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**Introduction:**

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 prompts 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. Specifically, we would like to more fully understand the effect of deontological and utilitarian ethical disposition, moral conviction and pressure from social consensus on support for universal health care. Ideally, by assessing how and why people do not support UHC, we can design interventions to improve its public perception.

**Ethics of Healthcare**

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 can be defined as ethical judgement based on outcomes, not intentions. In contrast, Deontological reasoning can be defined as ethical judgement based on whether or not behavior adheres to a preconceived set of ‘rules’, this includes concepts like ‘rights’, ‘ideals’, and explicitly recorded law. The COVID-19 pandemic provided clear examples for how moral reasoning influences policy making (Tseng, 2021).For example, policymakers with strong deontological ethics that value the patient’s ‘right’ to bodily autonomy means allowing for patients to refuse a vaccine. While it is possible that there would be great benefits to society as a whole if vaccinations were mandatory across society, some deontologists would find this unacceptable. In contrast, policymakers that prioritize utilitarianism generally value care that provides the greatest welfare for the greatest amount of people. Mandatory vaccinations, resulting in generally better levels of societal health, would be ethically justifiable, even if it results in ignoring individual bodily autonomy.

Medical triage during a disaster is another application of general moral reasoning to medical decision making (Wagner, 2015). While it is self-evident that medical resources are 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, critical patients (e.g. major blood loss, severe 3rd degree burns, dismemberment, etc.) are given comfort care over life prolonging treatment so that resources that are limited (e.g. supplementary blood, oxygen, electrostimulation devices, etc.) are reserved for those with a greater chance of survival. Refusal to provide medical care to those that are critically injured with minimal chance of survival is extremely ethically challenging for many healthcare providers. In a typical hospital setting, critically ill patients are given priority and physicians do not restrict access to medical resources. This is consistent with the deontological ethical belief that medical professionals should try to save the life of each patient. In the extreme case of disaster triage however, utilitarian ethical theory wins out in practice. In any context where medical resources are limited, and where the patient or medical professionals have strong beliefs on what rights should be afforded, both utilitarian and deontological ethical frameworks are worth investigating. This is clearly the case when examining UHC.

An additional factor that is thought to affect ethical perception and decision making both for UHC and more broadly, is the impact of social consensus. Jones’ and colleagues defines social consensus as the “degree of social agreement that a proposed act is evil or good” (Jones 1991). 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, 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.

Interestingly, while social consensus generally influences ethical perception of issues, individuals can be ‘inoculated’ from peer and even authority influence through the effects of ‘moral conviction’ (Kobayashi, 2018; Goldberg, 2019; Skitka, 2015; Skitka, 2014). Moral conviction can be seen as a meta-cognition connected to a position that is held (i.e. abortion should be legal), such that the position held is due to core beliefs about what is fundamentally right or wrong (i.e. abortion should be legal, due to the core belief that women should have full bodily autonomy). People desire to conform to majority opinion in most cases, but those who measure highly on moral conviction for a position 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. However, deference to that authority depends on whether or not the decision laid down is consistent with the individuals’ own preferred moral conclusions. We see evidence of this in the context of the U.S. conflict over federal and state legality of abortion procedures; the U.S. 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).

Given the impact of moral conviction on public perception of issues, it is challenging that few contemporary topics in public perception are universally agreed as moral isues (i.e., issues where it is understood that many people hold their belief due to fundamental perceptions of right and wrong). Wright and colleagues (2008) demonstrated that only a small number of concepts were considered moral issues by the general public. These included cheating on exams, committing a rape, incestual relations, and execution of mentally handicapped children. In contrast, there was no consensus on whether owning guns, vegetarianism, and sexual promiscuity were issues of morality, and instead they were generally thought of as issues of taste or preference.

When an issue is seen as moral, the stance that an individual has, from their own perspective, is seen as both universal, and objective. A universal belief here can be defined as the perception that an individuals’ assessment of a topic is not just right, but an absolute, that others around them do or should share (i.e., Americans value K-12 public education, and if seen as a universal belief, Americans would believe that the British do as well). A objective belief here can be defined as the perception that an individual’s assessment of a topic is not just right, but a ‘readily observable, objective property of the world’ (Skitka, 2010). For example, when individuals are forced to explain why incest is wrong, even under hypothetically ideal circumstance (i.e. both people consent, 100% effective birth control is used, both are in good mental health), respondants tend to insist that “I don’t know, I can’t explain it, I just know it’s wrong” (Haidt, 2001), regardless of the actual harms both parties are subject to. The ‘fact’ that this behavior is unacceptable is as obviously apparent to those with moral conviction as the fact that 1 + 1 =2.

Positions that are not held due to moral conviction thus can be made due to preference (e.g. Coke or Pepsi?) or deference to a social (e.g. the opinions of friends, family, neighbors, etc.) consensus (Skitka, 2010; Tauber, 2014). While there is very little general agreement of what issues are generally considered to have moral conviction in the public, there is clear evidence that public perception of what issues are moral changes over time. 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, moral convictions can also be manipulated using framing effects (Kodapanakkal, 2021; Clifford, 2017; Wisneski & Skitka, 2017). The use of persuasive arguments containing harm, fairness, and liberty based moral keywords (e.g. harm, misuse, freedom, liberty, immoral, consequences, etc.), as well as persuasive arguments that focused on disgust based claims or containing disgusting images related to the issue (e.g. factory farmed tilapia are forced to live in their own waste, photos of aborted fetuses) can enhance perceived moral convictions in otherwise morally neutral individuals. Conversely, perceived moral conviction can be decreased by using persuasive arguments that focused on more pragmatic elements such as cost or inefficiency keywords (e.g. costly, unfeasable, monetary costs). However the evidence regarding this is more mixed, as Clifford and colleagues (2017) were unable to reduce moral conviction on ‘food politics’ (e.g. support for factory farming, genetically modified food, animal welfare) when presenting a factually neutral non-persuasive argument.

While previous research has been relatively effective at increasing moralization of an issue, it has struggled in general with reducing moral conviction. One of the obvious issues are that many contemporary topics become highly polarized once they begin gaining political attention (e.g. free/hate speech, sports gambling, etc.). In effect, any experiment manipulating the perception of topics that commonly arise in ‘regular’ life, are potentially contaminated as respondants have already had significant exposure to framing of the topic (Druckman, 2012). Thus, there is a significant open question in the research whether or not non-moral framing can reduce moral conviction in topics well known to the public.

Additionally, non-moral framing of persuasive messages has been shown to be effective for those that are not neutral, but instead already hold a strong moral identity (i.e. their stance on an issue is important to their identity, and that stance is based on the issue’s perceived ‘goodness’ or ‘badness’). For example, Tauber and colleagues found evidence of this when presenting arguments attempting to persuade Dutch citizens to support climate change (Tauber, 2013). In the moralized framework, wherein the Netherlands were seen as immoral due to their difficulties in combating climate change, Dutch citizens were less willing to strive for improvement in climate change. Conversely, in the non-moral framework, wherein the Netherlands were seen as incompetent instead of immoral, Dutch citizens were significantly more willing to strive for improvement in climate change. Vitally, competence can be seen as separable from morality, and is instead perceived as a non-moral issue. This effect was significantly more pronounced in Dutch citizens that strongly identified support for climate change as one of their moral convictions, and was relatively nonexistant for Dutch citizens that were morally ambivalent regarding climate change. It is another open question whether people who have strong moral feelings in one direction could be persuaded by a strong moral argument in the other 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.

The previous literature makes clear that social consensus predicts preferences, however for those issues on which people have moral conviction, they are inoculated against social consensus. Furthermore, there has been no research done on the baseline degree of moral conviction people have regarding UHC. Thus, we wish to determine what level of moral conviction exists regarding support for UHC. There is no evidence that moral conviction will replicate the same inoculation to social consensus in this context. As the previous research states, there is strong evidence that perception of changed social consensus will lead to conforming to that consensus. Thus, in conditions of high social consensus in favor of UHC, we would expect to see increased support for UHC, conversely, if there is low social consensus in favor of UHC, we would expect to see decreased support for UHC. We hypothesize that in our condition of high social consensus, that there will be no effect of deontology or utilitarian leaning. In other words, we suspect that in cases of high social consensus, that this will subsume any individual moral or ethical assessment of the issue. Thus any individual effect that deontological or utilitarian inclination would otherwise have will not be apparent.

Furthermore, there is still relatively little evidence indicating whether non-moral framing, defined as framing that contains pragmatic arguments highlighting economic and feasibility concerns, has the ability to reduce moral conviction in general. There is also no evidence on whether moral framing, defined as highlighting the moral or immoral elements in a position on a moralized attitude, has the ability to enhance moral conviction, defined as “evalulations based on perceptions of morality and immorality” in the context of UHC (Skitka, 2010). Additionally, there is evidence that a moral argument is persuasive to those with high moral conviction that are in favor of an issue (Tauber, 2014; Kutlaca 2013). For example, Kutalca and colleagues increased perceived moral conviction for public education successfully by presenting subjects with text focusing on education as a basic right, necessary for society. For subjects that were already strongly in favor of higher education, the increased moral conviction was effective in improving persuasiveness. However, for subjects that were not in favor of higher education, increasing moral conviction was not sufficient to persuade them. Thus, it continues to be an open question as to whether or not a moral argument will lead to increasing or decreasing support for those with high moral conviction that oppose the issue.

Study 1

The purpose of Study 1 was to determine if perceptions of social consensus could be increased or decreased experimentally. Furthermore, if the effect of increased social consensus (increasing support) or decreased social consensus (decreasing support) would replicate in the context of support for Universal Health Care. Lastly, we wished to determine if individual differences in utilitarian and deontological orientation affected support for UHC, and if this effect was nullified when perception of social consensus was increased.

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. Additionally, we 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 1-7) 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

Several additional measures of health literacy and numeracy were also collected. 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 requesting feedback 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**

The purpose of Study 2 was to determine if perceptions of moral conviction could be increased or decreased experimentally in the context of UHC. If this is the case, we plan to learn how the effect of increased moral conviction would affect support for UHC, both for individuals in favor of UHC, and for those that oppose UHC. Furthermore, we also plan to learn how the effect of decreased moral conviction would likewise affect support for UHC, both for individuals in favor of UHC and for those that oppose UHC. We selected two additional issues to contrast with UHC in our experimental protocol. We retained the issue of capital punishment, as literature indicates that this issue arouses significant moral conviction for at least some portion of the population (Kasten, 1996). Furthermore, we selected the issue of choosing to exercise, as an inherently non-moral issue, wherein literature indicates that the choice to exercise has generally not been seen to reflect perceptions of the inherent goodness or badness of exercise itself (Wright, 2008).

Expanding on our results from Study 1, we would expect to see that if the social consensus intervention is effective, it is plausible that UHC is not a topic that the population experiences strong moral conviction about, as measured using Skitka’s single item inventory of moral conviction (Skitka, 2014). If social consensus was effective, this would be the opposite of the expected ‘peer inoculation effect’ from high moral conviction. Conversely, if moral conviction for UHC is low in Study 2, and we are unable to successfully manipulate it upwards, it is plausible that a social consensus based informational intervention would be particularly effective, as topics that do not have strong moral conviction backing them have been shown to be susceptible to opinion change through social conformity.

**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 three essays in favor of supporting universal healthcare or a control statement describing what UHC is. The first essay has a highly moralized framing supporting UHC centered on the rights and obligations that citizens are due from the U.S. government. The second essay has a highly moralized framing supporting UHC centered on perceptions that the U.S. is immoral if it does not provide UHC to it’s citizens. The third essay has a non-moral framing supporting UHC centered on arguments centered on the relative benefits of UHC in other countries, emphasizing the pragmatic benefits of UHC (increased lifespan, relatively lower healthcare costs, etc.). The control statement presents some brief, factually true, but neutral information neither in favor or opposition to UHC. 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 physical exercise. We begin this block by first assessing baseline support for physical 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 essays in favor of supporting exercise, or a ‘control’ statement describing what country music is. The first essay has a highly moralized framing supporting exercise centered on the perspective that exercise strengthens moral character, leads to more ethical living, and that ignoring your own health and wellbeing is immoral. The second essay has a non-moral framing supporting exercise centered on factual arguments regarding relative reduction in risk of death and prevention of several common chronic illnesses. The control statement presents some brief, factually true, but neutral information neither in favor or opposition to exercise. 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 country music 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 essays in favor of supporting capital punishment, or a control statement describing what capital punishment is. The first essay has a highly moralized framing opposing capital punishment centered on the moral unacceptability of both accidental executions of the innocent and significant racial bias in sentencing. The second essay has a non-moral framing opposing capital punishment centered on the economic unacceptability of significantly increased cost to taxpayers, emphasizing the pragmatic downsides of capital punishment (greater burden on the courts, longer time to final sentencing, roughly $1,000,000 per person greater cost relative to life sentencing, etc.). The control statement presents some brief, factually true, but neutral information neither in favor or opposition to capital punishment. After being presented with this informational intervention, participants are exposed to a brief pamphlet consisting of relatively neutral, factual, information in opposition to 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). 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 support of exercise (“What is your level of desire or motivation to exercise?”) was adapted from Katula and colleagues (2006). This measure would be on a 7 point Likert scale, with measurement ranging from 1 (No Desire Whatsoever) to 7 (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**

The purpose of Study 3 is to expand and integrate the results of Study 1 and Study 2. In Study 1 we examined the effects of social consensus on support for UHC, in Study 2, we examined the effects of moral conviction on support for UHC. In Study 3, we wish to see if we are able to manipulate both social consensus and moral conviction simultaneously. Specifically, we would like to know if increased moral conviction does indeed ‘inoculate’ against the effects of social consensus. Conversely, we are also exploring whether there is greater effect of social consensus in our condition of decreased moral conviction.

**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, we measure deontological and utilitarian ethical predisposition using the Ethical Standards of Judgement Questionnaire, as in Study 1. Then, we take an initial assessment of support for UHC and support for capital punishment, as well as the amount of moral convicition that our participants have regarding their stance on these two issues.

Afterwards, two ‘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 issue (either UHC or capital punishment), where we attempt to increase or decrease moral conviction regarding the issue. In the first block of content, participants will read one of three randomized essays intended to manipulate moral conviction towards UHC, or a neutral ‘control’ statement. The first essay has a highly moralized framing supporting UHC centered on the rights and obligations that citizens are due from the U.S. government. The second essay has a highly moralized framing supporting UHC centered on perceptions that the U.S. is immoral if it does not provide UHC to it’s citizens. The third essay has a non-moral framing supporting UHC centered on arguments centered on the relative benefits of UHC in other countries, emphasizing the pragmatic benefits of UHC (increased lifespan, relatively lower healthcare costs, etc.). The control statement presents some brief, factually true, but neutral information neither in favor or opposition to UHC.

In the second block of content, participants will read one of two randomized essays intended to manipulate moral conviction towards capital punishment, or a neutral ‘control’ statement. The first essay has a highly moralized framing opposing capital punishment centered on the moral unacceptability of both accidental executions of the innocent and significant racial bias in sentencing. The second essay has a non-moral framing opposing capital punishment centered on the economic unacceptability of significantly increased cost to taxpayers, emphasizing the pragmatic downsides of capital punishment (greater burden on the courts, longer time to final sentencing, roughly $1,000,000 per person greater cost relative to life sentencing, etc.). The control statement presents some brief, factually true, but neutral information neither in favor or opposition to capital punishment.

Participants were then randomly assigned to one of two conditions representing different exposure to social consensus. Our two conditions were a ‘High’ consensus condition and a ‘Low’ consensus condition. 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, was support for UHC and support for capital punishment. 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%).

Afterwards, we reassessed the measurement items we asked at the beginning of the study, the degree of support for UHC and how much moral conviction that stance has, likewise with the degree of support for capital punishment and strength of moral conviction for that stance as well. Then, we assess for individual differences in health literacy and subjective numeracy. Additionally, there are a pair of free response questions where we request participants to inform us of which things they liked about the exercise, and what things they found challenging about the exercise. Finally, we assess demographic information, consisting of political orientation, age, gender, race/ethnicity, and year in school. 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 for support towards UHC and capital punishment.

**Measures**

Deontological and Utilitarian ethical orientation will be measured with 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

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.

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).

Individual differences in subjective numeracy and health literacy will be measured 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 (two groups), an effect size of .5, an alpha of .05, and a power of .95, for a linear multiple regression. Our two ‘item issues’ that we surveyed (capital punishment and support for UHC) 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. Furthmore, we plan to examine the potential interaction 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 3 Hypothesis:**

Hypothesis 1 – Increases in moral conviction will weaken the effect of social consensus (‘Inoculation from social consensus’).

Hypothesis 2 – Decreases in moral conviction will strengthen the effect of social consensus.

**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 another successful replication of our ability to manipulate moral conviction. Additionally, for participants who have had their moral conviction successfully manipulated to increase, we expect to see a significant decrease in the effectiveness of social consensus. We plan on analyzing hypothesis 2 with a linear model fitted to our support for UHC outcome measure. We expect to see that for participants with low moral conviction, there is a relatively increased effectiveness of social consensus on their support for our two assessed issues.

**Limitations**

Both studies 1 and 2 primarily are limited due to the majority of data collection being derived from Psychology 1000 students at a large midwestern university.