Team 3: 404 Users Not Found

Boyd Coates, Jack Huber, Emmanuel Mata-Jimenez, Graham Elgin

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1. Problem Overview - Coordination in Socially Sensitive Situations:

Description of the problem

Socially sensitive situations are interactions where communication carries an emotional, relational, or social risk. In these moments, what is said and how it is said can affect trust, relationships, and group dynamics. These situations can involve emotional and personal distrust, power imbalances, and uncertainty around uncomfortable interactions. This can make coordination and communication difficult to navigate thoughtfully and respectfully.

Many people struggle to express themselves without escalating tension, resulting in misunderstandings and unresolved issues. Difficult conversations are avoided due to fear of conflict, damaging relationships, or being misunderstood. When conversations do occur, existing communication tools prioritize speed and efficiency over emotional safety, which can increase pressure, create unequal power dynamics, or escalate conflicts.

As a result, people are left without support for organizing responsibilities, emotional communication, and ongoing coordination in sensitive situations. This challenge is worsened by limited understanding of how to navigate these interactions effectively. While coordination remains necessary, it must be approached in a way that does not add pressure, conflict, or social risks. These are needs that existing technologies often overlook by focusing on efficiency rather than the social and emotional conditions needed for successful interactions.

Why the problem is important

Socially sensitive situations are common and unavoidable, while they are also some of the toughest moments for people to coordinate and communicate in. When you begin to involve emotions, power dynamics, and fear of conflict, what may seem like simple conversation or coordination can become incredibly stressful and lead to misunderstandings. Without the proper support for these difficult situations, people may avoid important conversations entirely or handle them poorly, resulting in an increase in tension.

Most technologies today do not properly support the emotional and social complications that these situations can create. Instead, they prioritize getting things

done quickly rather than supporting careful communication. In sensitive situations, this can make people feel rushed or pressured to respond before they are ready to do so, further increasing the chances of misunderstandings and conflicts.

Since these situations can affect relationships, collaboration, and emotional well being, the lack of tools to help support this problem leaves a gap in how people are able to coordinate and communicate during sensitive situations. Developing the technology to help people coordinate and communicate more effectively in socially sensitive situations is important for reducing conflict and preventing uncomfortable interactions.

Existing solutions:

Virtual reality applications have been made with the intention of development in emotional skills. These devices are able to create protected environments where people can practice and grow in how to respond to hard social situations without the normal consequences. Perspective-taking exercises are an example of VR that put people in multiple peoples' shoes in situations in order to show the complication and different viewpoints when seeking to solve issues. VR has been used for exposure therapy in order to help people with social fears to help them deal with these situations. Some of the real shortcomings of these VR situations are that because the other people are not real in the training, real emotion can be hard to come by because of the artificial nature [5].

Sentiment analysis tools are also present in this field. These tools track the emotions of people through their written language to show where they are and what contexts of belief they come from, largely through AI. This can be very helpful in an academic setting helping teachers to know how best to approach students about class related issues. One serious drawback of this technology is that it requires a large amount of student data and writing to be able to knowledgeably analyze their situation [5].

AI and online roleplay is something that has been developed, for companies, to train their employees in how to interact with, prevent and solve social conflict and improve group interaction and work. It educates people in communication skills by immersing them in artificial real world situations through something called immersive learning. The main drawback of this is that it is fairly limited to work environments because individuals will likely never use these unless it is paid for by their company [4,6,7].

Relationship card decks that give couples activities to perform to create more healthy communication habits. These also are used to create plans for people who are in relationships. The largest drawbacks of these are that it only really works for romantic couples and does not work well for all couples [8].

Analog examples also include written agreements or contracts that set out boundaries and understandings for people before work or actions arise so that they can agree on how to work together in those situations and prevent conflict. A serious downside to this way of doing it is that when agreements and contracts are written at the beginning of a relationship or project they do not take into account the dynamic issues that will be present.

2. Stakeholders and Users

Relevant stakeholders and user groups:

We identified these stakeholder groups through a mix of our own personal experiences and observations as well as background research. Research on technology supported care coordination shows that sensitive coordination requires many roles such as individuals, caregivers, professionals, and administrators. We also looked at resources on social anxiety and technologies to assist it to better understand why people avoid difficult conversations and what tools are already being used to improve these issues [9,10,11]. Additionally, an industry example shows how organizations are exploring AI roleplay tools to help employees practice conflict resolution in a low risk environment [7]. Through personal experience in academic group work, work environments, family and roommate settings, we were also able to observe similar challenges in coordination happen in relationships where power imbalances, emotional struggles, and fear of conflict impact communication [1].

Primary Stakeholders:

- Friends, romantic partners, roommates, and family members who need to coordinate relationships and shared responsibilities where unresolved issues or unclear expectations can lead to conflict
- Caregivers and individuals receiving care, including both family and professional caregivers who must coordinate tasks and provide emotional support while dealing with stress and unequal responsibility
- Individuals with disabilities, chronic pain, or accessibility needs who may need alternative solutions and formats to participate in coordinating efforts.
- Individuals navigating sensitive situations on their own, such as people who avoid conflict and struggle to express emotions without escalating problems.

Secondary Stakeholders:

- Students, teachers, professors, and group organizers who coordinate collaboration and participation, specifically in group settings where power differences and social pressures affect communication. `
- Leaders, managers, and coaches who support teams or groups, and are responsible for navigating hard conversations, enforcing equal participation, and preventing conflict.
- Members of teams, clubs, sports, and religious or community groups who take part in coordination, but struggle to initiate and control how it happens

Tertiary Stakeholders:

- Organizations and administrators who are responsible for the approval and use of coordination tools
- Communities and families who may be indirectly affected over time by how sensitive coordination is handled
- Other companies or products that provide tools for communication, collaboration, and solutions for reducing conflict which have an impact on the common uses for handling sensitive coordination

3. Tasks and Context

Key Tasks Users Seek to Perform

- Raise a concern or need without escalating tension
- Coordinate shared responsibilities such as chores, caregiving, or group work
- Request accessibility accommodations or emotional support
- Provide feedback about behavior or communication styles
- Resolve misunderstandings after a conflict has occurred
- Track ongoing issues that have not yet been addressed or resolved
- Decide when outside help or mediation is necessary

Important Task Characteristics

- Emotionally risky: Users fear rejection, judgement, or the possibility of damaging their relationships.
- Ambiguous outcomes: There is often not a “correct” outcome or solution when it comes to the problems these tasks present.

- Power-sensitive: Social hierarchies in relationships and conflicts, such as the relationships between parent and child or boss and employee, can affect openness.
- Open to interpretation: Tone and wording can heavily influence meaning.
- Asynchronous: Conversations usually occur over time, not in one sitting.
- Accessibility dependent: Anxiety, neurodiversity, and disabilities shape participation.

Task Environments

- Physical context: homes, dorms, workplaces, classrooms, online
- Social context: friendships, families, caregiving relationships, teams or groups
- Organizational context: informal rules, cultural expectations, authority structures
- Technological context: texting, email, group chats, productivity or team apps

Structured Task Analysis

Method:

Hierarchical Task Analysis (HTA) [12], which breaks down a user's overall goal into hierarchically organized tasks, subtasks, and plans in order to understand how activities are carried out in real contexts.

Overall Goal:

Address an imbalance in shared responsibilities without damaging the relationship.

Task Breakdown:

Address shared responsibility imbalance

Plan:

Perform tasks 1–3 in sequence. If misunderstanding or tension occurs during task 4, return to task 2 to reframe communication, or proceed to task 5 if additional support is required.

1. Recognize the issue

- 1.1 Notice an imbalance in shared responsibilities
- 1.2 Experience ongoing frustration or stress related to the imbalance
- 1.3 Decide that the issue requires attention

2. Prepare to communicate

- 2.1 Decide whether to initiate a conversation
- 2.2 Select a communication format (in-person, text, or message)
- 2.3 Choose an appropriate time to communicate
- 2.4 Formulate the content of the message

3. Initiate communication

- 3.1 Open the conversation or send the message
- 3.2 Express the concern using the prepared wording
- 3.3 Describe the specific responsibility imbalance

4. Respond to feedback

- 4.1 Observe the verbal or written response
- 4.2 Identify response cues indicating understanding, confusion, or defensiveness
- 4.3 Modify wording or clarify intent if tension arises

5. Evaluate outcome

- 5.1 Determine whether mutual understanding was reached
- 5.2 Decide whether responsibilities were clarified or renegotiated
- 5.3 Decide whether follow-up discussion or outside mediation is needed

Outcome Expectations

- Responsibilities are clarified, renegotiated, or deferred
- The impact on the relationship is assessed by the user
- The issue is marked as resolved or ongoing

4. Research Methods and Evidence

Our research methods vary pretty heavily. One strategy that we used was taking our bullet points from our slide show and using generative AI as a supplementary tool to help identify relevant research directions and potential sources related to our topic. We also used the hierarchy readings to understand how we ought to approach each task to help us structure our task analysis. Similarly we used the internet and ACM Digital Library to find helpful articles that apply to the issues by searching for things related to our topic. We found many articles that explained current solutions and helps to these social situations including *Rehearsal: Simulating Conflict to Teach Conflict Resolution* an ACM Digital Library article about a technology called rehearsal that allows people to rehearse conflicts which increased cooperation strategy and decreased competitive

strategies. We also found articles about virtual reality that show its use as an ability to put people into situations to help with empathy and understanding [4]. Through another ACM article called *Someone Is Wrong on the Internet: Having Hard Conversations in Online Spaces* we found that conflict is extremely present in online spaces. This above article similarly showed us that people like when they can customize and shape the way that they communicate online with serious fears of their messages being understood in the wrong way or be rejected by others. Overall, finding that interpersonal design is imperative [2]. Another ACM Digital Library article that we found is called *Conflict in Community-Based Design: A Case Study of a Relationship Breakdown* which explored the relationship between unspoken castes and relational conflict. To prevent these injustices and conflicts there must be space for reflection, open communication, disagreement and that designs must keep in mind what communities believe and value. When these are missed the environment is set for conflict [1]. The final ACM Digital Library article that we explored is called *Two Sides to Every Story: Mitigating InterculturalConflict through Automated Feedback and Shared Self-Reflections in Global Virtual Teams* that explored communication between people of different backgrounds and how that contributes to conflict. They found that the problems often come when people do not truly understand what the other person is attempting to communicate. This issue is best solved when each side begins to understand the other's intentions and cultural values along with valuable structured shared reflection [3].

5. Synthesis and Design Implications

Synthesis of Findings

Across our exploration of users, tasks, and existing systems, we noticed a consistent pattern regarding how people experience coordination in socially sensitive situations. Users often face emotional risk, fear of conflict, anxiety, and uncertainty when they are attempting to raise concerns or negotiate shared responsibilities. These situations are usually asynchronous, not isolated, and are affected by power dynamics, unique accessibility needs, and past interactions. Due to these factors, users tend to delay or avoid communication completely, even when action or coordination is needed.

Our task analysis revealed that the coordination needed to solve these problems is not simple or a single action, it is a multiple step process that requires recognition, preparation, communication, interpretation, and evaluation. Each stage introduces the possibility of misunderstandings or conflict, particularly when users feel pressured to respond quickly or if they are unsure how their message will be received. We also found that the emotional state of users, timing, perceived social risk are a big part of how users engage with the tasks.

Regarding existing technologies, we found that they can be useful in specific scenarios, but often fail to support users navigating real world scenarios. Messaging and productivity tools emphasize efficiency and task completion, which can increase pressure and introduce emotional discomfort unintentionally. On the other hand, training-based solutions such as roleplay, VR, and rehearsal systems are useful in terms of navigating niche scenarios and supporting emotional development, but they are detached and fail when it comes to assisting users in navigating more broad day to day scenarios. This detachment leaves users without the knowledge and tools to coordinate successfully in social sensitive moments.

What These Findings Imply for Future Design Decisions

After examining our stakeholders and problem areas, we found that socially sensitive situations are created through group dynamics, power differences, and the fear of escalation. Communication goes beyond two people, and users frequently feel the pressure to perform socially in group settings. Due to this, our future design decisions should account for the fact that users benefit the most from time and structure before having to act or respond to a situation.

Our findings show that tasks should allow individuals to reflect before they begin participating, instead of requiring immediate responses. Existing systems do not account for this, as they will encourage users to respond in the moment. This increases anxiety and creates power imbalances, which make these conversations much more difficult to navigate. Our future design needs to avoid the overreliance on instant action by helping to support preparation and reflection.

These designs also need to feel natural, instead of having users stop what they are doing in the middle of a sensitive situation. Rather than having tools that intervene in the middle of conflict, these tools need to be more preventative by helping our users build these skills ahead of time so that they can keep issues from escalating instead of trying to resolve these conflicts in the moment.

Also, future designs should not just focus on verbal communication. We can support socially sensitive situations that may involve visual cues, behavioral reflection, pattern tracking, and exercises. This can be especially helpful for users who deal with social anxiety and try to avoid difficult conversations. By helping users understand their communication habits and triggers, we could increase their confidence over time.

The diversity of user groups is also an important thing to consider, as that plays a large role on the platform choice. Difference users, contexts, and tasks will influence the type of system that is most appropriate. Usability testing will be incredibly important to understand which situations users are willing to engage with these tools, and it will also help identify which scenarios users feel most uncomfortable using these tools.

Constraints and Opportunities

A major constraint we discovered is how interpersonal conflict is rarely addressed by pulling out a phone or device during the moment. This tells us that the UI should focus on preparation and reflection rather than in the moment conflict resolution. Users can instead rely on what they are learning from a system during actual interactions, or use the system afterwards to reflect upon their behavior.

When considering the platform choice, physical artifacts and mobile interfaces seem to provide the most opportunities. Physical artifacts could be most appropriate in certain contexts because they reduce the need for screen engagement because the users can focus on an object instead. Mobile interfaces provide great accessibility benefits as phones are easily available and can be used at any point throughout the day. This supports reflection and learning, which are important for addressing socially sensitive situations.

What Platform Might be Most Appropriate

Based on our findings, we do not think a traditional screen-based platform is always the best option during interactions. When people are focused on a device, it can negatively affect attention to social cues and engagement with the other party, which are important when dealing with interpersonal issues. Because of this, we think that physical artifacts would be more appropriate in some cases, since they can act as less of a distraction and more of a shared point of focus, assisting in helping users feel like they are working toward the same goal instead of against each other.

We also think that a mobile platform could be appropriate since reflection and preparation play a large role in how people handle sensitive situations, and a mobile platform provides more accessibility and flexibility than a desktop platform. Most people carry their phones throughout the day, and a mobile platform could make it easier to reflect, plan, or revisit an issue at a time that the user feels more comfortable and emotionally stable. This is important in this problem space because users may need time to think through how they want to communicate before or after a difficult interaction. We think that these two platforms may each be most appropriate at different stages of a socially sensitive interaction or conflict.

6. Peer Feedback and Reflection

Key themes in the feedback

General interest

Overall, our peer feedback showed strong interest across all three problem areas, with all generally agreeing that each space offered promising directions to explore. While technology to help environment adjustment and technology to aid in navigating social sensitive situations were viewed as feasible, many identified technology to help with the obstacles of aging as the most understandable and impactful direction. At the same time, addressing socially sensitive situations stood out to most as having the strongest potential for a successful semester long project.

Large scope

A recurring theme observed in all feedback was a concern about the broad scope of each problem space. Our peers consistently questioned how a space with wide ranging problems could be narrowed down given the length of time we have to work on this. For technology to aid with the obstacles of aging, a concern emphasized was the diversity of health conditions, abilities, and technology comfort level associated with aging. For technology to help environment adjustment, it was noted that context plays a crucial role in traveling, relocation and adjustment. For our third problem space, the variability of individual emotional responses and social dynamics raised questions about how a single solution could address such different problem areas. Overall, the feedback emphasized a need for a more defined problem area within these larger issues.

Simplicity and inclusion, and accessibility

Feedback related to our problem areas in aging and socially sensitive situations frequently expressed the need for simplicity, accessibility, and inclusive design. With many noting that existing technology fails to accommodate different abilities, comfort levels, or emotional states, and cautioned that adding another solution might unintentionally contribute to this growing need. To make a meaningful change, it is noted that user centered research and design in addition to usability would help combat these existing issues found in these problem spaces.

Feasibility and real world use

Concerns about feasibility were mainly seen in our problem of interest, particularly regarding the practicality of using technology in socially sensitive areas or high stress situations. Many questioned how we would define what a socially sensitive situation is, whether individuals would even find themselves engaging with an application in one of these moments, how users would know when to use the

technology, and whether demand would exist for the tool to be of value. Most importantly, many expressed concerns about how a single application might struggle to address interpersonal dynamics and communication without being intrusive or a burden to use over time.

Oversaturation

Several of our peers indirectly raised concerns about the number of apps that already exist relating to social interaction and personal support. They didn't directly name tools, but stated that many already exist to attempt to address aspects of conflict resolution, communication, or emotional well-being which could result in our solution being diluted in a saturated space.

Strengths and weaknesses Identified

Idea 1: Technology to help people combat the obstacles of aging

Our feedback was the most positive for this idea, as many people found it as the most understandable and actionable problem area. Many people saw the immediate value of supporting an aging population. The clarity surrounding this problem was a big strength, many seemed to like the idea of helping elderly individuals with technology. Although this was a well received problem area, the various health conditions and abilities that change with time were one of the main weak points in this problem area, it would pose a challenge of who would be excluded within a singular solution.

Idea 2: Technology to help people adjust to new environments

The feedback for our second idea centered around its strength of versatility. This same strength presented its weakness of how rich the problem space was due to the inability to limit every context people may face. "Adjust to new environments" was the main weak point in this problem area, because without narrowing our focus this would encompass too many experiences that would make identifying a clear user need difficult.

Idea 3: Technology to help support coordination in socially sensitive situations

This idea generated a lot of interest but also a lot of confusion. Many found this problem area unique, but were unsure of what a solution would encompass. A main weakness found was its feasibility and around how someone would go about using a product in an ambiguous environment. Many questioned how engagement would work during sensitive moments and how it might produce an even more awkward situation.

The lack of direction played as a strength, because it allows us to explore different mediums when trying to solve this problem.

How peer feedback influenced your choice

The peer feedback highlighted general questions surrounding how we would define such a broad problem area, but garnered significant interest in possible solutions. Regarding our initial area of focus, this feedback seemed to reinforce and highlight the need for a more diverse approach to how communication and social interaction take place. Most feedback recommended a singular platform to address this issue such as a web application, this common recommendation in addition to concerns of a saturated space allowed us to confirm the need to pivot away from what many find conventional. This directly addresses some concerns about usability during certain social settings while also exploring existing technologies limitations.

Points of disagreement or tension

All the feedback from our 3rd idea generated mixed responses, some found it too broad of an area to try to explore, while others found it as an over saturated area in the online space. We found ourselves overlooking some of the recommendations that state we bridge the gap in existing apps and focus on a single app that fixes a lot of existing issues. Many of the responses centered around a fixed mindset of how will an app help fix this problem, this approach to thinking an app is the only solution would limit our creative freedom with how we design a solution by the limitations of what can be done on a phone, or an application.

Implications for future work

The feedback provided great insights in terms of usability and general concern about how we can narrow down our problem space. Our main take away was shifting from just the problem statement to how the user would reasonably be expected to use a technology in an already uncomfortable situation. With many noting the wide availability of communication apps, it is important to explore what certain applications fail to address, and how they exclude certain individuals. When we approach the design process, it should heavily incorporate usability testing to ensure this can be used in a wide variety of social situations without being an additional step someone feels like they have to take or an assistive technology that draws attention to themselves.

Citations

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