

Bridging The Gaps

Improving Interactions Between
African-American Teenagers and Uniformed
Police Officers: The Use of Augmented
Reality for Uniformed Police Officers During
Police-Community Programs.

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April 29, 2021

Submitted in partial fulfillment for the degree
of Master of Graphic Design

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MGD STATEMENT

Program Statement on the Master of Graphic Design Final Project

This document details a final project, which in design is commonly referred to as a graduate “thesis,” at North Carolina State University. The work was defined in a 3-credit course in a fall semester, and executed in a 6-credit course in the following spring semester. The Master of Graphic Design is a terminal professional degree with a research orientation, but like the MFA and MDes, it is not a primary research degree. This is a discovery-based investigation. Cash (2018) describes the process of building scientific knowledge as a cycle between theory building and theory testing. The theory building mode includes (1) discovery and description, (2) definition of variables and limitation of domain, and (3) relationship building (pp. 88–89). This investigation is restricted to the theory building mode. The theory testing mode includes (4) prediction, testing, and validation, and (5) extension and refinement (p. 89). While experts may have been consulted, this investigation does not entail any testing with human subjects, and it does not endeavor to prove anything; all assertions are tentative and speculative.

See: Cash, P. J. (2018). Developing theory-driven design research. *Design Studies*, 56, 84–119.

ABSTRACT

The tension between African-American teenagers and uniformed police officers remains an issue. Although there have been efforts to change police-community relations through police-community programs and training, many training tactics fail to take advantage of de-escalation training. While police training may utilize design technologies, such as virtual reality, no training utilizes place-based augmented reality. This study explores how an augmented reality de-escalation application for the uniformed police officer, used inside police-community programs, can encourage police officers to consider alternative ways to go about future interactions in the community. Police officers utilizing this application would learn ways to reduce the use-of-force, to have empathy, and the use of appropriate language. This application can help with future interactions between the uniformed police officer and African-American teenager.

ACKNOWLEDGMENTS

Thank you

To my family and friends for your encouragement.

To my committee members for their advice and guidance along this journey.

*“Not everything that is faced can be changed, but nothing
can be changed until it is faced.”*

-James Baldwin

TABLE OF CONTENTS

Abstract.....	3
Chapter 1	
Introduction.....	7-8
Chapter 2	
2.1 Problem Statement.....	9-10
2.2 Justification.....	10
2.3 Annotated Bibliography.....	11-14
2.4 Definition of Terms.....	14-15
2.5 Assumptions and Limitations.....	15-16
2.6 Precedents.....	16-21
Chapter 3	
3.1 Conceptual Framework.....	22-24
3.2 Research Questions.....	25
3.3 Investigation Model.....	26
3.4 Scenario.....	27
Chapter 4	
4.1 Study 1.....	28-45
4.2 Study 2.....	46-58
4.3 Study 3.....	60-74
4.4 Study 4.....	75-87
Chapter 5	
5.1 Design Principles.....	88-89
5.2 Future Work.....	89-90
5.3 Conclusion.....	90
Chapter 6	
References.....	91-97

1

Introduction

Policing in the United States has an often unacknowledged history of discrimination against African Americans. During slavery, police activities included “slave patrols” and so called Night Watchers. (Alang et al., 2017) states that police recapturing those who escaped enslavement while also disciplining them is very similar to what’s happening today, but today’s time, disciplining is recorded for public scrutiny and consumption. From the nineteenth century through to the twentieth, segregation and Jim Crow laws mandated separate public spaces. Spaces such as restaurants, schools, and libraries were split between black and white. It was the role of the police to enforce these laws. Walker (2019) states African-Americans who broke these laws often endured police brutality.

In the twentieth century, the Black Panther Party rose to confront police brutality and injustice by creating a visual archive of justified outrage. Half a century later, the Black Panther Party’s Ten-Point Program of social and economic justice inspired the Black Lives Matter (BLM) Six-Point Platform of Demands (Painter, N., King, D., & Chotiner, I., 2020). Transitioning into the twenty-first century, citizen-captured footage has played a role in documenting the extremes of police brutality, allowing people to tell their own stories (“Streaming Revolution”, 2020). The negative depiction of African Americans in media shapes public perception and attitudes in the United States. (Donaldson, 2015).

The events of George Floyd’s death on May 25, 2020 in Minneapolis, Minnesota resulted in a significant shift in public perception, resulting in heightened sense of

struggle, exacerbated by the economic stress of the Covid-19 pandemic. The killing resulted in worldwide awareness of racism. Companies, educational institutions and individuals became motivated to advocate for social justice and spoke out against racism.

Prescriptively, the role of the police should include close ties with people in the community, considerable openness to public scrutiny, increased community service, and a major advocacy role for the disadvantaged and oppressed (Mendelsohn, 1970). This study is designed to help improve interactions between uniformed police officers and African-American teenagers through the use of de-escalation and augmented reality. It is designed specifically for uniformed police officers during police-community programs for future interactions with an African-American teenager.

2

Problem Space

2.1. Problem Statement

Police officer relationships with urban communities have been contentious for centuries. Police are often taught that the enemy is “out there.” Police training focuses on the worst-case scenario utilizing weapons and learning how to fight (Hughes, 2020). While training offers some focus on de-escalation training it is not included within training scenarios. Training scenarios offer an in person and immersive environment where a police officer can improve his or her skills.

Hughes (2020) writes that his experiences as a police officer in cultural diversity training were problematic. His fellow officers didn’t take such training seriously. He argues that officers should be hired to better represent the communities that they serve. He explains when his department did cultural diversity training, most showed up because they had to and cracked jokes through the whole thing. Hughes also favors hiring officers who reflect the communities they serve, by race. The imbalance of this experience is reflective of most police departments in America. A city that is forty-three percent black has about fifteen percent of police officers on the force. (Hughes, 2020).

Even though it is difficult to see what can be done to change police attitudes toward the black community (Mendelsohn, 1970), society as a whole need to understand the dilemma between individual police attitudes and the need for greater

public trust in law enforcement. Both citizens and police officers need knowledge of both truth and justification. Programs and training methods attempt to solve this issue, though most are based on older methods of face to face training. Few offer re-examining training particularly looking at the affordances of augmentation media and media channels. (Johnson, 2017) stated “if law enforcement officers have a greater knowledge of the experiences, histories, and cultural norms of groups other than white males of European descent, they will become, “enlightened,” more sensitive to the experiences and cultural norms of others.”

Oliver and Bartgis (1998) state that community-oriented policing provides a framework for recognizing that there are factors in relation to the police. Factors such as local culture, history, economics, technology, and the environment and other factors that are endogenous to the police. Some factors can be controlled by police officers while other factors can be varied in other contexts. Communication Affordance Theory suggests that people perceive objects differently even if in the same environment, and can view and use an object differently based on their personal experiences (Ramirez, 2017). Social Dominance Theory emphasizes social and intergroup relations that focus on how people develop belief structures as a support for institutional dominance. Highlighting the role that individuals value orientations towards inequality play in both affecting and being affected by social hierarchy (Pratto, Sidanius, Levin, 2006). Approaching certain situations differently can aid in changing police officers individual attitudes as well as in building community trust in law enforcement (Morabito, 2010).

2.2. Justification

De-escalation training is not included within typical training scenarios for police officers (Hughes, 2020). A design intervention can aid or support de-escalation training that is specific to police-community programs. Not many exercises exist that focus on encounters with minority citizens in potentially real circumstances (Johnson, 2017). This suggests a need for different strategies that can be aided by augmented reality. Focusing on de-escalation and augmented reality the police officer can have a greater understanding of how to de-escalate situations involving African-American teenagers before actually interacting with them when that time comes. Simple interventions that build trust can be further developed through “virtuous trust”, whereas virtuous trust makes assumptions about a good character that makes it less watchful (Goldsmith, 2005). The kinds of experiences that people have inevitably influence their preparedness to trust, experience requires interpretation for it to become meaningful. Individuals will vary in the perceptual ‘frames’ or filters that they bring to the interpretation of experience.

2.3. Annotated Bibliography

Police Training

Police training should highlight preventing escalation. The main question after a police shooting should not be “Was it legal?” but rather “Was it necessary?” (Hughes, 2020). Police officers are trained specifically in self-defense, including ways to handle a variety of deadly weapons. Despite management and disciplinary action also advising law enforcement to limit the use of force, law enforcement training primarily relies on force and coercion. Using physical power reminding the recruits that coerciveness is a central feature of the law enforcement lifestyle (Skolnick & Fyfe, 1993). To improve circumstances and relationships counseling training programs, counseling supervisors, and practicing counselors are encouraged to focus their efforts on building stronger community partnerships (Moore et al., 2016).

Learning and Culture Strategies

Potts states that learning and culture strategies require goal-setting, a theory of change, an understanding of the audience, and a commitment to meaningful evaluation and learning. Bringing activities and tactics including narrative design, expansion, and discovery; story-driven content creation which leads into digital production and live events; engaging the audience to ensure impact through a real-world connection (Potts, 2018). Secondly police officers typically face situations in their jurisdiction which require assessing community needs, identifying problems, evaluating options, identifying potential solutions, and implementing a chosen alternative (Birzer and Nolan, 2002).

History is partly a record of the development of culture, a nation's history reinforces the validity of the reigning culture and reaffirms the social ordering of crime, politics,

and the social environment in that nation within a nation, over time. (Oliver and Bartgis, 1998)

Trust Relations

In varying circumstances, trust is fragile. Its existence and extent depend upon a range of factors both within and outside police control. In deeply divided, post-conflict, and post-authoritarian societies a deficit of trust in the police is all too common (Weitzer, 1995; del Frate, 1998; Mishler and Rose, 1998). Public trust in police tends to be problematic depending on where there are strong indicators of social disorganization and relative socio-economic inequality, (Reisig et al., 2004).

De-escalation

The incorporation of de-escalation policies and training is one of the most prominent recommendations for police organizational reform. De-escalation training for the police is recognized and seen as prescriptive by policymakers, politicians, police executives, academics, civil rights activists, and citizens (Engel, 2020).

A more central feature during police training and practice should be de-escalation. It is suggested that conflict resolution skills and improving officers' communication will temper police-citizen interactions and reduce police use of force, and that change will improve citizen trust in the police (Todak, 2017).

Law enforcement personnel often intervene in on edge, even unstable situations, where human lives are at risk. Involving conflict between multiple individuals, with the potential for bodily harm, or highly charged situations dealing with an individual,

POLICE TRAINING	Brooks, M., Ward, C., Euring, M., Townsend, C., White, N., & Hughes, K. L. (2016). <i>Is There a Problem Officer? Exploring the Lived Experience of Black Men and Their Relationship with Law Enforcement</i>. <i>Journal of African American Studies</i>, 20(3-4), 346-362. doi:10.1007/s12111-016-9334-4 Hughes, D. (2020, July 16). <i>I'm a Black Police Officer. Here's How to Change the System</i>. Moore, S., Robinson, M., Adedoyin, Brooks, & Harmon (2016). <i>Hands up: police shooting of young Black males: Implications for social work and human services</i>. <i>Journal of Human Behavior in the Social Environment</i>, 1, 1–13 Skolnick, J., & Fyfe, J. (1993). <i>Above the law: Police and the excessive use of force</i>. New York: Free Press.
LEARNING AND CULTURE STRATEGIES	Birzer, M. L., & Nolan, R. E. (2002). <i>Learning strategies of selected urban police related to community policing</i>. <i>Policing: An International Journal of Police Strategies & Management</i>, 25(2), 242-255. doi:10.1108/13639510210429356 Oliver, W. M., & Bartgis, E. (1998). <i>Community policing: A conceptual framework</i>. <i>Policing: An International Journal of Police Strategies & Management</i>, 21(3), 490-509. doi:10.1108/13639519810228796 Potts, E. (2018, June 15). <i>A Conversation about Cultural Strategy</i>
TRUST RELATIONS	Goldsmith, A. (2005). <i>Police reform and the problem of trust</i>. <i>Theoretical Criminology</i>, 9(4), 443-470. doi:10.1177/1362480605057727 Reisig, M., J. McCluskey, S. Mastroski and W. Terrill (2004) 'Suspect Dis- respect towards the Police', <i>Justice Quarterly</i> 21: 241–66. Weitzer, R. (1995) <i>Policing under Fire: Ethnic Conflict and Police Community Relations in Northern Ireland</i>. Albany, NY: SUNY Press. Del Frate, A. (1998) <i>International Victimization Survey</i>. Rome: UNICRI. Einstein, S. and M. Amir (2003) <i>Police Corruption: Paradigms, Models and Concepts: Challenges for Developing Countries</i>. Huntsville, TX: Office of International Criminal Justice. Mishler, W. and R. Rose (1998) <i>Trust in Untrustworthy Institutions: Culture and Institutional Performance in Post-communist Societies</i>. Glasgow: Centre for the Study of Public Policy.
DE-ESCALATION	Engel, R. S., Mcmanus, H. D., & Herold, T. D. (2020). <i>Does de-escalation training work? Criminology & Public Policy</i>, 19(3), 721-759. doi:10.1111/1745-9133.12467 Hughes, C. E., & Ingraham, K. M. (2016). <i>De-escalation training in an augmented virtuality space</i>. 2016 IEEE Virtual Reality (VR). doi:10.1109/vr.2016.7504713 Todak, N. (2017.). <i>De-Escalation in Police-Citizen Encounters: A Mixed Methods Study of a Misunderstood Policing Strategy</i>.
BIAS AND STEREOTYPES	Pickett, Xavier. (2007). The Center for Public Justice [PDF File]. <i>Policing Black Communities</i>, 30(1). Maya Harris, "Fostering Accountable Community-Centered Policing," in Tavis Smiley, ed., <i>The Covenant with Black America</i> (Chicago: Third World Press, 2006), 73. Smiley, T. (2016). <i>The Covenant with Black America: Ten years later</i>. Carlsbad, CA: Hay House.

Table 2.3.1. Annotated bibliography.

e.g., someone who might be undergoing a crisis. A key to understanding and controlling the situation is de-escalation (Hughes, Ingraham 2016).

Bias and Stereotypes

Police make discretionary decisions every day about who is likely to commit a crime and who should be targeted by the criminal justice system; about who should be stopped, questioned, searched, and arrested. Decisions by individual police officers are made based on their own individual experiences and personal histories. These are decisions often informed by race (Smiley, 2016).

Racial bias has many causes—historical, political, and economic—but we know that any solution must begin by focusing on our communities, especially youth. (Pickett, 2007).

2.4. Definition of Terms

Technical terms used throughout the final project are as follows.

Augmented Reality

Digital content onto a live camera feed which places digital objects within a users real-world environment.

De-escalation

Preventing escalation of a potentially violent situation.

Uniformed Police Officer

A police officer that has general law enforcement duties including responding to calls for service and building relationships with the residents of local neighborhoods (*Discover Policing*, 2018).

Trust

Feeling safe with another individual physically and emotionally.

Community

Having similar characteristics with a group of people that work towards a common goal. (Gurteen, 2020)

Real World Environment

Circumstances with which an individual must deal with and live in.

Learned Behavior

A behavior that one learns from experience and/or from an event.

Learning Culture

A community of workers with a growth mindset meaning they not only want to help their organization with what they have learned, but also share that knowledge with others as well (Grossman, 2015).

Culture Strategy

Strategies to develop better routes for social issues in communities.

Empathy

The ability to understand and share the feelings of another.

Police-Community Program

Programs developed to help build relationships between police officers and citizens.

2.5. Assumptions and Limitations**Assumptions**

For this study, I assume that uniformed police want to engage in an activity that can improve their trust relationship with African-American teenagers. Furthermore, uniformed police would be willing to use the de-escalation application outside of their normal training, in day-to-day situations. I assume users would download and participate with an Augmented Reality (AR) learning social application. I assume this study would also develop openness over time in police officers personal attitudes regarding communication with African-American teenagers, leading to more positive outcomes in the community based on applying principles of de-escalation. Assuming officers would not only have an open mind but also knowing in a professional manner how to de-escalate a situation.

Limitations

This study primarily focuses on educating and reducing negative actions, such as use-of-force, non empathetic behavior, and inappropriate language. Different cultures and societies may hold different perceptions of the topic. Although the proposed

augmented reality experience might transfer to other cultures, the study is primarily focused on African-American teenage citizens and uniformed police officers. This study does not focus on other branches of law enforcement and does not focus on older age groups within the African-American community. Another limitation of this study is my lack of expertise in the law enforcement field. This exercise is designed to be implemented into police-community programs and only focus on the potential for augmented reality to address the issues discussed.

2.6. Precedents

The following are precedents that show current programs and applications. The majority of precedents have features that help with relationship building between users. Here I present an investigation of outreach programs and relationship building applications while giving takeaways to show what emerged from the study.

Community Oriented Policing Services (COPS) (Training)

The community oriented policing services (COPS) training portal (**Figure 2.6.1.**) consists of an e-learning catalog of resources and opportunities for individual officers, organizations, and training academies. This includes in person training, e-learning courses, and multimedia resources. The portal supports working at one's own pace while also having the option to share or stream in the program.

Takeaway: E-learning catalog, personal training, multimedia resources

USPDhub, from LogicTree IT Solutions (Training)

USPDhub (**Figure 2.6.2.**) is an outreach tool for police and communities that gives vital information to a citizen's mobile device. Such things consist of crime events and traffic incidents. Citizens also have the option to submit photos and any necessary tips to the police department. This application is a two-way communication application that features a calendar of Events, sending feedback, and a gallery of images.

Takeaway: Two-way communication, Gallery of Images

Coffee With A Cop (Educational/Relationship)

Coffee With A Cop (**Figure 2.6.3.**) is a program hosted by cops across the country through training events and workshops. This program searches for ways to interact with local communities and the citizens they serve more successfully. The cops are aiming to spark community conversations, and the cops will sit and dine with you if need be to develop trust and build better relationships within the communities they serve.

Takeaway: Conversation, Trust building

You & Five-O (Educational)

The You & Five-O program (**Figure 2.6.4.**) involves interactive, hands-on presentations that teach practical strategies when interacting with law enforcement. Participants learn about their constitutional rights and how to interact with officers during vehicle and on-street encounters in a safe way. You & Five-O consist of live exercises, videos, and podcast episodes on individuals in the force and what you can do to stay safe.

Takeaway: Constitutional rights, Videos for educational purposes

vTime XR - Social AR & VR (*Relationship*)

vTime XR (**Figure 2.6.5.**) is an application where you can create your avatar with endless possibilities. Meeting with friends in virtual reality without the headset via magic windows mode and also augmented reality. Another feature is that the user can chat in changing destinations, giving you an option to pick your environment and chat with people you bring inside that environment. Communicating with users within 3D photos and sharing within a selected environment is a great way to discuss things.

Takeaway: Chat with users in a selected environment

AReduction (*Educational*)

The AReduction application (**Figure 2.6.6.**) allows users to interact with their-textbooks, images, and instructor affiliated content in an augmented reality learning environment. Cognitive training games and various learning materials are included in the application.

Takeaway: Learning environments and materials

Octi (*Relationship*)

Octi (**Figure 2.6.7.**) is an Augmented Reality social media that brings people together and connects in many ways. Octi gives you the opportunity to see your friends AR profile by pointing the camera at your friends around you. Adding songs, videos, and effects on them. An open-world concept that lets you have fun with your friends and socialize with people around you.

Takeaway: Open world, Socialize with people around you

Snaappy - AR Social Network (*Relationship*)

Known as the most emotional Augmented Reality (AR) application in the world. Snaappy (**Figure 2.6.8.**) lets you create AR videos and explore other videos created by the community. Letting the user explore the city using AR content. This also lets the user comment on their shared feelings and ideas with the apps easy to use AR editors. Snaappy offers libraries of different 3D objects, and 2D images to choose from giving the user control of everything in real-time.

Takeaway: Shared feelings and ideas, Real-time

Facebook (*Relationship*)

Facebook (**Figure 2.6.9.**) is a social networking site that was designed originally for college students to socialize but eventually merged into a way for people to connect and share with friends and family online. The application gives people a way to express what matters to them and discover what goes on in the world. Facebook allows users to send messages, post status updates, and share photos along with videos.

Takeaway: Connect and share, Express what matters, Sharing of photos and videos

ACLU Mobile Justice Application (*Education*)

Description: Allows people to record their interactions with law enforcement. ACLU (**Figure 2.6.10.**) is an application can help with ongoing protest over police conduct. The importance of the app is to highlight moments like police brutality. This application can also inform the user about their rights.

Takeaway: Videos, Education about rights, In the moment



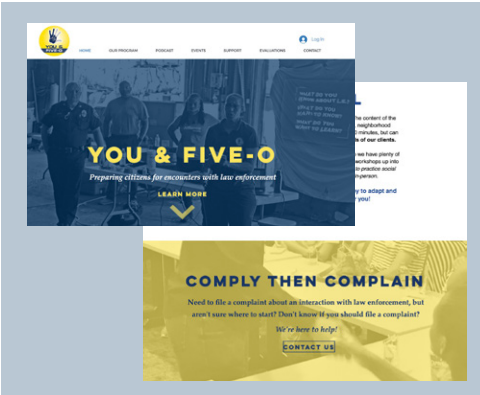
Table 2.6.1. Personal training website interface.

Table 2.6.2. USPD Hub application interface for two way communication.



Table 2.6.3. Coffee With A Cop website interface.

Table 2.6.4. You & Five-O website interface.



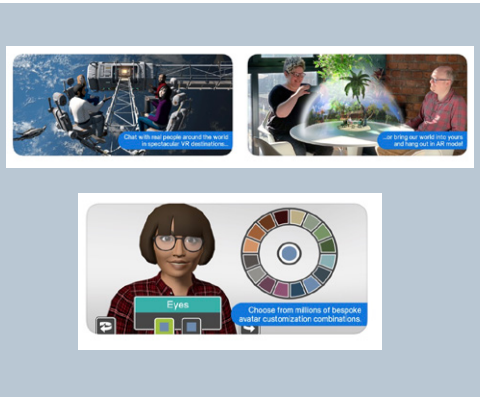


Table 2.6.5. vTime XR application. Chatting in a selected environment.

Table 2.6.6. AReducation learning materials.

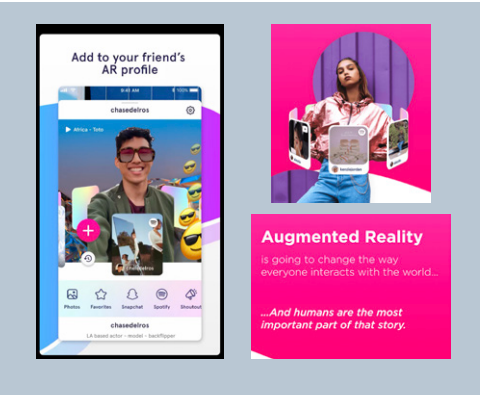
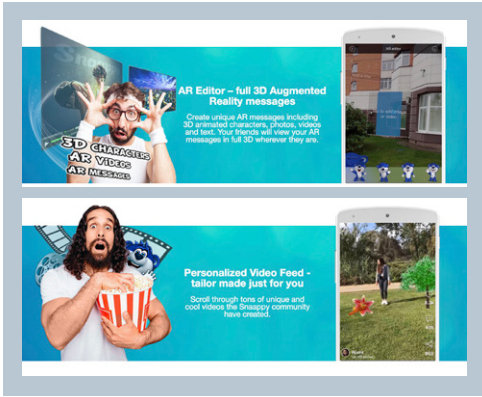


Table 2.6.7. Octi social media application for socializing.

Table 2.6.8. Snaappy social network for sharing feelings and ideas during real-time.



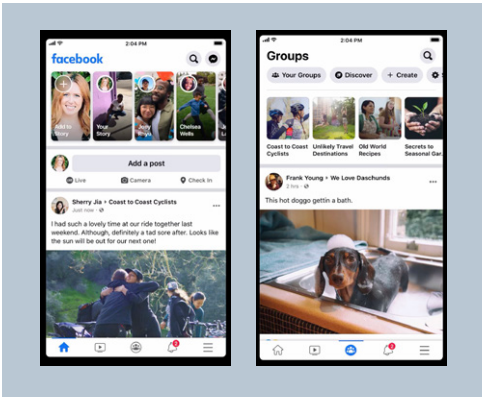
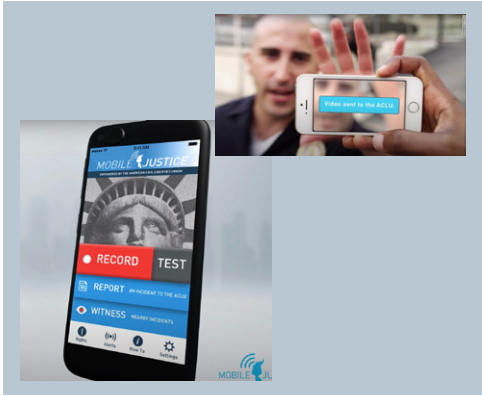


Table 2.6.9. Facebook app interface to connect and share photos and videos.

Table 2.6.10. In the moment recording and Interface of mobile justice application.



3

Investigation Plan

3.1. Conceptual Framework

The framework for this study is based on Oliver and Bartgis (1998) community-oriented policing, Communication Affordance Theory (Ramirez, 2017), Social Dominance Theory (Pratto et al. 2004), and adoption of elements obtained from Morabito (2010).

Community-Oriented Policing Framework

Oliver and Bartgis outline a framework for community-oriented policing, based on categories of culture, history, economics, technology, and the environment. These variables interact with each other while influencing all the aspects of the theoretical framework. Widely accepted and simplified historical understandings may reinforce a dominant culture, reaffirming the social ordering of crime, politics, and the social environment in that nation. Economics influence all societal relations, but most importantly for the discussion at hand. Technology enhances police operations while also creating social change. The environment impacts societal organizations and relationships. Oliver and Bartgis (1998).

Communication Affordance Theory

Communication Affordance Theory situates the archive within discussions regarding

police use of social media, visibility, transparency, and police-community relations. Communication Affordance Theory describes how people perceive objects. (Ramirez, 2017)

Social Dominance Theory

Social Dominance Theory states that we must understand the processes producing and maintaining prejudice and discrimination at multiple levels of analysis, this includes cultural ideologies and policies, relations of individuals to others inside and outside their groups, institutional practices, the interaction between the evolved psychologies of men and women, and the psychological predispositions of individuals. Social dominance theory explains how processes at different levels work together to produce systemic effects and also views human societies as systems, (e.g., Pratto, 1999; Sidanius, 1993; Sidanius & Pratto, 1999; Sidanius, Pratto, van Laar, & Levin, 2004).

Adoption of Elements

Adoption of Elements are adopting a problem-solving orientation, working with key stakeholders in the community, and making changes to the agency's organizational structure to facilitate community participation in public safety. Employing a proactive approach to problems of a disorder rather than the reactive stance of traditional professional policing is what's required when implementing community-oriented policing (COP). A proactive approach involves using community and technological resources to find new solutions to old problems (Morabito, 2010).

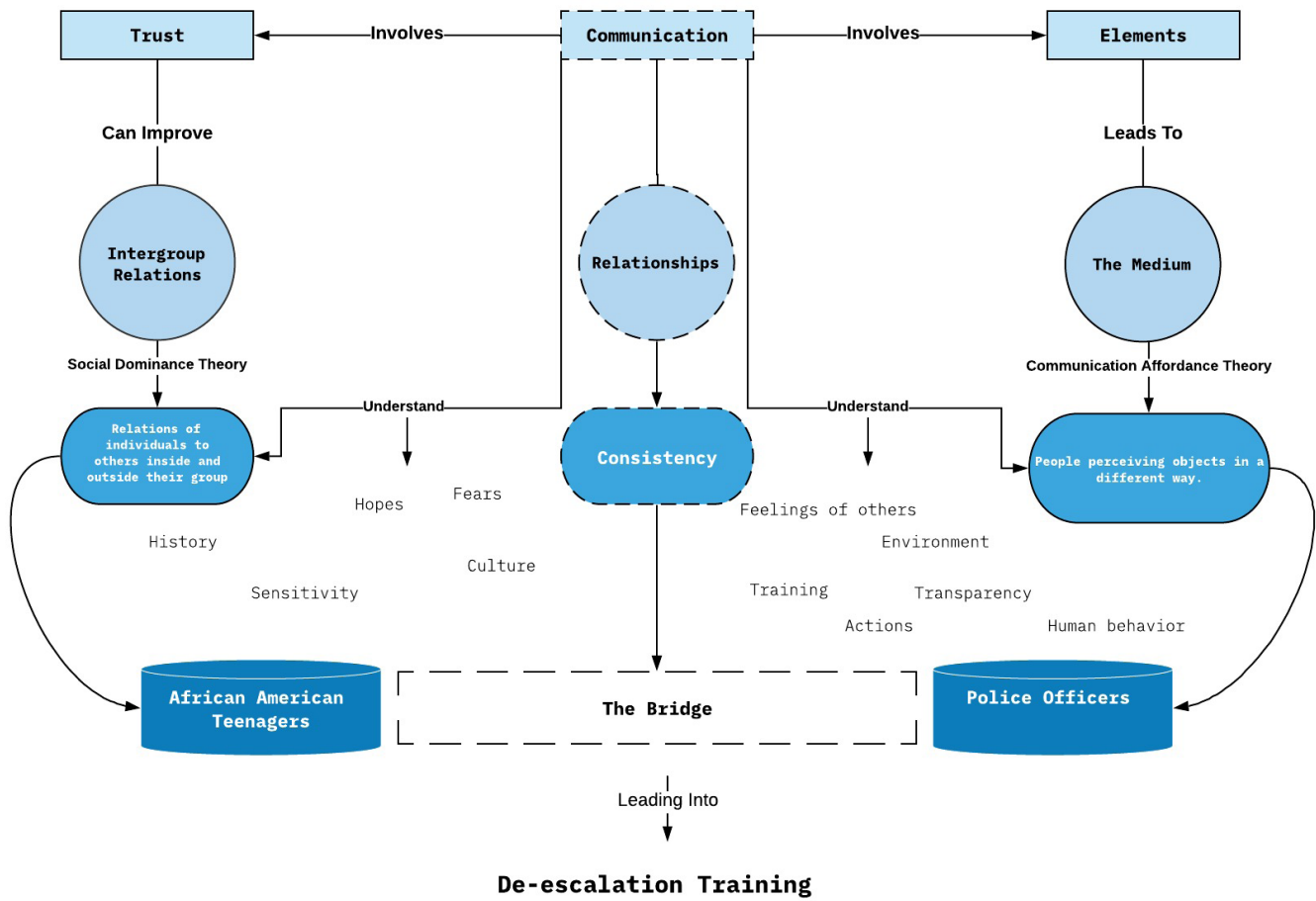


Figure 3.1.1. Conceptual Framework.

3.2. Research Questions

Research Question

How can the design of an augmented reality de-escalation application for uniformed police officers used inside police-community programs encourage a change of learned behavior to avoid escalation for future interactions with African-American teenagers?

Sub-Questions:

SQ 1 (*Reducing Use-Of-Force*)

How can the design of interactive scenarios and 3D digital objects suggest prompts for decision-making that can reduce the use-of-force in the uniformed officer when approaching face-to-face situations?

SQ 2 (*Inducing Empathy*)

How might the design of a photo overlay serve as an outlook of another person's history that brings empathy to the uniformed officer?

SQ 3 (*Influence Communication Change*)

How might the design of AR Flashcards provide communication techniques for correct terminology that could help the uniformed officer give calm and clear language for future interactions?

SQ 4 (*Full Cycle*)

How can a de-escalation application facilitate the full cycle of change of behavior, empathy, and clear language communication used in police-community building?

3.3. Investigation Model

For the investigation model I focus on individual strategies of de-escalation (reducing use-of-force, having empathy, and using appropriate language). Sub questions 1-3 correspond to the de-escalation strategies. These strategies are the focus of studies 1-3. Subquestion four facilitates the full cycle of the strategies to visualize the prototype model in operation.

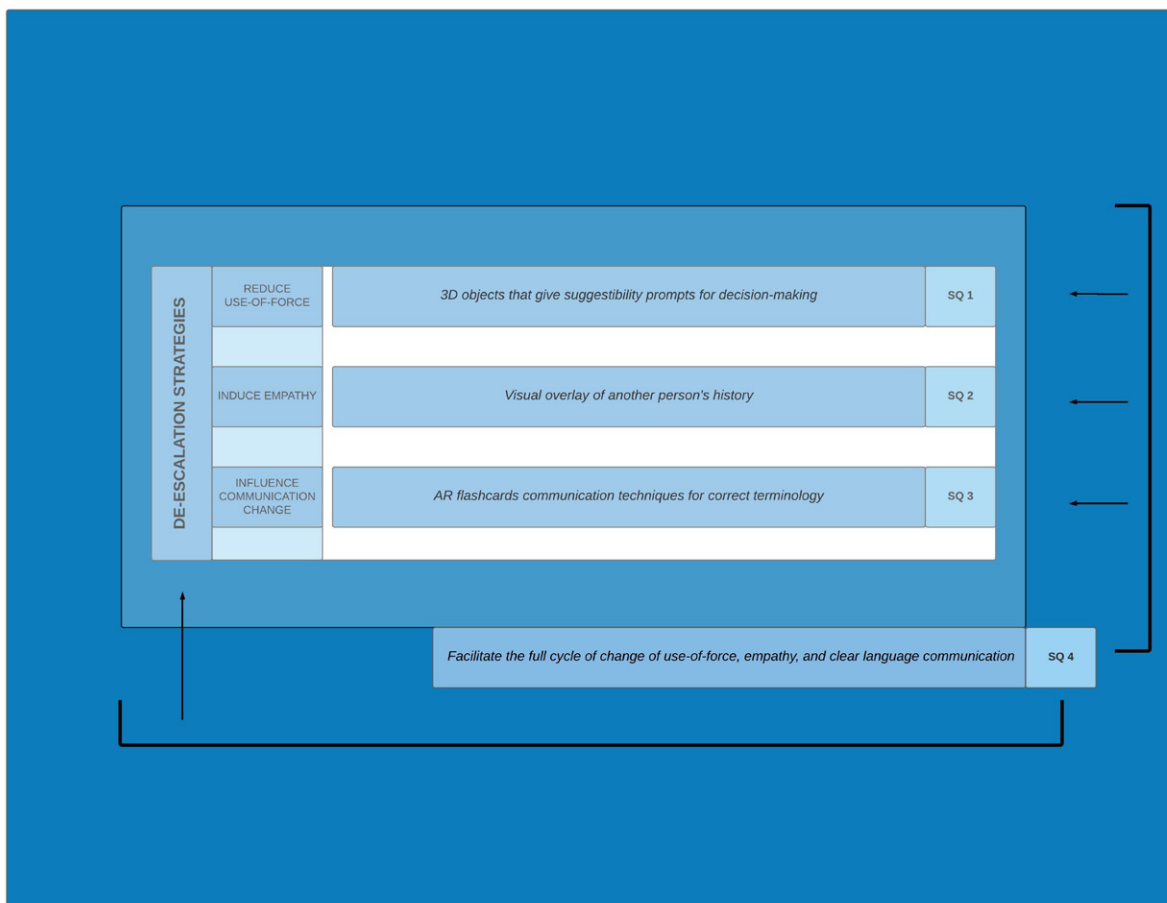


Figure 3.3.1. Investigation Model.

3.4. Scenario

Bradley is a forty-five-year-old caucasian uniformed police officer. He has a police training session coming soon and wants to switch it up from his crew's normal routine. Not only does he have the training sessions but he also goes out and patrols the community to engage with them. Bradley hears about the upcoming program meeting and is receptive and willing to participate in the training exercise to try to improve the relationship with teenage African-American citizens, given events in the news.

Pain Points- His crew may be unreceptive, He has heard negative comments from colleagues while patrolling the community. He has encountered non-cooperative citizens.

Dequan is a thirty-one-year-old community organization leader who hosts meetings once a week. His new topic for the week is discussing police and community relationships. He hears about this new de-escalation training application and wants to use it for the meeting. Not only does he want something to give as an activity for the meeting but wants to give program members a chance to do something at home during their free time.

Pain Points- Nothing is taken away from activities, Interruptive guest, Negative responses from activities.

4

Studies

Video Link Below

4.1. REDUCING THE USE-OF-FORCE

How can the design of interactive scenarios and 3D digital objects suggest prompts for decision-making that can reduce the use-of-force in the uniformed officer when approaching face-to-face situations?

Background

Study one is about the focus on reducing the use-of-force through the use of augmented reality 3D objects, “what would you do” scenarios, and suggestibility prompts. These 3D models are in the form of objects and silhouettes that present a selection of choices to which the police officer can respond with “I would do this in this situation” feedback. If the user picks a wrong choice the system suggests a better approach.

These 3D objects and silhouettes represent rookie and pro situations. Rookie scenarios anticipate beginner situations while pro scenarios anticipate more challenging situations. Various sets of objects test decision making. Examples of the decision making scenarios are under the function section. The overall goal of this is to reduce the use-of-force when approaching certain situations. Rather than quickly grabbing certain objects to use on the African American teenager, the police officer can learn new approaches to the situation that don’t require force.

Function

For this study, the design of these augmented reality objects and silhouette situations will be placed around the police officers environment. Study one is composed of six different scenarios that range from more simple to more complex decisions for the user. The police officer will have the option to select rookie and pro from the command screen (**Figure 4.1.1.**). From there, each situation offers two different parts, such as “what would you do”, and suggestions for responses. Situation one to three consists of beginner scenarios that show a baton, a flashlight, and figures reaching for something unknown, just to name a few. Situation four to six consists of riskier scenarios using objects such as a handgun, a taser, pepper spray, and references to people rioting.

The “what would you do” section offers the user the option to select answers specific to the situation. The scenario choices change colors and icons to show if the user answered correctly. Green is the right answer; yellow is “maybe (and only appears in the pro level); red is the wrong answer. The prompt suggests how to go about the situation when that time comes. When the user is done with one section, he or she move the phone to the left or right to go to the other situation. Even if the user chooses the correct answer it will still give them the correct suggestion prompt when they select it.

ROOKIE

SITUATION 1: Argument Scenario (Figure 4.1.2.)

WHAT WOULD YOU DO SELECTION-African American teenage boy is arguing with his partner and it is about to get tense. Arriving at the scene, what would you do?

Use the baton to get the point across to the individual.

Split them both up and ask what happened that led to this point.

Take them both to the police station to solve the issue.

SUGGESTION- Try splitting them both and asking appropriate questions to get the story of what led to the point of the argument. This leads to getting both stories without any force and then you can make your judgment. Not having to take the baton to get your point across or taking them to the police station.

SITUATION 2: Stealing Scenario (Figure 4.1.3.)

WHAT WOULD YOU DO SELECTION- While you are driving you see a boy grabs a woman's purse. They both engage in an argument and the boy starts to physically strike the woman to get control of the purse. What would you do?

Order the man to stop the attack and release the purse and the woman.

Get on the radio and call for assistance.

Run and physically tackle to stop him.

SUGGESTION- Order the man to stop the attack and release the purse and the woman also identify to him you are a police officer. Physically restrain him if need be. Try talking to the boy and calm him down rather than physically tackling or calling for backup.

SITUATION 3: Fighting Scenario (Figure 4.1.4.)

WHAT WOULD YOU DO SELECTION- You receive a call for backup while on patrol. When you arrive at the scene you see your co-worker wrestling with a teenage girl on the ground. What do you do?

Shine the flashlight in their faces and ask what is going on.

Help your partner wrestle the girl to get her in the police car.

Rush to split up the fight and get the story to then figure out what's next.

SUGGESTION- Try splitting up the fight as soon as possible and get the details of the story. Avoid being rough with both your co-worker and the teenage girl. Calm them both down and call an ambulance as well.

PRO

SITUATION 4: Suicide Scenario (Figure 4.1.5.)

WHAT WOULD YOU DO SELECTION- You and your patrol partner get a call about a potential suicide attempt. When you both get there she has the knife to her wrist. What do you do?

Talk to the citizen while walking toward her to grab the knife.

Distract her while your partner takes her down.

Tase her to make her drop the knife and safely apprehend her to go to the hospital if need be.

SUGGESTION- How about talking to the citizen while walking toward her to grab the knife. Distracting her while your partner takes her down is also an option.

SITUATION 5: Person with Gun Scenario (Figure 4.1.6.)

WHAT WOULD YOU DO SELECTION- Several officers are attempting to arrest a subject at his residence. As you are walking up to the house the front door opens and the subject appears. He has a gun in his waist and threatens to shoot at you. What would you do?

Flash your gun and fire.

Seek cover and attempt to stop the subject's aggression.

Call for more backup so they can help.

SUGGESTION- Seek cover and attempt to stop the subject's aggression. The subject is flashing his weapon at you, so there is no time to waste, you must stop him from flashing the weapon. You are attempting to stop the subject's aggression. When it is safe to do so you could get on the radio and call for assistance.

SITUATION 6: Protesting Scenario (Figure 4.1.7.)

WHAT WOULD YOU DO SELECTION- You are on duty with a group of your co-workers. People are protesting a recent killing of an African American teenager. You see them getting materials ready to start rioting. What do you do?

Discuss with them by yourself a better way to protest and possibly give suggestions.

Talk with the group that you are with and ask for help to tell the individuals to go about this the right way.

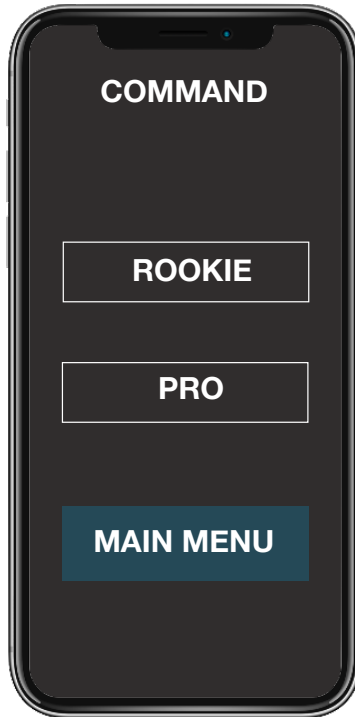
Pepper Spray them.

SUGGESTION- Discuss a different way to protest and give suggestions to the group protesting. Would rather do this by yourself than in a group of officers because the individuals may feel threatened. If this doesn't work then think about going with your group of officers.

ROOKIE



COMMAND



PRO

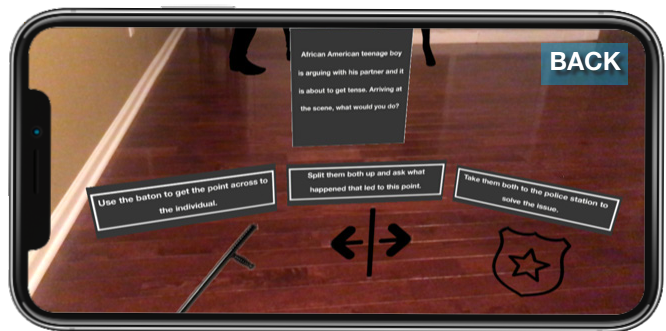


Figure-4.1.1. Command Screen Rookie and Pro Selection.

SITUATION 1



SITUATION 1 (SCENARIO SELECTION)



SITUATION 1 (SUGGESTIBILITY PROMPT)

Figure-4.1.2. Situation 1.

TAP NAVIGATION (STUDY 1)

COMMAND PAGE

OPEN | CLOSE

BACK

WHAT WOULD YOU DO

SUGGESTIBILITY



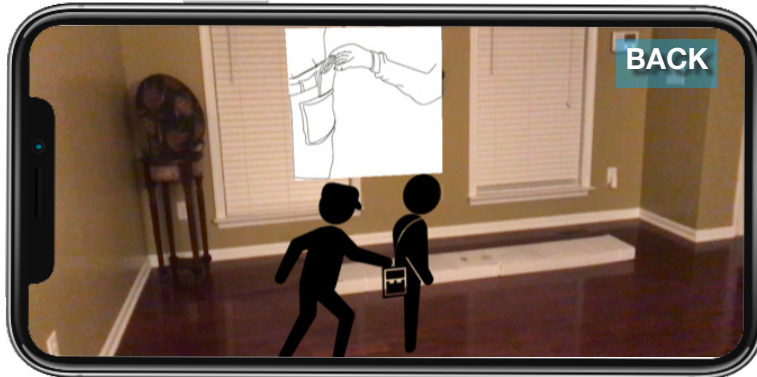
STUDY 1 (ROOKIE | PRO SELECTION)

ROOKIE

PRO

Figure-4.1.1. Command Cont.
Tap Navigation.

SITUATION 2



SITUATION 2 (SCENARIO SELECTION)

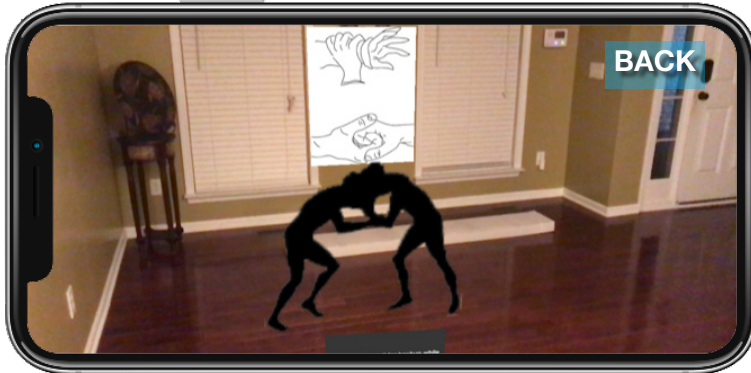


SITUATION 2 (SUGGESTIBILITY PROMPT)



Figure-4.1.3. Situation 2.

SITUATION 3



SITUATION 3 (SCENARIO SELECTION)

SITUATION 3 (SUGGESTIBILITY PROMPT)



Figure-4.1.4. Situation 3.

(PRO SCREEN & SITUATION 4)



SITUATION 4 (SCENARIO SELECTION & RW CHOICES)



SITUATION 4
(SUGGESTIBILITY PROMPT)

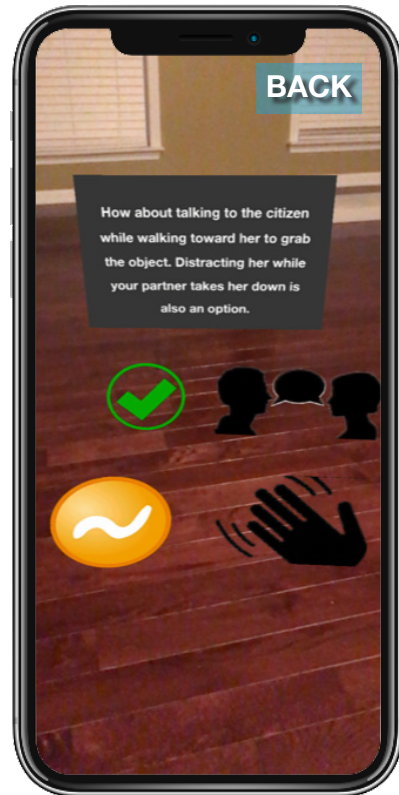
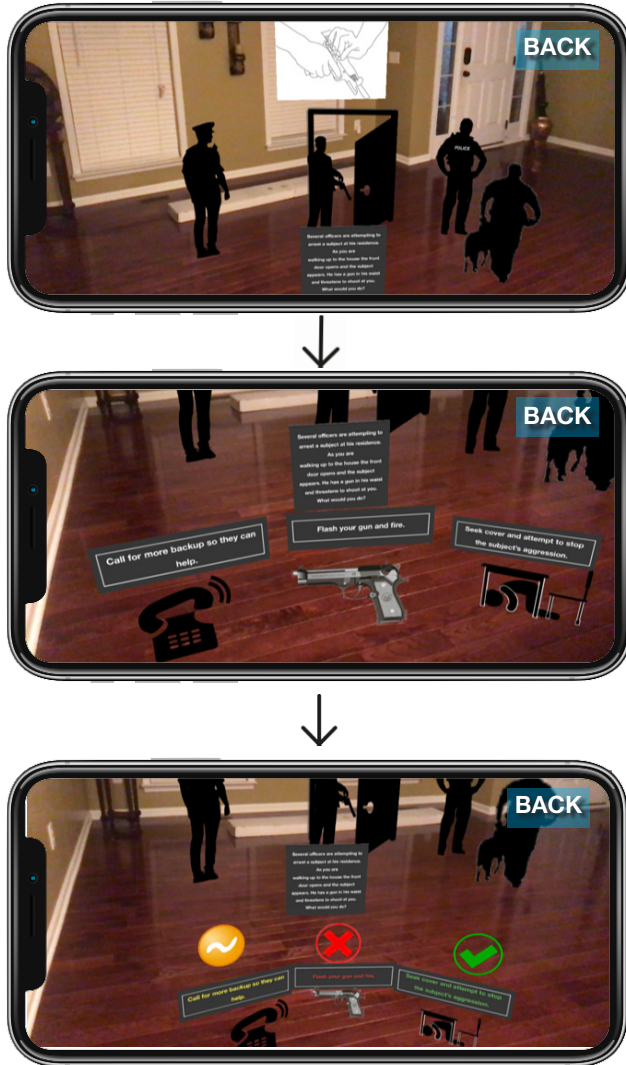


Figure-4.1.5. Situation 4.

SITUATION 5 (SCENARIO SELECTION)



SITUATION 5 (RW CHOICES)

SITUATION 5 (SUGGESTIBILITY PROMPT)

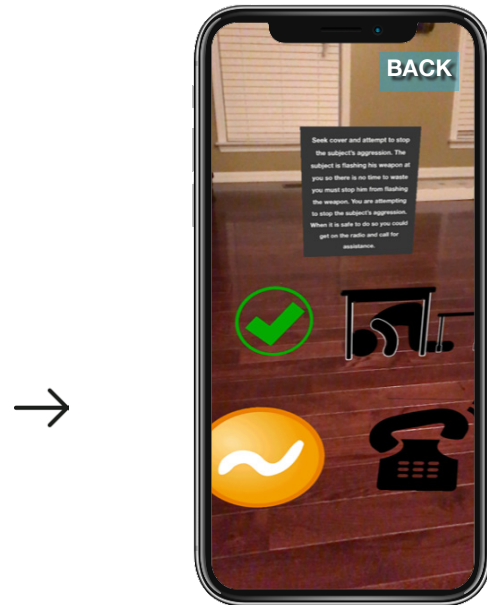
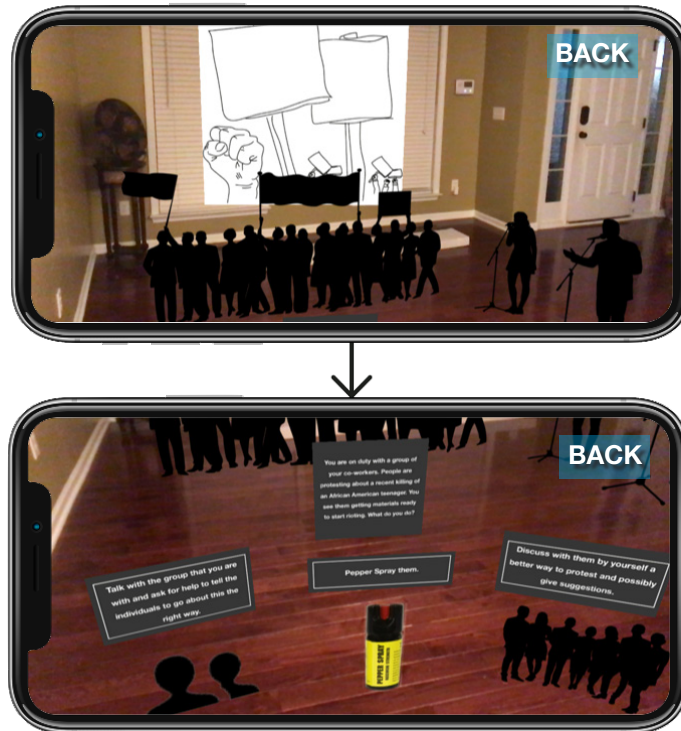


Figure 4.1.6. Situation 5.

SITUATION 6 (SCENARIO)



SITUATION 6 (SCENARIO RW & SUGGESTIBILITY PROMPT)



Figure 4.1.7. Situation 6.

Figures 4.1.8. - 4.1.17. are visual scenarios which show how the tool would be set up in the police-community program with the uniformed police officer. These virtual scenarios are placed throughout studies one, two, and three.

Figure 4.1.8. Rookie and Situation 1 Selection.

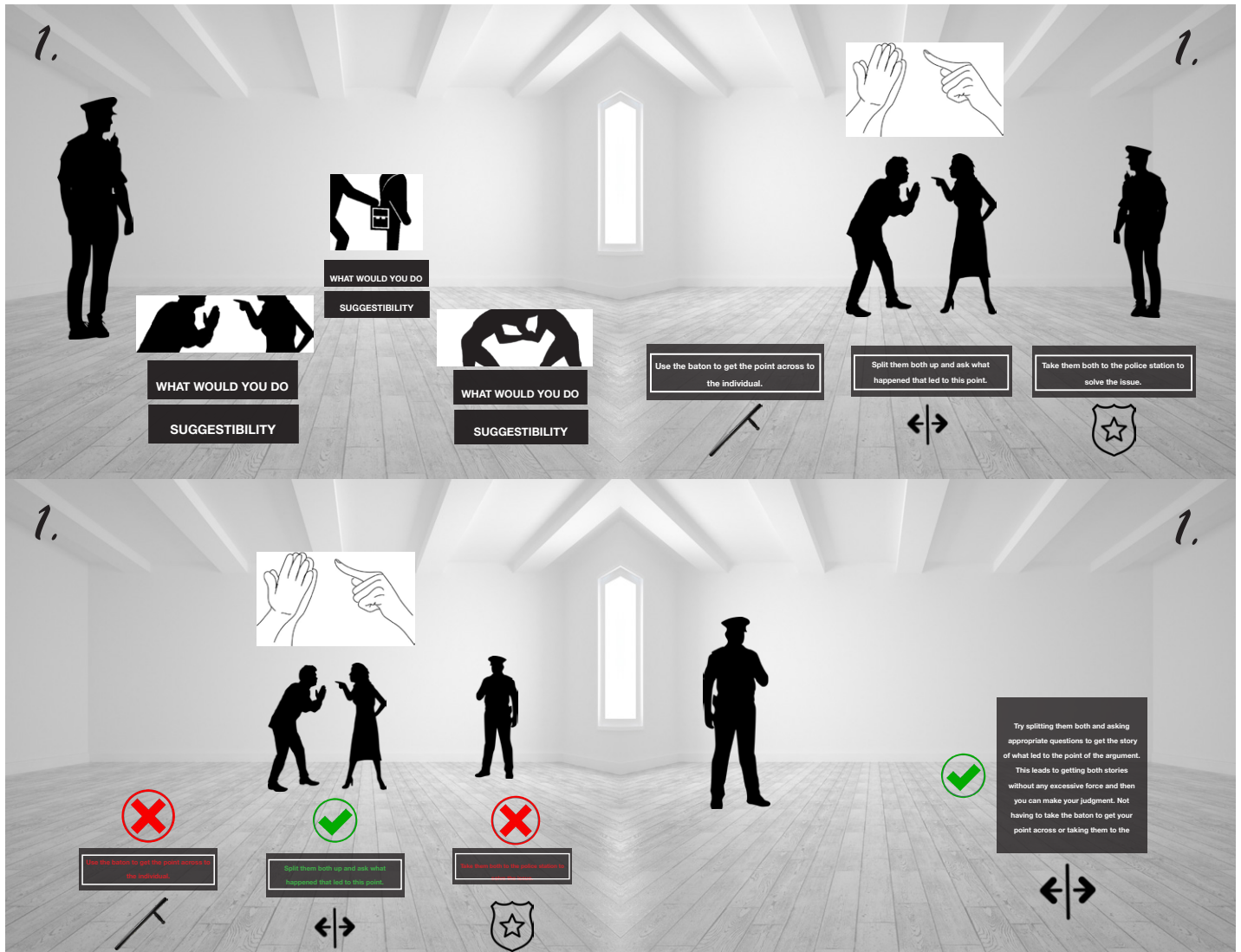


Figure 4.1.9. Situation 1 Results and Suggestibility Prompt (Rookie).

Figure 4.1.10. Situation 2 Selection and Results (Rookie).



Figure 4.1.11. Situation 2 Suggestibility Prompt and Situation 3 Selection (Rookie).

Figure 4.1.12. Situation 3 Results and Suggestibility Prompt (Rookie).



Figure 4.1.13. Pro Selection.

Figure 4.1.14. Situation 4 Selection and Choices (Pro).



Figure 4.1.15. Situation 4 Suggestibility Prompt and Situation 5 Selection (Pro).

Figure 4.1.16. Situation 5 Results and Suggestibility Prompt (Pro).

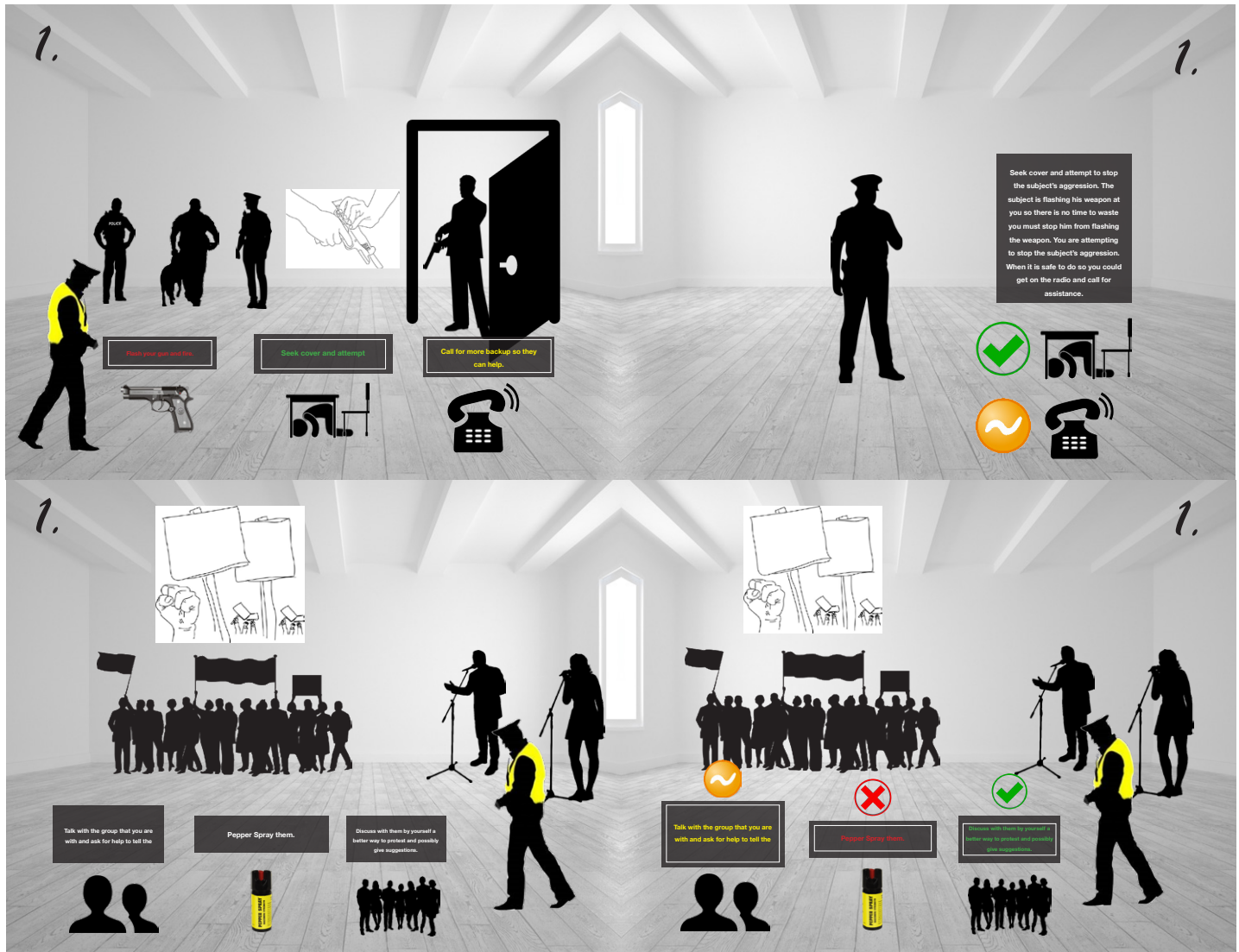


Figure 4.1.17. Situation 6 Selection and Results (Pro).

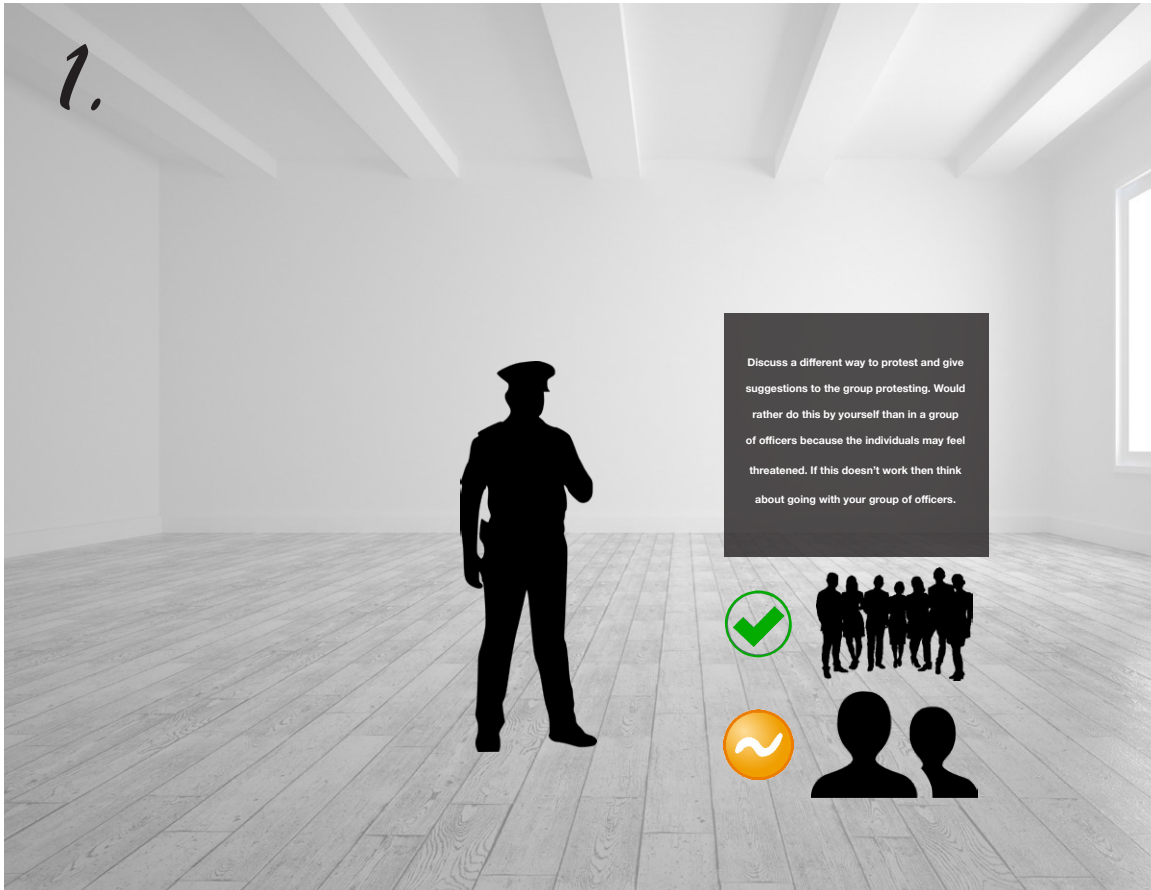


Figure 4.1.18. Situation 6 Suggestibility Prompt (Pro).

4.2. INDUCING EMPATHY

How might the design of a photo overlay serve as an outlook of another person's history that brings empathy to the uniformed officer?

Background

Study two is about inducing empathy using photography of previous encounters between uniformed police officers and African-American teenagers. Research shows that empathy and perceptions of empathy help to shape the interactions of police and members of the communities they are assigned to protect. Previous interactions with citizens and the police have consistently influenced the way officers behave. Community members have more positive evaluations of the police when officers communicate that they understand the issues that matter to community members. Police are more likely to be trusted and considered effective at their jobs when they display empathy with the community's concerns (Posick, Rocque, Rafter 2012).

Using photographic documentation of previous experiences can aid in building empathy for users. Building empathy can help in reduce unnecessary arrests and lead to more acceptance of their presence (Suttie, 2016). The overall goal for this visualization implemented by AR might inspire different approaches when interacting with African American teenagers in certain situations. Understanding and sharing the feelings of another person is key for building relationships. Seeing the trouble an African-American teenager faces can bring a sense of feeling to the user while also preparing him or her for when it is their turn to interact with similar individuals.

Function

For this study, the user opens this section of the app giving a list of years starting from the year 1994 (**Figure 4.2.1.**). A timeline through to the year 2020 shows differences and similarities of individuals who were victims of police brutality. Once the user taps on the year, names or the name of an African-American teenager appear. Tapping on the name gives a background story through real photos, placing the user virtually into the space. The background stories include descriptions of the teenager, riots after the incident, and the devastating results of the incident for both the family and the officers. The images not only reveal the African-American teenager's environment, but also plays sound as the user tours the space. During this process of the study, I conducted on the value of empathy, the outcome of empathy in relationships, and background information about previous police and African American teenager interactions. The user can select a different year by tapping the back button and selecting another year from the study screen.

1994-2020

Story | Names

2020----Aiden Ellison----2020----Miciah Lee----2014----Michael Brown----2012--
--Darnesha Harris----2004----Timothy Stansbury Jr.----1994----Nicholas Heyward Jr.

History/Outcome/Riot

(Figure 4.2.2) Aidan Ellison (2020)- Aidan Ellison was a 19-year-old male from Ashland, Oregon, who was shot in the chest after a dispute over loud music. The officer was charged with murder facing four criminal counts. Born in a middle-class family, his family did not receive anything for the murder. Aidan's friends started a fundraiser selling shirts and hoodies, with all the profits going to Ellison's mother (Streit, 2020). No major riots occurred after this incident.

(Figure 4.2.3) Miciah Lee (2020)- Miciah Lee was an 18-year-old male from Sparks, Nevada, who had a mental health condition at the time of the shooting. Officers responded to a call to a suicidal subject and armed with a gun. The driver (Lee) was uncooperative and reached toward a gun. Officials reported that the gesture prompted officers to fire at the subject. The family filed a lawsuit with the Sparks police department and it is an ongoing investigation (Corona, 2020). No major riots occurred after this incident but protesting did occur.

(Figure 4.2.4) Michael Brown (2014)- Michael Brown was an 18-year-old male from Ferguson, Missouri, who had stolen a box of cigars and later was shot six times by an on-duty police officer. The incident led to multiple waves of protests and civil unrest in Ferguson. Police faced no charges, even after the case was reopened. The family ended up receiving a 1.5 million dollar settlement (BBC News, 2020).

(Figure 4.2.5) Darnesha Harris (2012)- Darnesha Harris was a 17-year-old female from Breaux Bridge, Louisiana. Reports say Harris struck the front of the officer's car with her car, put the car in reverse and struck a parked car, then drove forward again through a ditch and struck a bystander and another car. One of the responding officers then exited the vehicle and began firing his weapon. Harris died in the emergency room from her wounds. The investigation remains active. The officer who shot and killed her had already been accused of misconduct while he had worked at three other law enforcement agencies. The family still wants answers and repercussions after death (Ghafoor, 2017). Mourners held late-night vigils, but no major riots occurred after this incident.

(Figure 4.2.6) Timothy Stansbury Jr. (2004)- Timothy Stansbury Jr. was a 19-year old male from New York, New York who was killed by a police officer in an “accidental shooting.” Officers were patrolling the rooftop of the Louis Armstrong Houses (a Brooklyn housing project), when one officer approached a door with a service weapon drawn. The officer reported he fired accidentally when Stansbury, a resident of the housing project opened the door in front of the officer. The grand jury ruled the shooting an accident and declined to indict the officer. Stansbury’s family received a two-million dollar settlement (Coen, 2020).

(Figure 4.2.7) Nicholas Heyward Jr. (1994)- Nicholas Heyward Jr. was a 13-year-old male from New York, New York. He and his three friends were playing with toy guns when a cop noticed him. Heyward yelled out “we’re only playing,” but the officer still shot him in the chest. He died the next morning before emergency surgery could be performed. The rookie cop did not face charges because the District Attorney framed the killing as justified homicide, blaming the presence of the toy gun. Nicholas Heyward Jr.’s father, Nicholas Heyward Sr., is now a mentor to the Black Lives Matter movement, helping people who suffered the same loss as he did (Eichelberger, 2016).



Figure 4.2.1. Command Screen
List of Years Selection.

TAP NAVIGATION (STUDY 2)

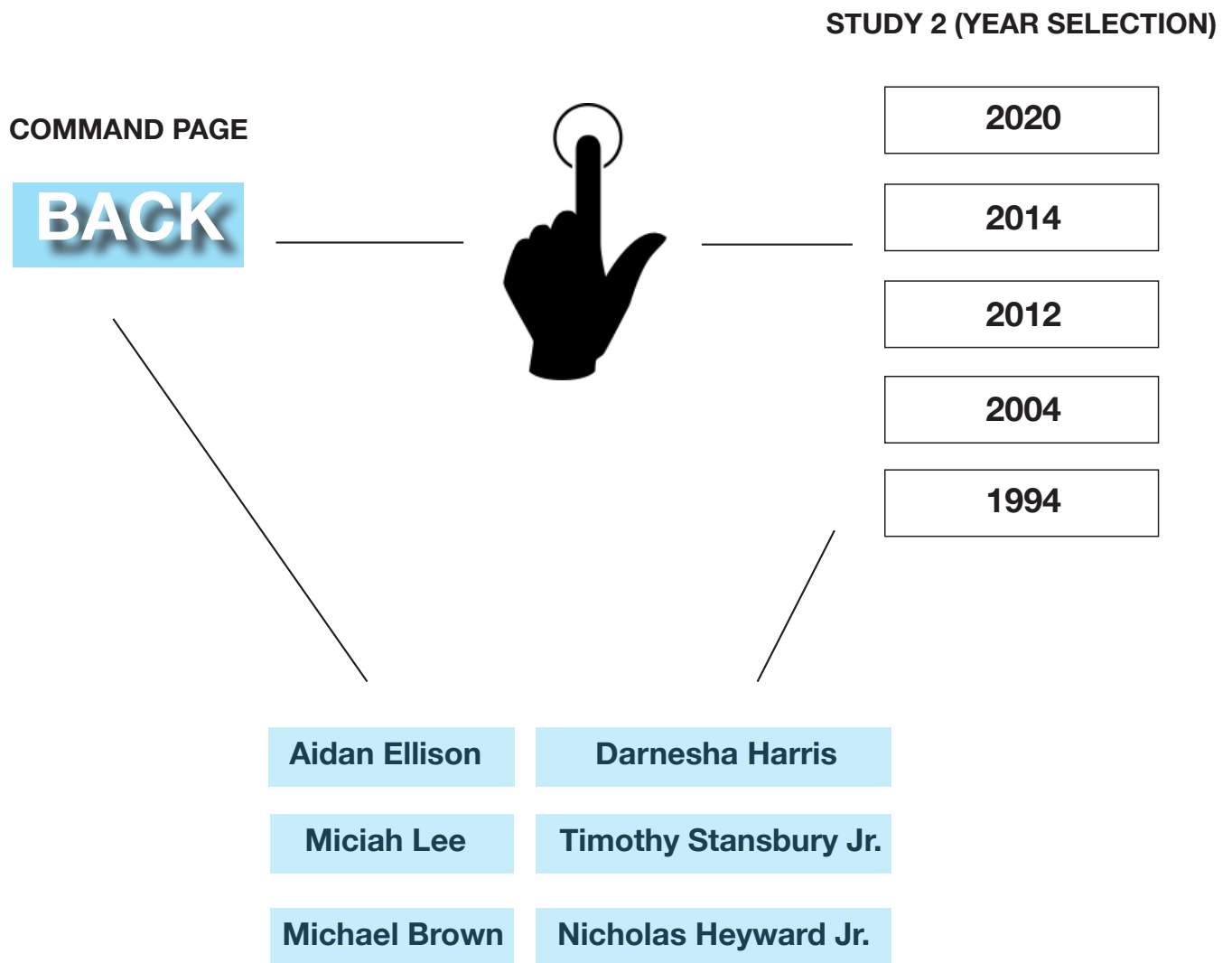
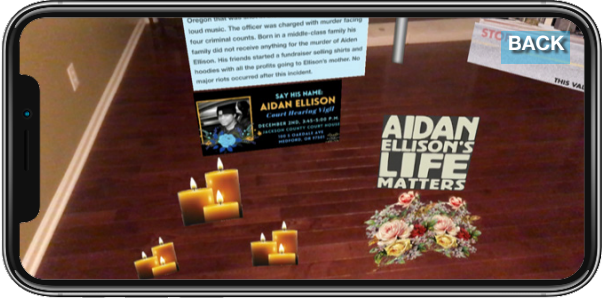


Figure-4.2.1. Command Cont.
Tap Navigation.

2020

Figure 4.2.2.
Aidan Ellison.



2020

Figure 4.2.3.
Miciah Lee.





Figure 4.2.4.
Michael Brown.

2012

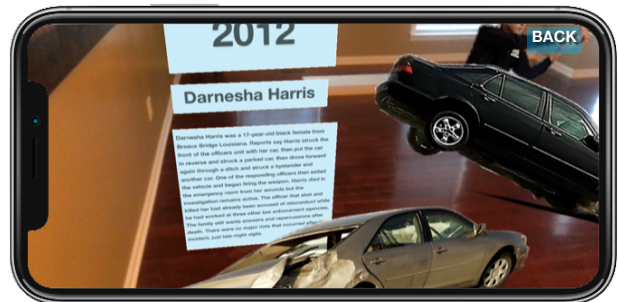


Figure 4.2.5.
Darnesha Harris.

2004



Figure 4.2.6.
Timothy Stansbury Jr.

1994



Figure 4.2.7.
Nicholas Heyward Jr.



Figures 4.2.8. - 4.2.10. are visual scenarios which show how the tool would be set up in the police-community program with the uniformed police officer. These virtual scenarios are placed throughout studies one, two, and three.

Figure 4.2.8. Visual Scenario of Aidan Ellison and Miciah Lee.



Figure 4.2.9. Visual Scenario of Michael Brown and Darnesha Harris.



Figure 4.2.10. Visual Scenario of Timothy Stansbury Jr. and Nicholas Heyward Jr.

4.3. COMMUNICATION CHANGE

How might the design of AR Flashcards provide communication techniques for correct terminology that could help the uniformed officer give calm and clear language for future interactions?

Background

Study three is about influencing communication change through AR flashcards that provide communication techniques for future interactions. This study implements a “what would you say situation,” providing verbal de-escalation tactics that can help with language when confronted with a situation. The police officer is confronted with ways of uses of language in those situations and try to avoid certain words that avoid aggressive confrontation. Also, the police officer can develop plans in the situation on how to move forward when it comes time for interaction.

Research shows that a police officer who has good communication skills is able to achieve his or her ends and solve problems, as well as address concerns using reliable information. Communication skills for police officers go a long way toward establishing positive relations in the community, which can be the primary force that gets cases solved in most situations. One of the key ideas in this approach is that citizens also show respect for the police when officers use communication effectively. An individual police officer’s decisions and behaviors influence how the community perceives the behavior of police officers in general. The officer also, however, has the power to change his or her opinion through open and constructive communication (Laurier, 2016).

Function

The application presents to the user multiple “what would you say” scenarios. There are three cards per section within these sections (blue, yellow, and red): blue is simple; yellow is medium; and red is complex. The user selects a scenario from one to three. The scenarios are placed on things such as stop signs, vehicles, and other objects to represent within the environment. Tapping a scenario presents your answer choices from said scenario. Tapping the card scenario a list of answers (only two) will appear. If the scenario answer is correct, it will stay as is if not the choice will fade out. The change in difficulty is a more intense scenario that uses wording to test the user. The user can easily change the difficulty by simply pressing the back button and switching the color on the study three home screen (**Figure 4.3.1.**). The star on the card represents the scenario while the ones without are the answer choices.

(Figure-4.3.2.) BLUE SECTION
WHAT DO YOU SAY WHEN

Scenario (Convenience Store)

You are on duty and decide to stop by the convenience store then you see an African-American teenage female steal two bottles of soda.

Answers-Stop her and ask her why you take the bottles and then tell her to return them, please.

Answers-Quickly run and tackle her to the ground while telling her what she is being arrested for.

Scenario (Blue Car)

You are on neighborhood watch and you see an African-American teenage male wandering around the neighborhood and you are curious and decide to stop him.

Answers-Turn on your sirens and arrest him. Telling him he is under arrest for trespassing.

Answers-Make sure to stop and ask questions. Ask him if he is safe and possibly offers a ride home if need be.

Scenario (Sign)

You get a call to come to a neighborhood about a disturbance at a pool full of African-American teenage males and females.

Answers-Get the story from both the person that made the call and the teenagers. Tell them to settle down with the noise and have a good time.

Answers- Observe and call backup. Talk to the person that made the call and wait until backup arrives.

(Figure 4.3.3.) YELLOW SECTION
WHAT DO YOU SAY WHEN

Scenario (Shopping Mall)

You are in the mall and see a dispute in the food court between an African-American teenage male and a white male.

Answers-Offer them a word of advice telling them this is not the way to go if it does not work then call backup.

Answers-Tell them to calm down, possibly give your feedback to both of them to clear up the situation.

Scenario (Yellow Car)

During a normal traffic stop, there is a mixture of African-American teenage males and white males in the car and there is an unusual smell in the vehicle.

Answers-Ask them all what is in the car getting them to tell you the truth before you start searching. As you search, keep asking questions.

Answers-Ask them all to step out of the car and search the vehicle for any illegal substances. Ask for help from your co-workers if necessary.

Scenario (Store)

You get a call about an African American teenage female using a counterfeit twenty-dollar bill at a local store. You manage to get there just in time before she leaves.

Answers-Tell her you are taking her in for counterfeit money and more questioning.

Answers-Why she is using the counterfeit bill get deeper into the questioning. Who, what, when, where, and why. Issue a fine for counterfeiting.

(Figure 4.3.4.) RED SECTION WHAT DO YOU SAY WHEN

Scenario (Stop Sign)

Leaving the grocery store you see a teenager walking around playing with what looks like a gun but you want to check to make sure.

Answers-You have your hand on your hip (on the utility belt). Drop your weapon, put your hands up in the air, and back up.

Answers-Yell FREEZE and draw your weapon (hand-gun) to make the person stop.

Scenario (School)

You are on duty at a high school as a school resource uniformed officer and get a call that someone has a weapon in the building. By the time you make your way to the

location, you see a group of African-American teenagers running out of the building that matches the description.

Answers-Through the walkie talkie say I need backup! Get other officers that are in the building to help you tackle the group and handcuff them.

Answers-STOP! Tell them hands up while running towards them with a taser drawn.

Scenario (Red House)

You are called to the scene of a loud party at a private residence and after arriving, notice the underage African-American teenagers in the corner of the room holding an alcoholic beverage and using illegal substances.

Answers-Ask where the owners of the residence are located and tell them to shut things down. Stay until everyone leaves.

Answers-Go over to the group of teenagers and ask them their ages and for I.D. Also, shut the party down.



Figure 4.3.1. Command Screen.
Blue, Yellow, and Red Selection.

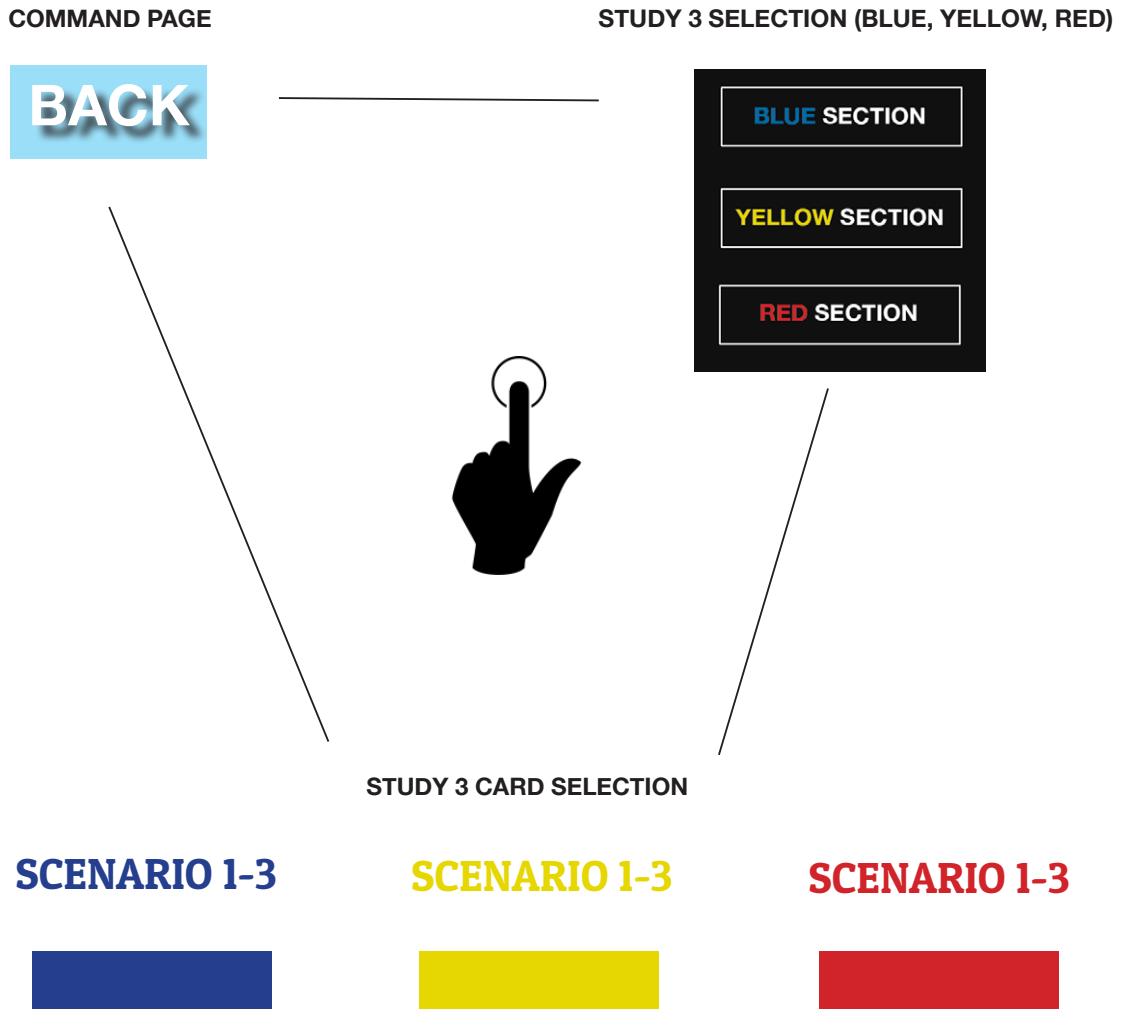


Figure-4.3.1. Command Cont.
Tap Navigation.

Figure 4.3.2. Blue Section
Scenario Choices.



Figure 4.3.2. Blue Section Cont.
Scenario 1 Selection and Right and
Wrong.

Figure 4.3.2. Blue Section Cont. Scenario 2 (Selection) Scenario 2 (Right and Wrong Selection).



Figure 4.3.2. Blue Section Cont. Scenario 3 (Selection) and Scenario 3 (Right and Wrong Selection).

Figure 4.3.3.
Yellow Section
Scenario Choices.



Figure 4.3.3. Yellow Section Cont.
Scenario 1 Selection and Right and
Wrong.

Figure 4.3.3. Yellow
Section Cont. Scenario 2
(Selection) Scenario 2 (Right
and Wrong Selection).



Figure 4.3.3. Yellow
Section Cont. Scenario 3
(Selection) and Scenario 3
(Right and Wrong Selection).

Figure 4.3.4. Red Section Scenario Choices.



Figure 4.3.4.
Red Section Cont.
Scenario 1 Selection
and Right and Wrong.

Figure 4.3.4. Red Section
Cont. Scenario 2 (Selection)
Scenario 2 (Right and Wrong
Selection).

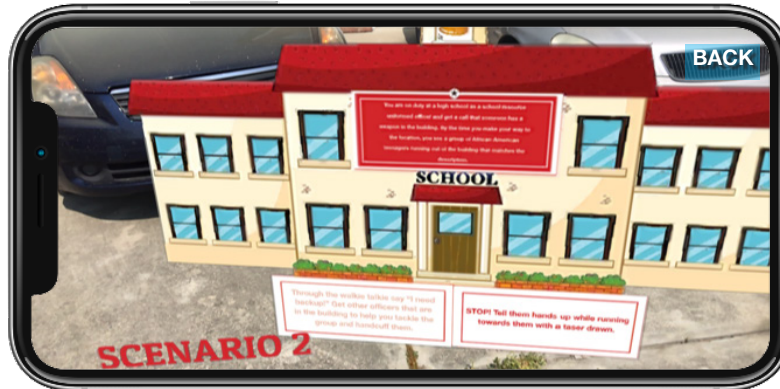


Figure 4.3.4. Red
Section Cont. Scenario 3
(Selection) and Scenario 3
(Right and Wrong Selection).

Figures 4.3.5. - 4.3.7. are visual scenarios which show how the tool would be set up in the police-community program with the uniformed police officer. These virtual scenarios are placed throughout studies one, two, and three.



Figure 4.3.5. (Blue) Scenarios (Top), Answer Choices (Bottom Left), Correct and Wrong Answer Choices (Bottom Right).



Figure 4.3.6. (Yellow) Scenarios (Top), Answer Choices (Bottom Left), Correct and Wrong Answer Choices (Bottom Right).



Figure 4.3.7. (Red) Scenarios (Top), Answer Choices (Bottom Left), Correct and Wrong Answer Choices (Bottom Right).

4.4. FULL CYCLE

How can a de-escalation application facilitate the full cycle of change of behavior, empathy, and clear language communication used in police-community building?

Background

Study four synthesizes the previous studies to suggest a “full circle” de-escalation augmented reality application, bringing together exercises in the use-of-force, exercises toward empathy, and exercises in clear language communication for future scenarios. The uniformed police officers who might utilizing this application might develop empathy toward others, behavior strategies on how to approach a situation, and conflict resolution.

Function

Before starting the study I created a user map to show the navigation and user experience as the user makes choices as he or she moves from one focus to another (**Figure 4.4.1**). The main menu offers a selection of (1) use-of-force, (2) empathy, and (3) communication (**Figure 4.4.5**). Giving a description of the exercises before going into them. Tapping the sections will then place the user into that particular exercise. The user will also have a login username and password to save progress, go back for their personal records, or explore the application during another community-policing program session. (**Figure 4.4.4**)

MAIN MENU WITH DESCRIPTION

Study One Description-Use-of-force

Reducing the use-of-force consists of augmented reality 3D objects, silhouette scenarios, and prompts that ask “a what would you do” in specific scenarios, followed by a selection of choices that the user can provide “I would do this in this situation” feedback. If the user picks a wrong choice they can tap on suggestibility to guide them in the right direction when facing that situation. When the user is done with one section they can simply turn left or right and tap to go to the other section.

Study Two Description-Empathy

Understanding and sharing the feelings of another person is key for building relationships. The use of photographic and audio representation of events reveals the brutal and often deadly encounters between police officers and African American teenagers. This exposure might elicit a sense of empathy in the user while also preparing him or her for future interactions with African-American teenagers.

Study Three Description-Communication

Influence communication change through AR flashcards that will provide communication techniques for future interactions. This study would implement a “what would you say situation” providing verbal de-escalation tactics that can help with language when confronted with a situation. The police officer would know how to react in those situations and try to avoid certain words to avoid aggressive confrontation. Once tapping the section you will have the option to choose scenario one to three. After tapping the scenario you will have the option of selecting your answer choice from said scenario. Tapping the card a list of answers (only two) will appear. If the answer is correct it will be as is if not the choice will fade out. The change in difficulty is a more intense scenario that uses wording to test the user.

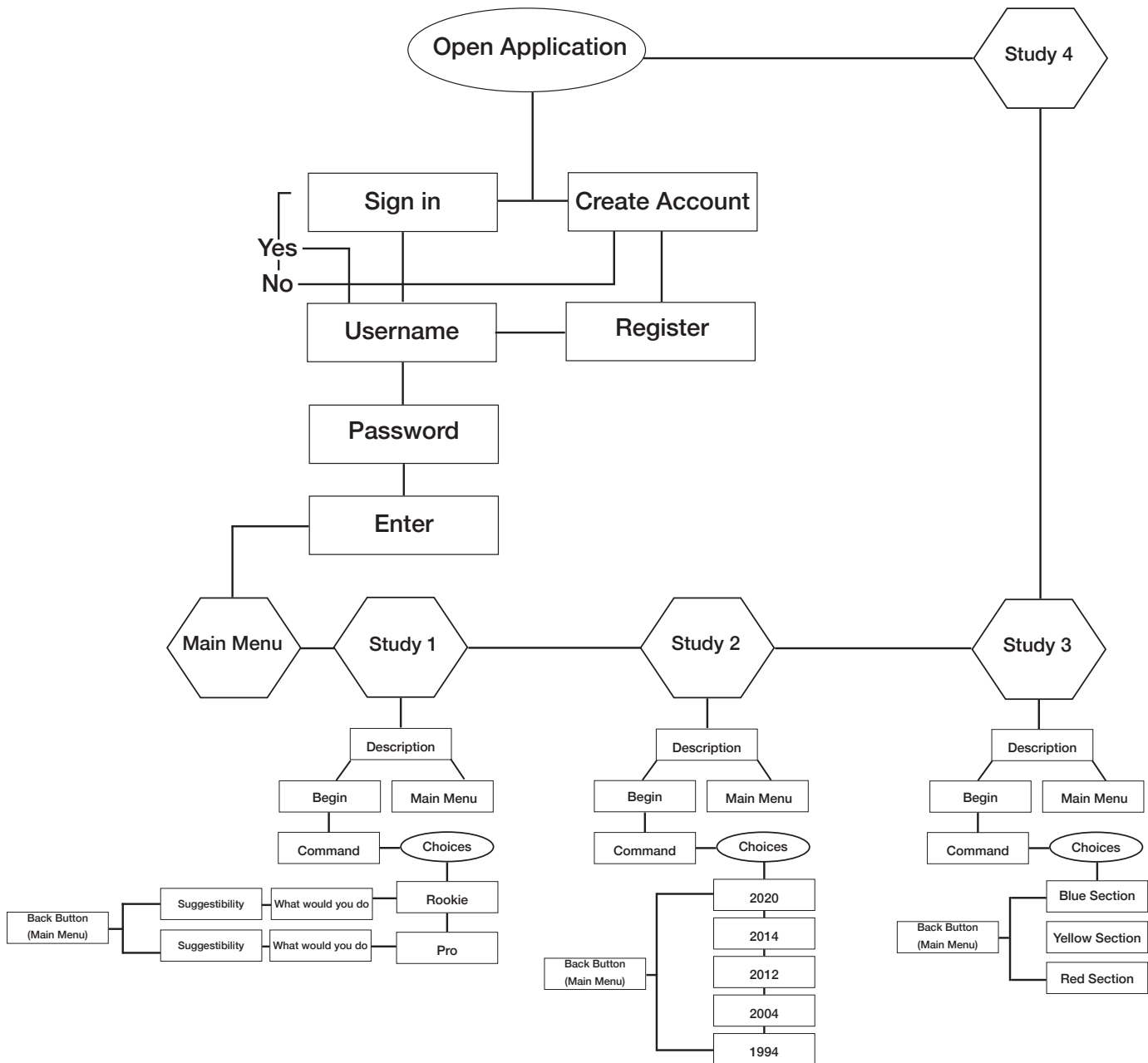


Figure 4.4.1. User Map of Application.



Figure 4.4.2. Sign In Page.

CREATE ACCOUNT

First Name

Last Name

Username

Password

Confirm Password

REGISTER

Figure 4.4.3. Create Account Page.

LOGIN

USERNAME

PASSWORD

ENTER

Figure 4.4.4. Login Page.



Figure 4.4.5. Main Menu Page.

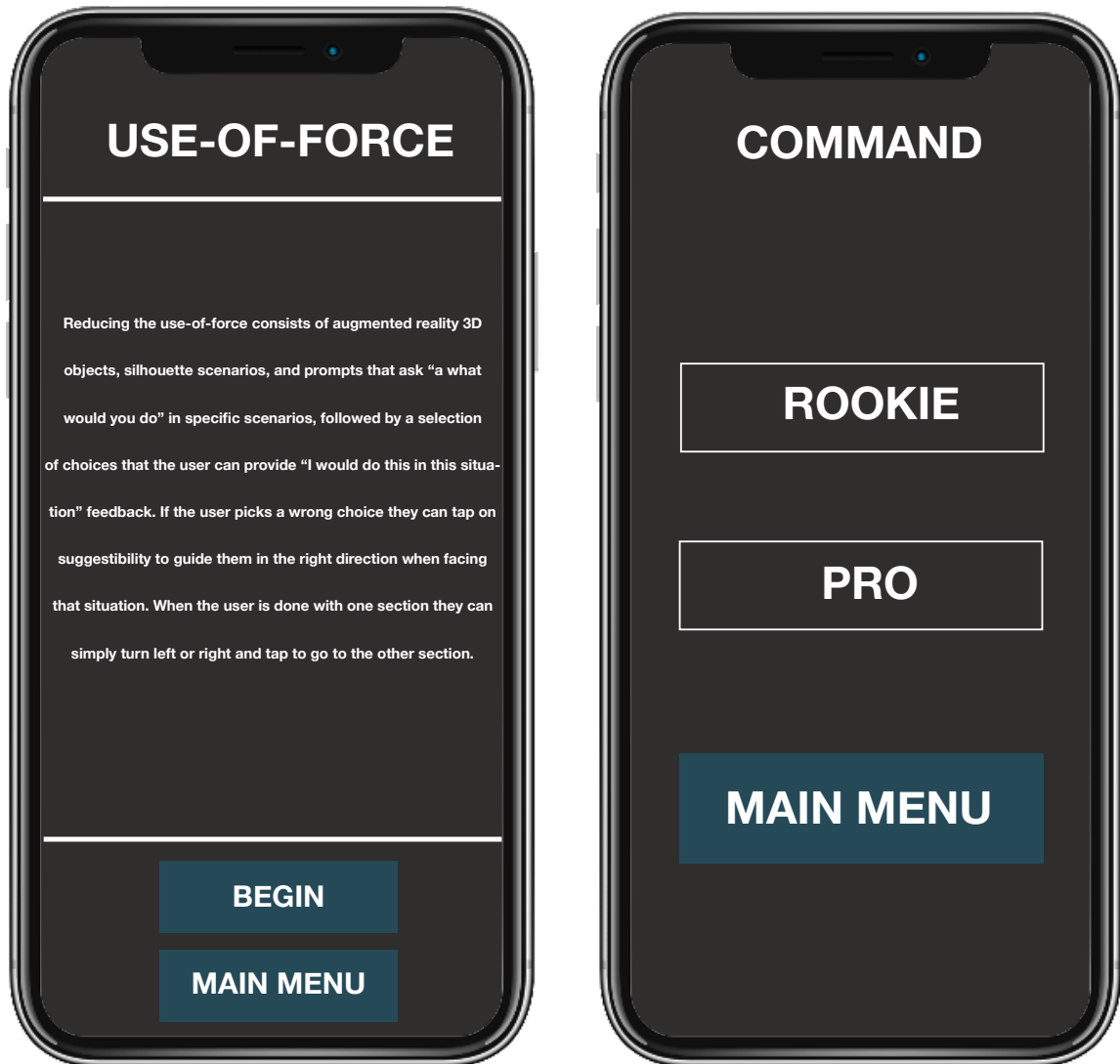


Figure 4.4.6. Study One Description and Command.



Figure 4.4.6. Study One Description and Command Cont.



Figure 4.4.7. Study Two Description and Command.



Figure 4.4.7. Study Two Description and Command Cont.



Figure 4.4.8. Study Three Description and Command.



Figure 4.4.8. Study Three Description and Command Cont.

5

Discussion

5.1 Design Principles

During this investigation, I designed features for a de-escalation application specifically for uniformed police officers to build relationships between them and African-American teenagers. This application would be given to them during police-community programs, but they would have the option to use it outside of the program as well. This application is strictly for teaching officers during a police-community program this would not be something that they use in the middle of an altercation. During this process I outlined specific principles that I believe are applicable to designers designing for environments using augmented reality.

Representation for Resistance of Force

Educating the user through virtual objects and silhouette scenarios could resist the use-of-force. Bringing the user into the scenario through augmented reality to show how they would go about situations could help for future situations. Implications for design: expand on the scenarios and objects to provide more in-depth situations and answer options. Rather than silhouettes the scenarios might present photographic cut-outs of could focus on a cut out of actual persons. Issues

of representation arose in my studies. It is important to explore other forms of representation. **(Study 1)**

Alternatives to Visualization

Impacting emotions through design elicit a sense of connectedness in the user through the product. This particular study is focused on bringing empathy to the user through photos of past traumatic experiences with sound. Through this study the form of these photos will be placed in a timeline selection to see similarities and differences. The role of sound might be expanded upon to study its effectiveness on eliciting empathy and understanding. **(Study 2)**

Language into Communication

Building language to form appropriate communication is a key factor in designing. Study three best illustrates this by creating flashcards that present language usage in particular scenarios. The difficulty increases as the color changes, challenging the user to choose the best option when confronted with a what would you say scenario. Placing scenarios onto objects within the uniformed officer environment could provide a more relatable scenario. The takeaway is rather than placing flashcards in the users environment, typography might be exploited in more scenarios for more freedom in selecting. **(Study 3)**

Engagement and Commentary for Balance

This refers to the full cycle of an application to give the best user experience possible. I wanted to merge all of the previous three studies into one to show how one connects with the other. All three relationship building topics (Force, Empathy, and Communication) will be formed into step by step wireframes into an application. This gives an overall balance for the user rather than just giving a study for police-community program use. The takeaway is even though balance is necessary for the flow of app use, future work would consist of a variety of topics that is important for police training. Also a synthesis and engagement section between the three studies to provide a comment or after thought section about what the uniformed officer learned from the exercise. **(Study 1-4)**

5.2 Future Work

Expanding to a wider audience

Future work would consist of expanding the application for other races and cultures. This would bring in a bigger audience for more storytelling and relationship

building. While researching there were many races that are affected by police relations and brutality bringing in this enormous gap that needs to be solved. I believe there is potential with not only Augmented Reality, but also this can help people connect with one another, join communities and organizations to help with the problems going on in their communities when it comes to police relations.

Continuance of the study and application

Continuing working on this application is something that needs to be done. I learned not only from research but also from my own experiences throughout the years that police officers and minority relationships are an issue that needs to be worked on through time. Uniformed police officers joining in on this project would be ideal. They can then utilize the application to be implemented into police training to help discover different approaches when it comes to altercations with citizens. Not only can this be a collaboration between designers and police officers, but also citizens in the community who could provide valuable and necessary insight.

5.3 Conclusion

Within real-world environments augmented reality technologies and police training can help provide stronger community partnerships. Police-community organizations and designers should consider how augmented reality training can be used to nurture positive relationships with minorities in the community.

I explored how the design of an augmented reality de-escalation application for uniformed police officers, used inside police-community programs, encourage a change of learned behavior to avoid escalation for future interactions with African-American teenagers. The studies were developed to encourage by reducing use-of-force, eliciting empathy, and improving uses of language. The visual studies build up to snapshots of a mobile phone application illustrating how the design of a de-escalation application and augmented reality tools might recommend implementation.

Exploring the literature, de-escalation training is needed throughout the police force. I do not suggest that mobile applications can replace police training, but that they might function as an aid to the training. This investigation aims to address a “wicked problem” in society with hopes that it might help bridging the gap between police officers and African-American teenagers.

6

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