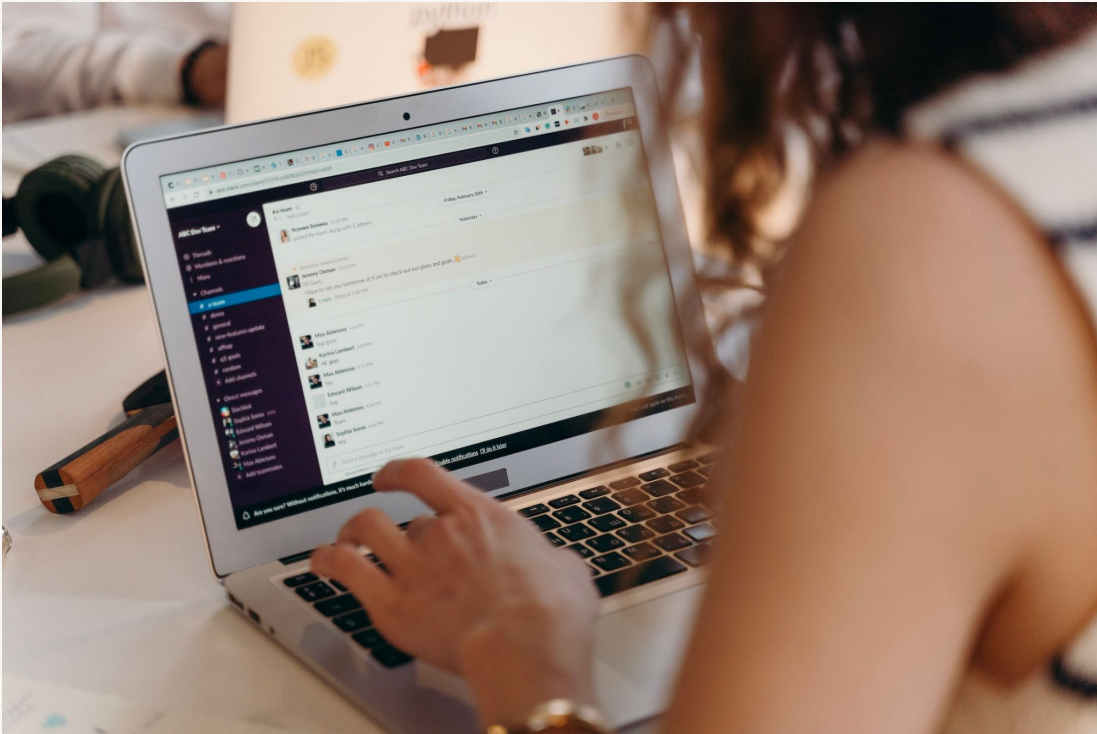


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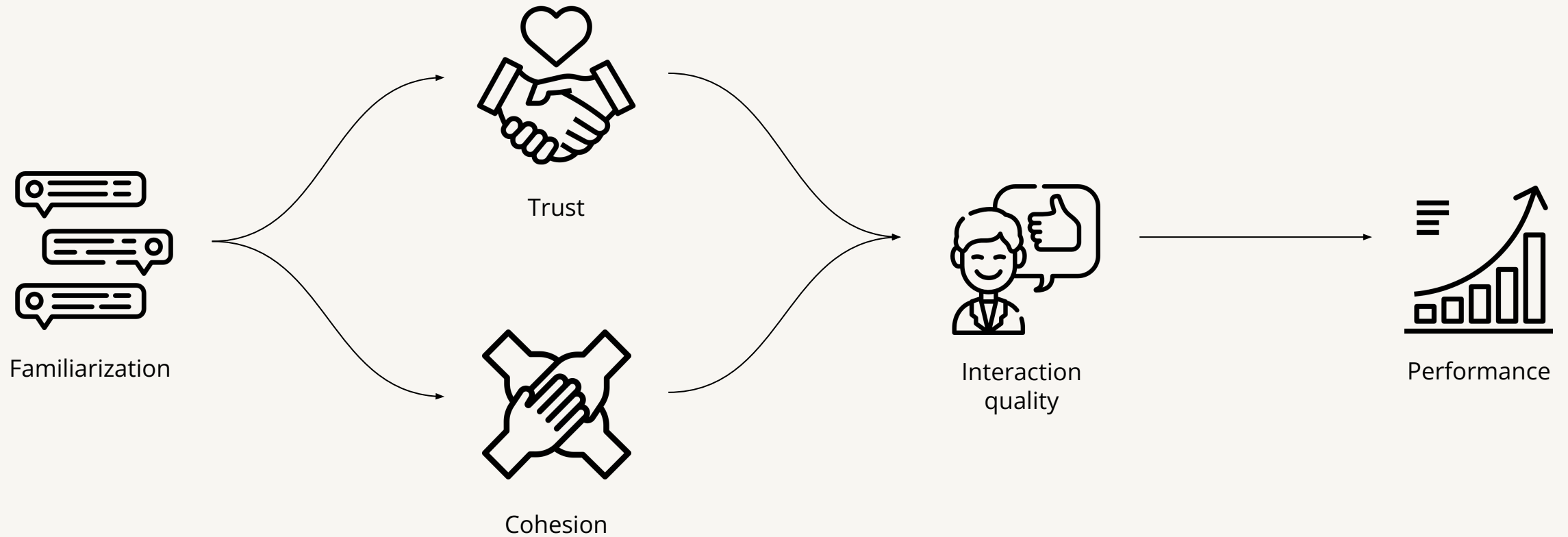


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Online Ad Hoc Collaboration



Social Relationships in Collaboration



Social Relationships in Online Collaboration



Trust

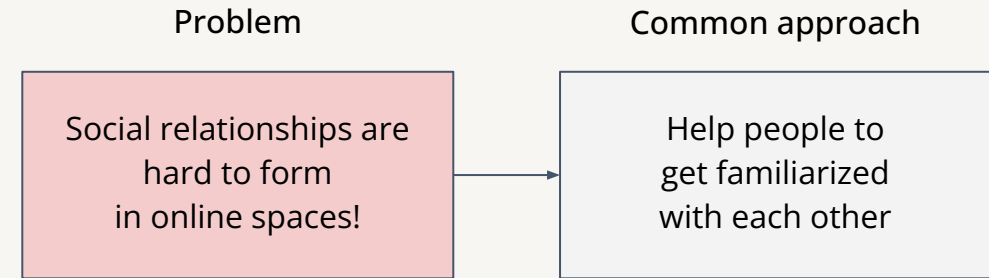
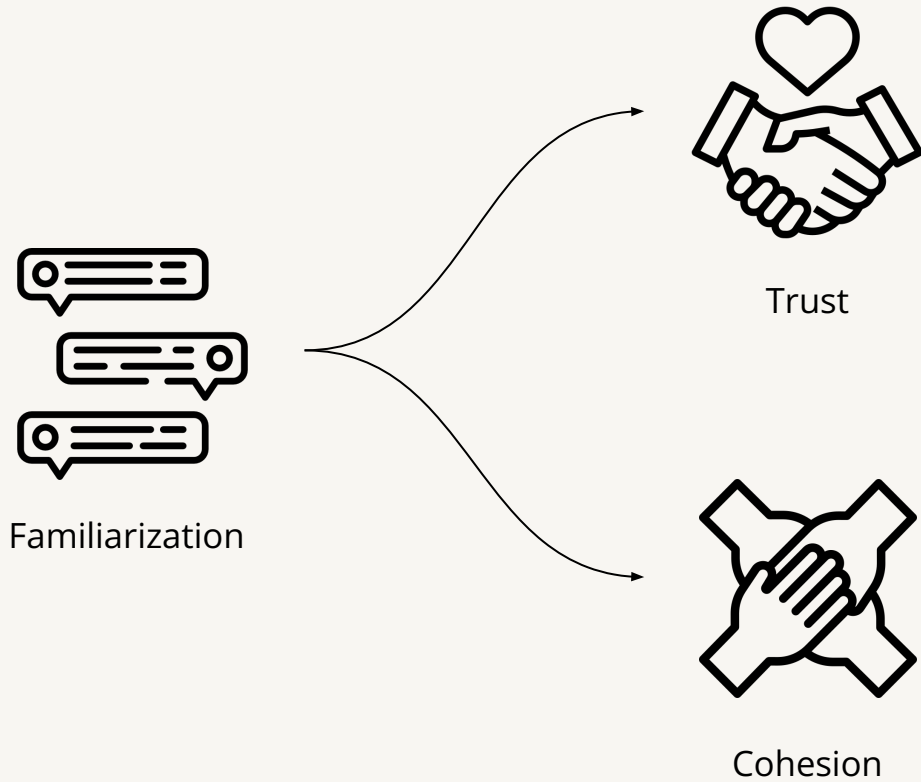
Problem

Social relationships are
hard to form
in online spaces!

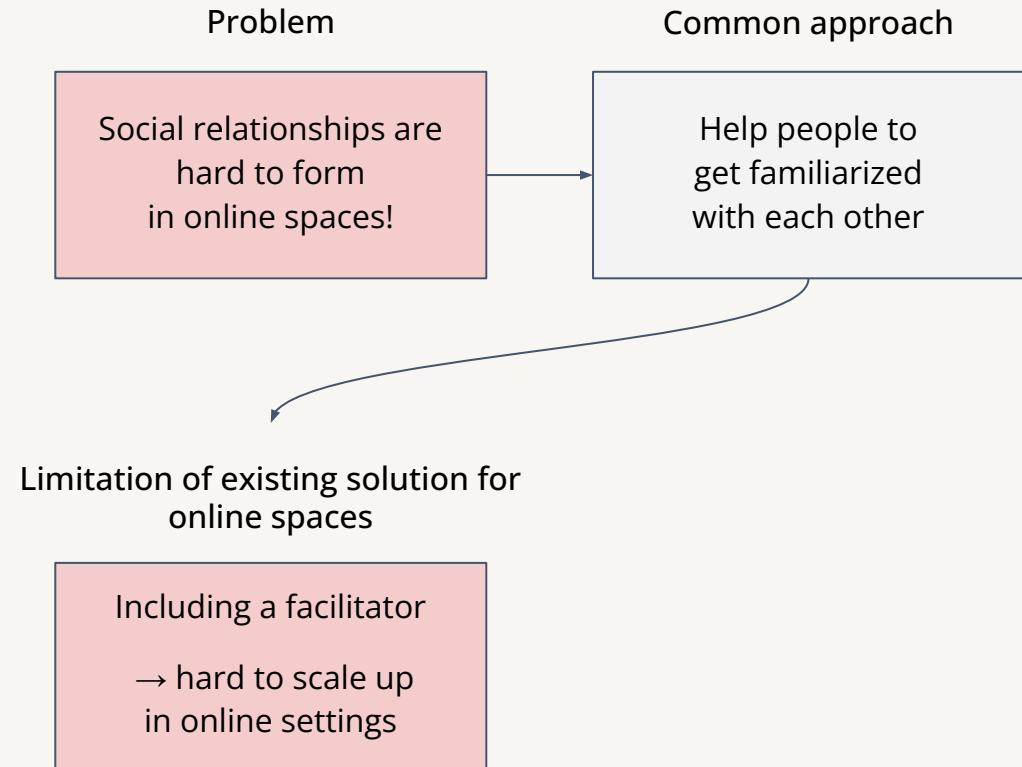
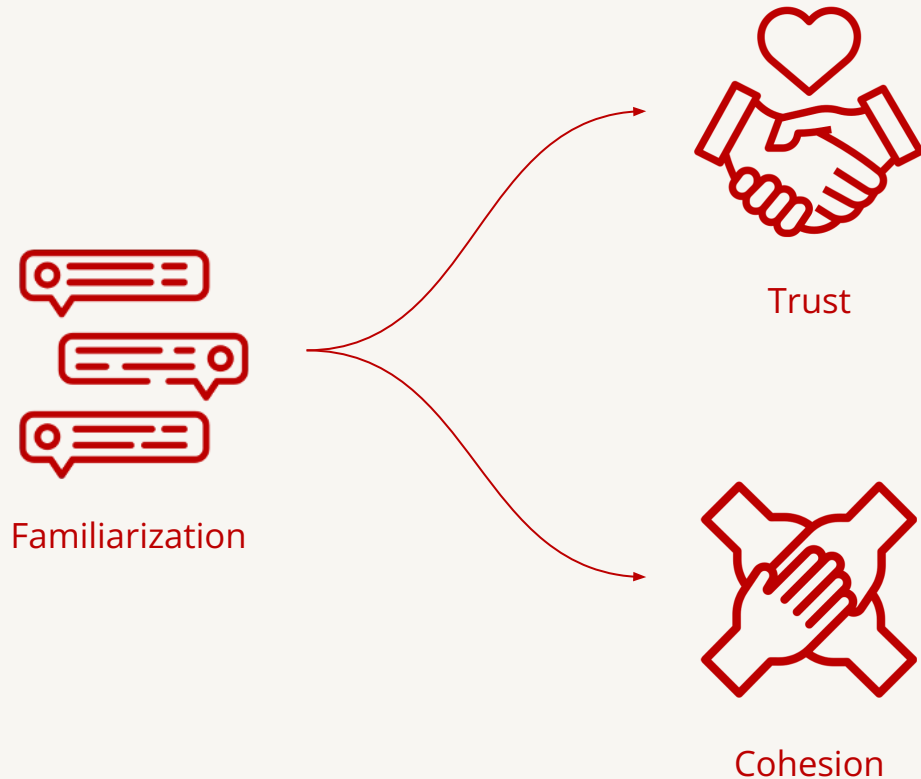


Cohesion

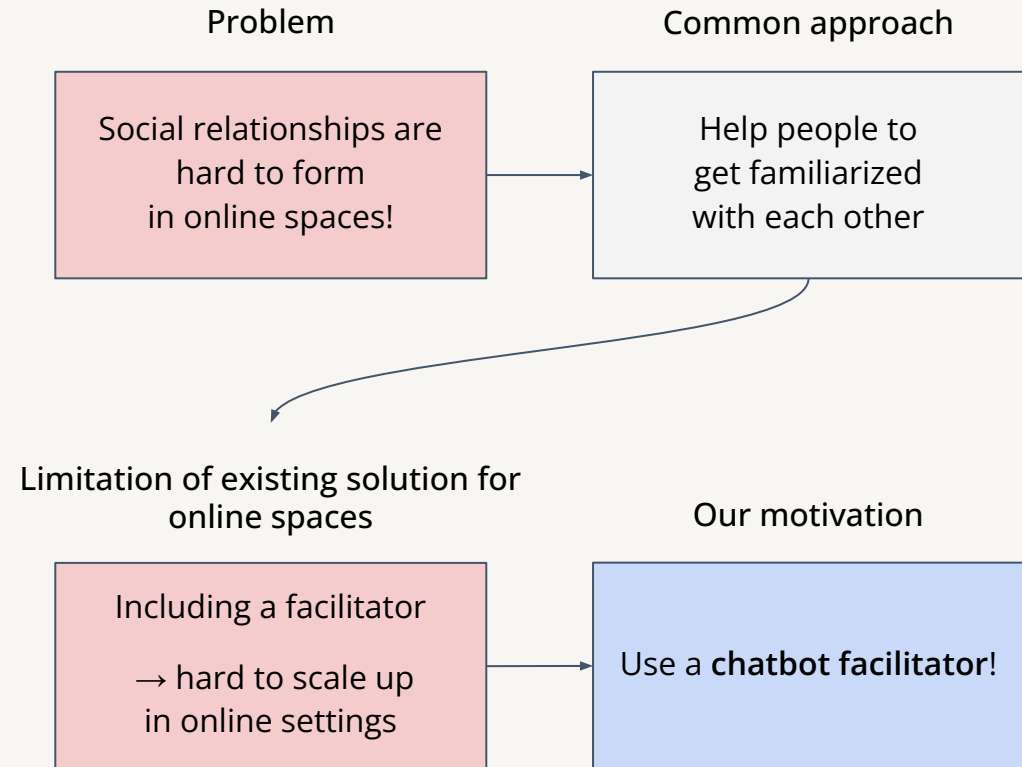
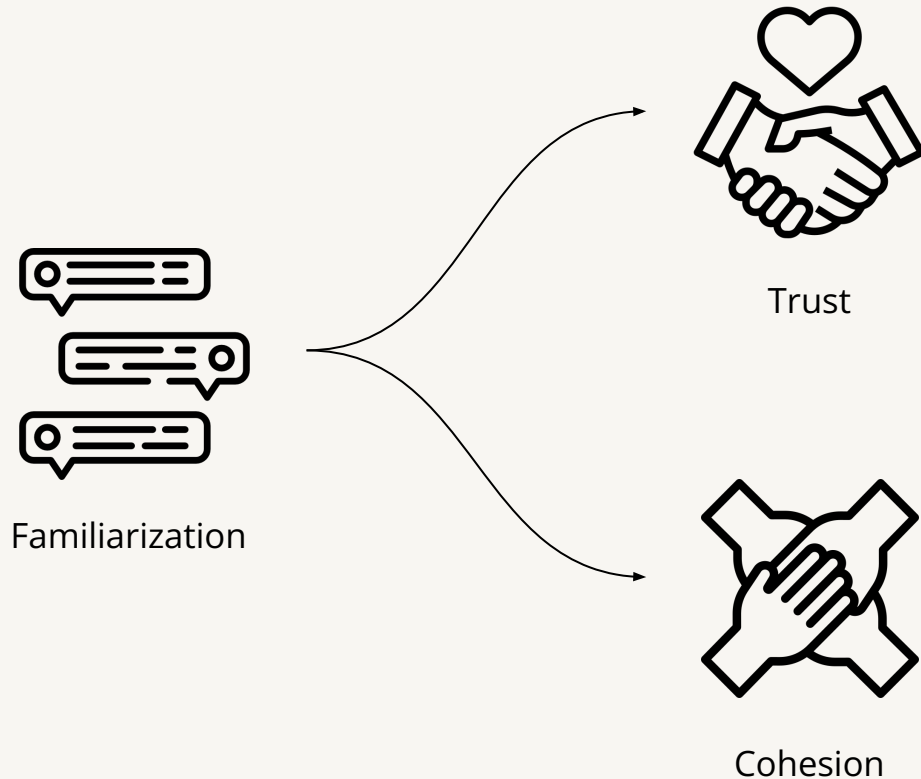
Social Relationships in Online Collaboration



Social Relationships in Online Collaboration

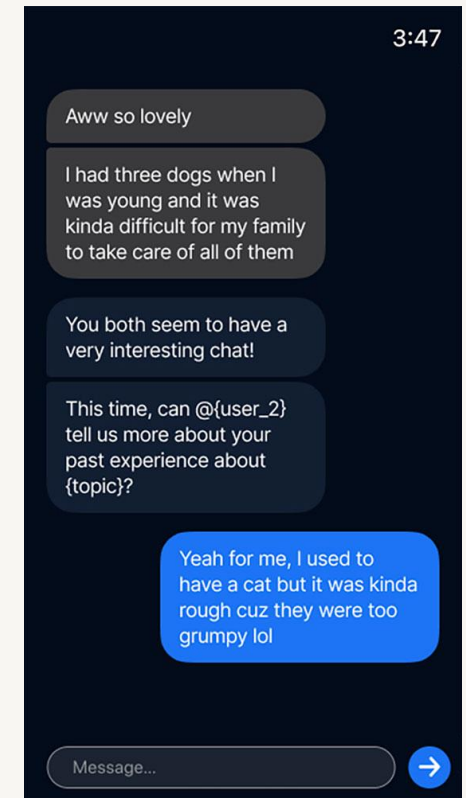
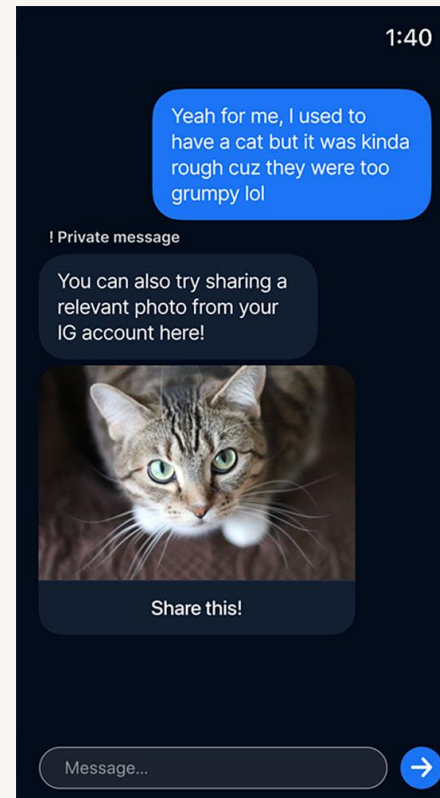
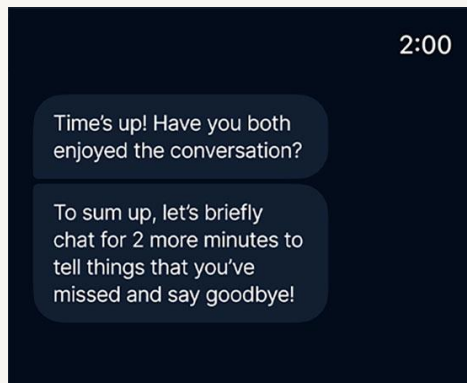
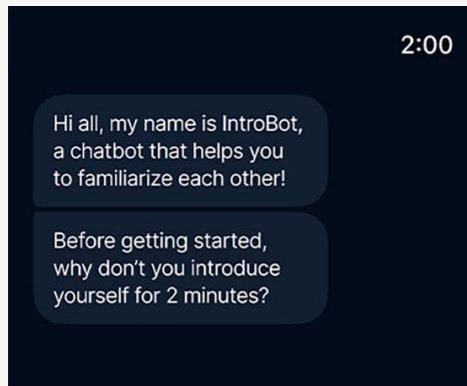


Social Relationships in Online Collaboration



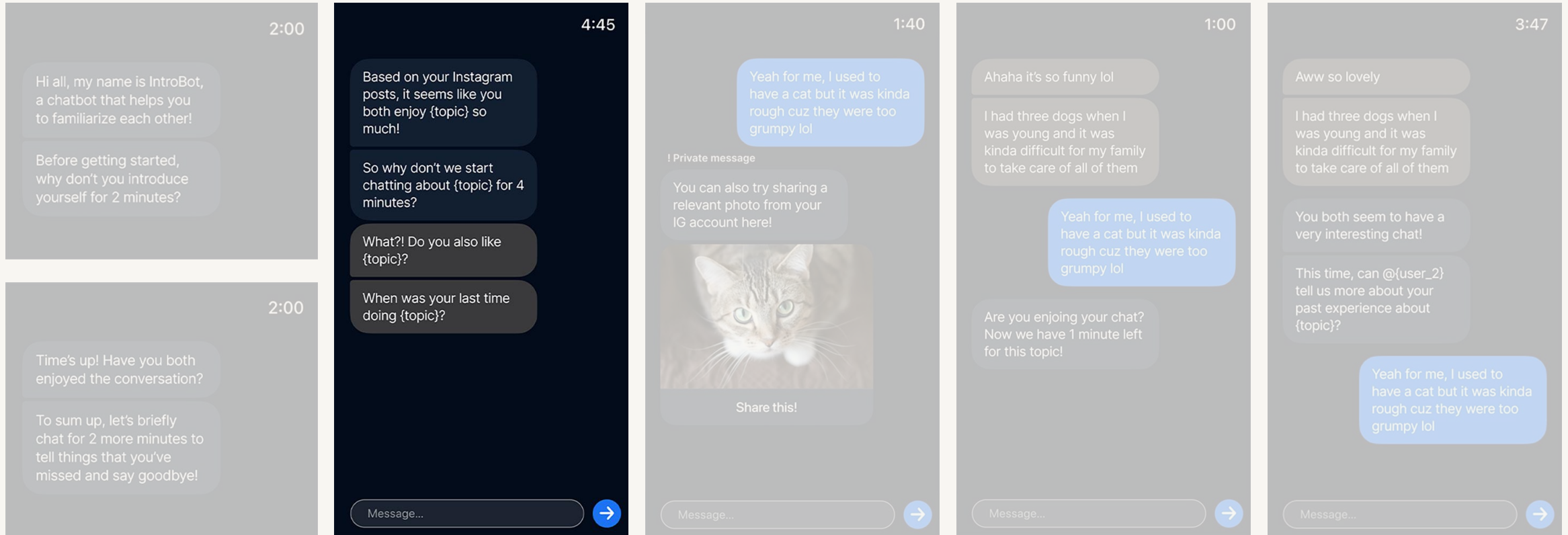
IntroBot

A chat facilitator for helping ad hoc teammates to get familiarized



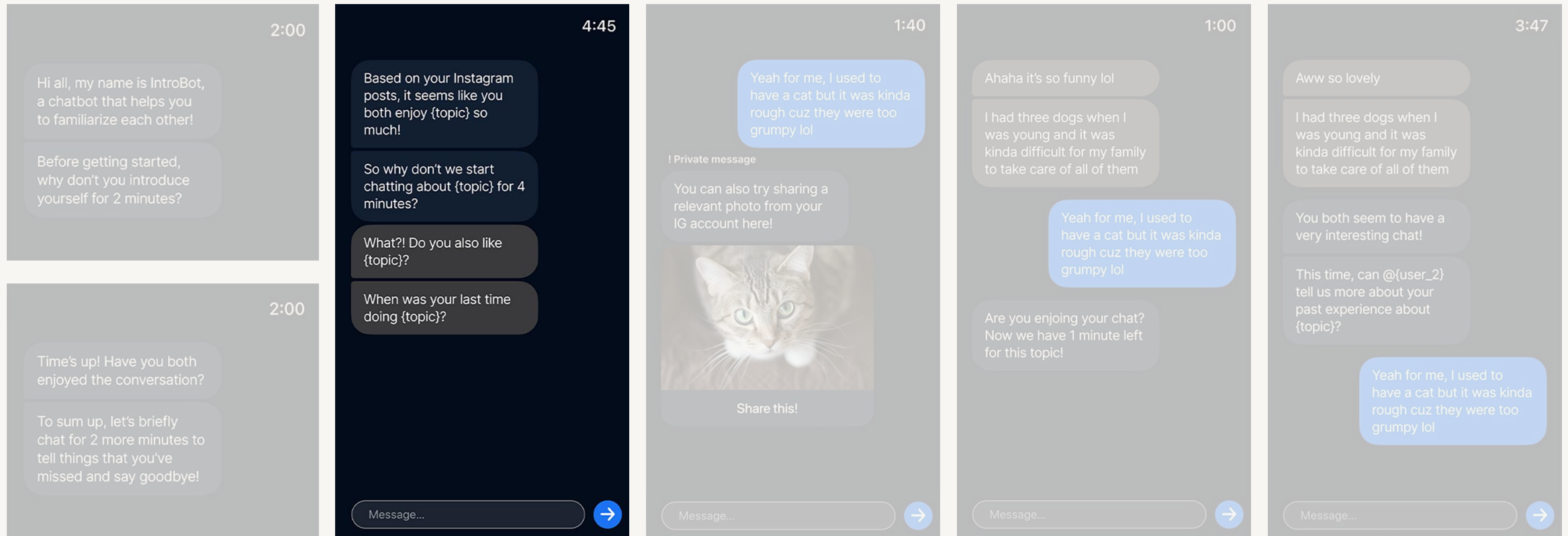
Intellectual Role

Selection of the topics of common interest



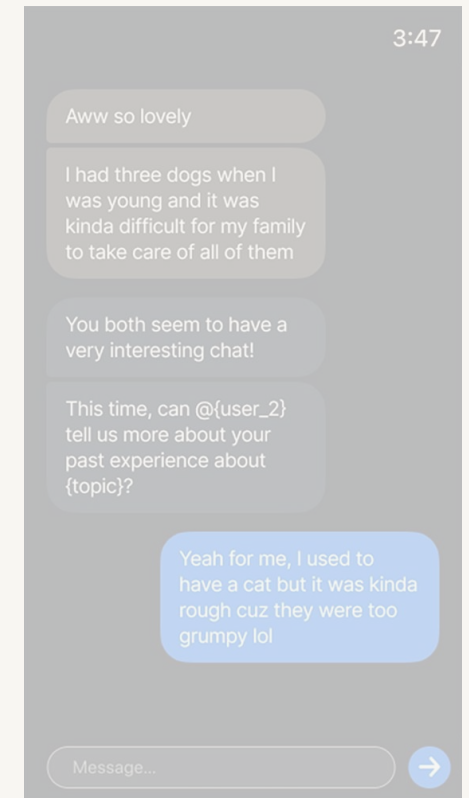
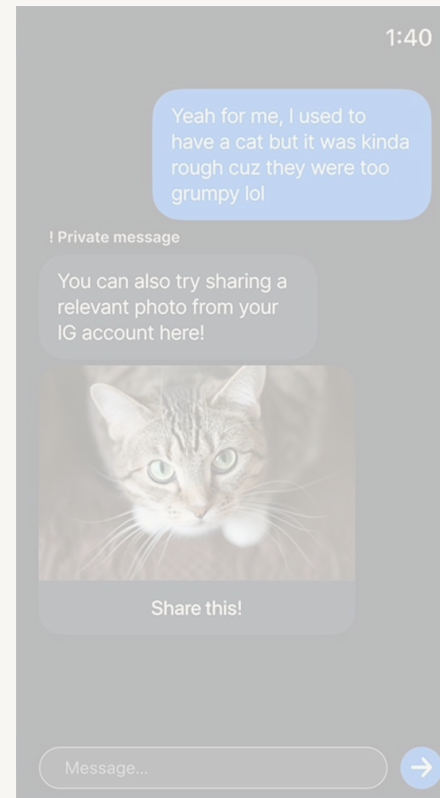
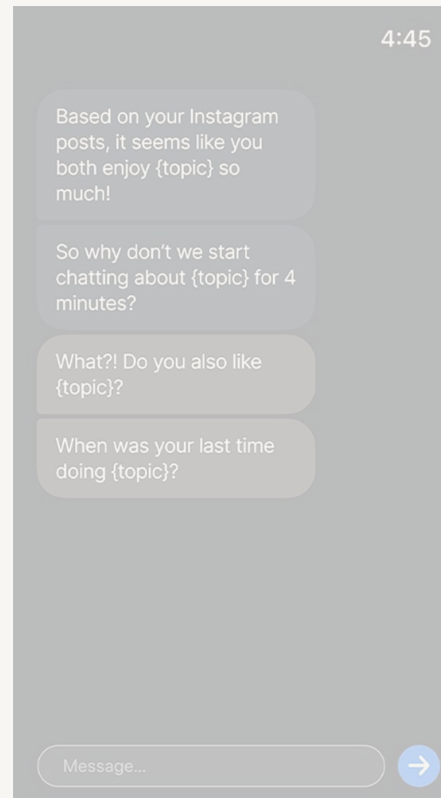
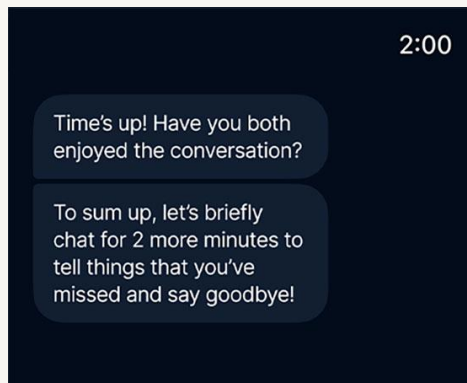
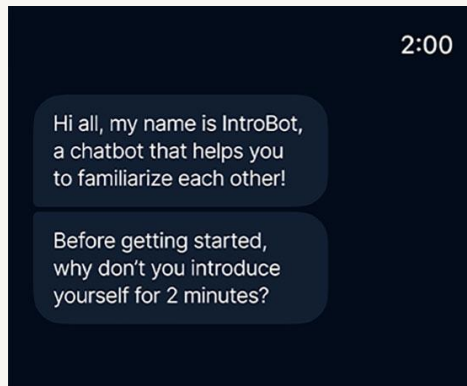
Intellectual Role

Initiating chat



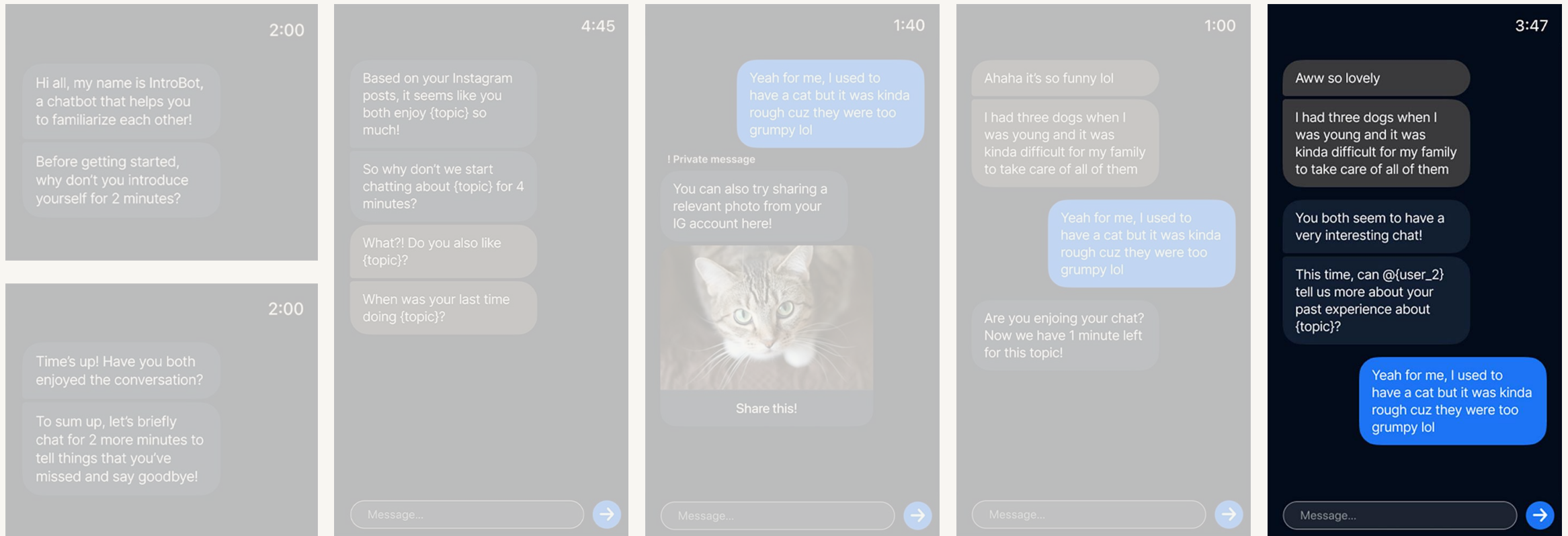
Managerial Role

Structuring the conversation



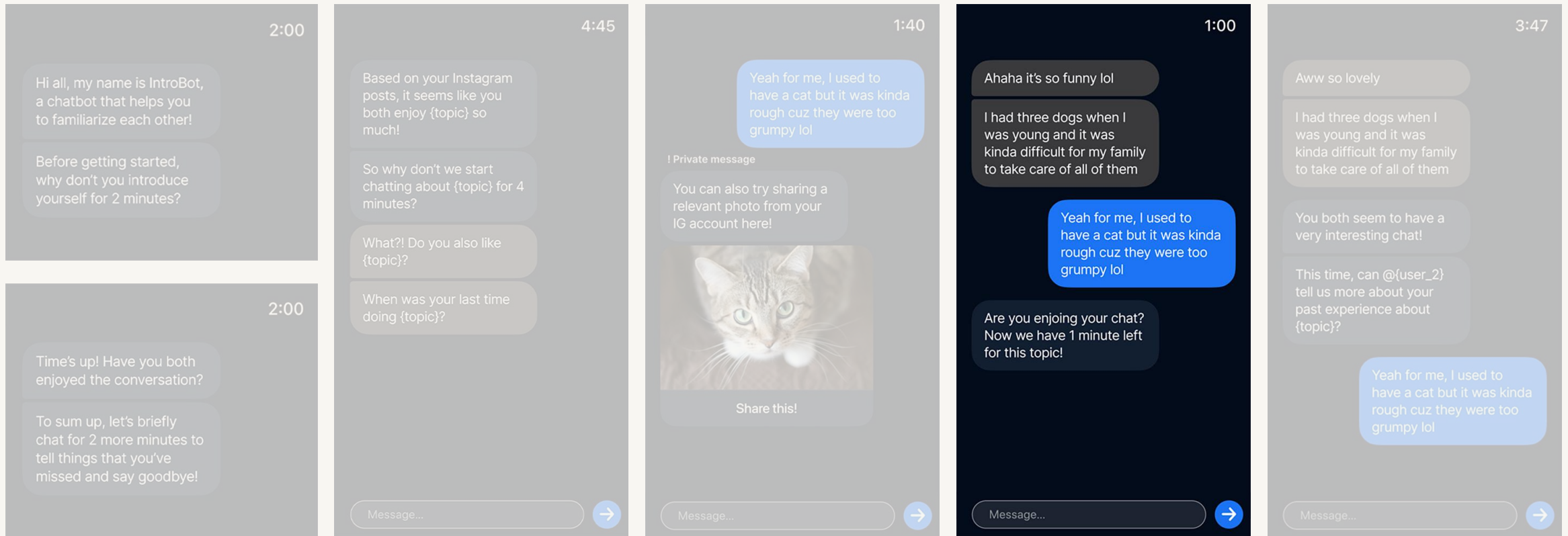
Managerial Role

Detecting and recovering dying chat



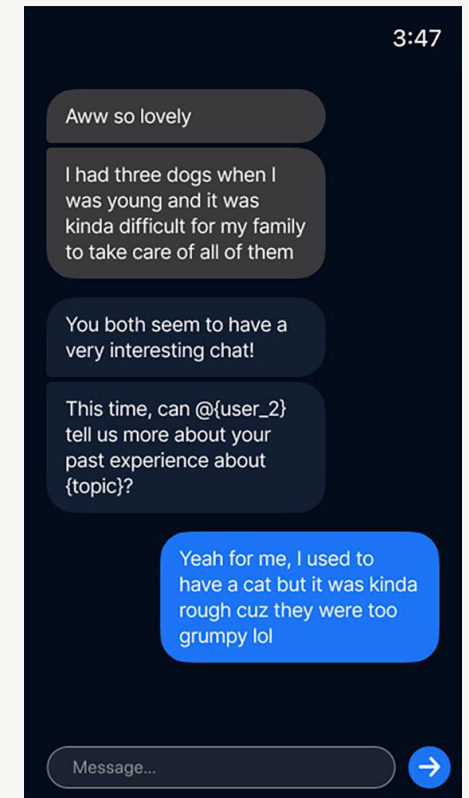
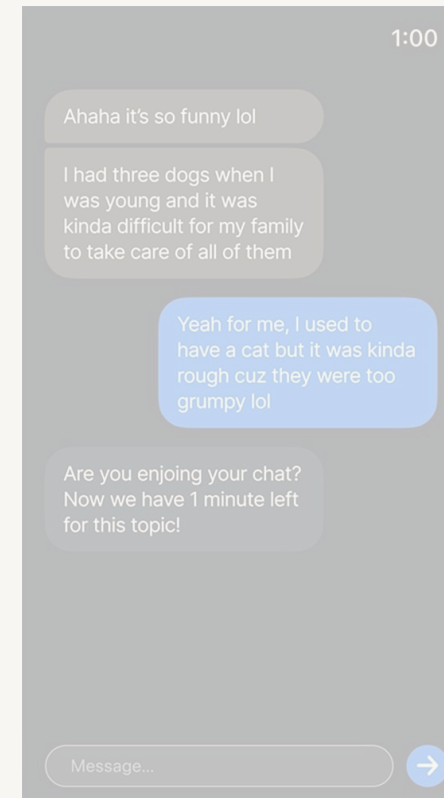
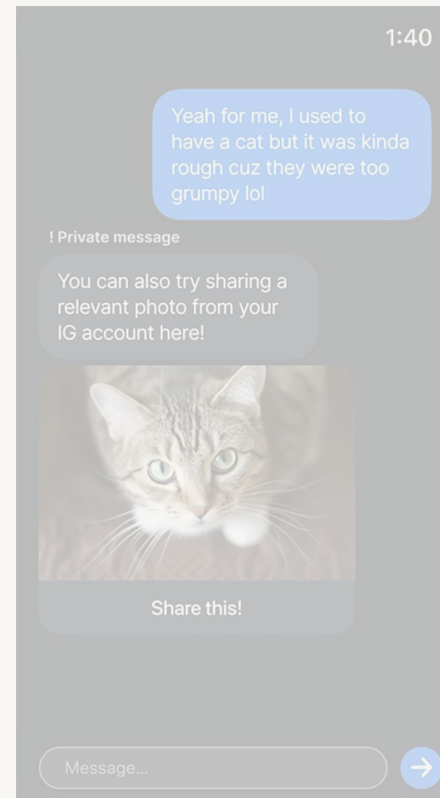
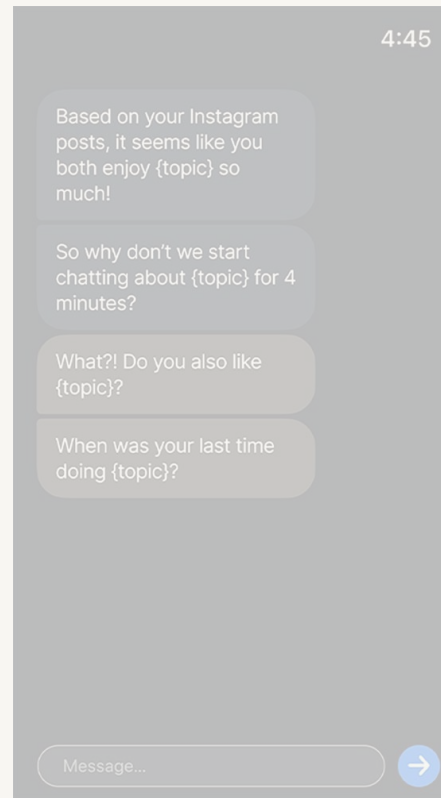
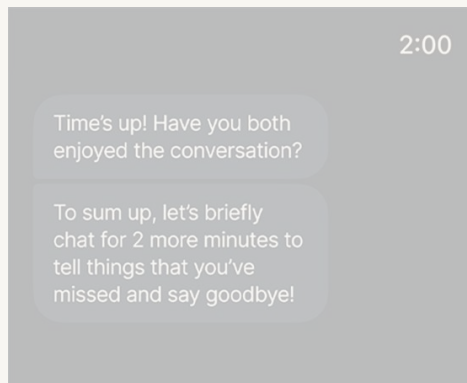
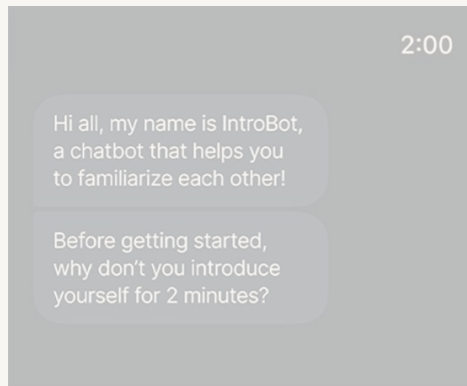
Managerial Role

Time management



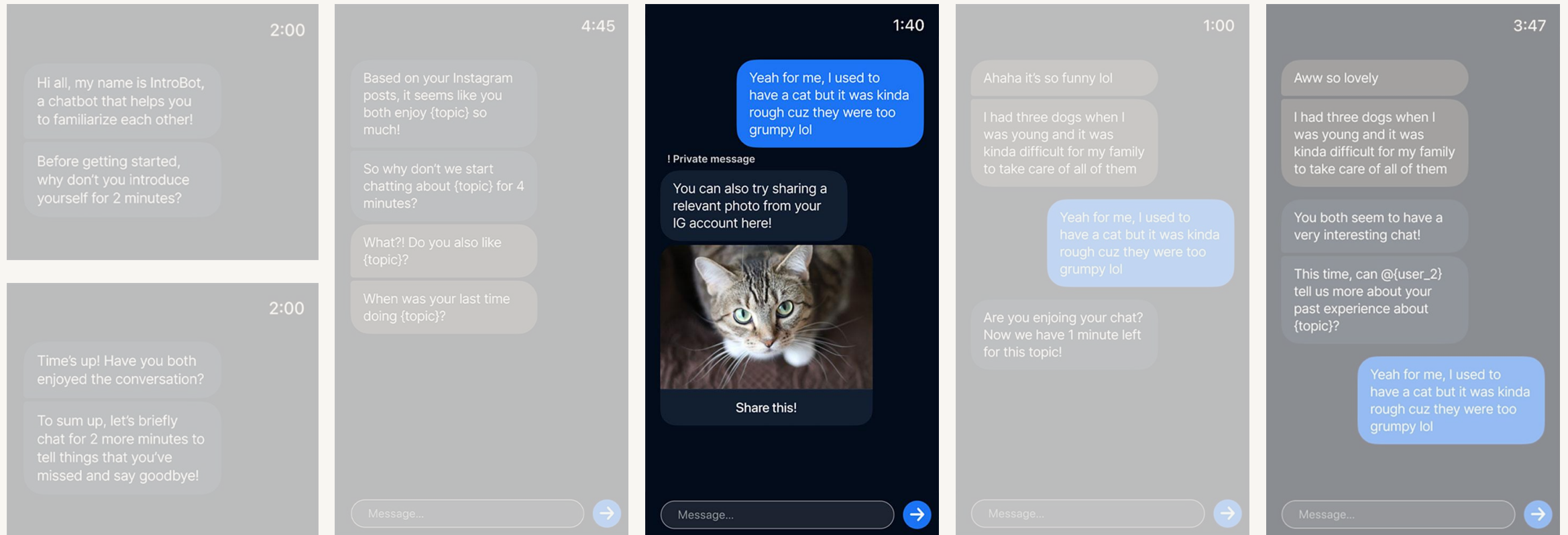
Social Role

Encouragement

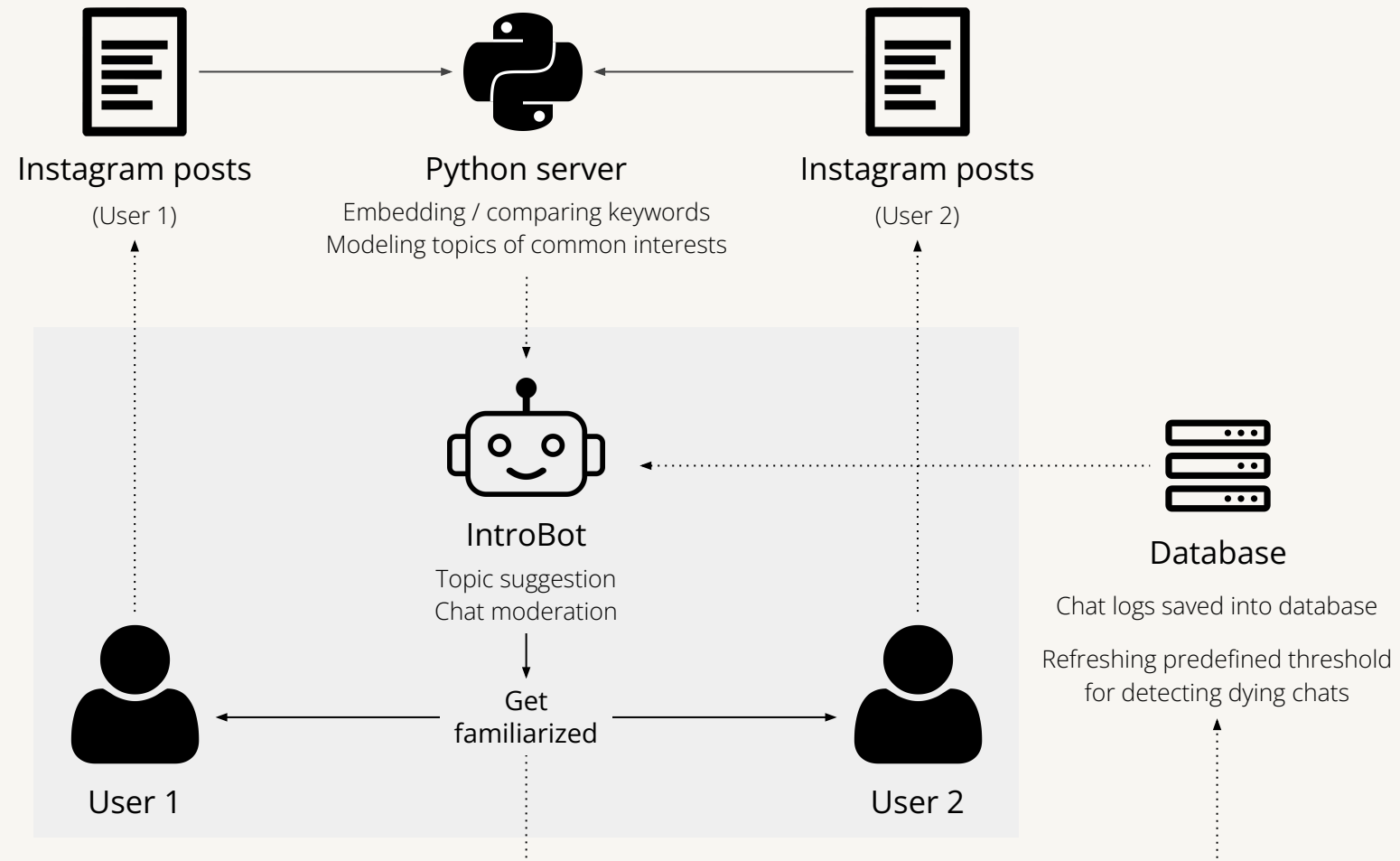


Social Role

Recommending users to share relevant photos

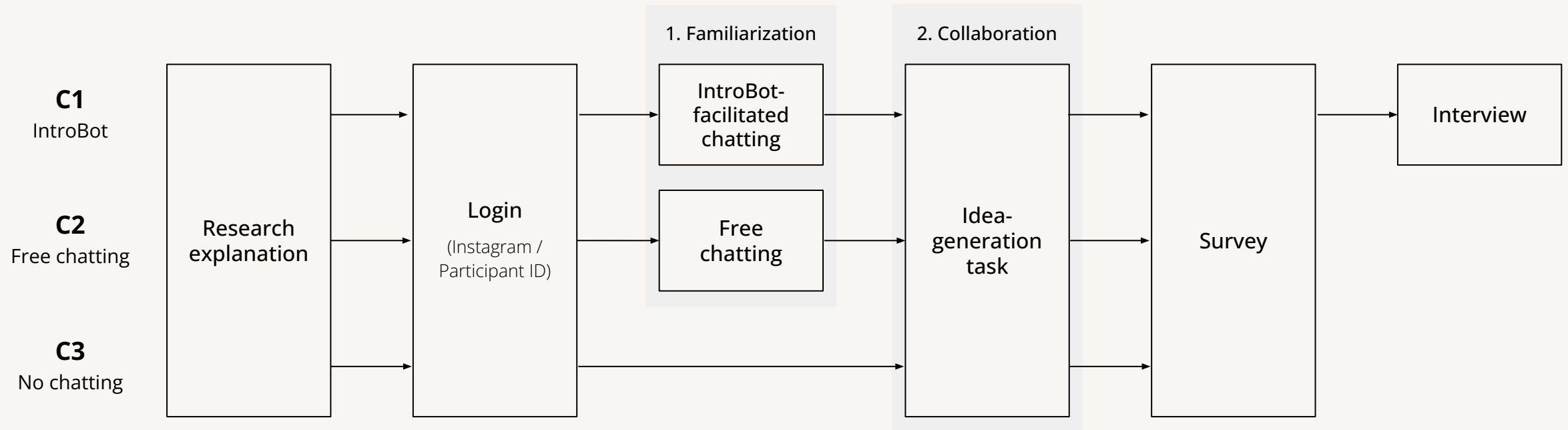


Implementation



Study

Between-subjects study design (N = 60)



Idea-generation task

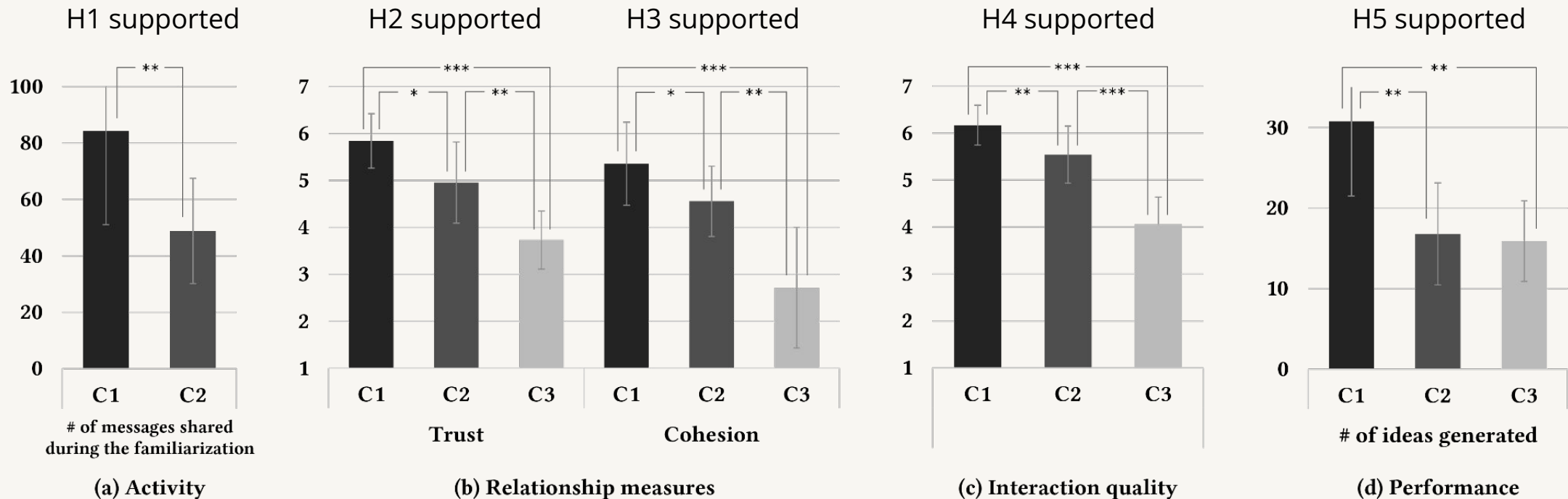
Hypothesis & Measurement

| | | |
|--|---|--|
| H1: Participants using IntroBot will chat more during the familiarization process | → | Comparison of the level of chat activity (# of chats during the familiarization; C1 - C2) |
| H2: Participants using IntroBot will have higher trust | → | Survey (dyadic trust scale; C1 - C3) |
| H3: Participants using IntroBot will have higher cohesion | → | Survey (small group cohesion scale; C1 - C3) |
| H4: Participants using IntroBot will have higher interaction quality | → | Survey (quality of interaction scale; C1 - C3) |
| H5: Participants using IntroBot will have higher performance | → | Comparison of the performance in idea-generation task (# of ideas generated; C1 - C3) |

Results

Quant

From the ANOVA followed by pairwise analysis, participants who used IntroBot (C1) showed significantly higher level of activity (H1), relationship measures (H2, H3), perceived interaction quality (H4), and performance (H5)



*: $p < .05$ **: $p < .005$ ***: $p < .001$

Results

Qual

Topic recommendation of IntroBot helped ice-break

Topic recommendation (i) reduced potential awkwardness between participants and (ii) acted as a stepping stone for exploring further common interests

e.g., "It was much easier to have a conversation with someone I didn't know at all because the chatbot suggested the topic to talk about." (P8)

Photo sharing between participants enhanced social cues and trust

Seeing the shared photos helped participants strengthening social cues, assisting them to build mutual trust during their conversation

e.g., "... once the partner shared the photo from Jeju island (a popular tourist attraction in South Korea), it reminded me of the days when I traveled there before, and the partner seemed to be 'more lively' and closer." (P13)

IntroBot facilitated social interaction by managing conversation

IntroBot's managerial role of moderating discussion by structuring the overall conversation process helped participants to have a systematic and efficient conversation, without having to worry about wasting time

e.g., "The chatbot has well structured the overall collaboration process. It set a topic for our conversation, so we could have a fun time. Also, we could have a systematic discussion because the chatbot did the time-check." (P2)

Enhanced understanding between participants improved task experience and performance

Understanding each other helped the collaborative process by creating a more comfortable environment and allowing *collaborative* relationship, rather than being *individualistic*

e.g., "Rather than coming up with an idea individually, I enjoyed the task while laughing and talking with my partner." (P16)

Discussion

1. **IntroBot effectively supported team-building practice and enhanced collaboration in ad hoc online settings**
 - a. Participants who used IntroBot showed higher trust, cohesion, interaction quality, and collaborative performance
 - b. IntroBot's orchestration of diverse roles, including intellectual, social, and managerial roles, played a significant role in its success
 - c. Specifically, we identified that photo-sharing helped a lot
2. **Our results suggest that IntroBot's design could be applied to other collaborative contexts**
 - a. *e.g., online gaming or remote software developer teams, integration with existing collaborative platforms as an add-on*
3. **Ethical and privacy considerations should be taken into account when scaled up**
 - a. Although we already included precautionary steps to avoid potential issues (*e.g., requiring user consent for sharing images, asking users to choose keywords to discuss from recommended topic lists*), considering further ethical / privacy issues is necessary when scaling up
 - i. *e.g., filtering potential offensive words, privacy around the photo-sharing*

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Thank you!

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