Using the Simulation *Operation Belmont* to Teach Research Ethics

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University Honors Program Thesis

March 24, 2017

Abstract

This paper describes the first playtest of *Operation Belmont,* a simulation designed to teach undergraduate students about research ethics in the developing world, as well as revisions made to improve learning. The simulation strives to enhance traditional research ethics curriculums by inviting participants to engage in and with realistic scenarios, different roles, and decision making that one might encounter doing research in rural, unstructured environments. The playtest involved volunteer students at Santa Clara University, the majority of which were Global Social Benefit Fellows, in addition to honors and general students interested in the topic. The results of the playtest showed that student perceptions of learning from the simulation were positive, and in fact greater than actual learning based on objective pretest and posttest measures. The measures indicated growth in understanding certain concepts such as vulnerable populations and autonomy, while knowledge of justice and informed consent exhibited no change, and understanding of one's role as a GSBF was mixed. Students also identified interactivity and feedback as the most helpful aspects of the simulation, while they cited lack of clarity as least helpful.

Using the Simulation *Operation Belmont* to Teach Research Ethics

Research ethics refer to ethical implications and considerations of responsibility surrounding the entire research process, including planning, procedures, interactions with participants, and presentation of data (Kalichman, 2009). By incorporating visual and participatory aspects to engage students, simulations can enhance the conventional research ethics curriculum, helping sensitize individuals to ethical issues while building their confidence as they practice addressing them before entering the field. Calls for more innovative, interesting, and effective methods of teaching ethics persist, and perhaps simulations will effectively address such a need (Yarborough & Hunter, 2013).

In this study, I present *Operation Belmont*, a simulation designed to teach research ethics to Global Social Benefit Fellows (GSBFs) at Santa Clara University, an annual cohort of 18 undergraduate students who conduct action research in the developing world during the summer in service to a social enterprise. The simulation's design draws on the experiences of the 2016 fellows, as well as from the existing ethics curriculum created by the professor organizing the fellowship. This thesis will report on the design strategy and insights gained from playtesting *Operation Belmont,* including suggestions for future research. The simulation provides realistic scenarios in an environment of controlled risk, allowing participants to practice behaviors and experience the impacts of their decisions (Kapp, Blair, & Mesch, 2013). It can prepare individuals to learn how to advance research interests without taking advantage of vulnerable populations. It can also encourage individuals to consider the perspectives of various stakeholders who assume different positions of power during research through playing different roles. At the very least, *Operation Belmont* helps participants acquire awareness about potential

ethical challenges that they typically would not face in other research settings. Whether a researcher has many years of experience or none, the simulation can prove useful by reinforcing and teaching about unique of ways upholding the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978) specifically in the context of the developing world. Beyond GSBF, professors can use *Operation Belmont* in research courses, and institutions can incorporate it as part of research application processes. The value of this study lies in its evaluation of students' research ethics learning progress as a result of *Operation Belmont*, as well as the efficacy of the simulation in teaching research ethics regarding vulnerable populations. This study also offers recommendations for simulations with similar objectives and guidance for future research on the field of simulations and learning in general.

Literature Review

The Importance of Research Ethics

Considering past abuses of human subjects, such as the infamous studies conducted by Milgram (1963) and Zimbardo (1973), ensuring that students recognize and prepare to deal with the ethical issues that research involves must remain of high priority. The Belmont Report officially outlines the guiding principles for ethical research, upholding respect for persons (i.e., treating people as autonomous); beneficence (i.e., doing no harm and maximizing benefits while minimizing risks); and justice (i.e., fair distribution of the benefits and burdens so that certain people do not gain from the research while others suffer at their expense) as three dimensions that all research must honor to protect participants. To ensure commitment to these principles, individuals desiring to conduct research involving human subjects must receive permission from

his or her university's institutional review board (IRB) in order to proceed. The IRB requires

proposals to explain how the researcher(s) will adhere to the principles in the design, method,

and overall procedure of the study before granting approval. Addressing both potential and actual

ethical implications within the research beforehand proves not only useful for efficiently

obtaining institutional approval but is also critical for ensuring respectful interactions with

research participants.

Vulnerable populations, such as minorities, people of low-income, children, pregnant

women, and people with chronic health problems, deserve special attention and even further

considerations regarding their rights (Shivayogi, 2013). Because many of them reside in the

developing world, where corrupt and/or broken political, social, and economic conditions often

neglect them, researchers can easily exploit their disadvantaged status in the process of collecting

data. In environments where institutional infrastructures especially fail to meet the needs of the

poor, it is important to take extra care to view vulnerable populations as co-researchers and treat

them with dignity, taking steps beyond the norm to accommodate their status. Nevertheless,

effectively communicating this to young researchers has received less attention than it should,

due to the fact that undergraduate research on vulnerable populations in the developing world is

a recent development (Duguet, Tao, Altavilla, Man, & Harris, 2013). A number of challenges

furthermore inhibit student exposure to such information, perhaps explaining the instruction gap

on this particular issue, in which teachers neglect to address this niche topic during research

methods courses. First, the ethics of working with vulnerable populations in research may simply

seem unimportant. Some researchers lack direct contact with people in developing countries,

because they conduct research within academic labs, where economic, intellectual, and cultural

standards may vastly differ from research conditions in other places. Because professors may be removed from experience or understanding of life in impoverished environments, as well as the moral issues involved in conducting research there, teaching students in this area might seem difficult, abstract, irrelevant, or simply inapplicable. Regardless of these challenges, however, students still need education on this topic. If the purpose of research lies in increasing knowledge so as to make the world a better place, then research should take place among populations most in need. Thus, researchers possessing such a goal should expect to work with people living in poverty, which implies that they will need ethics training to equip them in that type of field.

Indeed, effectively teaching research ethics in regard to the developing world contains a great deal of complexities. For example, based on a feedback survey on their research ethics training in the fellowship, the 2016 GSBFs highlighted that even among vulnerable populations in developing countries, each nation faces its own culture-specific challenges that require unique preparation beforehand. Although each team of fellows worked on different summer projects around the world, the professor only had enough time to provide a general overview of information relevant to all groups and could not speak to each and every project's concerns in class. If a fellowship that prepares students to conduct research with vulnerable populations in the developing world faces challenges in teaching about the ethical considerations involved, then curriculum geared for commonplace research methods courses are likely lacking even more in their discussion on research ethics specifically relating to developing countries. As a result, research methods courses in addition to the fellowship itself need to revise their educational materials and encourage the examination of contextual ethical research issues for particular projects, which standardized assignments and typical textbook study cannot fully offer.

Another major challenge of teaching research ethics is extending the material beyond mere head knowledge to true internalization and application. Instilling discernment so that students can make quick, ethical decisions in the moment does not simply come through memorization and submitting the "right" answers in class. It requires mature sensitivity, prospective reflection, and wisdom more so than just knowledge, which calls for a deeper level of thinking from students than what they might usually encounter during their studies. Students might also fail to learn research ethics well because the nature of the content itself can be difficult to grasp without actually experiencing those challenges themselves or truly seeing through the perspective of someone different and less privileged than them.

Teaching Research Ethics through Games and Simulations

The fact that young adulthood constitutes an emotionally and socially formative rather than primarily transitional period in human growth and development indicates that undergraduate education presents a prime time to teach research ethics (Hutchinson, Leigh, & Wagner, 2016). In the past, teachers have used a variety of methods to help students learn about research ethics, including guest speakers, didactic lectures, self-assessments that encourage reflection, and discussions that allow students to share different perspectives, such as reviewing each other's ethics plans or responding to a complex ethical scenario (Bowater & Wilkinson, 2012). Yet, teaching students to adopt a sensitive, empathetic perspective in research remains difficult. Stein (1989) and Davis (1990) affirm that people can only truly learn empathy through experience; it cannot forcefully occur. However, by combining features of the gaming and educational worlds, simulations show promise to instruct on the challenging topic of research ethics.

Games have always served as a popular way of entertaining youth. They can serve simply

to amuse and/or function as social forms of getting to know others. Today, games offer many options from offline (e.g., board games) to virtual (e.g., video games) and involving an individual or group, therefore appealing to a wide range of audiences. A study by the NPD Group found that 91 percent of children between the ages of two and 17 play games, with notable increases in recent years among teens between 15 and 17 (Reisinger, 2011). More recently, scholars have also begun recognizing the value of games beyond their superficial worth as mere sources of enjoyment. Gredler (1996) asserts that academic games encourage cognitive and intellectual thinking. Not only can they educate many people in a short amount of time but they also make learning non-threatening and more interesting (Bokyeong, Hyungsung, & Youngkyun, 2009; Gee, 2007; Rebolledo-Mendez, Avramindes, de Freitas, & Memarzia, 2009), yielding greater retention value (Boyle, 2011; Damassa & Sitko 2010; de Freitas & Liarokapis 2011).

Simulations constitute a distinct but related concept to games. Salen and Zimmerman (2004, p. 11) define a "game" as "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome," whereas Sauvé, Renaud, Kaufman, and Marquis (2007, p. 247) describe a simulation "as a simplified, dynamic, and accurate model of reality that is a system used in a learning context." Simulations always exhibit a high level of similarity to the actual world, attempting to reflect accurately the system that it represents. Although games and simulations overlap in that they both have rules, interactivity, and feedback, unlike games, simulations do not necessarily incorporate an aspect of competition. According to Warren, Jones, Dolliver, and Stein (2012), games must involve play, conflict, and a win/loss state, while simulations must model a reality, present tasks that genuinely reflect that

reality, and strive for the learner to internalize the model and its rules. As an immersive

experience that requires participants to make decisions and face corresponding consequences in a

system highly mirroring the real world, simulations appear particularly suitable for training

students in research ethics, which seems to require more engagement than that of traditional

classroom methods (e.g., lectures, readings, worksheets). Additionally, simulations present an

ideal balance between offering guidance and allowing players to build their own knowledge, in

which the former remains especially important for novice progress (Kirschner, Sweller, and

Clark, 2006).

Kapp, Blair, and Mesch (2013, p. 79) contend "that the level of interactivity within a

learning environment is what drives learning." An individual can complete an ethics worksheet

using seemingly reasonable answers but lack the intention to carry out those plans when faced

with an ethical dilemma. More and more people today realize that numeric scores and

supposedly correct answers on paper do not necessarily reflect actual learning of knowledge (i.e.,

the mastery of content in various disciplines and application of material learned), skills (i.e.,

planning, useful interactions with the world, and strategies for higher-order thinking), and

dispositions (i.e., attitudes or mindsets)—the three major education outcomes according to the

Council of Chief State School Officers (2013). Simulations, on the other hand, can, as

demonstrated through a study by Bowling (2011) on student nurses who experienced gains in

knowledge, skills, and the attitude of self-confidence through their participation in a simulation.

Using Self-Confidence in Learning and OSCE instruments, Bowling discovered that individuals

experienced a significant increase in knowledge and skill performance, as well as appropriate

developments in self-confidence as a result of a simulation. This is not to say that traditional

classroom learning is useless, as it is certainly very necessary, but teaching research ethics calls for supplementary activity that will more strongly influence behavior and cultivate authentic practice.

In the past, games, simulations, and educational exercises have made attempts to teach research ethics. For example, Gerodetti and Nixon (2014) designed workshops inspired by BBC's *Apprentice*, a British reality game show featuring businesspeople who participate in a series of challenges to win a prize. For the first workshop, students competed in two groups to create a conceptual plan for a game that would teach research methods and ethics, which they then designed and developed in a subsequent workshop. The workshops received positive feedback from students, 92 percent of whom affirmed their usefulness as a learning tool for research methods students.

Similarly to *Operation Belmont*, which involves role play and debriefing, Rosnow (1990) designed a role-playing classroom and discussion exercise for an undergraduate research methods course aimed at practicing critical thinking about research ethics. Students were asked to thoroughly study an issue in the past year from any primary research journal and present an oral report on it in class. After discussing the troublesome aspects of the research, the student role-played the author of the study and defended it amid criticisms from the rest of the class before evaluating the study on its moral cost and utility. Rosnow found that role-play and discussion indeed foster critical thinking, as well as appreciation for the nuances involved with research ethics. A validation study by Strohmetz and Skleder (2009) likewise supported Rosnow's (1990) findings on the effectiveness of role-playing in developing an awareness of the complex ethical considerations surrounding the research process. Clear commonalities between

the teaching methods in each of these studies are the active, engaged role that students assume through their participation.

Beyond transforming dispositions, research shows that simulations can help develop skills. The Advanced Distributed Learning Initiative (Kapp, Blair, and Mesch 2013) found that most of the time, skills learned in computer-based simulations demonstrate potential to transfer to genuine actions. In fact, the Initiative discovered that simulations can shorten the number of training hours needed for reaching proficiency compared to other methods. The steps that one goes through during a simulation—the templates of thinking and practice more so than knowledge of what to do—leads to learning transfer.

Through increasing motivation to learn, in addition to developing dispositions like empathy, skills like preventative ethical thinking, and knowledge of potential ethical dilemmas in research, games and simulations can greatly contribute to learning. They serve as interactive activities that can teach content effectively while presenting material in an interesting way that engages students. In particular, simulations allow individuals to practice making decisions in realistic scenarios and understand the outcomes of their actions. In this way, students can receive feedback and reflect on their choices in a low-stakes setting, which can positively guide or change their behavior in the real world.

The Design of the Simulation

Learning Outcomes

Building on the work of previous scholars, I devised a simulation for GSBFs and other undergraduates preparing to work with vulnerable populations in partnership with a social enterprise in the developing world. In order to advance research ethics training, the simulation

aims to accomplish the following objectives:

1) Students will identify the three basic ethical principles that guide research involving

   human subjects. They will recognize the importance of upholding autonomy,

   beneficence, and justice.

2) Through the simulation, students will develop and apply an understanding of informed

   consent. They will take turns when possible playing the different roles of researcher,

   translator, and participant living in poverty. They will build knowledge regarding the

   components of informed consent and formulate clear steps for securing it in the field.

3) Students will practice various roles that challenge themselves and/or their peers to fulfill

   their unique roles and responsibilities as fellows producing high-quality work in service

   to their host social enterprise. They will participate in scenarios that challenge them to

   function with integrity and respect for the relationships between their social enterprise

   and the communities that it serves.

4) Students will evaluate appropriate ways of approaching vulnerable populations during

   data collection processes. They will compare strategies for obtaining informed consent

   from these groups, including special procedures for ethically gathering photography and

   film.

Simulation Play

   Operation Belmont serves as a social, multi-player activity that puts students into small

groups where they must work together. Johnson and Johnson (1994) found that students more

often than not learn better in cooperative rather than competitive or individualistic environments.

Cooperation nurtures positive interdependence and a need to develop effective working

relationships, whereas competition stresses that individuals can only succeed if others fail to

reach their goals. As a result, I designed the simulation to promote cooperative learning. It lasts

approximately 45 minutes to an hour, with an additional 15 minutes reserved for discussion and

debriefing. Individuals can play *Operation Belmont* during a class period or in a separate

research methods workshop.

    The simulation is set in rural Tanzania, in which a group of undergraduate researchers is

working with the social enterprise Solar Sister (https://www.solarsister.org/) to conduct surveys

on the impact of solar lanterns. Because most of the participants speak Swahili and do not

understand English, the researchers need a translator. To play, students volunteer to enact one of

three roles: participant, researcher, or translator. Each receives a name tag; description of one's

role (see Appendix A), which provides context, information about one's goals, and guidelines for

role play; and a script (see Appendix B). The script, resembling a flow chart, provides relevant

information for each round, guidance on the decisions that they can make, and instructions on

how to proceed.

    While researchers aim to score as many points as possible by choosing the best answer

for each question, and participants have the responsibility of providing feedback cards (see

Appendix C) and keeping score of the researchers, translators help facilitate the researchers'

interaction with participants. Translators can also improvise whenever they desire by acting as if

they do not speak English well. They can choose to misinterpret the researcher, challenging the

researcher to work around poor translation. There are a total of nine rounds of questions, and

each round, the researchers answer questions to different ethical scenarios, drawing on research

ethics curriculum learned previously in class. They must consult among themselves and select

one of the multiple-choice options available. Each option corresponds to a certain number of points based on its level of appropriateness, and researchers receive more points for making more ethical decisions. The scenario card for each round is labeled as either green, yellow, or red. Green cards refer to situations that are easier to navigate, yellow ones are harder situations to think through, and red cards are more serious situations that require stronger critical thinking. Participants remain responsible for passing out scenario cards (see Appendix C) to the researchers each round.

The questions that researchers answer pertain to informed consent; the principles of beneficence, respect for persons, and justice; conducting research on minors; respectful interactions with locals; and maintaining the integrity of the relationships between the social enterprise and their social networks. Based on the researchers' choices, participants provide feedback cards that inform the researchers on the consequences of their decisions and explain the reasoning behind the best answer. In this way, participants assume a position of power. During the simulation, a presentation slide with a brief description of the three principles of the Belmont Report is displayed on the screen to assist players and reinforce knowledge.

Midway through the simulation, the script prompts individuals to switch roles into one that they have not yet played. This gives players the chance to apply their concepts of ethics in different ways and develop new perspectives. Raphael, Bachen, Lynn, Baldwin-Philippi, and McKee (2010) suggest that games requiring individuals to play various roles will be more likely to encourage ethical reflection. At the end of the simulation, the table with the highest score wins a prize (e.g., candy) for their group and can decide whether to share it with the rest of the groups or simply keep it for themselves, as a subtle way of testing the immediate effect of the simulation

on people's ethical orientations toward others. Afterward, students debrief on the simulation and its outcomes for the sake of reflective discussion on research ethics and vulnerable populations. Debriefing, which refers to reframing "the context of a situation to clarify perspectives and assumptions, both subjectively and objectively," is essential for full learning effect (NLN Board of Governors and International Nursing Association for Clinical Simulation and Learning, 2015). Ultimately, the goal of the simulation lies not so much in teaching individuals what to do but rather how to think. The ethical challenges posed do not necessarily have a single correct answer, but students are rewarded for applying the ethical principles of informed consent to make their choices. I believe that the simulation's value is not limited to the Global Social Benefit Fellowship (GSBF) and can be used by any professor seeking to teach research ethics through this angle. Unlike the standard IRB application, which fails to fully address photography, video, and other digital protections, or similar considerations in culture-specific contexts, the simulation encourages participants to consider how the appropriateness of research processes might differ in particular parts of the world.

For programs that train students to conduct research in different cultures, such as the GSBF, I recommend some special guidelines that I believe will enhance the overall simulation experience. First, students should break off into small groups based on their geographical location. For example, pairs who will work in East Africa would form one group, while those who will work in India would form another. Once students complete the simulation in their groups, the professor should facilitate the debrief together as a class and thereafter break everyone off into their teams to fill out an ethics worksheet with more project- and country-specific information.

Research Questions

To analyze the simulation's success in fulfilling its objectives and enhancing the existing

GSBF research ethics curriculum, I pose the following research questions:

RQ1: What were student perceptions of learning from the simulation?

RQ2: What did students learn from the simulation based on objective measures?

RQ3: What were students' perceptions of the most and least helpful aspects of the

simulation?

Evaluation of the simulation's effectiveness will help illuminate whether or not serious games

and simulations can truly function as powerful learning tools for research ethics.

Methods

Participants

All participants were undergraduate students at Santa Clara University, a medium-sized,

Jesuit college in Northern California. Out of a total of 13 participants, nine were female and four

were male; eight were GSBFs, two were prospective applicants for the fellowship, and three

were other students. Most were juniors and seniors. The participants exhibited a gender balance

and background of international experiences representative of GSBFs. Their ages and diversity

of disciplines furthermore reflected that of GSBFs overall. Considering that the simulation took

place among undergraduate students, the majority of whom were interested in the fellowship and

research ethics issues, external validity was probably even higher, though students did not

receive a grade or supervision from a professor during the activity.

Playtest

To recruit students, I made announcements in the GSBF fall 2016 course asking for participation. I also used email and social media networks, such as Slack, Facebook, and LinkedIn. In my text, I shared that "I designed a simulation with the goal of helping students better prepare for ethical challenges involved with conducting research in the developing world." I asked for volunteers to test my simulation and provide feedback, included free pizza and honors credit as incentives, and highlighted the playtest as an opportunity of interest for Global Fellows, GSBFs, or anyone applying to those service programs.

After participants confirmed their attendance, they received two emails with more information about the simulation and a request that they read a research ethics document about the Belmont Report's three major principles in relation to the GSBF. On the day of the simulation, students were asked to complete an online pretest upon their arrival using their laptop or mobile device. The pretest measured the following variables: understanding of one's role as a GSBF, which is to perform action research in service to a social enterprise; knowledge of research ethics concepts such as vulnerable populations, justice, respect for persons, beneficence, and informed consent; perception of one's research ethics knowledge; and perception of research ethics' importance. The pretest took approximately 20 minutes for everyone to complete.

After taking the pretest, students volunteered for each role and formed their own small groups, consisting of two or three researchers, a translator, and one local. The simulation took place in a meeting room located in the basement of a university building, which contained four round tables. I administered the simulation and explained the instructions through a presentation. The presentation began by reviewing the information contained in the research ethics document that students were assigned to read beforehand, and then explained the instructions for the

simulation. Students played within each of their groups and afterward completed an evaluation of

their progress in meeting each learning objective as a result of *Operation Belmont* (see Appendix

D). They also debriefed together as one full group using a set of questions displayed on a

presentation slide, and spent 15 minutes discussing the following: What was your experience

like? How did you feel throughout the simulation? What were your biggest takeaways? Were

there any situations that you felt unequipped for, or did anything come up that was surprising?

Who did you feel was in control of the simulation, and why? If you were doing this in the field,

what would you do differently? What did you find helpful about the simulation? What can be

improved so that you can better meet the learning objectives? A week later, students were asked

via email to take a posttest independently. The posttest contained all of the same questions in the

pretest (see Appendix E for pretest and posttest measures), and intended to measure whether the

simulation made any long-term impact on their learning of research ethics**.** All 13 participants

completed the posttest. For more information regarding the administration of the simulation,

please refer to the literature review.

Findings

RQ1 asked students how well they felt they met each of the learning objectives as a result

of the simulation in order to examine the efficacy of *Operation Belmont* in achieving its goals. I

analyzed the quantitative data of RQ1 based on an online evaluation completed immediately

after the simulation, in which students measured their own perceptions of progress in meeting

each learning objective as a result of *Operation Belmont* (see Appendix D). I examined

participants' median rating of their perceived progress on a scale from 1 (no progress) to 5

(significant progress). The median rating for each objective was 4.0. Students were also asked to

rate their own knowledge of research ethics as a whole before and after playing the simulation. The median rating in the pretest and posttest for perceptions of one's research ethics knowledge was 4.0 on a scale of 1 (low) to 5 (high). The ratings ranged from 1 to 5 in the pretest, whereas they ranged from 4 to 5 in the posttest.

RQ2 used objective measures to identify students' learning gains after playing the simulation. Qualitative data analysis measured knowledge of informed consent and understanding of the importance of research ethics, using open-ended questions on the pretest and posttest. The average length of responses ranged from one to two short paragraphs. As the sole coder for this study, I defined my categories deductively based on a set of established content criteria from the GSBF research ethics document. I checked for consistency in my coding by recoding the responses one week later to ensure similar outcomes. In my analysis of the open-ended question on informed consent, I looked for changes in the number of informed consent elements (e.g., privacy considerations, statement of risks and benefits) included in students' written scripts. I counted the number of informed consent elements that participants could list in the pretest and posttest, and then compared the total amount for each participant. Whereas seven participants (53.8 percent) increased in their understanding of informed consent, two participants (15.4 percent) included the same amount of informed consent elements as they did in the pretest, and four participants (30.8 percent) decreased in their inclusion of certain aspects. The top three most frequently missed components consisted of explaining the research's purpose, risks, and benefits.

To examine responses regarding the importance of research ethics, I looked for mention of at least one of the three ethical principles and/or the history of human subject abuses. In the

pretest, eight individuals mentioned at least one of the three principles, and of the eight, one person referred to past human subject abuses. Comparatively, in the posttest four individuals cited history, two of which did not make mention of any principles. A total of ten participants cited at least one of the principles in the posttest. The mean number of principles mentioned per participant was 1.0 ($SD = 1.0$) in the posttest, as opposed to 0.8 ($SD = 0.8$) in the pretest.

In addition to qualitative data, I examined quantitative data that measured understanding of one's role as a GSBF and knowledge of vulnerable populations, justice, respect for persons, beneficence, and informed consent. I compared the differences in median ratings for each multiple-choice question in the pretest and posttest. Table 1 shows the quantitative results of the pretest and posttest. Overall, students made most gains in grasping the concepts of vulnerable populations and respect for persons, whereas they made least gains in understanding beneficence. Understanding of justice and informed consent remained the same, while progress in understanding one's role as a GSBF appeared inconsistent.

RQ3 inquired about which aspects of the simulation students felt were successful or unsuccessful at helping them meet each learning objective as a way of identifying specific changes to improve the simulation. The participants discussed such aspects in the evaluation immediately following the simulation (see Appendix D) as well as during the debrief. I took notes during these activities and also throughout the simulation regarding any feedback that participants offered, compiling the most frequently voiced concerns (i.e., concerns brought up or affirmed by multiple participants). The qualitative data for RQ3 ranged from a couple words to three sentences. The unit of analysis for all qualitative data consisted of the player. Tables 2 and 3 show the results for RQ3. The majority of students identified feedback cards as the most

helpful aspect of the simulation, while they cited the least helpful aspect as the lack of clear role play guidelines.

Discussion

The results of RQ1 indicate that students felt the simulation achieved its learning objectives and advanced their research ethics knowledge overall. Although the median rating for perceptions of one's research ethics knowledge did not change after the playtest, nearly 40 percent of individuals (eight people) reported increases in this way, suggesting some degree of growth in confidence. This finding is consistent with research showing that simulations help players develop self-confidence and other intended attitudes as they practice navigating situations in a low-stakes environment to prepare for real occurrences (Bowling, 2011).

The fact that most of the quantitative results increased from the pretest to posttest certainly reveals some progress. The qualitative results for RQ2, however, both confirm and challenge students' perceptions of their learning by evidencing growth in general understanding of informed consent despite still having incomplete knowledge, especially regarding some of the more specific details, such as explaining the broader purpose of one's research in informed consent scripts. Students also overestimated their progress and level of research ethics understanding, as the objective measures showed inconsistent gains. For example, although students rated progress in understanding the three research ethics principles, students primarily made gains in knowledge of autonomy. Students also cited progress in preparing and securing informed consent, but the objective measures showed no change in this area from pre to post simulation. In addition, students noted progress in practicing roles that challenge themselves and/or their peers to serve a social enterprise with integrity and respect for its relationship with

local communities, but this was only partially reflected in the objective measures.

The simulation's lack of clear teaching on the distinction between the three ethical

principles showed in the posttest results as well, as the objective pertaining to knowledge of the

three ethical principles did not encounter significant gains. In fact, one student commented,

"There was . . . one part on whether a situation was infringing [on] beneficence or autonomy that

I thought could've gone the other way based on the definition given." To address this, I will

revise the simulation questions regarding the three ethical principles in wording and content so

that they point to a clearer answer.

Interestingly, participants' feedback and perceptions immediately following the

simulation seemed positive, while the posttest results appeared more mixed. The results for RQ2

may ultimately suggest that the simulation is only effective in the short-term and requires more

reinforcement afterward, as it may remain insufficient for long-term retention of research ethics

information. Although this seems unlikely, as more than half of the participants completed the

posttest within one week of the simulation and likely would not forget the information in such a

short term, it remains a possibility to be explored. To cement learning for students after the

simulation, a quarterly research ethics refresher can be implemented, in which students complete

research ethics worksheets using their knowledge from the simulation and receive feedback from

a professor/teacher. For GSBFs, this would not be unreasonable, since they already complete

quarterly ethics worksheets. For further reinforcement, professors/teachers may occasionally

show short research ethics videos in class with discussion questions that connect the video(s) to

the simulation content. Nevertheless, a more likely explanation for the inconsistency between

student perceptions and the objective measures is that the objective measures simply do not

capture actual learning. Only one individual created them without testing their reliability or validity, and perhaps more questions in the measures that thoroughly capture the concepts tested for are needed, as well as revision of the measures by others to ensure that they accomplish their purpose.

For RQ3, individuals highlighted more successful aspects of the simulation compared to its shortcomings. Even though objective measures showed no gains in knowledge of informed consent, students felt that the informed consent questions were helpful. Perhaps the participants lacked thorough knowledge in that area but realized its importance in the field, and therefore appreciated that the simulation focused on that topic. This may indicate that simulations are not the most effective method for teaching informed consent, and/or simply that the simulation fell short in this area.

Moreover, the interactiveness of the simulation, which involves role play, real-life scenarios, and immediate feedback helped make *Operation Belmont* relevant, as well as challenge students to think through important ethical decisions. One student even mentioned that "it was interactive and actually pretty fun." This remains consistent with previous research showing that simulations can engage individuals and help them experience gains in knowledge, skills, and attitudes (Bowling, 2011). Role playing in the classroom has demonstrated efficacy in heightening students' critical thinking and awareness of complex research ethics considerations (Rosnow, 1990; Strohmetz & Skleder, 2009). Thus, this finding suggests that simulations can encourage students to learn about research ethics. It also suggests that simulations can be an effective supplement to traditional teaching methods, especially considering that all students indicated learning progress to some degree even though over 60 percent of the participants

already received previous research ethics training.

The successful aspects of the simulation that students identified point to the importance of its engaging nature. Participants' ability to experience a new role and recognize the consequences of their decisions allowed them to understand and get a sense of what to expect in the field. The simulation turned abstract ideas and encounters far removed from their daily realities into something concrete. It exposed students to the process of addressing research ethics in an applied manner. According to Kapp, Blair, and Mesch (2013, p. 79), "The more the learner interacts with other learners, the content, and the instructor, the more likely it is that learning will actually occur." This finding confirms previous research indicating that active participation through simulations can overcome disengagement and superficial learning.

On the other hand, *Operation Belmont* lacked clarity. Due to the many elements involved (i.e., role descriptions, scripts, scenario cards, feedback cards, and scorekeeping), participants felt that they were focusing on too many parts at once. The simulation lacked simplicity and came across to some as overwhelming. In addition, the simulation did not specify the degree to which individuals should follow their script versus naturally roleplay their character, and the response choices for the questions relating to the three main ethical principles overlapped, in which one could argue for the relevance of one answer over another. As a result, I will revise the questions to present clearer answers, and remove the option of going off-script in the role descriptions to simplify the instructions. Kapp, Blair, and Mesch (2013) affirm the importance of ensuring clear rules, goals, and point systems in simulations. They emphasize avoiding over complication, as players usually assume the simulation is more complex than it is. They likewise affirm the importance of playtesting among supportive groups so that the designer can address

any confusion that emerges and implement changes for the final version of the simulation.

Overall, the findings for RQ3 suggest interactivity, clarity, and playtesting as paramount for a

simulation's maximum efficacy.

Based on the results of my playtest, I will make the following changes to my simulation:

clarify roles in the role descriptions as previously discussed; simplify the wording of the cards

and scripts; revise the questions pertaining to the main ethical principles; and add a score key for

that gives feedback on overall performance in the simulation (see Appendix F). I also propose to

strengthen teaching on informed consent by providing more explanation regarding what the

purpose, risks, and benefits of research refer to, including examples, in the research ethics

document. In addition, those elements will be highlighted when initially mentioned in the

researcher's role description (see Appendix A) through visual emphasis (e.g., capitalization,

underlining, bolding, etc.) to reinforce their importance. Regarding the importance of research

ethics, students demonstrated an imbalance between their knowledge of the three ethical

principles and the history of human subject abuses in research. Students recognized the

principles as grounds for upholding research ethics but demonstrated a need for stronger teaching

on the latter subject. As a result, more information on past human subject abuses in research

should be included in the research ethics document and during the introductory presentation.

Conclusion

The initial playtest of *Operation Belmont* led to positive student perceptions of their

learning gains in research ethics as a result of the simulation. Although students indicated

learning progress overall, objective measures from the posttest revealed that they primarily grew

in understanding concepts of vulnerable populations and autonomy, and exhibited little growth in

their understanding of beneficence. The simulation did not affect their knowledge of justice and informed consent, and its impact on understanding one's role as a GSBF was mixed. The objective measures ultimately indicate that the simulation only helped students learn certain ideas. In particular, participants found the feedback cards and informed consent questions most helpful, while they identified the lack of clarification regarding the role of the participant and translator, as well as the overwhelming number of roles, scripts, cards, and text, as least helpful. Previous research demonstrates the potential for simulations to foster learning, even in research ethics, largely due to their interactivity but also highlights the importance of clarity in their structure.

The limitations that may have affected my findings include the small sample size, which may have excluded valuable additional perspectives, feedback, and support for the study. Because eight of the participants were GSBFs who have already studied research ethics in depth and practiced navigating ethical challenges in the field, growth in learning from pre to post simulation may have been less than it actually would be for individuals without extensive research ethics training. Especially concerning informed consent, GSBFs were required to practice securing that in the field on a daily basis, meaning they probably knew that information quite well already. The simulation also strives to teach people how to think about research ethics, but perhaps fellows had adopted ingrained patterns of thinking in which they struggled to relearn concepts (e.g., informed consent, justice) in a different way after just one experience. The fact that the simulation was not mandatory or part of a class furthermore may have affected the results. Students might have been less invested or motivated to answer questions in the posttest according to their full knowledge, because they did not receive a grade. In contrast to spending a

designated time completing the pretest under my supervision, students completed the posttest independently on their own time. The timing of the posttest may have encouraged incomplete responses as well, in which students spent minimal effort or thought completing it, because it was administered during finals week and winter break. This may apply especially to participants who decreased their inclusion of certain aspects in their posttest informed consent script. Perhaps the simulation itself was not enough to help participants retain the information either.

Moreover, the pretest and posttest only contained one or two questions to measure each variable, which could be insufficient for measuring complex variables. Because I came up with the questions myself instead of applying a reliable and valid instrument used in previous research, internal validity of my study may be weak. In this way, the measures captured breadth but potentially compromised their ability to measure true understanding of a concept, because they were not exhaustive. For example, one of the questions inquiring about what fellows should do if their translator in-country does not understand English fluently did not seem to capture the heart of one's role as a GSBF, even though it was intended to. Ultimately, the questions may not have been thorough enough to draw conclusions about learning gains. Coding open-ended responses could have been strengthened by a second person's input as well. If two people coded the responses based on an established coding standard agreed upon, then they could check against each other to see that they are coding and thinking in similar, unbiased ways. Considering that this study playtested the first draft of *Operation Belmont*, there is certainly need for revisions and fine tuning.

Based on the findings, I will simplify and clarify the guidelines of the simulation. I will explicitly state the roles and actions of participant and translator in the role descriptions, giving

translators the role of mediator and scorekeeper. Translators will stick to their script and the option to improvise will be eliminated for the purpose of clarity. I will also reduce text in the script and cards where possible in order to make each of the simulation materials more succinct, so as not to overwhelm participants with too much information. I will create a key that reveals the meaning of final scores so that students know where they stand in their ability to think through research ethics thoughtfully and in their readiness to enter the field (see Appendix F). Lastly, I will revise the questions in the simulation concerning the three main ethical principles so that one principle is more applicable than the other based on the definitions provided in the research ethics document. These revisions demonstrate that effective simulations offer feedback, clarity, and simplicity.

In addition to redesign, this study provides broader insight for future research. Future research can strengthen my findings by incorporating inter-coder reliability and ensuring at least three questions of the pretest/posttest measure each variable. While prior research has suggested that simulations are effective media for teaching research ethics, my study found that they may be insufficient for long-term retention of learning material. By examining the learning areas where students experienced little-to-no growth, future research can experiment with various reinforcement activities using a control group to understand better the impact of simulations on learning over time. Future research could build upon that by studying different types of reinforcement and identifying which ones are more effective than others for ensuring a simulation's full capability. Finally, future research can replicate this study using a group of graduate students, as they typically perform more research than undergraduates, and the simulation may also prove more useful or relevant to them. In this way, we can examine the

usefulness of *Operation Belmont* for people in different stages within academia and from a wide

range of undergraduate educational backgrounds.

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Table 1

Knowledge Gains

Question (Knowledge Item)	Correct Answers in the Pretest	Correct Answers in the Posttest	Knowledge Increase from Pre to Post Simulation
Which of the following best describes your role as a fellow? (Role as a GSBF)	46.2%	100%	53.8%
Which are examples of vulnerable populations? (Vulnerable populations)	69.2%	100%	30.8%
The principle of respect for persons is most closely linked to what other concept? (Respect for persons)	15.4%	46.2%	30.8%
Which of the following options below best exemplifies the principle of beneficence during research? (Beneficence)	53.8%	61.5%	7.7%
What does the principle of justice primarily refer to in research ethics? (Justice)	61.5%	61.5%	0%
Does informed consent apply to photography, video, and film? (Informed consent)	92.3%	92.3%	0%
If your assigned translator in your host country does not speak good English, what step should you take? (Role as a GSBF)	15.4%	15.4%	0%

Table 2

Helpful Simulation Features for Meeting Learning Objectives

Helpful Aspects	Number of Mentions by Participants
Receiving feedback for each decision with explanations	8
Navigating informed consent (e.g., learning "how to secure informed consent for film for a whole group")	5
Having multiple choice options and scenarios that one did not think of before	4
Overall interactivity (e.g., "the role-playing aspect of it was a good way to get invested")	4

Table 3

Unhelpful Simulation Features for Meeting Learning Objectives

Unhelpful Aspects	Number of Mentions by Participants
Lack of clarification regarding the role of the participant and translator, especially concerning the latter's freedom to improvise	5
The amount of roles, scripts, cards, and text made the simulation confusing to follow	4
Scoring the researchers without any feedback on the scores themselves	3
Lack of clear distinction between answers for questions about the three main ethical principles	3

Appendix A

Role Descriptions

<u>**Translator**</u>
You are a local Tanzanian attending college in the city of Arusha. Solar Sister, a company that sells solar lanterns and clean cookstoves in rural villages without electricity, visits your school in search of a translator fluent in both Swahili and English. Although you are still learning English, you land the job, because you appeared to speak English better than most of the other candidates.

Your role: Based on the script, assign points to the researchers and provide feedback to the researchers' decisions on behalf of the participant.

<u>**Participant**</u>
You have spent your entire life living in a mud house that your family built from the ground up. As a farmer, you live in a rural village without running water or electricity. You live on $2.50/day, and although you speak Swahili, you CANNOT speak English. You have only ever seen a few non-African people in your lifetime thus far, and your friend recently told you that some Mzungu ("white people") from Solar Sister, the company that you bought your solar lanterns from, want to talk to you.

Your role: Based on the script, complete the interview with the researchers and prompt the translator to provide feedback on the researchers' decisions.

<u>**Researcher**</u>
Congratulations on being awarded the highly competitive Global Social Benefit Fellowship! You are a rising senior at SCU, ready to begin your social impact assessment for Solar Sister in Tanzania. Solar Sister is a social enterprise that sells solar lanterns and clean cookstoves through a women-sales network as part of an effort to eradicate energy poverty and provide economic opportunity for women. You are interested in understanding the household uses and impacts of solar lanterns on rural communities **so that you can publish a report that will help Solar Sister and the field of social entrepreneurship in general learn more about the benefits of solar.** For participants, there are <u>NOT any foreseeable risks</u> to participating in the research, but there are also <u>NOT any particular benefits</u>. All of their information will be kept confidential--you will not share their names or stories with anyone else, and participants can withdraw at any time. This information is important to know when securing informed consent.

In addition, a translator will be working with you because the local people do not speak English.

Your role: Working together with your co-researcher, answer the questions in each round and follow your script. Earn as many points as possible. The translator will score you based on your answers.

Appendix B

PARTICIPANT SCRIPT

1) Remember, you do not understand English and therefore cannot communicate directly with the researchers whom you are coming to meet. You have limited information about why they want to talk to you, and you plan to return to work soon in order to feed your six children at home. You want to help the Americans, but you also have things to do. Start timing the researchers.

If the researchers do not present anything regarding informed consent (e.g., what they are researching, why they are researching, research risks/benefits, etc.) to you within the next 60 seconds, simply leave the room without saying anything.

If the researchers persuade you to return, or even if they do not, eventually go back to your spot and ask the translator to give the researchers RED CARD #1, which will explain what just happened. Then, wait for the researchers to explain informed consent.

Mark which of the following that they include in their informed consent:

__What they are researching (e.g., impact and uses of solar lanterns)

__Why they are researching (e.g., to understand the benefits of solar)

__ Potential risks involved with the research

__ Potential benefits for participants from participating in the research

__How/where the data will be shared (e.g., a report)

__Confidentiality/anonymity considerations

__ Your ability to withdraw at any time as a participant

If the researchers do present something on informed consent within the next 60 seconds, mark which of the following that they include:

__What they are researching (e.g., impact and uses of solar lanterns)

__Why they are researching (e.g., to understand the benefits of solar)

__ Potential risks involved with the research

__ Potential benefits for participants from participating in the research

__How/where your data will be shared (e.g., a report)

__Confidentiality/anonymity considerations

__Your ability to withdraw at any time as a participant

The translator will give the participant either YELLOW CARD #1 or **FEEDBACK CARD #1.** After the translator gives the researchers one of those cards and it is read, proceed to #2.

2) Ask the translator to read <mark>YELLOW CARD #2</mark>. Wait for the researchers to answer the question.

> The answer is beneficence. After the translator assigns them points, ask the translator to read **FEEDBACK CARD #2**. Wait for it to be read aloud and then proceed to #3 below.

3) Wait for the researchers to ask you a question.

> Answer the question by saying, "17," and affirm your desire aloud to participate in the research. Wait for the researchers to respond.

> After the translator assigns points, ask the translator to read **FEEDBACK CARD #3** to the researchers. Wait for it to be read aloud and then proceed to the next step.

4) Wait for the researchers to ask you a question.

> They ask a question that you feel that is intrusive of your privacy. You do not feel comfortable sharing this information. As a result, ask the translator to read RED CARD #2 to the researchers. Wait for the card to be read aloud.

> After the translator assigns them points, ask the translator to read **FEEDBACK CARD #4**. Wait for it to be read aloud and then proceed.

SWITCH ROLES: PLAY A ROLE THAT YOU HAVE NOT YET PLAYED if possible. Review your role description before proceeding.

5) When you spot these foreigners, you cannot help but stare at this rare occurrence. Ask the translator to read YELLOW CARD #3 to the researchers and wait for the card to be read aloud.

After the translator assigns points, ask the translator to read aloud **FEEDBACK CARD #5** to the researchers. Then proceed to #6 below.

6) After your encounter with the researchers, you are curious to learn more about why they are here, so you pursue conversation with them. Ask the translator to read GREEN CARD #1 to the researchers and wait for it to be read aloud.

After the translator assigns points, ask the translator to give the researchers **FEEDBACK CARD #6**. Wait for it to be read aloud. Then proceed to #7 below.

7) It is a new day, and you arrive at your friend's house along with a group of eight others only to meet these people from America again, but this time for a survey.

If you are a male reading this, ask the translator to read RED CARD #3 to the researchers. Wait for it to be read aloud.

If you are a female reading this, ask the translator to read RED CARD #4 to the researchers. Wait for it to be read aloud.

After the translator assigns points, ask the translator to read **FEEDBACK CARD #7** to the researchers. Wait for the card to be read aloud. Then proceed to #8 on the next page.

8) You are currently showing the researchers where you place your solar lanterns in the house and how you use them at night when tutoring your siblings in schoolwork. Ask the translator to give the researchers GREEN CARD #2 and wait for it to be read aloud.

After the translator finishes reading the card and assigns points, ask the translator to read **FEEDBACK CARD #8** to the researchers. Wait for the card to be read aloud. Then proceed to #9 below.

9) You finished the survey and the researchers are now preparing to leave your village. If they thank you for your time, tell the translator to give them eight extra points!

Thanks for your participation! You have reached the end of the simulation. I hope that you learned more about research ethics in the developing world and that this will be helpful in preparing you for the field.

RESEARCHER SCRIPT

1) The date is June 20, 2017. You are officially done with junior year, and you just arrived in Tanzania. You are finally going to begin conducting your research with the participants sitting before you. In your spring fellowship course, you learned that the first thing you must do before commencing any research is to make sure that participants provide informed consent.
    - Write a script that includes all the information that participants need to know in order to provide informed consent.
    - Orally present your informed consent script to them in a timely manner. Remember, the participants do NOT speak English, so keep everything simple and easy to translate.

You have one minute to start presenting on informed consent before you might lose the attention of your participants.	→	If you are able to present informed consent to them, then wait to receive a response.
	→	If your participant loses interest and leaves, politely chase after him/her. Wait until you receive a card signifying what to do next.
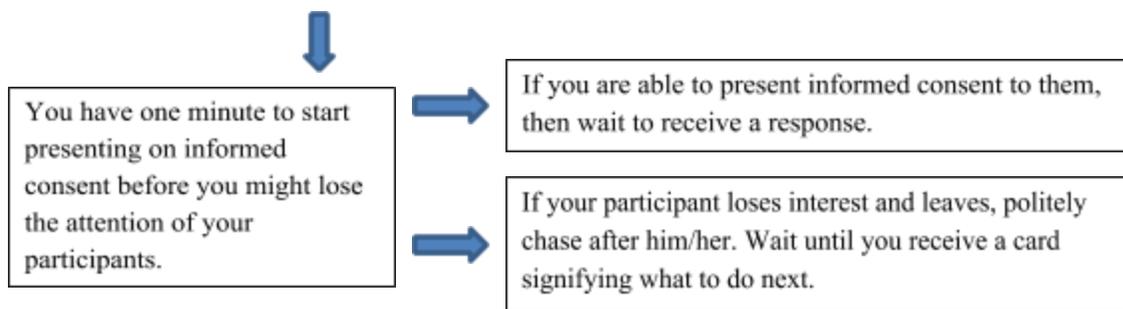
2) Wait for the translator to read aloud YELLOW CARD #2.

3) It is your turn to begin surveying, and you desire to know the age of your participant. Ask him/her how old he/she is. ONLY AFTER the participant responds to your question about age can you lift up the paper flap below. *[The following paragraph should be concealed by a paper flap.]*

Please read aloud: The respondent reveals that he/she is 17 years old. You initially designed your study without the intent of surveying minors, knowing that you would need to undergo special procedures to obtain informed consent from this vulnerable population because they are incapable of making an informed decision on their own. At the same time, however, you are trying to gather as much data as possible from as many people as you can. What should you do?
    A) Ask if there is a parent or guardian you can talk to and get permission from.
    B) Allow the minor to participate in the research since he or she is almost an adult.
    C) Decline, saying that you are actually seeking individuals 18+.
Communicate your decision and wait for a response.

4) You are asking demographic questions and eventually come to one regarding income, suddenly realizing how awkward you feel about asking this question, as this is something you would never ask a stranger back home. With your partner, attempt to ask for this information in a sensitive way that respects privacy but also gets at the information that you are looking for. Then, ask your participant the question and wait for a response.

5) It is the afternoon, and you decide to explore the village that you just surveyed with your research partner. You see some locals staring at you while talking to one another in Swahili. One of the individuals approaches you to initiate an interaction.

6) The individual has another question and initiates further interaction.

7) It is a new day, and you are currently in the field ready to meet participants. Unlike most other days, you have a long line of people who show up waiting to be surveyed. As you call for the next individual to be surveyed, his/her presence brings something to your attention.

8) After conducting surveys for the day, your participant starts showing you where he/she places solar lanterns in the house and how he/she uses them at night when tutoring siblings in schoolwork. The participant hands you a unique opportunity that could be very valuable for your research project.

9) You are leaving the field for the day and will be traveling to a new village tomorrow. Is there anything else that you would like to say?

That is a wrap! You have reached the end of the simulation. I hope that you learned more about research ethics in the developing world and that this will be helpful in preparing you for the field.

TRANSLATOR SCRIPT

1) Before starting anything, the researchers must secure informed consent from the participants. If the participant you are with asks you to read RED CARD #1 aloud to the researchers, do so. Otherwise, wait for the researchers to present an informed consent script orally.

⬇️

Mark which of the following included in the researchers' initial informed consent script and assign <u>four points</u> for each one marked:

__What they are researching (e.g., impact and uses of solar lanterns)

__Why they are researching (e.g., to understand the benefits of solar)

__ Potential risks involved with the research

__ Potential benefits for participants from participating in the research

__How/where the data will be shared (e.g., a report)

__Confidentiality/anonymity considerations

__Ability for participants to withdraw at any time

⬇️   ⬇️

If they miss any of these elements, give the researchers YELLOW CARD #1, wait for them to read it aloud, and then answer their question. Proceed to #2.	If they include all elements, then assign the researchers <u>28 points</u> and give the researchers **FEEDBACK CARD #1** on behalf of the participant. Then proceed to #2.

2) When asked by the participant, read YELLOW CARD #2 aloud to the researchers. Wait for the researchers to answer the question.

⬇️

The answer is beneficence. Assign them <u>four points</u> if they correctly answer the question. When the participant asks, read **FEEDBACK CARD #2** aloud to the researchers and then proceed to #3 below.

3) Wait for the researchers to make a decision on how to approach the participation of a minor in this study.

| If the researchers ask for a parent or guardian, give them <u>four points</u>. When asked by the participant, read **FEEDBACK CARD #3** aloud to the researchers. Then proceed to the next step.	If the researchers allow the minor to participate in the research, give them <u>zero points</u>. When asked by the participant, read **FEEDBACK CARD #3** aloud to the researchers. Then proceed to the next step.	If the researchers do not let the minor participate because they are only seeking individuals 18+, give the researchers <u>four points</u>. When asked by the participant, read **FEEDBACK CARD #3** aloud to the researchers. Then proceed to the next step.

4) When asked by the participant, read aloud RED CARD #2 to the researchers.
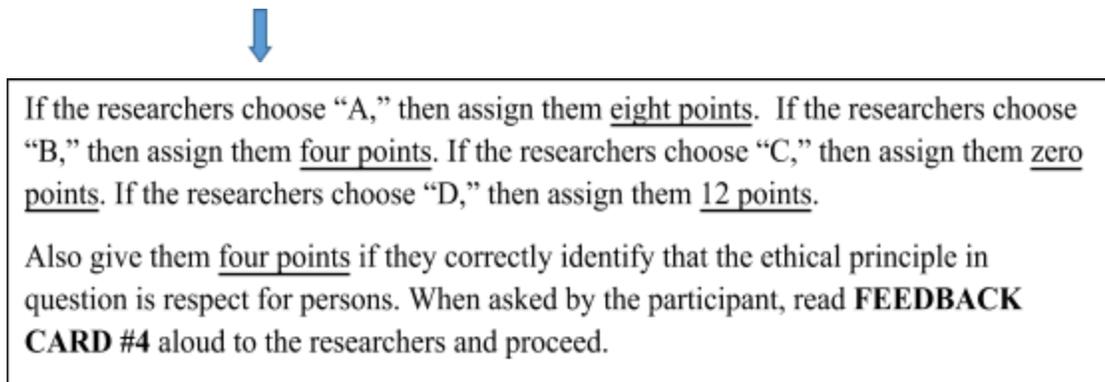
If the researchers choose "A," then assign them <u>eight points</u>. If the researchers choose "B," then assign them <u>four points</u>. If the researchers choose "C," then assign them <u>zero points</u>. If the researchers choose "D," then assign them <u>12 points</u>.

Also give them <u>four points</u> if they correctly identify that the ethical principle in question is respect for persons. When asked by the participant, read **FEEDBACK CARD #4** aloud to the researchers and proceed.

SWITCH ROLES: PLAY A ROLE THAT YOU HAVE NOT YET PLAYED if possible. Review your role description before proceeding.

5) When asked by the participant, read YELLOW CARD #3 aloud to the researchers.

If the researchers choose "A," then give them <u>two points</u>. If the researchers choose "B," then give them <u>four points</u>. If the researchers choose "C," then give them <u>zero points</u>.

When asked by the participant, read **FEEDBACK CARD #5** aloud to the researchers. Then proceed to #6 below.
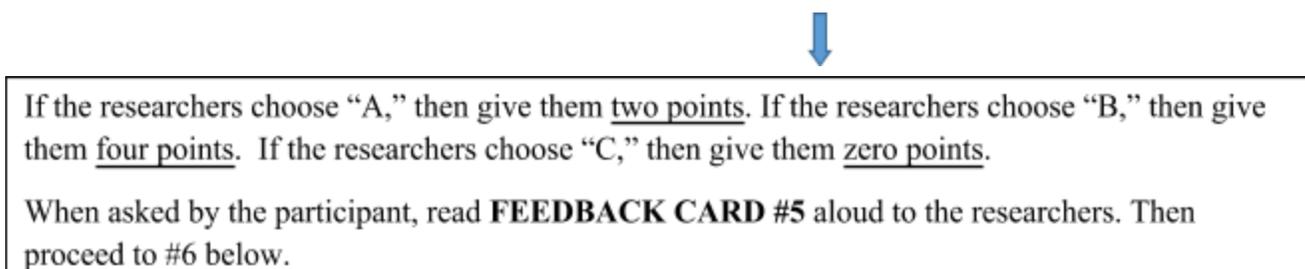
6) When asked by the participant, read GREEN CARD #1 aloud to the researchers.

⬇

> If their answer is "A," then give them eight points. If their answer is "B," then give them zero points. If their answer is "C," then give them two points. If their answer is "D," then give them two points.
>
> When asked by the participant, read **FEEDBACK CARD #6** aloud to the researchers. Then proceed to #7 below.

7) Read aloud the card to the researchers, as specified by the participant.

⬇   ⬇   ⬇   ⬇

If their answer is "A," then give them two points and add four more points if they identify the relevant principle as justice. When asked by the participant, read **FEEDBACK CARD #7** aloud to the researchers. Then proceed to #8.	If their answer is "B," then give them eight points and add four more points if they identify the relevant principle as justice. When asked by the participant, read **FEEDBACK CARD #7** aloud to the researchers. Then proceed to #8.	If their answer is "C," then give them four points and assign four more points if they identify the relevant principle as justice. When asked by the participant, read **FEEDBACK CARD #7** aloud to the researchers. Then proceed to #8.	If their answer is "D," then give them zero points but add four points if they identify the relevant principle as justice. When asked by the participant, read **FEEDBACK CARD #7** aloud to the researchers. Then proceed to #8.

8) When asked by the participant, read GREEN CARD #2 aloud to the researchers.

⬇   ⬇   ⬇

If their answer is "A," then give them eight points. When asked by the participant, read **FEEDBACK CARD #8** aloud to the researchers. Then proceed to #9 below.	If their answer is "B," then give them four points. When asked by the participant, read **FEEDBACK CARD #8** aloud to the researchers. Then proceed to #9 below.	If their answer is "C," then give them zero points. When asked by the participant, read **FEEDBACK CARD #8** aloud to the researchers. Then proceed to #9 below.

9) You finished the job! If the researchers thank you for your time, add eight extra points to their score. If the participants ask you to add points to the researchers' score as well, do so. Share the overall score key to find out how prepared the researchers are to navigate research ethics surrounding vulnerable populations in the developing world.

Thanks for your participation! You have reached the end of the simulation.

Appendix C

Simulation Cards

GREEN CARD #1

The participant says, "I would really like to know more about who you are with and what you are doing. Why are you here?"

Researchers, what do you say?
   A. "To understand how people use Solar Sister lanterns and their impact on education, health, etc."
   B. "To gather data for the Miller Center for Social Entrepreneurship"
   C. "To explore social entrepreneurship and personal vocation"
   D. "To utilize my gifts and skillsets as a way of making a meaningful difference"

Share your answer.

GREEN CARD #2

As the participant shows you how his/her family uses solar lanterns, you see an amazing photography and film opportunity. The participant sees your camera and thinks it's a medical device. Using simple language, explain what it actually is and does. *[Wait for the researchers to respond before reading aloud the next sentence.]* In addition, before you begin filming and/or snapping away, recall that you might have to ask for permission first. What do you do?
   A. Seek permission from all respondents at once by asking the group as a whole.
   B. Seek permission from individual respondents, asking them one at a time.
   C. Informed consent does not apply to film/photography.

YELLOW CARD #1

Please read aloud: According to the participant, "Unfortunately your explanation of informed consent was incomplete, and you failed to mention something(s) very important that might have changed my decision to participate in the research."

Ask the translator what the participant needed to know in order to give fully informed consent. Then wait for a response.

YELLOW CARD #2

According to the participant, "I've heard stories of Africans in the past being harmed from white men who did not minimize the risks involved with their research."

Researchers, the participant is referring mostly to which ethical principle being violated? Give your reasoning.

YELLOW CARD #3

The local says, "I can tell that you are not from here. You must be from Canada! How is the prime minister? Are you a representative of World Vision? My family needs help."

Researchers, how do you react?
  A. Seize the opportunity to engage in an extended conversation and exchange contact
      information.
  B. Politely smile or briefly chat, and continue going.
  C. Do not acknowledge them due to safety concerns, as you do not know him/her.

Share your answer aloud.

RED CARD #1
It appears that you took too long to engage your respondent and explain to them informed
consent. As an individual who took time out of his/her workday to participate in your survey, it
is important that you respect their time and come prepared.

Fortunately, the participant is patient and gracious. You have another chance to secure informed
consent. Start now!

RED CARD #2
The participant appears uncomfortable answering this question and would like to withdraw from
the research. You have not gained his/her trust yet and he/she feels that privacy has been
invaded. What do you do?
  A. Skip the question on income or come back to it later.
  B. Let him/her withdraw immediately because he/she is entitled to non-coerced participation
      as part of informed consent.
  C. Remind him/her that he/she has already begun participating in your research and do not
      let them withdraw.
  D. Clarify your intentions in a respectful manner and convince him/her to stay.

In addition, state the ethical principle that is most relevant to this dilemma and why. Share your
answers.

RED CARD #3
An unexpectedly large number of participants showed up today, but you realize that this man is
cutting all of the women in line to be surveyed. A local employee of your host social enterprise
explains that men always get to go first, because otherwise they will leave, whereas women will
patiently wait to be surveyed. How do you deal with this cultural gender inequity while
maximizing the number of people to interview?
  A. Do not say anything so as to maintain peace, and respectfully continue your research.
      Speaking up may not be culturally appropriate.
  B. Make the best decision that you can in the moment but later dialogue with Keith or
      another Miller Center representative on how to approach it in the future.
  C. Ask men to wait until their turn, because the women arrived first. This is part of
      upholding justice.
  D. Change the nature of your research project to focus on this interesting issue, as research is
      a dynamic process of discovery.

What ethical principle is especially important to consider when deciding who gets to be surveyed first? Why? Share your answers aloud.

RED CARD #4

An unexpectedly large number of participants showed up today. As this woman approaches, you realize that the man who was surveyed right before her only waited five minutes, whereas this woman has waited two hours just to speak with you. A local employee of your host social enterprise explains that men get to go first, because otherwise they will leave, whereas women will patiently wait to be surveyed. How do you deal with this cultural gender inequity while maximizing the number of people to interview?

    A. Do not say anything so as to maintain peace, and respectfully continue your research. Speaking up may not be culturally appropriate.
    B. Make the best decision that you can in the moment but later dialogue with Keith or another Miller Center representative on how to approach in the future.
    C. Ask men to wait until their turn, because the women arrived first. This is part of upholding justice.
    D. Change the nature of your research project to focus on this interesting issue, as research is a dynamic process of discovery.

What ethical principle is especially important to consider when deciding who gets to be surveyed first? Why? Share your answers aloud.

FEEDBACK CARD #1

Great job! You included all of the following elements in your explanation of informed consent: what you are researching, the purpose of your research, potential risks for participants, potential benefits for participants, how the data will be shared, confidentiality/anonymity considerations, and the fact that participants can withdraw at any time. Proceed to #2 in your script.

FEEDBACK CARD #2

The correct answer is beneficence. Beneficence refers to doing no harm to human subjects during the research process. It involves maximizing benefits for the research project while minimizing risks to participants. Even if participants are not necessarily better off from the participating in the research, they should at least not be negatively impacted.

Proceed to #3 in your script.

FEEDBACK CARD #3

You cannot allow minors to participate without securing permission from a parent or guardian. Although receiving permission from a parent or guardian as a proxy is ideal, sometimes you will not have the time to seek out an adult and would be better off using your time surveying others. Depending on the situation, you should choose "A" or "C."

FEEDBACK CARD #4

You absolutely cannot force participants to stay. However, you can clarify your intentions and try to encourage their participation, which is better than letting them go right away and missing

out on an opportunity to survey someone. In this case, it is best to choose "D." "A" is also good, but if you skip the question you might forget to come back to it later. Polite ways of asking for income include asking how many animals they have and what type (or other cultural assets that represent wealth); providing income ranges to choose from; and using questions from the Progress Out of Poverty Index for the country that you are in.

The most relevant principle to consider for this dilemma is respect for persons. This refers to protecting the autonomy of all people, and treating them with courtesy and respect, being truthful and never deceptive, and allowing them to decide for themselves if they would like to proceed with the research based on complete information about what it involves.

Proceed to the next step in your script, which is to switch roles.

FEEDBACK CARD #5
"B" is the best option, though it really depends. These types of encounters can occur frequently, and you will not be able to chat with locals every single time, which is perfectly O.K. Do not be rude, but at the same time, be wise about engaging in extended conversations with people whom you do not know, especially if you are unsure of his/her intentions. Because you are in a village with your research team and it is daytime, safety probably is not as much of a concern. Your job is to function with integrity and respect for the relationships between the social enterprise and the communities that it serves.

Proceed to #6 in your script.

FEEDBACK CARD #6
Your role as a Global Social Benefit Fellow above all is to inform and advance the mission of the host organization, which sponsors, enables, and is the client for your research. You are servicing them and their request. It is your job to respect and maintain the integrity of the relationships between the social enterprise and their social networks. "C" and "D," are secondary goals, while "A" is primary. You are here to gather data for your host social enterprise.

Proceed to #7.

FEEDBACK CARD #7
While there is no clear right answer for this question, option "B" is most appropriate. Because you are probably unfamiliar with the cultural norms, it is important that you do not act in a disrespectful way, while at the same time, recognize that you should not ignore the situation. Thus, you should do what you can and dialogue about these types of dilemmas with Keith and/or a Miller Center representative to know how to better handle them in the future. You might be able to include some information about this encounter in your final deliverable(s), but you should not select option "D."

The ethical principle especially important to consider in this case is justice. Justice refers to fair distribution of the benefits and burdens involved with research, and ensuring that researchers treat participants as equals so that one group does not benefit at the expense of another.

Proceed to #8 in your script.

<u>FEEDBACK CARD #8</u>
Informed consent indeed applies to film/video/photography. Although "B" would be ideal theoretically, "A" is actually the best option, as it is most efficient and still serves its purpose well. A great way to implement this is to include a request for permission of photography and film when initially introducing informed consent considerations. You would do this when introducing yourself before surveying a village, and when multiple participants are present. You can obtain informed consent individually from those who arrive late and did not hear your explanation of it in the initial group setting.

Proceed to #9.

Appendix D

GSBF Simulation Feedback

Hey fellows! Thanks again for taking the time to participate in my research ethics simulation. I hope that you found it useful as you prepare to navigate the field soon. I would love to learn more specifically about what you found helpful and unhelpful about it. Below are the learning goals. Please evaluate your progress in meeting each as a result of the simulation.

Email address:

1. Understand the three research ethics principles of autonomy, beneficence, and justice.

<div align="center">

1   2   3   4   5

No progress   Significant progress

</div>

2. Prepare and secure informed consent in the field.

<div align="center">

1   2   3   4   5

No progress   Significant progress

</div>

3. Practice various roles that challenge yourselves and/or peers to serve the social enterprise while functioning with integrity and respect for the relationships between the social enterprise and the communities that it serves.

<div align="center">

1   2   3   4   5

No progress   Significant progress

</div>

4. Compare strategies for obtaining informed consent from vulnerable populations, including special procedures for ethically gathering photography and film.

<div align="center">

1   2   3   4   5

No progress   Significant progress

</div>

5. What aspects of the simulation were helpful for meeting the learning objectives?

6. What aspects of the simulation were NOT helpful for meeting the learning objectives?

Appendix E

GSBF Research Ethics Questionnaire

Instructions: Please complete this questionnaire based off of your existing knowledge from the assigned reading and WITHOUT using extra notes or help. This assignment is completely CONFIDENTIAL and will not be graded or seen by Keith.

Email address:

1. Which of the following best describes your role as a fellow?
    A. Performing action research in service to a social enterprise
    B. Producing action research deliverable(s) first for the Miller Center and secondarily for my host social enterprise
    C. Exploring the field of social entrepreneurship and personal vocation
    D. Making a meaningful difference in the developing world through my gifts and skillset

2. Which are examples of vulnerable populations?
    _ Low-income people
    _ People of color
    _ Children
    _ Immigrants
    _ Pregnant women
    _ People with disabilities

3. What does the principle of justice primarily refer to in research ethics?
    A. Research studies should not neglect unexplored topics that have traditionally received less attention.
    B. Research should always be conducted in line with local laws and governance.
    C. Certain participants should not benefit at the expense of others.
    D. None of the above

4. Which of the options below best exemplifies the principle of beneficence during research?
    A. Giving back to participants through incentives or large gifts
    B. Always thanking participants generously for their time
    C. Ensuring that participants are not harmed from the research
    D. All of the above

5. The principle of respect for persons is most closely linked to what other concept?
    A. Human dignity
    B. Confidentiality
    C. Transparency
    D. Autonomy

6. Write a brief example script for obtaining informed consent as a researcher.

7. Does informed consent apply to photography, video, and film?
   A. Yes
   B. No
   C. Only in special cases

8. If your assigned translator in your host country does not speak good English, what step should you take?
   A. Change the nature of your project to involve more observation than interaction.
   B. Work with the individual and do your best to teach him/her English along the way.
   C. Kindly let him/her go and hire a better translator.
   D. Persuade a local employee of the host social enterprise who speaks English fluently to serve as your translator.

9. Why is research ethics important? Cite examples that exemplify your reasoning.

10. How would you rate your current understanding of research ethics?

   1   2   3   4   5

   Low   High

11. Is there anything about this questionnaire that can be improved (e.g., content, organization, structure, etc.)?

Appendix F

Operation Belmont Score Key

Score Range	Level of Research Ethics Understanding	Meaning
0 - 49	Failing	Although you may have had exposure to research ethics and informed consent concepts, unfortunately you are unable to navigate the field effectively and would likely violate important principles. Before starting the research process, you need to build foundational research ethics knowledge.
50 - 69	Deficient	You lack basic understanding of research ethics and informed consent. Application may be challenging because you are still learning these concepts theoretically. Before conducting research, you require further preparation and ethics training.
70 - 79	Satisfactory	You possess a general understanding of research ethics and informed consent. However, you understand most of these concepts theoretically and struggle to apply your understanding practically. Consider reinforcing your knowledge before entering the field.
80 - 89	Superior	Your understanding of research ethics and informed consent is above average. You can deal respectfully with ethical situations in the field using your basic knowledge, though certain nuances and important concepts need to be reinforced.
90 - 100	Excellent	You have strong understanding of research ethics and informed consent. You are able to apply your knowledge with cultural sensitivity, and you are ready to begin your research in the field.