Bigger number, better morals? Exploring the relationship between morality and efficiency

Araika Ramchandran[1], Helen Trottmann[2], and Andrew Wesel[3]

[1] Castilleja High School, araika.ramchandran@gmail.com
[2] Saint Mary's Hall, helentrottmann@gmail.com
[3] Harvard-Westlake School, andrew.wesel@gmail.com

ABSTRACT

Previous research conceptualizes efficiency as moral in its effect on established moral foundations, rather than as a foundation itself. Despite being a winner of the Moral Foundations Prize, a search for additional foundations, the efficiency/waste virtue/vice relationship has been given little attention. An efficient structure is defined as one that maximizes the utility of resources. Study 1 (*n=245*) used the Moral Foundations Questionnaire to analyze how participants value efficiency when contrasted with other values. The research found that efficiency is rarely valued in and of itself and cannot predict how one views moral dilemmas. Participants only valued efficient systems in their ability to fulfill another value. Study 2 (*n=144*) annotated explanations of participants' preferred racial distribution of ride-share vouchers using MFD2. People who distributed resources in favor of racial equality explained their decision using a large amount of language relevant to fairness and a small amount relevant to care. Respondents who chose the most efficient model–distributing the most resources, regardless of racial demographic–tended to express this choice using words relevant to care, rather than efficiency or fairness. Despite meeting the criteria to be a Moral Foundation, we find little utility in measuring efficiency values.

Keywords: moral foundations theory, efficiency, text annotation, mfd2, survey-based

I. INTRODUCTION

Understanding efficiency as a judgment-making metric has been a source of academic study for decades. We define an efficient structure as one that maximizes the utility of its available resources. This can come in the form of profit or probability of achieving a given goal. Given this definition, past research offers "waste" as the opposite to valuing efficiency (Graham et al. 2013, p. 104).

This paper will use the Moral Foundations Theory (MFT) (Haidt et al., 2009), a theoretical framework that explains morality as being both innate and developed by cultural experiences. MFT is able to quantify the moral preferences of a person as well as the moral virtues used in a body of text. MFT scores these values along five different vice/virtue relationships: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and purity/degradation. The care/harm foundation is defined by the desire to care, nurture, and protect. Fairness/cheating is defined through triggers involving cheating or cooperation. Loyalty/betrayal involves prioritizing group loyalty and cooperation, with betrayal being defined as undermining the group's interests in favor of personal gain. The authority/subversion dimension is rooted in a person's tendency to form social hierarchies and respect leadership. The purity/degradation foundation is defined by how one feels regarding actions or objects considered pure or disgusting (Haidt, Graham, & Joseph, 2009).

In 2013, looking to potentially expand the theory beyond the original five foundations, Haidt's group hosted the Moral Foundations Prize. This competition would monetarily reward people for coming up with promising potential foundations. The efficiency/waste virtue/vice relationship was one of the winners of the Moral Foundations Prize. Despite receiving this prize, integrating efficiency into MFT has been given astonishingly little attention by the research community (Simpson, 2017, p. 5).

Graham et al. 2013 provided a framework with five distinct criteria for establishing a concept as a moral foundation. Out of these five criteria, efficiency has been previously established to meet four of them. First, the given foundation must elicit some sort of immediate evaluative response. For efficiency, this would be the presumed association between body type and laziness, which results in an immediate assumption that overweight people are lazy (Lewis, Cash, & Bubb-Lewis 2012). Next, a foundation must be seen across cultures. Because multiple cultures discovered similar efficiency-related innovations (e.g. blast furnace) separately, we can assume that those cultures had a similar common goal of maximizing the utility of their resources (Tambolo, L. & Cevolani, G., 2021). Additionally, there must be evidence that a foundation can be seen in non-human primates or in young children. For example, different chimpanzee groups have developed methods of nut-cracking using different tools to most efficiently obtain food (Luncz et al., 2017). Finally, some clear adaptive advantage to a given foundation must be shown. Evolution itself proves that efficiency meets this criterion: organisms evolve to live longer and

accomplish more given their surroundings (Song & Simpson 2018). The last criterion explains that a foundation must be used in making "normative judgments" (Graham et al. 2013, p. 109), which requires empirical proof that attitudes towards this foundation influence moral behavior. This paper attempts to provide evidence that efficiency fulfills this final criterion. If we are not able to provide such evidence, that indicates that efficiency should not be included as a foundation.

To do this, we developed five scenarios that addressed efficiency-related moral dilemmas. This first, looked at a trade-off between helping the maximum number of people at the expense of racial fairness and helping fewer people with a more representative racial distribution. The second scenario, similarly related to racial justice, asked about affirmative action, presenting participants with a series of choices between a school's average SAT score and the diversity of the study body. The third scenario addresses the healthcare sector and introduces a series of monetary distributions between providing affordable care and engaging in shareholder buybacks. The fourth scenario compares sourcing production from more expensive local businesses and sourcing from cheaper foreign corporations. The fifth and final scenario is concerned with corporate election funding and presents a trade-off between the likelihood of a political candidate winning an election and the degree of corporate control exercised once that candidate is elected.

Since its development, a large body of research has used MFT with applications ranging from political ideology, environmental attitudes, and radicalism (Graham, Haidt, & Nosek, 2009; Feinberg & Willer 2013; Atari et al. 2022). This paper aims to look at the utility of moral foundations across multiple efficiency-related contexts to see how efficiency might be included in making moral judgments. The paper is guided by the following question: are existing MFT foundations able to predict how people balance efficiency-related tradeoffs? If not, we will argue for a sixth efficiency/waste foundation to fill this gap in MFT's representative capabilities.

The five Moral Foundations can be grouped into two categories: the individualizing foundations and the binding foundations. The individualizing foundations, made up of care and fairness, emphasize the avoidance of suffering and value the guarantee of rights and individuals' well-being. Loyalty/betrayal, authority/subversion, and purity/degradation make up the binding foundations, and they emphasize values associated with individual roles and duties as a means of strengthening groups and institutions (Graham et al., 2011). Liberals are more willing to violate the binding foundations.

Although our study will operationalize MFT, there are many competing moral frameworks that contest MFT's hegemony. Morality-as-cooperation conceptualizes morality as a phenomenon that arose out of the evolutionary need to be friendly with surrounding populations (Curry, 2016). Cooperation is efficiency-related in its ability to maximize the outcome or result. Thereby, cooperation is prioritized specifically when maximum efficiency is achieved through this value.

Existing research on morality and efficiency has focused on exploring the trade-off between efficiency and morality as distinct, separate concepts. In one paper, research by Capraro and colleagues (2020) found that participants will choose a more efficient option even when less immoral. On the other hand, research by A.J. Culyer (1992) determined that the efficiency of a healthcare system and its morality are synonymous; the purpose of medicine is to maximize healthcare for the largest number of people. This suggests that whether or not a specific choice is efficient could be a determinant of the morality of that choice, although the paper does not make this claim. Lennon and colleagues examined efficiency in the context of minimum wage through a survey-based experiment. They found that an average participant preferred higher wages for fewer people over a larger workforce receiving minimum wage. While a larger workforce with lower pay increases employment rates, the study found that participants preferred unemployment for higher wages. Moral justice is pitted against economic efficiency, rather than outlining efficiency as a moral, in this research. Additionally, in a perceived tradeoff between the efficiency and morality of an organ donation scheme, the majority of participants prioritized the morality of the model over its efficiency (Elias, Laceters, & Macis, 2016). Gustafson & Johnson (1989) found in a survey-based experiment that people believe that corporations have a responsibility to both create a socially responsible work environment and be profitable at the same time.

In all of these papers, efficiency and morality were framed as separate concepts which interact with each other. Instead, we'd like to explore the concept of efficiency being an innate moral concern, rather than being tangentially relevant in niche scenarios.

II. METHODS

A. Study 1: Survey

Study 1 was conducted with a poll of a relatively diverse sample of the American population (*n=245*). First, the respondent was asked for basic demographic information, including age, gender, race, political affiliation, and education level. Then, they were administered the Moral Foundations Questionnaire developed by Graham et al. 2011, a brief quiz intended to gauge how much a participant values different Moral Foundations. Our team developed additional questions to measure how much a given participant values efficiency. The answers to these questions would become our independent variable. There were both labeled and unlabeled attention checks. Eight unpaid participants failed these checks. Additionally, we excluded 32 participants who completed the survey in an abnormally short amount of time. Paid participants were obtained via Prolific Academic. Additional unpaid participants, often friends or family of the researchers, were also given access to the survey. About one-third of respondents were unpaid.

In our first scenario, which was borrowed from a study conducted by Chohlas-Wood et al. 2022, participants were presented with a scenario in which people were given free rides to avoid missing court dates. In this scenario, if an individual misses court, they will go to jail. The city has a limited budget to provide to a large population, half white, half Black. In this city, the average Black person lives farther from the court than the White individuals, aligning with real-world holdovers from codified segregation. As such, it costs more to get them to court. Participants could maximize the number of rides given, strictly abide by racial demographics, or provide a disproportionate amount of resources to the Black community.

In our second scenario, a hypothetical elite university was considering using affirmative action to increase the diversity of its student body. Participants were given a series of trade-offs between the proportion of underrepresented minority students and the school's average SAT score; a more diverse student population correlated to a lower average SAT score.

The third scenario looked at efficiency and morality in the healthcare sector: a big pharmaceutical company made significant profits after seeing success in their latest drug, and participants would choose between using these profits to provide affordable healthcare to a larger number of people or engaging in stock buybacks that would please its shareholders.

The fourth scenario pertains to a local retail store. It has two competition options for where to source its products: local producers with higher prices or foreign corporations who offer more affordable prices. Participants were asked to choose between different distributions of where to source their products.

The fifth and final scenario looked at corporate political contributions. As participants accepted hypothetical donations from corporations, they would have a higher chance of winning the election, but the corporation would also want to have a higher degree of political control once the candidate won.

Education		Gender		Politics		Race/ethnicity	
Some high school or less	25.1%	Female	54.6%	Democrat	51.2%	White/Caucasian	59.4%
High school diploma	9.7%	Male	43.0%	Independent	23.7%	Asian/Pacific Island	18.4%
Some college	18.4%	Non-binary	1.9%	Republican	15.9%	Black/African American	8.7%
Associate's or technical degree	7.7%	Prefer not to say	0.5%	Other	9.2%	Hispanic/Latino	6.8%
Bachelor's degree	25.1%					Multiracial	3.9%
Graduate or professional degree	14.0%					Native American	1.4%
						Other	1.4%

TABLE 1. Demographic distributions for the survey data analyzed in Study 1.

To test the statistical significance between the MFQ scores and scenario responses, we employed logit regression. In testing the relationship between categorical demographic variables and scenario responses, we used many chi-square tests. The chi-square coefficient doesn't indicate a directional relationship, so directionality was inferred based on visualizations of the data. The alpha level was .05.

The demographics of the survey are shown in Table 1.

B. Study 2: Text Analysis

A dataset collected by Chohlas-Wood et al. 2022 contains answers to the aforementioned "rideshare distribution" scenario as well as written explanations behind each person's choice. Using an extended Moral Foundations Dictionary 2.0 which included efficiency-related words, we annotated the explanations for their moral sentiment. We took the necessary pre-processing steps to exclude irrelevant and faulty data, cutting down the dataset significantly from 319 to 144 respondents. We excluded the first two non-header rows, which provide metadata about the survey; responses that were collected before December 6, 2022; responses with the status of "Survey Preview;" responses that answered incorrectly to the comprehension question; and responses to questions irrelevant to our study.

The efficiency sections of the dictionary were developed with a hybrid approach between an LLM and expert annotators. First, ChatGPT and the experts listed relevant words. Then, human annotators rated each other's responses and used Krippendorf's Alpha to establish inter-coder reliability for the chosen words. Z-scoring was used to adjust the values found using MFD2 around the mean. We used logistic regression to relate the MFD2 values to preferred distributions of resources. The alpha level was .05.

Demographic data is shown in Table 2.

III. RESULTS

A. Study 1: Survey

Care was predictive of how people would respond to three scenarios. As shown by logit regression, people who scored high on the care foundation are less likely to maximize profit at the expense of their local community (X^2(196) = -0.41, p = .030), more likely to provide healthcare to as many people as possible at the expense of shareholder payouts (X^2(196) = 0.50, p = .012), less likely to provide little affirmative action (X^2(196) = -0.44, p = .026), and more likely to provide a large amount of affirmative action (X^2(196) = 0.54, p = .005). Other foundations were predictive in fewer scenarios. Participants who scored high in the fairness foundation were less likely to provide little affirmative action (X^2(196) = -0.44, p = .025). A relationship between high scores in the authority foundation and a decreased likelihood to prioritize diversity over maximum avg. SAT score was approaching

Education		Gender		Politics		Race/ethnicity		Income	
Prefer not to say	0.7%	**Female**	49.0%	**Democrat**	51.7%	**White/Caucasian**	77.9%	**$100K+**	28.3%
High school diploma	11.0%	**Male**	48.3%	**Independent**	24.1%	**Asian/Pacific Island**	8.3%	**$50-100K**	35.8%
Some college	17.9%	**Non-binary**	2.1%	**Republican**	18.6%	**Black/African American**	8.3%	**Less than 50K**	35.9%
Associate's or technical degree	8.3%	**Prefer not to say**	0.7%	**Other/No preference**	5.5%	**Multiracial**	2.1%		
Bachelor's degree	44.8%					**Native American**	2.1%		
Graduate or professional degree	17.2%					**Other**	1.4%		

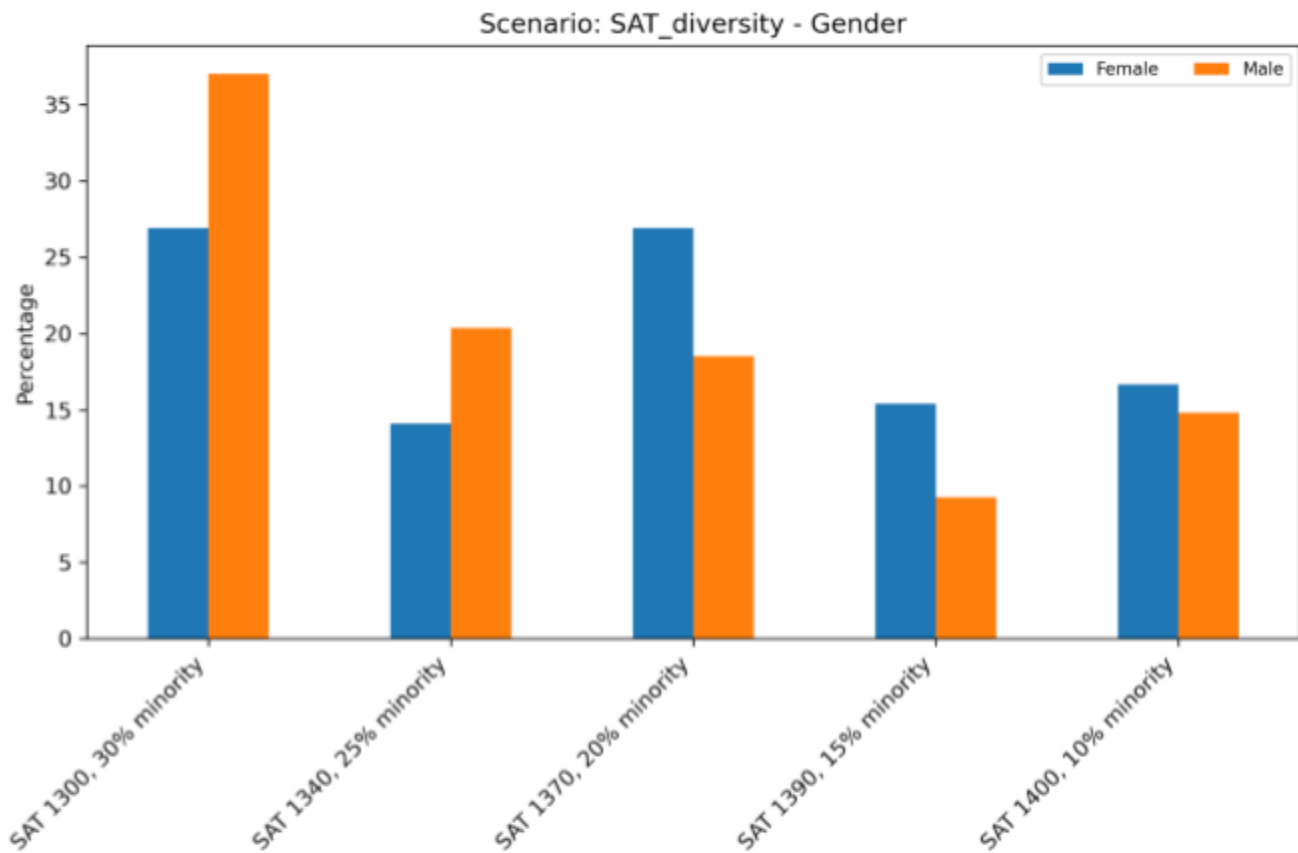**TABLE 2.** Demographic distributions for the survey data analyzed in Study 2.

FIG. 1. Women are more likely to prefer a moderate amount of affirmative action.

significance (X^2(196) = -0.56, p = .051). The efficiency foundation was only predictive of the corporate funding scenario: people who had higher efficiency values were more likely to sacrifice personal control over one's campaign for a higher chance of election (X^2(196) = 0.85, p = .0359).

In terms of observed demographic relationships, politics was related to how one responded to the affirmative action and corporate funding for election scenarios. As shown by a chi-square independence test, Republicans were more likely to maximize average SAT scores at the expense of diversity when choosing the makeup of a college (X^2(1) = 4.82, p = .02820) and Republicans were more likely to minimize corporate influence on election campaigns (X^2(1) = 4.23, p = .040).

The efficiency foundation was shown to predict whether someone was a Republican (X^2(196) = 43.6444, p = .0119). There were no other statistically significant relationships between political party and preference towards specific moral foundations, which contrasts with previous research on the subject.

Gender was also related to how one responded to the SAT scenario. Women tended to choose an option that balanced avg. SAT score and URM% (X^2(1) = 5.97, p = .0146), whereas men were less likely to (X^2(196) = 5.14, p = .023). This observation is displayed in Figure 1.

Education status was significantly associated with behavior in every single scenario. In four of five tradeoffs proposed, highly educated individuals were drawn away from the extreme ends of the proposed tradeoffs. They are less likely to prioritize their local community over profit (X^2(201) = -0.42, p < 0.001), less likely to prioritize maximizing the average SAT score of a college over diversity (X^2(201) = -0.22, p < 0.001), more likely to provide rides in a racially equal distribution than the most efficient model or a model that disproportionately benefits the Black community (X^2(201) = 0.14, p < 0.001) and are less likely to completely cut off corporate donations at the expense of one's electoral chances beta (X^2(201) = -0.94, p < 0.001). The only scenario to which highly educated individuals were more gravitated towards an extreme was in the tradeoff between shareholder profit and the scope of a healthcare company's services. They are more likely to prioritize providing healthcare over
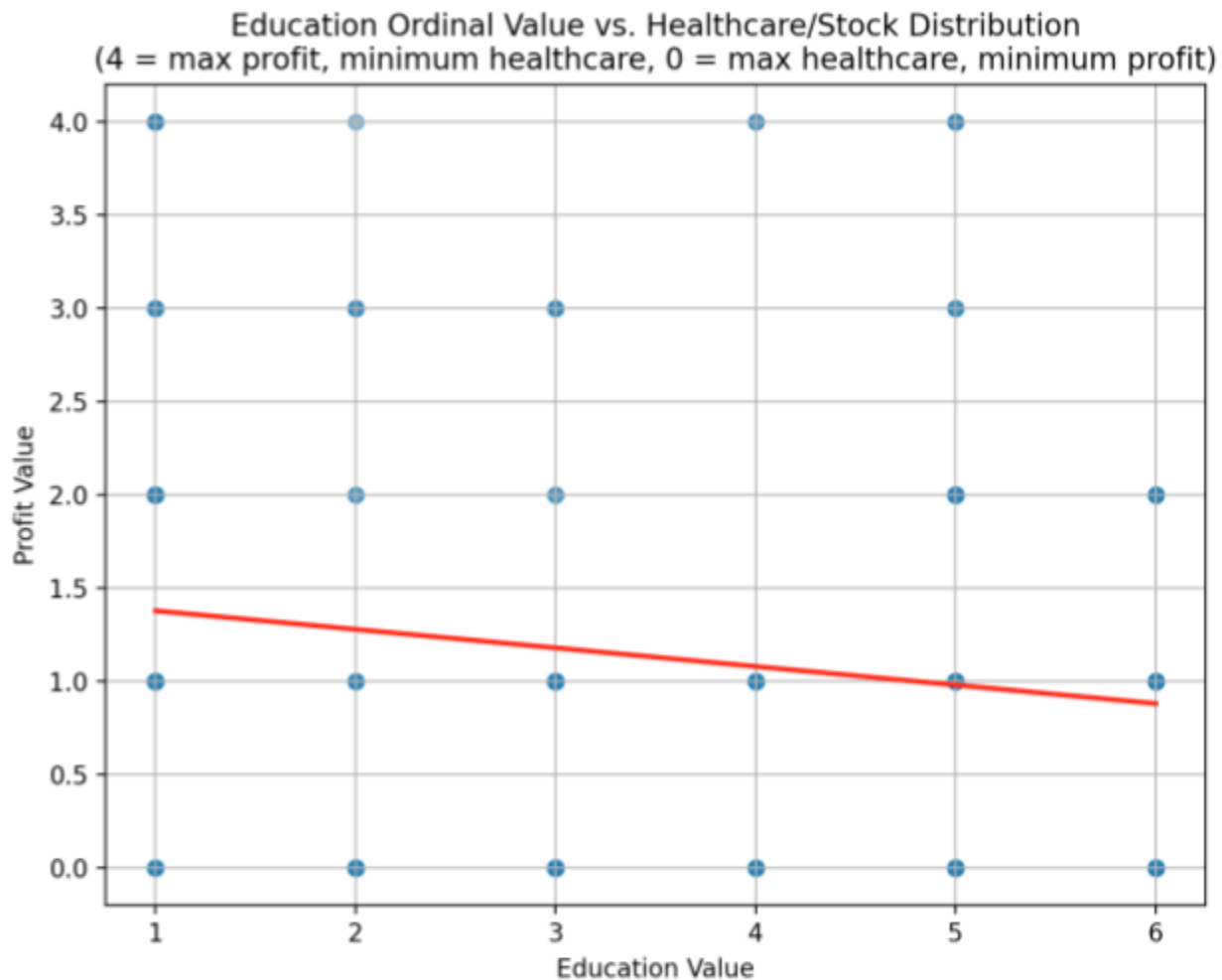
Education Ordinal Value vs. Healthcare/Stock Distribution
(4 = max profit, minimum healthcare, 0 = max healthcare, minimum profit)

FIG. 2. Higher-education status correlates with valuing healthcare over profit.

pharmaceutical shareholder payouts ($X^2(201) = 0.24$, $p < 0.001$). This relationship is visualized using a linear regression in Figure 2.

Race was a predictor of action regarding healthcare. Black people are more likely to provide the most healthcare possible at the expense of corporate profit ($X^2(1) = 4.06$, $p = .044$), whereas Asian people are less likely to do so ($X^2(1) = 10.34$, $p = .001$). 94% of the Black population surveyed in this study were Democrats, and none were Republicans, which may have been a confounding variable in this relationship.

B. Study 2: Text Analysis

Figure 3 summarizes the results of Study 2; it contains the z-normalized amongst of moral language associated with each distribution of resources.

When someone's explanation included language deemed relevant to the fairness foundation by MFD2, they were more likely to choose the demographically equal model ($X^2(123) = 0.71$, $p = .015$). The opposite is true for the care foundation: if someone had high care value, they were less likely to indicate support for a demographically equal model ($X^2(123) = -.75$, $p = .027$). When one's explanation included language deemed relevant to care, they are more likely to keep the most people out of jail possible ($X^2(123) = 0.79$, $p = .019$). The relative values of each statistically significant relationship are visualized in Figure 4. As demonstrated in Fig. 3, high care values are concentrated in the most efficient model, where the maximum amount of people are helped by the program.
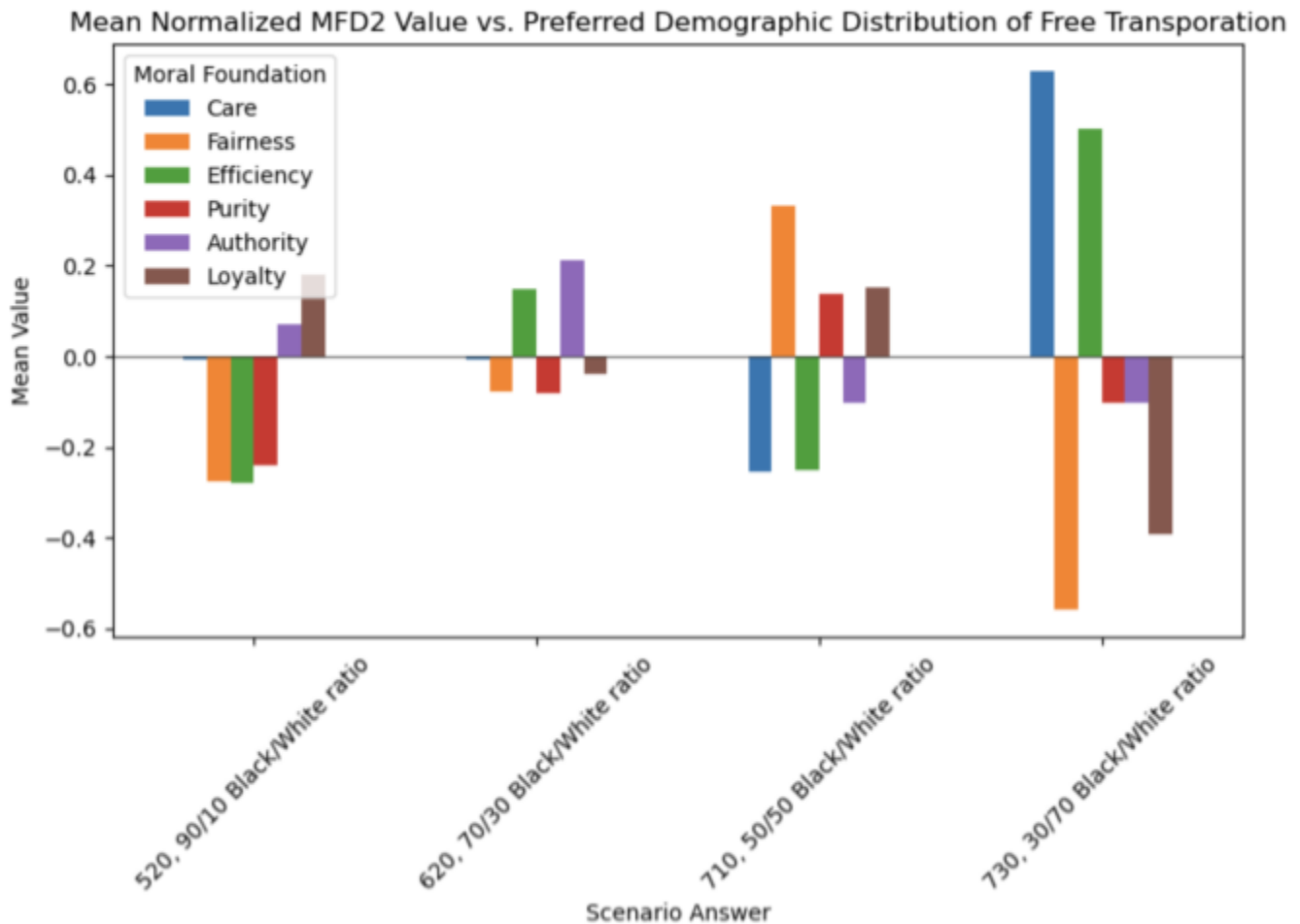
FIG. 3. Study 2 summary.

Although MFT claims that Republicans and Democrats use different foundations, Republicans and Democrats had no statistically significant pattern of speech. In running an ANOVA, every foundation returned a P value of 0.30 or greater, indicating a very low likelihood of a relationship. They also didn't choose statistically significant different demographic distributions of resources. This aligns with our results in Study 1.

While there were many statistically significant relationships surrounding the authority foundation, there were only five instances of words relating to authority being used in the dataset, and they were often non-moral in nature, i.e. noting that the scenario involved the government. The relationships shown are probably not indicative of any broader relationship. Regardless, we will present them here. When one's responses included language relevant to authority, they were more likely to have chosen an option that gave disproportionate resources to the Black community, following the logic of reparations (X^2(123) = 5.87, p < .001), less likely to be Caucasian (X^2(123) = -6.02, p < .001), more likely to be Black or African American (X^2(123) = 9.66, p < .001), and more likely to have income between $30,000 and $39,999 ($X^2$(123) = 9.13, p < .001).

IV. DISCUSSION / CONCLUSION

This paper aimed to analyze whether efficiency should be considered a moral foundation. The research looked at data from two studies, the first being a survey conducted by the researchers and the second being an existing data set collected from a previous study done by Chohlas-Wood et al. 2023. Both studies included scenarios designed to be attractive to people who scored high on the efficiency section of the MFQ or elicit efficiency-related explanations.
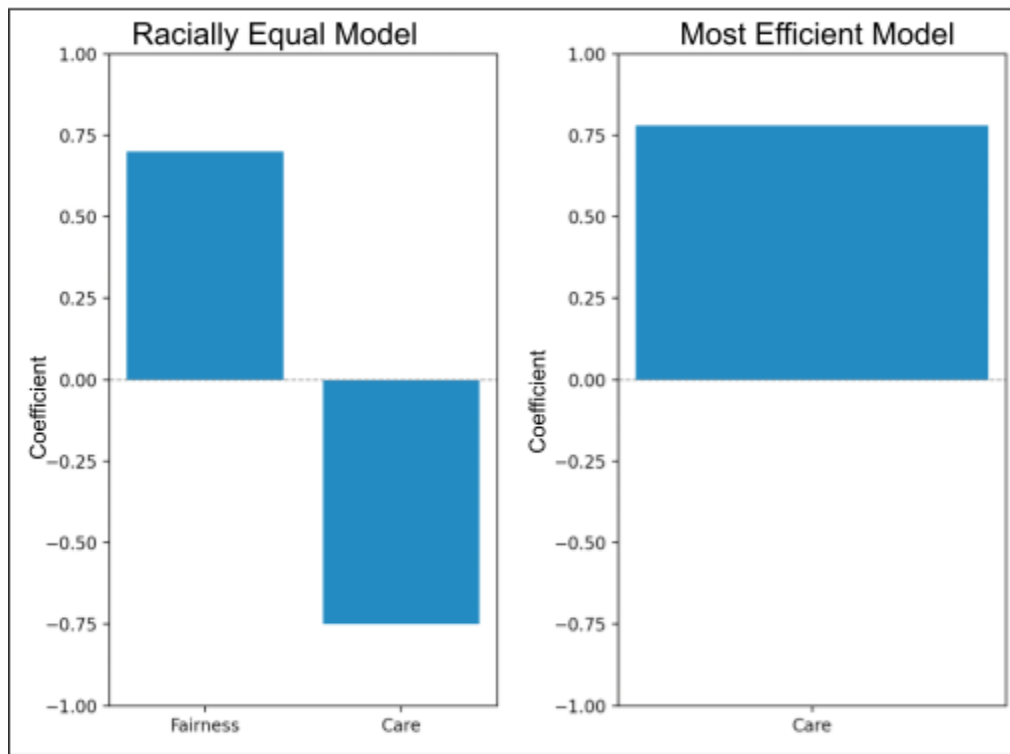
FIG. 4. Statistically significant relationships observed in Study 2.

In all five scenarios analyzed in Study 1, at least one moral foundation was able to predict at least one behavior. In four out of five scenarios presented in Study 1, efficiency scores were insignificantly related to someone's preference. Insignificant efficiency abnormalities often were paired with significant changes in other categories. For example, in the ride-share voucher scenario which involved keeping people out of jail, an insignificant positive efficiency abnormality was paired with a significant positive care abnormality. The explanations provided in the dataset analyzed in Study 2 provide causality to this observation. Many participants who selected the most efficient option explained their answer using words along these lines: "It helps the largest amount of people avoid jail time." This response, which was included in the dataset, registers in both the efficiency ("largest") and care ("helps") foundations, despite only using the word "largest" as a quantifier for how much care this participant intended to provide relative to other options. In other words, when efficiency is relevant to moral considerations, it is only relevant in its ability to moderate the relative values of other foundations. "To provide utility" is vague, and survey participants frame the utility of their decision not in the abstract, but with explicit references to other foundations. That being said, because efficiency isn't valued by itself, it shouldn't be a moral foundation. Had efficiency met the normative judgment criteria, it could have been categorized as one of the binding foundations.

The only scenario not predicted by existing moral foundations involved a tradeoff between corporate control over one's election campaign and their likelihood of being elected. Presumably, someone who accepted more corporate donations would be able to run more campaign ads, visit more cities, and become more likely to win the election. This scenario was only predicted by the Efficiency Foundation. Despite the statistical evidence that other foundations were not predictive, this scenario should logically be related to the authority or purity foundation, as it deals with navigating the hierarchies of power surrounding politics and whether one is willing to corrupt their ideals for the sake of a better chance at election. It's possible that significant relationships with these foundations would show with a larger sample of Republicans. On average, Republicans will utilize the purity and authority foundations more than Democrats because they are "binding" instead of "individualizing," meaning the Democratic bias of our sample might impede a relationship from being identified. Although interesting, it is insignificant that the efficiency foundation could predict this scenario. This isn't indicative of any broader predictive power or relevance to moral considerations, especially considering the lack of significant relationships in the other four scenarios.

High values in the efficiency foundation were statistically significantly associated with Republican political status. The foundation aligns with core Republican values of maximizing production and economic growth. However, the consequentialist nature of the foundation and connections with individual responsibility makes the foundation "individualizing" as opposed to "binding". This is the first time that an individualizing foundation was associated with conservative status. Traditionally, conservative ideologies have been closely linked to moral foundations that prioritize tradition, authority, and in-group loyalty. The inclusion of the efficiency foundation into the conservative framework showcases the diversification of values within the Republican party and indicates that conservative individuals may be driven by a more diverse set of moral beliefs than previously assumed.

Many of the scenarios included competing efficiency obligations. For example, pharmaceutical companies have an intended goal of both providing affordable drugs and hefty shareholder payouts, so it would be considered efficient to do either. Justifiably, when we posed a tradeoff between these two stated goals, there was no significant result regarding the efficiency foundation, but the different types of efficiency became related to existing moral foundations. People who registered high on the Care foundation were more likely to provide more healthcare, showing that competing efficiency obligations can be categorized into other moral foundations. This is consistent with previous findings, which determined that the option that provides healthcare to the largest number of people is understood to be the most moral (Culyer, 1992).

Affirmative action is a polarizing issue clearly divided along party lines. One's political affiliation heavily influences one's moral views on the issue. This phenomenon is observed in our affirmative action scenario: Republicans were clearly more likely to prefer a college campus with a higher average SAT score than a college campus with a higher URM population. While interesting by itself, the relationship between politics and morality is complicated further in relation to other scenario responses. The survey deliberately included two very similar scenarios; in the affirmative action scenario, respondents choose between the quality of a college and the diversity of its students and in the ride-share scenario, respondents choose between the quality of a public service and the diversity of its recipients. Not only are these scenarios similar in structure, but also in moral weight. Both experienced statistically significant relationships only in the care and fairness foundations, indicating that respondents considered the two scenarios using similar moral processes. In the ride-share scenario, a deliberately obscure scenario not discussed by either side of the political mainstream, there was no statistically significant relationship related to political parties. This could be due to the phrase "affirmative action" eliciting a negative response from Republicans that may come prior to moral intuitions. According to research by Bruchmann and colleagues, opinions on politicized issues are impacted more so by the morality of the group than by the morality of an individual (Bruchmann et al., 2018). This observation is visualized in Figure 5.
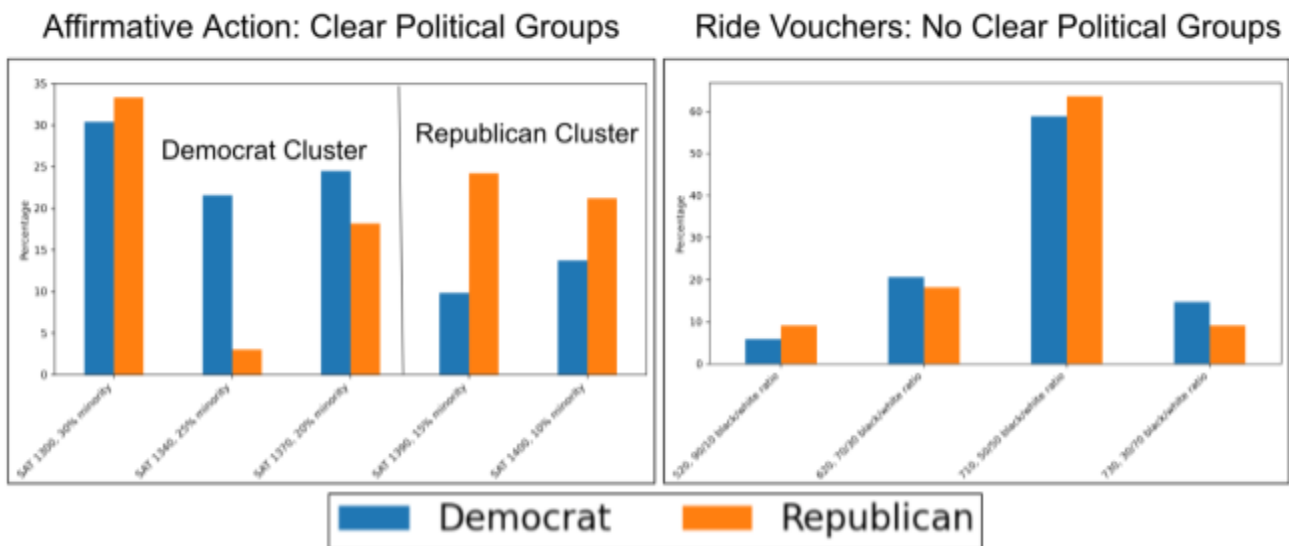

FIG. 5. Politicization influences clustering by political party.

In contrast with previous research (Graham, Haidt, & Nosek, 2009)., our data did not show a relationship between MFQ answers or moralized language use and political party. However, answers to Study 1's efficiency-related questions were able to predict Republican affiliation, which suggests a potential use for the concept of efficiency. Additionally, our efficiency dictionary's efficiency annotations approached a statistically significant relationship with Republican status, suggesting that future research could refine our dictionary and establish a more robust relationship.

The results of our study indicate a strong and consistent association between education status and behavior across all scenarios examined. Highly educated individuals exhibited distinct patterns of decision-making, showing a tendency to avoid extreme choices in four out of five proposed tradeoffs. This finding suggests that education may play a crucial role in shaping individuals' attitudes and preferences when confronted with complex and morally charged decisions. The significant relationship observed between education status and behavior is particularly noteworthy, as it highlights the potential impact of educational attainment on societal decision-making processes. Higher levels of education might equip individuals with critical thinking skills, a broader understanding of ethical considerations, and a more nuanced perspective on various tradeoffs, leading them to opt for more balanced choices. Intriguingly, we did observe an exception to the trend, wherein highly educated individuals demonstrated a stronger inclination towards prioritizing healthcare services over pharmaceutical shareholder payouts in the scenario involving a healthcare company. One possible explanation for this discrepancy could be that highly educated individuals possess a deeper awareness of the importance of accessible and comprehensive healthcare services for the overall well-being of society. They might be more cognizant of the potential societal benefits that stem from allocating resources towards healthcare services rather than focusing solely on maximizing pharmaceutical shareholder profits. Additionally, these individuals may be more likely to consider the long-term consequences of their choices, recognizing that prioritizing healthcare could lead to improved public health outcomes and a more stable and equitable society in the future. Another effect is age: more highly educated people tend to be older because education takes time. As one gets older, they will experience more health issues and potentially increased gratitude for the security that healthcare can provide.

Future research in this area should consider employing alternative annotation methods to further investigate the nuances of efficiency-related moral judgments. Expert annotations, the expanded Moral Foundations Dictionary (eMFD), and distributed dictionary representations could provide more comprehensive insights into how efficiency-related language is used in moral reasoning. By utilizing these methods, we can gain a deeper understanding of the complex interplay between efficiency and established moral foundations. Furthermore, crowd-sourcing an efficiency-specific dictionary could be a valuable endeavor. This would involve obtaining contributions from a large and diverse group of individuals to develop a comprehensive lexicon that captures various aspects of efficiency in the moral context. Additionally, Such a dictionary could enhance the accuracy and granularity of analyzing efficiency-related moral judgments in future studies. Additionally, extending the investigation to other candidate foundations, such as honesty and liberty, would be worthwhile. Running a similar normative judgment test on these foundations could help compare the perceived moral weight of efficiency with that of other values. This comparative analysis may offer valuable insights into the unique role of efficiency within the moral landscape. Moreover, researchers should pay further attention to the specific wording of scenarios used in moral dilemma assessments. Investigating how subtle changes in scenario wording can influence moral weight attribution could illuminate potential biases or contextual factors that shape participants' judgments. Fine-tuning scenario construction may lead to more accurate assessments of participants' value attributions and enhance the validity of findings.

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AUTHOR CONTRIBUTION STATEMENT

A.W. conceived the experiment and A.W. analyzed the data. All authors reviewed the manuscript.