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Introduction

Since AI image generators rose to prominence in 2022, artists have been sounding the alarm about how they might be displaced by algorithms that trained on their work without consent, compensation, or transparency. As a state whose entertainment industry went on strike throughout 2023, in part over the threat of generative AI replacing various creative jobs, this is a critical problem for California to address. However, passing policy is notoriously difficult and can be greatly affected by how a policy issue is discussed. I raise the following research question: how does framing artificial intelligence usage affect support for regulating AI image generators? In this paper, I will be analyzing the effects of framing AI usage on public support for various image based generative AI regulations in order to better understand which frames are most and least effective for policymakers, advocates, and other groups seeking to remedy the impacts of AI on artists via policy. To test this, I conducted a survey experiment in which respondents were presented with either no frame (Control), an “Artist Impact” frame, or an “AI Positive” frame, and then answered questions about their support for various AI regulations.

Significance of Issue

The rise of generative artificial intelligence (AI) tools such as ChatGPT in 2022 have allowed users to input a text prompt to output images, text, audio, and more (Shumailov et al.

2023). The subset of generative AI whose outputs are in part or fully composed of visual data are known as “image generators” and encompass popular products such as DALL-E, Midjourney, and Stable Diffusion (Jiang et al. 2023). In order to generate these outputs, AI image generators must be trained on massive quantities of data in the form of image-text pairs, which is often compiled from scraping images off the internet (Shumailov et al. 2023). For example, the LAION-5B dataset, which is used by popular AI image generators such as Stable Diffusion, is a collection of over 5 billion artworks, photos, and other images originating from the internet (Jiang et al. 2023). In particular, the most targeted websites involve users creating and curating their own content, such as Pinterest, while sites such as ArtStation that are solely dedicated to artwork are lifted wholesale (LAION Aesthetic Gallery 2023). As Shumailov et al. (2023) finds, training models on AI generated outputs causes the model to collapse, which means models are reliant on human-created works to function. In other words, the quality and profitability of image generators would not exist without the labor and creativity of human artists.

Jiang et al. (2023) finds that the proliferation of AI image generators leads to numerous consequences for artists, specifically those who share their work on the internet for friends, family, and prospective employers. Artists largely did not consent to the use of their work to train AI, were never compensated for the use of their work, and are unable to exit the system due to opaque, burdensome, and unenforceable opt-out policies (Jiang et al. 2023). They also face the misappropriation of their work and names to prompt AI to generate look-alike works to deceive viewers and harm the reputation of the artist (FTC 2023). Most controversially, artists must contend with unfair competition, whether it is against AI copies of their work specifically or general oversaturation of AI imagery (Jiang et al. 2023)(EPIC 2023). Where it may take an artist days to complete a piece, AI may generate hundreds at a speed and cost no artist can realistically

compete with, resulting in cases such as Netflix Japan using AI instead of hiring background artists in an animated production (Jiang et al. 2023). This is a particularly salient issue for California, which boasts a creative economy worth \$507.4 billion and providing 1.8 million creative jobs, the vast majority of which (1.13 million) originate from an entertainment industry that went on strike in 2023 partly over the threat of AI (Otis College 2023; Otis College 2023; Nolan 2023). Economic reasons aside, AI also has major implications for human creativity and culture that warrant policymaker action. As the Copyright Alliance (2023) noted in their comments to the US Copyright Office, “Artists’ reluctance to share their work and teach others also reduces the ability of prospective artists to learn from experienced ones, limiting the creativity of humans as a whole...if we, as humanity, rely solely on AI-generated works to provide us with the media we consume, the words we read, the art we see, we would be heading towards an ouroboros where nothing new is truly created, a stale perpetuation of the past.”

Placing any issue on the policy agenda, let alone the issue of AI and art, is notoriously difficult and can be greatly affected by how an issue is framed. Research into framing artificial intelligence will be valuable for policymakers, the media, and other groups to understand how messaging can foster or discourage public support for regulation.

Background

As Gamson and Modigliani (1989) put, a frame is a “story line that provides meaning to an unfolding strip of events...a frame suggests what the controversy is about.” According to framing theory, an issue can be viewed from multiple perspectives, and minute changes in the presentation of an issue can produce a change in opinion by priming selective aspects or values of an individual’s perceived reality (Chong and Druckman 2007). Given the average member of

the public's depth of knowledge on science and technology, and on AI in particular, frames provide an avenue through which individuals can more easily interpret and evaluate complex ideas (Druckman and Bolsen 2011). Prior framing research has identified an array of common frames in media messages about science and technology, such as "social progress" vs "Pandora's box" (Nisbet et al. 2003; Nisbet and Mooney 2007). Applying this to artificial intelligence, Bingaman et al. (2021) found that participants exposed to the former frame reported greater support for AI compared to those exposed to the latter, though framing effects were modest. The literature on framing AI has primarily focused on understanding framing effects on public support (Bingaman et al. 2021), trust (Kim and Song 2023), and utilization (Hemesath and Tepe 2023), but has rarely focused on support for regulation, which arguably plays just as important of a role in how technology is adopted in society. This paper departs from previous framing research with its focus on AI image generators, artists, and support for regulation.

Though California leads the way in generative AI policy, there is little in the way of regulating harms outside of state usage, particularly when it comes to image models and their impacts on creatives (Zhu 2023). In 2023, Newsom's Executive Order No. 12 directed state agencies to develop plans around AI, while numerous bills regulating state usage of AI tools were introduced in the California legislature (West 2023; Zhu 2023). In contrast, New York state legislators introduced AB7634 to directly address AI displacement in the film industry, specifically by disqualifying production companies from receiving a film production tax credit if they replace actors with AI (Zhu 2023). Much of the policy debate in regards to generative AI's impact on creators is currently taking place at the federal level. On July 12th 2023, the US Senate Judiciary Subcommittee on Intellectual Property held a hearing on AI and Copyright, in which parties representing tech companies and creators argued over whether current AI models

justifiably or unjustifiably ingested copyrighted works, whether they would supplant or complement creatives, and whether they promoted competitive or monopolistic practices (US Senate Committee 2023). Corporations, advocacy groups, and other organizations put forth similar lines of argument in their comments to the US Copyright Office's (USCO) study on AI in the fall (USCO 2023). The Federal Trade Commission, which held a listening session on the Creative Economy and Generative AI in October 2023 (FTC 2023), argued in their comment to USCO that current generative AI practices could constitute unfair competition to creators and deceptive practices to consumers expecting human-authored works (FTC 2023). As the regulatory landscape evolves, it will become more necessary for policymakers to understand how to frame the AI debate to achieve their policy goals.

Theory and Argument

My research questions how framing AI usage affects support for regulating AI image generators. Specifically, I will examine the relationship between my independent variable of frame exposure and dependent variable of support for regulation.

For my independent variable, respondents will be exposed to either no frame, an "Artist Impact" frame that emphasizes AI's negative impact on artists, or an "AI Positive" frame that emphasizes AI's positive aspects. The specific frames are tailored to two topics of interest for artists: ingestion of work in the training data stage and competition against AI in the labor market (Jiang et al. 2023). Under the topic of training data, the specific Artist Impact frame is the ingestion of works in training data as *theft*, while the AI Positive frame is ingestion as *inspiration*. Under the topic of market competition, the specific Artist Impact frame is AI as *labor displacing*, while the AI Positive frame is AI as *labor enhancing*. These oppositional

frames were sourced from the language used by tech company representatives, which have obvious incentives to frame their product positively, and artist advocates, who are compelled to discuss AI through how it negatively impacts themselves and their core constituency in their appeals to the federal government. For my dependent variable, respondents will be asked for their support on a variety of generative AI regulations relevant to that topic, which are sourced from previous public opinion polls conducted on AI, academic papers, advocacy group platforms, proposed legislation, and existing policy.

Conceptually, I argue that individuals exposed to AI usage through the frame of artist impact will show greater support towards regulating AI image generators compared to those exposed through frames emphasizing AI's positive aspects. The causal mechanism I propose is that frames emphasizing the impact of AI on artists will prime individuals to prioritize those values (theft, labor displacement) over others (inspiration, labor enhancement) when evaluating usage of AI, which influences their overall attitudes towards regulating AI usage (Chong and Druckman 2007). It may be possible for someone to believe that AI can both displace artists and enhance their work depending on the context, but if exposed to a labor displacement framing of AI use in the entertainment industry which has resulted in reduced hours for concept artists, that value becomes more salient compared to labor enhancement. As a result, their overall attitude towards regulation tailored to address displacement, i.e. exempting AI outputs from copyright, becomes more supportive (Chong and Druckman 2007).

Support for regulation might not be solely explained by framing effects, but also familiarity, experience, and occupational exposure to AI. Prior research on autonomous vehicles (AVs) suggests that those with high familiarity with AVs were more likely to find them safe and support their adoption (Penmetsa et al. 2019). Horowitz, Kahn, et al. (2023) examined US public

opinion on 4 types of autonomous technology and found that experience with AI (including self-reported use at work and home) had a statistically significant positive relationship with support for adoption and use. In an analysis of public sentiment on Twitter (now known as X), Miyazaki et al. (2023) found that occupational exposure to AI shared a positive relationship with positive sentiments towards AI. Essentially, if individuals with high familiarity, personal experience, and exposure to AI through work are more supportive of AI's adoption and use, they may oppose regulation they perceive to limit its adoption. To account for this, respondents will be surveyed on their familiarity with AI image generators, prior experience with using image generators, and whether they have used image generators in the workplace.

To test the relationships between frame exposure and support for regulation, I propose the following operational hypotheses:

1a) Respondents exposed to the Artist Impact frame will report greater support for AI regulation compared to respondents exposed to no frame.

1b) Respondents exposed to the AI Positive frame will report less support for AI regulation compared to respondents exposed to no frame.

1c) Respondents exposed to the Artist Impact frame will report greater support for AI regulation compared to respondents exposed to the AI Positive frame.

Research Design and Data

To test my hypothesis, data was collected through an online Amazon Mechanical Turk (MTurk) survey experiment with 211 California residents. The unit of analysis is each respondent. The independent variable of framing of generative AI use is measured as frame exposure to either a control, an AI Positive frame, or Artist Impact frame. Respondents read two

scenarios, one involving the ingestion of artist work in the training data stage and another involving competition against AI in the labor market. For the training data scenario, respondents randomly received either no frame (control group; $n = 79$), the inspiration frame (AI Positive group; $n = 70$), or the theft frame (Artist Impact group; $n = 62$). The market competition scenario was treated with either no frame (control group; $n = 72$), the labor enhancement frame (AI Positive group; $n = 67$), or the labor displacement frame (Artist Impact group; $n = 72$).

Under the topic of training data, respondents read the following scenario of a developer compiling artworks for an AI training dataset: “Eric is a developer that puts together training datasets for a highly popular AI image generator. His responsibilities include scraping millions of artworks, photographs, and other images from the internet to train the AI to produce an image tailored to a user’s text prompt. He did not obtain the consent of original creators before using their work in the AI model.” The control group, which received no frame, served as a baseline to compare support against the AI Positive and Artist Impact groups. The AI Positive group read the same scenario treated with the **inspiration** frame: “He did not obtain the consent of original creators before using their work in the AI model, **because the AI draws inspiration from artists’ work when it generates an image, in the same way humans have been inspired by other artists throughout history.**” The inspiration frame was informed by the language of technology groups such as TechNet (2023), who argued against the need to disclose works used by AI on the basis that human artists need not “disclose every poem read on the web, every mp3 sent in an email, or every Instagram cover art inspiration that played a role in developing a hit song.” The Artist Impact group read the same scenario treated with the **theft** frame: He did not obtain the consent of original creators before using their work in the AI model, **because the AI cannot function without the mass theft of the work of millions of human artists and the**

technical knowledge, artistic decisions, and personal experiences behind each of their pieces. This frame was informed by artist advocates such as Karla Ortiz (2023), an entertainment industry concept artist who described AI models as “large-scale theft.”

Under the topic of market competition, respondents assigned to the control group read the following scenario of a freelance character designer required by her studio to use generative AI: “Zia is a professional freelance character designer that contracts with major gaming studios. She has been in an increasing number of projects that require her to use AI models to generate initial sketches of character designs, which she would then redraw and clean up. Sometimes the studio requests that Zia use the name of a specific character designer in an AI image prompt to generate images in that designer’s art style.” The AI Positive group read the same scenario treated with the **labor enhancement** frame: “On these projects, she **uses AI as a tool to explore more designs, streamline her workflow, and turn in character designs faster.**” The labor enhancement frame was informed by companies such as Stability AI that argue AI will not supplant creators but act as “a tool that can help...accelerate the creative process...boost their productivity, experiment with new concepts, and perform complex tasks as part of a wider workflow”(Brooks 2023). The AI Positive group read the same scenario treated with the **labor displacement** frame: “On these projects, she **has noticed that fewer artists are hired on and her own freelance hours have lessened in comparison to her previous contracts.**” This frame is informed by the concerns of artists such as Ortiz (2023), who testified that since the introduction of generative AI, many of her peers “have lost jobs, some have had their duties lessened (and of course, their proposed pay).”

The dependent variable of support for regulating AI image generators is measured through self-reported support or opposition to various generative AI regulations. After reading

each scenario, respondents were asked to report support for four regulations (eight regulations in total) through close-ended survey answers on a 5-pt Likert scale: (1) Strongly oppose, (2) Somewhat oppose, (3) Neutral, (4) Somewhat favor, (5) Strongly favor. This measure naturally translates to values between 1-5, allowing for the creation of indexes of support for regulation on training data and support for regulation on market competition.

Generative AI regulations were sourced from a combination of previous public opinion polls conducted on AI, academic papers, advocacy group platforms, proposed legislation, and existing policy. Under the topic of training data, the surveyed regulations were: requiring a creator's explicit consent before their work is used in an AI model (Jiang et al. 2023), requiring companies to record and disclose what works were used in an AI model, providing creators the ability to erase their work from a training dataset (Wolford 2018), and the destruction of AI models that were trained off of creator's works without consent (Goland 2023). Under the topic of market competition, surveyed regulations include: compensation for creators every time AI generates images using their name (Kastrenakes and Vincent 2023), requiring AI generated outputs to be clearly disclosed as such through a watermark (Jiang et al. 2023), exempting AI generated content from receiving copyright protection (GSG 2023), and limiting the use of AI models in the creative workforce (Concept Art Association 2023).

Prior to reading any scenarios, respondents were asked a battery of questions at the start to account for potential confounding variables. To measure familiarity, respondents were asked "How familiar are you with AI image models, such as Midjourney, DALL-E, and Stable Diffusion, which can generate artwork, photos, and other images in response to a text prompt? (1) Not at all familiar, (2) Slightly familiar, (3) Somewhat familiar, (4) Moderately familiar, (5) Extremely familiar." To measure experience, respondents were asked about frequency of use:

“How frequently do you use AI image models? (1) Never, (2) Rarely, (3) Sometimes, (4) Often, (5) Always.” To account for occupational exposure to AI: “Where in your life have you used AI image models?”, with respondents given the option to select multiple answers among “Work, Home, School, Other.” To gauge public opinion towards AI: “In your opinion, do you think that AI image generators will have more of a positive impact on society or more of a negative impact on society? (1) Mostly negative, (2) Somewhat negative, (3) Neutral, (4) Somewhat positive, (5) Mostly positive.”

Steps were taken to promote measurement and overall survey reliability and validity. The survey was designed to be 12 questions long (not including 17-19 demographic questions) and take respondents around 6-8 minutes to complete to reduce attrition, while the order in which scenarios and regulations were presented was randomized to mitigate recency bias (Krosnick 1999). At the start of the survey, respondents were given the following explanation to provide context and prime them for the rest of the survey: “Image based generative AI, also known as AI image generators or AI image models, produce images or video outputs based on an input such as a text prompt.” Additional plain-language explanations of how AI image generators functioned, how they were trained, etc. were embedded within each scenario to reinforce that respondents understood what they were asked and avoid instrumentation issues. Regulations were also stated in plain language instead of jargon, i.e. using “destruction of AI models that were trained off of creator’s works without consent” in place of “algorithmic disgorgement” (Goland 2023). I can expect measures such as support for regulation, familiarity, etc. to be reliable due to the nature of close-ended responses where respondents could only select from a list of 4-5 answers.

There are a number of limitations in the survey design, however. The limited sample size of 211 respondents (and subgroup sizes of 60-70 respondents) reduces the representativeness of our survey sample and thus generalizability to the actual California population. Additionally, MTurk respondents are more likely to be Democratic, liberal, male, younger and less likely to be religious, Black, Hispanic or Latino, which further weakens external validity (Krosnick 1999).

Analysis and Findings

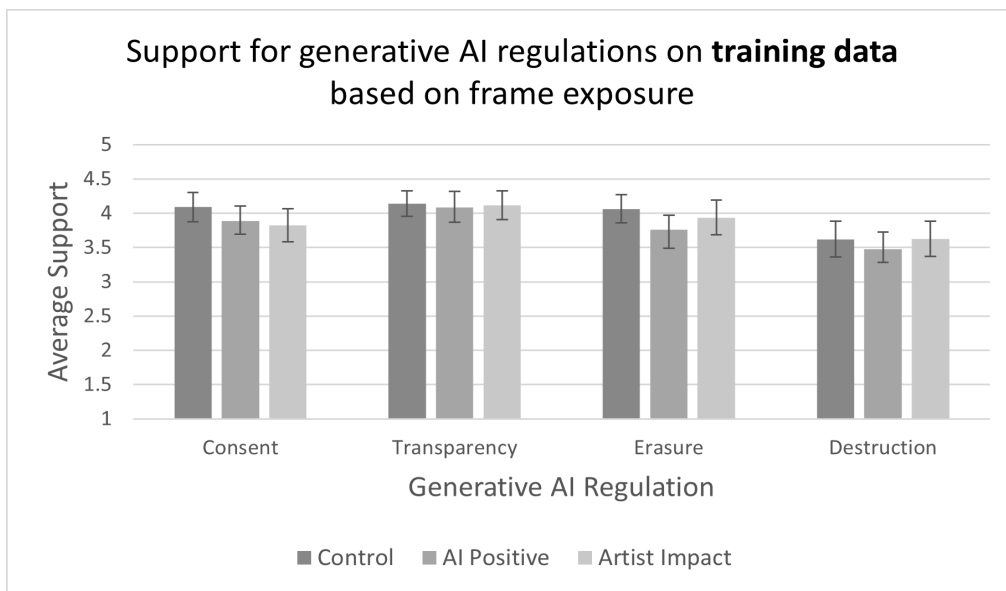


Figure 1. Data Source: MTurk Survey.

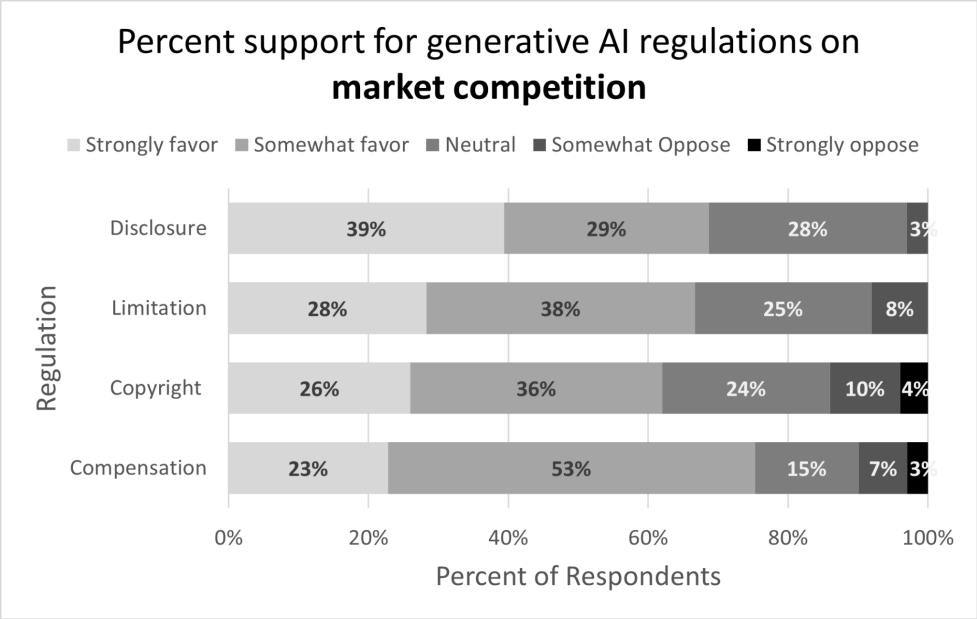


Figure 2. Data Source: MTurk Survey.

Overall, public opinion is very favorable towards regulation. As Figure 1 and Figure 2 show, every policy earned at least majority support, with compensation for creators per AI generation using their name was the most popular regulation (76% strongly or somewhat favor), followed by providing creators the ability to erase their work from a training dataset (71% favor) and requiring a creator’s consent before their work is used in an AI model (70% favor). Destruction of datasets was the least popular regulation (53% strongly or somewhat favor) with the widest margin of neutral respondents (31% neutral), followed by exempting AI outputs from copyright protection (62% somewhat or strongly favor)(Figure 1; Figure 2).

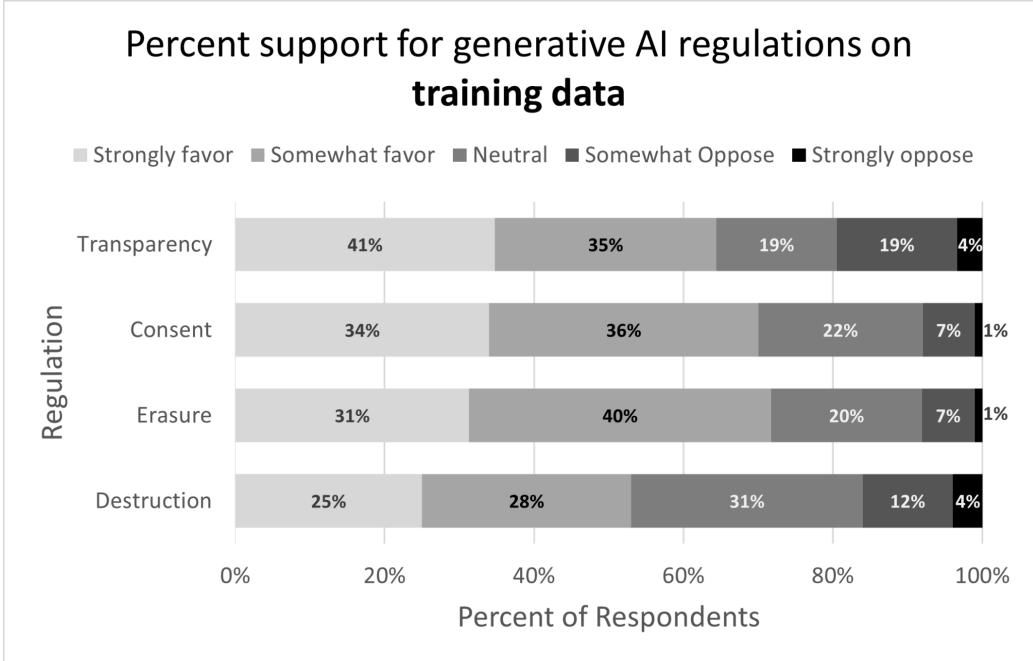


Figure 3. Data Source: MTurk Survey.
Note: Higher numbers on the y-axis indicate greater support for regulation.

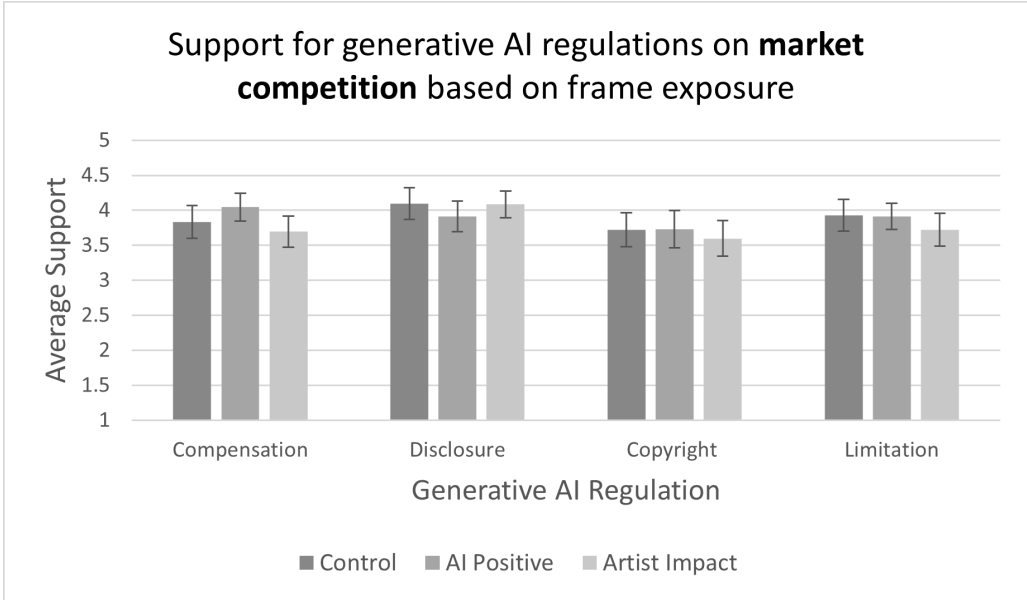


Figure 4. Data Source: MTurk Survey.
Note: Higher numbers on the y-axis indicate greater support for regulation.

After running t-tests against each test groups’ averages at a 95% confidence level, I found that there was little difference in support for each regulation between the control, AI Positive, and Artist Impact group with two exceptions. The AI Positive group reported *significantly less*

support ($t = 2.0022$, $p = 0.0471$) for the erasure regulation (providing creators the ability to erase work from a training dataset) compared to the control group, providing some support for Hypothesis 1b (Figure 3). In contrast, the AI Positive group reported *significantly more* support ($t = 2.3017$, $p = 0.0229$) for the compensation regulation (compensation for creators every time AI generates an image in their name) compared to the Artist Impact group, contradicting hypothesis 1c (Figure 4). One explanation for this could be that the specific frame of labor displacement primed respondents to view a pay-per-generation, individualistic compensation policy as inadequate to address an industry wide trend of job loss. As there were no other significant frame effects, the results do not support hypothesis 1a.

Though statistically significant differences were found, ultimately frame effects were quite limited, which may reflect the limitations of the experimental design. It could also be that effects were limited by the modest design of ‘single exposures to brief question wording manipulations.’ (Bingaman et al. 2021). Frame effects tend to be stronger effects with repeated exposures to stronger manipulations over time, i.e. through the media. It may also be that certain frames and regulations did not have a strong enough relationship with one another for a frame to have effect on reported support. Under the compensation regulation, being exposed to the Artist Impact frame of labor displacement may have actually reduced support for the compensation regulation, because of a perception that the regulation lacked relevance or effectiveness.

Conclusions and Implications

My findings show limited support for the idea that framing AI usage through how it impacts artists can increase public support for regulation. For certain regulations, framing AI usage through its positive aspects can bear some changes in public support. Policymakers and

advocacy groups seeking stronger regulation on the use of creative works in training data should avoid characterizing AI in human terms, i.e. taking inspiration from others. Groups pushing for compensatory policies would benefit from emphasizing how AI can enhance artist labor, rather than emphasizing the potential for labor displacement. These findings may help inform policymakers on how to discuss AI to foster support for various generative AI regulations which, if passed, will have significant impacts on the rights of creators, the viability of the arts as a career, and the prominence of human creativity in the cultural output of California and the nation. Future research should be conducted to test more frames in the AI-Art policy space, tailor regulations more closely to frames, and test pro-AI regulations in addition to policies addressing artist needs.

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