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Abstract?

* Think about where we are going with study 2 and 3 before we write this up entirely.
* Partly needs to be based on our final results as well.

**Introduction:**

The United States is the world leader in many things, such as nuclear power generation and yearly military expenditure (CITE). However, the United States is the only country in the developed world that still lacks Universal Health Care (UHC) for its citizens (Alspaugh 2021). This lack of medical coverage results in several strongly negative outcomes for average Americans, such as life expectancy significantly below the global average, 78.8 compared to 81.7 years (Papanicolas, Woskie, and Jha 2018). This lack of UHC does not even result in a cost savings, with healthcare costs continuing to rise. US Healthcare expenditures topped 18.3% GDP in 2021, up from 17.8% in 2016, and both numbers are significantly higher than peer GDP expenditures ranging from 9.6% to 12.4% (*National Health Expenditures*, July 2023). These poor outcomes come as no surprise; The US bears a staggering un-insurance and underinsurance rate combining at over 30% of the total US population (Himmelstein et al. 2005; Roco 2014; Schoen et al. 2005).

A practical answer to these concerns, adopted by many peer countries, is the concept of Universal Health Care (UHC). UHC has historically led to lower overall healthcare costs over time, lower mortality and better overall population health, and is seen by some as more morally or ethically justifiable as compared to privatized health care (William C. Hsiao, Cheng, and Yip 2019; Panpiemras et al. 2011; Galvani et al. 2017; *Making Fair Choices on the Path to Universal Health Coverage*, 2014). However, public perception in the United States is generally negative towards UHC, with recent polling indicating that only 36% of Americans believe that the government should implement UHC.

Considering the obvious benefits to UHC, this begs the question; What is the reasoning behind this lack of relative support, and what can be done to address this? The goal of this project is to examine what types of logical and ethical reasoning are used by individuals resulting in a lack of support for UHC, as well as what types of interventions can interact with these various reasons. Ideally, by assessing how and why people do not support UHC, we can design interventions to improve its public perception.

**Ethics of Healthcare**

Looking at academic literature more broadly, we attempted to build a rough theory behind the reasoning for lack of support for UHC. Taking from the field of ethics research more generally, Brady and Wheeler (1996) posited that moral and ethical choices can fall under two general forms of reasoning, Utilitarian reasoning, and Deontological reasoning. Utilitarian reasoning has a very simple definition, which is seen as “The tendency to assess ethical situations in terms of their consequences for people”; in essence, a pure utilitarian that doesn’t consider other frameworks when making ethical judgements would proscribe to the idea that “the ends justify the means” in all cases. In contrast, Deontological beliefs comprise “the human tendency to assess ethical situations in terms of their consistent conformity to patterns of rules or other formal features”, this can include structures such as ‘rights’, ‘ideals’, and explicitly recorded law; in essence, a pure deontologist would believe that an action is wrong or right based on the nature of why the action was engaged in, not necessarily it’s consequences.

With regards to considering both moral frameworks as they apply to healthcare, we can see as an example how both utilitarian and deontological reasoning are weighed against each other during outbreaks of disease (Tseng, 2021). This is extremely pertinent given the recent COVID-19 pandemic. In setting policy priorities, deontological and utilitarian reasoning bore itself out with regards to which stakeholders are centered in the decision-making itself. For example, policymakers with strong deontological ethics in this case were inclined to be patient centered. Thus the patient’s ‘right’ to bodily autonomy allows for patients to refuse an mRNA vaccine, and any restrictions on those who have not been vaccinated are seen as potentially unjust under the circumstances. While it is possible that there would be great benefits to society as a whole if vaccinations were mandatory across society, this strongly violates the ‘right’ to bodily autonomy, and would be seen as unacceptable through a deontological ethical lens. In contrast, policymakers that prioritize utilitarianism, are generally inclined to be society centered, which values care that provides the greatest welfare for the greatest amount of people. Seen from this perspective, mandatory vaccinations, as they would result in generally better levels of societal health, would be ethically justifiable, even if it would result in the trampling over of individual bodily autonomy. Indeed, the path to reaching the greatest happiness for the most people could very well result in the wholesale sacrifice of a small, but significant number of complete innocents. In a practical sense, most stakeholders in non-emergency healthcare scenarios generally attempt to balance both deontological and utilitarian ethical concerns.

Another circumstance to assess ethical justification behind medical decision-making comes from the perspective of disaster triage (Wagner, 2015). While it is self-evidence that medical resources are definitionally limited, this is taken to an extreme degree during emergency service disaster triage situations. In these circumstances, individual professionals are forced to make life or death decisions, wherein patients that are critically injured with minimal chance of survival (e.g. major blood loss, severe 3rd degree burns, dismemberment, etc.) are not provided limited resources (e.g. supplementary blood, oxygen, electrostimulation devices, etc.) due to their categorization as ‘dead or dying’ and instead given comfort care. Refusal to provide medical care to those that are ‘too far gone’ is extremely ethically challenging for many healthcare providers, as it falls strongly counter to the day-to-day ethical principles generally put forth in hospitals otherwise. Indeed, in an ordinary emergency department, critically ill patients are taken care of before those in less need, and generally as much as possible is done to try to save those people. This falls neatly in line with the deontological ethical belief that medical professionals should try their best to serve their patients. In the extreme case of disaster triage however, utilitarian ethical theory wins out in practice.

It is important to note that deontological and utilitarian ethical assessment may not be the pertinent concept affecting moral decision making about various topics, including UHC. In fact, Jones and colleagues (1991) argue that in many cases, individual judgement can defer the decision making instead to social consensus. In Jones’ integrated model, social consensus is defined as the “degree of social agreement that a proposed act is evil or good”. In circumstances where social consensus is high, clear and shared understanding of what is ethical becomes rather apparent. Even if the individual does not ‘intuitively’ agree with the position, if they are unsure about what is right, conforming to the majority opinion is extremely typical (Asch, 1956; Deutsch M, 1955). The personal judgement of ethicality, whether through the lens of deontology or utilitarianism is not needed. In situations where social consensus is low, however, individual moral judgement occurs instead.

While social consensus can indeed be shown to influence assessments of issues in many cases (Kobayashi, 2018; Goldberg, 2019) involving contemporary topics (climate change, nuclear power, etc.), individuals with strong moral conviction are ‘inoculated’ from peer and even authority influence (Skitka, 2015). Indeed, while in general people desire to conform to majority opinion in most cases, those with high moral conviction desire increased psychological distance from those they disagree with (Skitka, 2005; Kidder, 2015). This increased psychological distance manifests itself in strong peer independence when considering willingness to change. Additionally, in cases of authority influence (expert, or scientific authority), there is a general deference to the rule of law or expertise. When high moral conviction clashes with authority, however, even if that authority is generally considered legitimate, the acceptance of that authority depends on whether or not the decision laid down is consistent with the individuals own preferred moral conclusions. We see significant evidence of this in the context of the U.S. conflict over federal and state legality of abortion procedures; The supreme court (generally considered a legitimate authority) laid down a ruling that conflicts with the moral leanings of a significant portion of Americans, resulting in an ideological split in Americans perceiving that authority as continuing to be legitimate (Bauman, 2009; Gibson, 2023).

However, it is important to note that very few issues that are considered ‘up for debate’ in public parlance, are considered absolute moral issues with a strong social consensus (whether good or bad). Research done by Wright and colleagues (2008) reinforces that, with a scant minority of concepts being considered moral issues by the majority of participants, such as: cheating on exams, committing a rape, incestual relations, and execution of mentally handicapped children (in contrast: owning guns, vegetarianism, and sexual promiscuity). Indeed, many choices that individuals make are mere preference (e.g. Coke or Pepsi?), or as mentioned previously, deference to a social consensus (e.g. the opinions of friends, family, neighbors, etc.) instead of reflecting deep ethical beliefs (Skitka, 2010; Tauber, 2014). However, it is also vital to note that it is possible for stances to change. For example, things that were once preferences (cigarette smoking in the 20’s-30’s) can evolve into morally weighted judgements (smoking seen as an ‘uncouth’ habit), that can even have real consequences (e.g. public smoking being banned in many venues) as the society around the concept changes (Rozin, 1999)! While this process of ‘moralization’ can happen over time naturally, contemporary research indicates that it is possible to moralize or de-moralize attitudes using framing and reframing strategies (Kodapanakkal, 2021). However, previous research has only indicated effectiveness of this moralization or de-moralization framing in circumstances where subjects are asked to assess relatively novel issues. There is a significant open question in the research whether or not moral or non-moral framing can increase or reduce moral conviction in contemporary issues well known to the public, where strong moral arguments can be made for both sides (capital punishment, abortion, etc.). Additionally, previous literature has shown that persuasive moral and non-moral framings can lead to directional attitude change for relatively novel topics. Furthermore, non-moral framing of persuasive messages has been shown to be effective for those that have a strong moral identity (Tauber, 2013). However, it is another open question whether highly moral framings of persuasive messages are effective for those that have strong moral conviction, but in the opposite direction. For example, an argument on how immoral it is to restrict a woman’s ability to regulate their own health being presented to a highly morally convicted pro-life supporter.

Should this be the transition statement to getting where we want with our study? I think so

Considering the previous context, we see that both utilitarianism and deontology have their proponents with regards to priority in ethical decision making. However, it is still an open empirical question as to whether or not

Study 1

Method

Participants

Our goal is to have 180 participants. The participants were students enrolled in a Psychology course at a Midwestern University. Our participants were primarily white (74%), female (57%), and Juniors (38%); further demographic information can be found in the table below. Participants received course credit for participation in the study.



**Procedure**

Our participants began by clicking on the virtual study link, available in the online study sign-up website. This study link forwarded to an online Qualtrics survey. Participants were brought to a cover page that included a brief (but deceptive) description of the research they believed that they would be involved in. After indicating consent, we assessed baseline measures of support for our four main measurement items. Three of our four measurement items, that of support towards Universal Health Care (UHC), support for the death penalty, and belief in anthropogenic climate change, were taken from historical American public survey results (Economist – YouGov poll, 2017; Pew Research Polling, 2020). Our fourth item, on American support for the institution of slavery, was chosen as a calibration item and attention check. We then additionally measured individual differences in deontological and utilitarian moral orientation.

Participants were then randomly assigned to one of two conditions representing different exposure to social consensus. Our two conditions were a ‘High’ consensus condition (n=21) and a ‘Low’ consensus condition (n=21). For both experimental conditions, subjects were asked to estimate what they believe to be the percentage of ordinary Americans in 2018 that agreed with various social and scientific issues, which in this case, were the four measurement items that we had measured their baseline support for previously. After providing their estimate, we provided deceptive information regarding what the ‘actual results’ of what Americans believed in 2018. This ‘deception’ was our primary method of manipulating perception of social consensus.

In the ‘high’ consensus condition participants saw survey results that were biased artificially upwards by 20% (e.g., if 60% of Americans agreed that capital punishment is needed in the US, the actual percentage shown to those in the high consensus condition will be 80%). Conversely, in the ‘low’ consensus condition, participants saw survey results that were biased artificially downwards by 20% (e.g., if 60% of Americans agreed that capital punishment is needed in the US, the actual percentage shown to those in the high consensus condition will be 40%). In both cases, however, the calibration question regarding whether or not slavery was a violation of human rights, was set to 99%, as we believed that it would be distressing and unnecessary to test social manipulation on this issue.

Participants were then asked to indicate on a Likert scale (from 1-5) how much ‘surprise’ they felt after being given this feedback information. Afterwards, we asked the participants to estimate what they believe to be the percentage of ordinary Americans in 2023 that agreed with the same previous four issues. We then re-assessed their support for our four measurement items again, to see if any changes occurred through the manipulation. Finally, we asked for demographic information (age, sex, race, year in school, etc.) as well as individual differences in health literacy and numeracy. After all measurements are completed, participants were provided with a detailed debrief revealing the true nature of our actual study, as well as providing them with the actual survey response values on three of the four previously assessed measurement items (excluding slavery).

**Measures**

The primary outcome measure was a single item support for UHC measure, adapted from Shen & Labouff (2013), measured both pre and post-intervention. The scale is comprised of a single item measuring support for UHC, “Our government needs to implement Universal Health Care because basic population needs are not being met”. The capital punishment ("Capital Punishment (the Death Penalty) is necessary in America") and climate change ("Greenhouse gas emissions generated by human activity has and will continue to change Earth's climate") issues were assessed using language taken directly from surveys of American public opinion in 2017 and 2020 (Economist - YouGov poll, 2017; Pew Research Polling, 2020). The measure for the slavery item ("Slavery, forced labor and human trafficking are violations of human rights") was taken from the United Nations – Human Rights Office of the High Commissioner (2021). All four items were measured on a 7 point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Participants additionally were asked to complete a measure of their baseline deontological and utilitarian orientation. This was assessed using the Ethical Standards of Judgement Questionnaire (Love, 2018). This questionnaire is comprised of two segments, each segment assessing either utilitarian or deontological orientation respectively. Each segment consisted of six items measuring the aforementioned orientation; each item was measured on a 5 point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Final deontological or utilitarian orientation scores were taken as an average of all six items corresponding to that orientation; see Appendix B for item wording

Participants also completed several additional measures of health literacy and numeracy. Health literacy was assessed using the Single Item Health Literacy Screener (Morris, 2006). This item “How confident are you filling out medical forms by yourself?” was measured using a 5 point Likert scale from 1 (Never) to 5 (Always). Our first measure of numeracy was the Subjective Numeracy Scale (Fagerlin, 2007), which consists of 8 items measuring general confidence in using numbers, and preference for numbers over words (e.g., “How good are you at figuring how much a shirt will cost if it is 25% off?”, and “How often do you find numerical information to be useful?”). All items were measured on a 6 point Likert scale. Total scoring for the scale was taken as a simple average of all items, after reverse scoring the 7th item. Our second measure of numeracy was an objective measure, consisting of the number line task developed by Thompson and colleagues (2021). This item consisted of placement of 20 fractions one at a time, at the appropriate place on a number line ranging from 0 to 1, and then placing 20 more fractions, one at a time, on a number line ranging from 0 to 5 (e.g. the relative distance between 2/3, 7/9, 12/13, 4/7, etc.). Performance on this task was measured as precision on the number line estimation as a summation of the percentage of absolute error on all fractional placements. Additionally, there was a free-response question asking about the participant’s thoughts on the exercise they had just completed, both on things they liked, and things they found challenging. Finally, we also measured demographic information, including gender identity, age, race/ethnicity, and year in school.

**Power and Statistical Analysis**

We planned to recruit approximately 180 participants. Sample size was determined a-priori using G-power 3.1.9.7 with the following parameters: seeking the difference between two independent means (two groups), an effect size of .5, an alpha of .05, and a power of .95, for a linear multiple regression. Our four ‘item issues’ that we surveyed (climate change, death penalty, support for UHC, slavery) were all treated as continuous variables. We examined the effects of experimental condition (high or low social consensus) and individual differences (deontological and utilitarian orientation, health literacy, multiple measures of numeracy) on our outcome measure. We examined the main effect, as well as interactions between deontology and utilitarianism with our experimental conditions for our predictors. All tests were conducted in R and considered statistically significant when P <.05.

**Study 1 Hypothesis:**

Hypothesis 1: We hypothesize that when participants perceive that a strong social consensus towards universal healthcare exists, they will be more likely to support universal healthcare, as opposed to when they perceive a lack of that same social consensus.

Hypothesis 2: We hypothesize that in conditions of high social consensus, there will be no effect on support for Universal Health Care due to the individual differences in utilitarianism and deontology (e.g. that an interaction here nullifies the effect).

**Results**

Descriptive statistics are summarized in the tables below. Our hypothesis was tested using a linear regression fitted to our support for UHC outcome measure. In support to H1, we found that in conditions of strong social consensus, there was a statistically significant effect in our planned comparison of our active intervention condition. Furthermore, we evidence in support of H2, there did not seem to be any effect of utilitarianism and deontology when looking at conditions of high social consensus.

**Study 2**

**Method**

**Participants**

We are planning to recruit participants that are students enrolled in Psychology 1000 at a Midwestern University. Participants will receive course credit for participation in this study.

**Procedure**

Our participants will begin by clicking on the virtual study link, available in the online study sign-up website. This study link will forward to an online Qualtrics survey. Participants are brought to a cover page that included a brief description of the research they would be involved in. After indicating consent, three ‘blocks’ of content are presented, in a randomized order such that all participants are exposed to each block of content. Each block of content focuses on a different ethical/moral construct that we are assessing support or opposition towards. The first block of content, focuses on assessing support for UHC. We begin this block by first assessing baseline support for UHC, next, we assess the relative moral conviction of the subject on this issue. Then further randomization occurs, and our participants receive either one of two (three?) arguments in favor of supporting universal healthcare or a control statement describing what UHC is. After being presented with this informational intervention, participants are exposed to a brief pamphlet consisting of relatively neutral, factual, information in favor of UHC. Lastly, we re-measure support for UHC and level of moral conviction on the subject again, to assess if any changes occurred after our intervention. The second block of content is very similar and focuses on assessing support for exercise. We begin this block by first assessing baseline support for exercise, next, we assess the relative moral conviction of the subject on this issue. Then further randomization occurs, and our participants receive either one of two (three?) arguments in favor of supporting exercise, a control statement describing what exercise is. After being presented with this informational intervention, participants are exposed to a brief pamphlet consisting of relatively neutral, factual, information in favor of exercise. Lastly, we re-measure support for exercise and level of moral conviction on the subject again, to assess if any changes occurred after our intervention. Our third block follows the same structure, and focuses on assessing support for capital punishment (a.k.a. the death penalty). We begin this block by first assessing baseline support for the death penalty, next, we assess the relative moral conviction of the subject on this issue. Then further randomization occurs, and our participants receive either one of two (three?) arguments in favor of supporting capital punishment, or a control statement describing what capital punishment is. After being presented with this informational intervention, participants are exposed to a brief pamphlet consisting of relatively neutral, factual, information in favor of capital punishment. Lastly, we re-measure support for capital punishment and level of moral conviction on the subject again, to assess if any changes occurred after our intervention.

For all three blocks, the first argument is intended to portray a heavily moralized argument, wherein the argumentation in favor of the subject relies heavily on activation of moral conviction. Conversely, the second argument is intended to portray a neutral ‘facts based’ argument in favor of the subject, which is intended to be as non-moral as possible. The control statement is meant to provide a completely neutral, but accurate, informational assessment on the concept. The intention is to provide no argumentation in favor of the issue in the control statement, one way or another. We will be assessing whether or not moral conviction increases with a manipulation, directly measuring moral conviction on the issue before and after the manipulation; see appendix B for Study 2 experimental materials. Study 2 will use a between-groups design, wherein different participants will receive each condition of our independent variable.

**Measures**

The primary outcome measure will be the same support for UHC scale as used in Study 1 (“Our government needs to implement Universal Health Care because basic population needs are not being met”), adapted from Shen & Labouff (2013), measured both pre and post-test. Our outcome measurement for capital punishment is likewise the same as used in Study 1 ("Capital Punishment (the Death Penalty) is necessary in America"), taken from Pew Research Polling (2021) on the American public. Our measure for exercise was adapted from sports medicine work (“What is your level of desire or motivation to exercise”) done by Katula, Sipe, Rejeski, and Focht (2006). This measure would be on a 7 point Likert scale, with measurement ranging from 1 (No Desire Whatsoever) to 7 (Very Strong Desire).

We will also be measuring as a manipulation check the degree of moral conviction that our participants have towards the issues we assess. We will evaluate moral conviction with Skitka and colleagues single item measure of moral conviction. This consists of the question “My feelings about X are a reflection of my core moral beliefs and convictions”, measured on a 7-point Likert scale from 1 (Strongly disagree) to 7 (Strongly agree). We will also collect a measure of subjective numeracy and health literacy, using the Subjective Numeracy Scale and the Single Item Health Literacy Scale as in Study 1. Participants will additionally complete a free-response question, asking the subjects what they thought was good about the exercise they completed, and what they thought was challenging in the exercise they completed. Finally, we also measure demographic information, including political affiliation, gender identity, age, race/ethnicity, and year in school.

## Power and Statistical Analyses

We planned to recruit approximately 220 participants. Sample size was determined a-priori using G-power 3.1.9.7 with the following parameters: seeking the difference between three independent means (three groups), an effect size of .5, an alpha of .05, and a power of .95, for a linear multiple regression. Our three ‘item issues’ that we surveyed (capital punishment, support for UHC, exercise) were all treated as continuous variables. We plan on examining the effects of experimental condition (moral, nonmoral, or neutral) and individual differences (health literacy and subjective numeracy) on our outcome measure. We will examine the main effect, as well as interactions between support for our issues and strength of moral conviction for our predictors. All tests will be conducted in R and considered statistically significant when P <.05.

**Study 2 Hypothesis:**

Hypothesis 1 – Non-moral framing will be more effective for attitude change in participants with high moral conviction that oppose the issues.

Hypothesis 2 – Moral framing will be more effective for attitude change in participants with low moral conviction on the issues.

Hypothesis 3 – Moral framing will increase polarization (increase in support if in favor, further decrease in support if opposed) in participants with high moral conviction on the issues.

**Results**

We will summarize descriptive statistics in a detailed table. We plan on analyzing hypothesis 1 with a linear model fitted to our support for UHC outcome measure. Ideally, we would like to see our nonmoral experimental condition lead to a decrease in moral conviction (or at least no increase/change), and then looking at subjects that had an initial amount of high moral conviction, we would hope to see an increase in support across our three issues. We would expect the increase in support across these three issues to be less in subjects that had initial amounts of high moral conviction, being presented with our moral experimental condition. We plan on analyzing hypothesis 2 with a linear model fitted to our support for UHC outcome measure. Ideally, we would like to see that for participants with low moral conviction, that the moral experimental condition has a greater effect in increasing support than our nonmoral or control conditions. We plan on analyzing hypothesis 3 with a linear model fitted to our support for UHC measure. Ideally, we would see that in participants with high initial moral conviction, a moral framing would lead to either an increase in support for those that favor, and a decrease in support for those that oppose, the issue; In contrast, we would be very surprised if the moral framing lead to no change in support for those with high moral conviction. We believe it is relatively implausible that individuals feel strong moral conviction and do not support or oppose the issue as well.

**Study 3**

**Method**

**Participants**

We are planning to recruit participants that are students enrolled in Psychology 1000 at a Midwestern University. Participants will receive course credit for participation in this study.

**Procedure**

Our participants will begin by clicking on the virtual study link, available in the online study sign-up website. This study link will forward to an online Qualtrics survey. Participants are brought to a cover page that includes a brief description of the research they would be involved in. After indicating consent, participants are assessed using the Ethical Standards of Judgement Questionnaire as in Study 1, to determine their initial deontological and utilitarian preferences. Then, our participants are assessed on our initial measurements of both support for UHC, as well as support for capital punishment, we also measure how strong the moral conviction of the participants with regards to their stance on both topics.

Next, two ‘blocks’ of content are presented, in a randomized order such that all participants are exposed to each block of content. The first block of content consists of our participants being presented with one of three randomized essays. The first essay is a heavily moralized argument in favor of UHC, intended to increase the participant’s moral conviction towards the topic. The second essay is a non-moral argument in favor of UHC, based primarily on factual information, intended to reduce the participant’s moral conviction towards the topic. The third essay is a neutral ‘control condition’ essay, consisting of relatively neutral, factual information, that is not strongly in favor or opposition to UHC. The second block of content is very similar to our first, where our participants are again presented with one of three randomized essays. The first essay is a heavily moralized argument in favor of capital punishment, intended to increase the participant’s moral conviction towards the topic. The second essay is a non-moral argument in favor of capital punishment, based primarily on factual information, intended to reduce the participant’s moral conviction towards the topic. The third essay is a neutral ‘control condition’ essay, consisting of relatively neutral, factual information, that is not strongly in favor or opposition to capital punishment.

After exposure to both sets of randomized essays, our participants are randomly assigned again to one of two blocks of content. In both blocks of content, subjects were asked to estimate what they believe to be the percentage of ordinary Americans in 2018 that agreed with various social and scientific issues, which in this case, were the two measurement items that we had measured their baseline support for previously. After providing their estimate, we provided deceptive information regarding what the ‘actual results’ of what Americans believed in 2018. This ‘deception’ was our primary method of manipulating perception of social consensus.

In the ‘high’ consensus condition participants saw survey results that were biased artificially upwards by 20% (e.g., if 60% of Americans agreed that capital punishment is needed in the US, the actual percentage shown to those in the high consensus condition will be 80%). Conversely, in the ‘low’ consensus condition, participants saw survey results that were biased artificially downwards by 20% (e.g., if 60% of Americans agreed that capital punishment is needed in the US, the actual percentage shown to those in the high consensus condition will be 40%).

Participants were then asked to indicate on a Likert scale (from 1-5) how much ‘surprise’ they felt after being given this feedback information. Afterwards, we asked the participants to estimate what they believe to be the percentage of ordinary Americans in 2023 that agreed with the same previous four issues. We then reassessed their support for our two measurement items again, as well as the level of moral conviction they have on both stances, to see if any changes occurred through the manipulation. Finally, we asked for demographic information (age, sex, race, year in school, etc.) as well as individual differences in health literacy and numeracy. After all measurements are completed, participants were provided with a detailed debrief revealing the true nature of our actual study, as well as providing them with the actual survey response values on the two previously assessed measurement items.

**Measures**

The primary outcome measures will be the same support for UHC scale as used in Study 1 (“Our government needs to implement Universal Health Care because basic population needs are not being met”), adapted from Shen & Labouff (2013), measured both pre and post-intervention. Our outcome measurement for capital punishment is likewise the same as used in Study 1 ("Capital Punishment (the Death Penalty) is necessary in America"), taken from Pew Research Polling (2021) on the American public. We will also assess the degree of moral conviction that our participants have towards the two issues. We will evaluate moral conviction using the same measure as Study 2, Skitka and colleagues single item measure of moral conviction. This consists of the question “My feelings about X are a reflection of my core moral beliefs and convictions”, measured on a 7-point Likert scale from 1 (Strongly disagree) to 7 (Strongly agree). We will also collect a measure of subjective numeracy and health literacy, using the Subjective Numeracy Scale and the Single Item Health Literacy Scale as in Study 1. Participants will additionally complete a free-response question, asking the subjects what they thought was good about the exercise they completed, and what they thought was challenging in the exercise they completed. Finally, we also measure demographic information, including political affiliation, gender identity, age, race/ethnicity, and year in school.

## Power and Statistical Analyses

We planned to recruit approximately 200 participants. Sample size was determined a-priori using G-power 3.1.9.7 with the following parameters: ANOVA: Repeated measures, between factors, an effect size of .25, an alpha of .05, a power of .95, for four groups, with four measurements, for a linear multiple regression. Our two ‘item issues’ that we surveyed (capital punishment, support for UHC) were all treated as continuous variables. We plan on examining the effects of differing arguments (moral, nonmoral, or neutral) on their effect on moral conviction, as well as the effects of differing levels of social consensus (high or low) on our outcome measure. We will examine the main effect, as well as interactions between differing levels of moral conviction and the effect of social consensus. All tests will be conducted in R and considered statistically significant when P <.05.

**Study 2 Hypothesis:**

Hypothesis 1 – Moral framing will be more persuasive to participants than nonmoral or neutral framing.

Hypothesis 2 – The perception of high social consensus will be more persuasive to participants than the perception of low social consensus.

Hypothesis 3 – The effect of social consensus will increase in conditions of non-moral framing, and will decrease in conditions of moral framing.

**Results**

**Limitations**

Both studies 1 and 2 primarily