Absence makes the heart grow colder: the harmful nature of invisibility of contemporary American Indians

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ABSTRACT
In settler colonial societies, settlers employ various practices to eliminate, replace, and erase Indigenous Peoples. We posit that the rarity of representations of contemporary American Indians in mainstream US culture legitimates other settler colonial practices in US society. We studied whether less exposure to representations of contemporary American Indians is associated with less support for challenges to other settler colonial practices. Using survey data from 903 White Americans, we examined associations between exposure to representations of contemporary American Indians, belief that American Indians are "a people of the past", and support for challenges to settler colonial practices. We found that less exposure to representations of contemporary American Indians was indirectly associated with less support for challenges to settler colonial practices. This association occurs via double mediation – first through belief that American Indian Peoples are not contemporary and second through belief they are "a people of the past".

Fryberg and Eason ([2017]) explained that oppression faced by American Indians (AI)[1] manifests in both commissions and omissions. Commissions include stereotyping, prejudice, discrimination, and structural barriers faced by AI persons, while omission refers to exclusion and thus invisibility of AI persons. In regard to representations of AI people (in media content, education curriculum, and names/logos associated with mascots and consumer products), researchers have demonstrated the prevalence of stereotyping (e.g. Davis-Delano et al. [2021]; Merskin [2014]; Warner [2015]). Scholars have

also documented omission (i.e. invisibility and underrepresentation) of AI Peoples in media and education curricula (e.g. Peruta and Powers 2017; Tukachinsky, Mastro, and Yarchi 2015; Warner 2015).

More narrowly, one commission is that AI Peoples are commonly portrayed as primarily "a people of the past" in media and education curricula,[2] while one omission is invisibility and underrepresentation of contemporary AI people in media and education curricula (e.g. Fitzgerald 2014; Leavitt et al. 2015; Shear et al. 2015). While there are academic research publications that reveal the harmful consequences of commissions in representations of AI people (e.g. Davis-Delano, Gone, and Fryberg 2020b; Lee et al. 2009), academic research publications focused on the consequences of omission of representations of contemporary AI people are rare (although Fryberg, Dai, and Eason 2023, describe unpublished research findings on this topic).

Omission of representations of contemporary AI people in US culture can be explained by settler colonial theory. Settler colonial societies, including the United States, utilize a variety of means to eliminate, replace, and erase Indigenous[3] Peoples (e.g. McKay, Vinyeta, and Norgaard 2020; Veracini 2010; Wolfe 2006). One means of erasure is generating and propagating the settler colonial ideology that Indigenous Peoples are "a people of the past" and not contemporary Peoples (e.g. Fryberg, Dai, and Eason 2023; Johnston and Lawson 2000; McKay, Vinyeta, and Norgaard 2020; O'Brien 2010; Steinman 2022; Veracini 2010). This ideology is propagated via the practice of omitting contemporary Indigenous people from representations (e.g. in media and education curricula) (Davis-Delano et al. 2021; Fryberg, Dai, and Eason 2023; O'Brien 2010).

In this article, we describe research findings on consequences of lack of exposure to representations of contemporary AI people in US society. More specifically, using a White American sample, we explore whether less contact with representations of contemporary AI people is associated with less support for challenges to settler colonialism.

Omission of representations of contemporary AI people

Content analysis reveals that contemporary AI people are greatly underrepresented in fiction and non-fiction in mainstream US culture. Regarding non-fiction, the vast majority of coverage of AI Peoples in school curricula is pre-1900 (Journell 2009; Shear et al. 2015). O'Brien (2010) found that representations of local history in northeastern United States incorrectly conveyed that local and regional AI people no longer existed. In news coverage, AI persons are often associated with the past (Baylor 1996; Miller and Ross 2004; Weston 1996). Leavitt et al. (2015) examined the first 100 images of AI people that returned using internet search engines and found that 95.5 per cent of Google and 99 per cent of Bing searches returned

historical images. Scholars also describe the omission of AI people from pub-licly-available statistical findings (e.g. Huyser et al. 2021; Tuck and Yang 2012). In terms of fiction, when appearing on television, AI characters are often situ-ated in the past (Fitzgerald 2010; 2014). Rarely do AI characters appear in films set in a contemporary period (Larson 2006; Raheja 2010). Associating AI people with the past is also evident in mascots (e.g. Dai et al. 2021), video-games (Williams et al. 2009), and print advertisements (Molholt 2012).

Effects of omission of contemporary AI people

Given these findings from content analyses, it is not surprising that many non-AI persons in the United States cannot recall representations of contem-porary AI persons. More specifically, excluding many participants who did not answer the survey question, 65–74 per cent of Davis-Delano et al.'s (2021) participants indicated that they did not know the names of any famous living AI person. Further, only small percentages could recall the names of films and television shows that featured contemporary AI characters.

We could find only two published academic research projects focused on effects of omission of representations of contemporary AI persons. Using a sample of AI students, Covarrubis and Fryberg (2015) found that exposure to a description of an AI role model significantly increased school belonging in comparison to omission of an AI role model via exposure to descriptions of white, ethnically ambiguous, and no role models. Turner (2005, 43) discov-ered that the US Congress takes more action on AI issues when these issues are covered in the news, in comparison to when these issues are rarely covered, concluding: " … the level of national press coverage of Indian affairs play[s] a role in congressional attentiveness to American Indians. Legislators *do* take action when issues are brought to the public's attention", resulting in more favorable legislation. Fryberg, Dai, and Eason (2023) discussed findings from unpublished studies focused on the effects of omission of representations of contemporary AI persons.

Omission of representations of contemporary AI Peoples may be more impactful than underrepresentation of some other groups (e.g. elderly) because of the limited interpersonal contact many non-AI persons have with AI persons (Reclaiming Native Truth Project 2018). Interpersonal contact is limited because AI people are a small percentage of the US popu-lation that is concentrated in particular regions (U.S. Census Bureau 2021). Further, omission of representations of contemporary AI Peoples may be especially detrimental because the settler colonial context – including in the United States – fuels belief that Indigenous Peoples are primarily "of the past" (Veracini 2010), and this belief is not evident for many other groups, including non-AI populations of color in the United States (Steinman 2022).

Settler colonial theory

Classic colonialism, where there is an absence of large numbers of settlers, is focused on extraction of natural resources and exploitation of Indigenous labor. In contrast, in settler colonial societies, large numbers of settlers strive to secure the land of Indigenous Peoples by eliminating and replacing them (e.g. McKay, Vinyeta, and Norgaard 2020; Veracini 2010; Wolfe 2006). In settler colonial societies, various material policies and practices are used to eliminate, replace, and erase Indigenous Peoples, including: killing; expulsion; removals and confinement; miscegenation; a system of racialization that denies indigenous status to those of mixed ancestry and defines Indigenous Peoples as racial minorities rather than citizens of sovereign political bodies (e.g. AI nations); other moves to destroy and deny the sovereignty of Indigenous societies (e.g. the 1950s US termination policy); imposition of private property regimes to break up collective Indigenous land holdings and enable settler ownership of lands; cultural assimilation, including via boarding schools and religious conversion; adoption of Indigenous children by non-Indigenous people; and making Indigenous people citizens of the settler nation (e.g. McKay, Vinyeta, and Norgaard 2020; Steinman 2022; Veracini 2010; Wolfe 2006).

Although some of these policies and practices are used by settler colonists against non-Indigenous people of color, such as expulsion and cultural assimilation, non-Indigenous people of color in settler colonial societies were and are primarily exploited for their labor. Processes of elimination and replacement are primarily focused on Indigenous Peoples because they are the original inhabitants of land desired by settler colonists. Settler colonialism is ongoing, meaning settler colonial societies still strive to maintain and advance ownership and control of land via elimination, replacement, and erasure of Indigenous Peoples (e.g. McKay, Vinyeta, and Norgaard 2020; Steinman 2022; Wolfe 2006).

It is not only material practices and policies that eliminate and erase Indigenous Peoples in settler colonial societies, as ideologies also play a fundamental role in elimination and erasure. In fact, settler colonial ideologies are intertwined with material settler colonial practices and policies (e.g. Johnston and Lawson 2000; Steinman 2022; Veracini 2010). Both historically and today, ideologies were/are generated, maintained, and propagated by settlers to legitimate settler colonial practices and policies (e.g. the ideology of Indigenous Peoples as bloodthirsty savages was used to justify the use of military force to take Indigenous land; the ideology of Indigenous Peoples as primitive was used to justify cultural assimilation). Settler colonial ideologies include stereotypes, dehumanization, myths about empty lands, religious ideology, and racial ideology (e.g. Johnston and Lawson 2000; McKay, Vinyeta, and Norgaard 2020; Steinman 2022; Veracini 2010).

Relevant to our research is the settler colonial ideology that Indigenous Peoples are "a people of the past", which erases the existence of Indigenous people who are citizens of contemporary communities and sovereign political bodies (e.g. AI nations). Veracini (2010, 79) argued that settler colonialism involves "a comprehensive denial of the presence and sovereignty of indigenous groups", and "everything indigenous can be reduced to reminiscence" (Veracini 2010, 86). This ideology legitimates settler colonial practices and policies (e.g. Johnston and Lawson 2000; O'Brien 2010; Veracini 2010). For example, this ideology legitimates settlers replacing Indigenous Peoples (O'Brien 2010), settler colonial governance (Veracini 2010), non-recognition (as Indigenous) of living Indigenous people who do not exclusively practice traditional Indigenous cultures (O'Brien 2010; Veracini 2010), and dismissal of claims made by contemporary Indigenous Peoples (Veracini 2010).

Settler colonial material practices generate and maintain settler colonial ideologies. Omission of representations of contemporary Indigenous Peoples (e.g. in media, education curricula, and historical documents) is a settler colonial practice that may generate and maintain the ideology, and corresponding personal beliefs, that Indigenous Peoples are not contemporary and are "of the past" (e.g. Davis-Delano et al. 2021; Fryberg, Dai, and Eason 2023; Johnston and Lawson 2000; O'Brien 2010). More specifically, Davis-Delano et al. (2021) and Fryberg, Dai, and Eason (2023) suggested that omission of representations of contemporary AI people in media, education curricula, and the like – in combination with inclusion of representations of AI people from the past – may contribute to these beliefs, and thus play an important role in legitimation of settler colonial policies and (other) practices in the United States. This is because for non-AI people who have little-to-no interpersonal contact with AI people, omission of representations of contemporary AI people may render contemporary AI existence, realities, and efforts to resist settler colonial processes invisible; in turn, this may reduce non-AI support for this resistance. Representation as primarily "a people of the past" seems unique to Indigenous Peoples, as evidenced by research revealing that AI Peoples are depicted as primarily "a people of the past" (which we discussed earlier in this article), while there is no corresponding research revealing that non-AI groups of color are depicted as primarily peoples of the past.

Despite settler colonial policies, practices, ideologies, and representations, Indigenous Peoples persist, and many Indigenous people and nations resist, striving to maintain and enhance their indigeneity and sovereignty (e.g. Kauanui 2016; McKay, Vinyeta, and Norgaard 2020; Steinman 2022). AI nations and pan-AI nation organizations, along with non-AI allies, resist by challenging settler colonialism in a variety of ways, including: confronting stereotypes, working to increase representations of AI people, protecting AI cultures, strengthening AI nation economies, maintaining and enhancing

control of AI lands, and defending and bolstering AI nation sovereignty and the trust relationship[4] with the US government (for example, see: National Congress of American Indians, Native American Rights Fund, First Nations Development Institute, Indigenous Journalists Association, and IllumiNative).

The present study

Given that settler colonial practices harm Indigenous Peoples, and given that the ideology that "Indigenous Peoples are of the past and not contemporary" can legitimate these practices, it seems especially important to undertake empirical research to explore whether representational invisibility of contemporary Indigenous Peoples is associated with this ideology and other settler colonial practices. In the present research project, we examine the question of whether less exposure to representations of contemporary AI Peoples is associated with less support for challenges to other settler colonial practices. We predict that for many non-AI people, lack of exposure to representations of contemporary AI Peoples fuels (the ideological) belief that contemporary AI Peoples do not really exist. Further, we posit that it is unlikely non-AI people will support the survival and flourishing of contemporary AI nations and Peoples – in opposition to settler colonial goals of elimination – if they do not believe contemporary AI Peoples exist or know little about their lives. Our approach is aligned with the theoretical vision and unpublished research findings discussed in Fryberg, Dai, and Eason (2023).

More specifically, we hypothesize that less exposure to representations of contemporary AI people will be associated with less support for challenges to settler colonial practices via two sequential mediators. First, we predict that less exposure to representations of contemporary AI people (our independent variable) will be associated with less belief that AI Peoples are contemporary (our fist mediator), as this belief is directly related to our independent variable. Second, we predict that less belief that AI Peoples are contemporary will logically be associated with more belief AI Peoples are "of the past" (our second mediator) (i.e. if AIs are not perceived as contemporary, then they could only be perceived as "of the past"). Third, we predict that more belief that AI Peoples are "of the past" will be associated with less support for challenges to settler colonial practices (our dependent variables).

As shown in Figure 1, our model tests direct effects from participants' exposure to representations of contemporary AI persons to their support for attitudes, policies and activism beneficial to AI Peoples, in addition to direct effects from beliefs about AI Peoples (i.e. beliefs AI Peoples are contemporary and "of the past"). The model also tests simple indirect effects of exposure to these representations on support for policies, attitudes, and activism through each mediator (i.e. beliefs AI Peoples are contemporary and "of
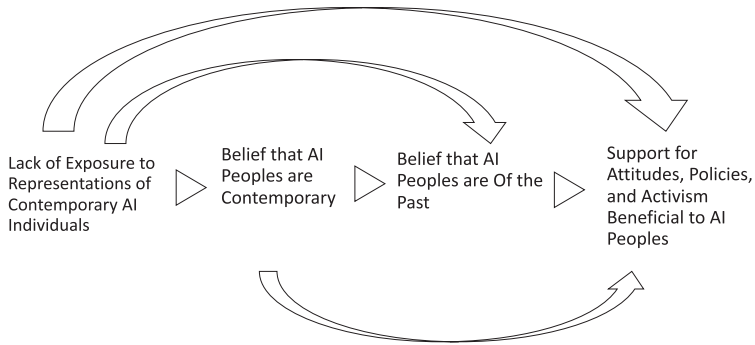
Figure 1. Double mediation model of direct and indirect effects of exposure to representations of contemporary AI persons on attitudes, policies, and activism beneficial to AI peoples.

the past"), as well as more complicated sequential indirect effects via double mediation, first through belief that AI People are contemporary and subsequently through the belief that AI people are of the past.

As far as we know, only two other academic publications include measures similar our mediators. First, Lopez, Eason, and Fryberg (2022) found that greater endorsement of the belief that contemporary AI people do not exist was associated with higher scores on perceptions that "redface" is acceptable, and this relationship was mediated by lower scores on belief that AI people experience racism. Second, Orr, Sharratt, and Iqbal (2019) found that when participants were exposed to a (researcher-generated) news story that portrays an AI tribe as modern (via their use of appliances and speaking English), participants were less apt to believe the tribe is authentic, a good role model, and deserving of additional resources. Fryberg, Dai, and Eason (2023) describe findings from unpublished studies that also include our mediators.

We used six dependent variables, all of which measure degree of support for challenges to settler colonial practices. First, we measured modern prejudice against AI Peoples, as it indicates disapproval of challenges to oppressive settler colonial policies and practices. Second and third, we measured degree of support for AI nation sovereignty and the trust relationship with the US government; in both cases, high scores indicate support for AI nations – in opposition to settler colonial policies and practices that aim to eliminate or weaken AI nations. Fourth, we measured degree of support for improving representations of AI people in media and curricula, and fifth, we measured opposition to appropriation of AI cultures; in both cases high scores indicate support for combatting settler colonial erasure of AI Peoples. Lastly, our sixth dependent variable is participant activism in support of AI rights that challenge settler colonialism.

Method

Procedure and participants

We secured online survey participants from the Dynata data collection company. We paid this company, and the company paid the participants. After removal of participants who failed attention checks, we were left with 903 participants in our final sample, all White (only) and from 48 states (i.e. not Alaska and Hawaii[5]). It took participants a median of 16.75 minutes to complete their survey.

Materials

The larger survey, labeled "Cultural Experiences and Beliefs", contained multiple measures as part of a larger research project. For the current study, our independent variable was "Exposure to Representations of Contemporary AI Persons." Two sequential mediators were, first, "Belief AI are Contemporary", and second, "Belief AI are a People of the Past." There were six dependent variables, including "Modern Prejudice Toward AI" and "Opposition to AI Appropriation." We used three measures of policy positions: "Support for AI Nation Sovereignty", "Support for the AI Trust Relationship", and "Support for Improving Representations of AIs". Lastly, we used a measure of "Actions Taken to Support AI Interests". Unless otherwise noted, measures were developed by the authors for this study.

   Demographic Measures. Participants were asked demographic questions, three of which we used as control variables. With regard to gender identity, 53.7 per cent identified as women, 44.3 per cent as men, and 2 per cent other. Median age was 48, with a range from 18 to "80 or older". Political ideology ranged from 1 = "very conservative" to 5 = "very liberal" on a 5-point scale, with M = 3.04 and SD = 1.18. Education level ranged from less than high school to doctorate degree, with a median of "associate's degree/some college".

   Interpersonal Contact. We used a measure of interpersonal contact with AI individuals as a control variable. After reading our definition of close relationships (i.e. people participants shared personal information with or engaged in activities with on a regular basis), participants indicated the number of close relationships they have had with AI individuals. Although the range was 0 to "10 or more", the majority reported none (56.4 per cent) and the mean was 1.37. Because scores on this variable were skewed, we transformed the variable into a dichotomous one, in which 0 = no close relationships and 1 = at least one close relationship.

   Exposure to Representations of Contemporary AI Persons. Given the dearth of representations of contemporary AI persons in mainstream US culture, it was challenging to develop a measure of exposure to these representations.

We decided to measure this construct by asking participants if they were familiar with famous contemporary AI individuals. Given that it is extremely unlikely that participants would have personal contact with famous individuals, they would need to learn about them from exposure to representations.

Our measure of exposure to representations of contemporary AI persons asked participants, "Without looking up any information, please indicate whether you know at least one accurate fact about each of the following persons", with response options of "yes" or "no". This was followed by a list of names of five famous living AI individuals: Sherman Alexie, Louise Erdrich, Deb Haaland, Billy Mills, and Graham Greene. Two of these individuals were the (only) most commonly named living AI persons in another study (Davis-Delano et al. 2021). The first and third author generated the other three names. To disguise the purpose of this measure, we randomly mixed these names with those of famous living non-AI persons of color (e.g. Oscar Robinson). This measure was reviewed (along with the rest of the survey measures) by three individuals with relevant expertise.

When selecting names for this measure, we included famous individuals that participants could have learned about from news media (e.g. Deb Haaland), fiction media (e.g. Graham Greene), and/or education (e.g. Louise Erdrich). Among other roles, these individuals have been activists, athletes, actors, authors, filmmakers, business owners, administrators, government officials, and founders of and spokespersons for non-profit organizations. Responses were scored 0 = yes and 1 = no. Scores were summed across the five AI individuals, so that higher scores indicate *lack of exposure* to contemporary AI public figures.

Exposure to Representations of Historical AI Persons. To make sure we were isolating the effects of exposure to representations of famous contemporary AI persons (and not AI persons more generally), we controlled for exposure to representations of famous historical AI persons. In parallel fashion, in our measure of exposure to representations of famous historical AI persons, participants were told to indicate (via selecting "yes" or "no") whether they knew at least one accurate fact about persons listed in the measure, without looking up any information. But, in this case, the measure included the names of famous historical AI persons (who died on or between 1617 and 1910), randomly mixed into names of famous historical non-AI persons (e.g. Napoleon). For this measure, we used eight AI historical figures commonly named by participants in research by Davis-Delano et al. (2021): Cochise, Crazy Horse, Geronimo, Pocahontas, Sacagawea, Sitting Bull, Squanto, and Tecumseh. Participants would have learned about these persons from fictional media, non-fictional media, and/or education. This measure was scored in the same manner as our measure of exposure to representations of famous contemporary AI persons, as scores were summed across the eight historical persons, and higher scores indicate *lack of exposure* to

famous historical AI persons. Scores ranged from 0 to 8 and were normally distributed around a mean score of 4.44.

Belief AI People are Contemporary and Belief AI People are of the Past. For this measure (which, as discussed below, later became two variables), we used ten statements developed for this study, ranging from strong assertions that AI persons are "of the past" to assertions that AI persons are contemporary. Participants answered using a 5-point scale that ranged from "strongly disagree" to "strongly agree." Principal components analyses of all ten items using Varimax rotation yielded three factors with eigenvalues greater than one. See Table 1 for a summary of results. Based on these results, we created two variables. Sample items for Belief-AI-are-of-the-Past include "Native Americans are a people of the past" and "There are no **real** Native Americans around anymore." Items for Belief-AI-are-Contemporary were "Native Americans are a contemporary group of people" and "Native Americans are modern."

Modern Prejudice Toward AIs. Our measure of modern prejudice toward AI persons is derived from Morrison et al. (2008). We replaced four statements in this measure and made minor modifications to other statements, resulting in 14 randomized statements, most of which indicate disapproval of AI and non-

Table 1. Initial psychometric evaluation of measures created for this study.

Measure	Factors	Eigenvalue	Number of Items	Minimum Factor Loading	Cronbach's Alpha
Beliefs AI are Contemporary or "Of the Past"	Belief AI are Of the Past	3.79	Six	.52	.79
	Belief AI are Contemporary	1.33	Two	.84	.71
	Unnamed/ unused	1.06	One	Cross-loaded	N/A
Modern Prejudice		7.26	Fourteen	.50	.93
Support for AI Nation Sovereignty		4.34	Six	.75	.92
Support for AI Trust Relationship		2.51	Three	.88	.90
Support for Education about AI History		2.13	Three	.82	.79
Support for Education about Contemporary AI		2.26	Three	.83	.83
Support for Increasing AI Representation in Media		4.44	Six	.83	.93
Opposition to AI Mascots		2.60	Three	.91	.92
Opposition to Appropriation	Opposition to Appropriation	3.64	Five	.55	.78
	Unnamed/ unused	1.09	N/A	Cross-loaded	N/A

AI efforts to challenge oppressive settler colonial policies and practices (e.g. the reverse-scored items of "Native Americans still need to protest for their rights" and "The U.S. should honor all aspects of treaties with Native Americans"). A 5-point scale, that ranged from "strongly disagree" to "strongly agree", was utilized for this measure. See Table 1 for results of principal components analysis with Varimax rotation.

Support for AI Nation Sovereignty. This measure included six randomized statements focused on AI nation sovereignty, half of which were reverse-scored (e.g. "Native American tribes should not possess sovereignty"). Before replying to these statements, participants were instructed to read:

> Native American tribes have sovereignty, which means that they have their own government which enables them to make and enforce their own laws and policies. These laws and policies impact many aspects of tribal life such as tribal citizenship, economics, education, housing, healthcare, the environment, and criminal justice.

Five answer categories ranged from "strongly disagree" to "strongly agree". Higher scores indicate greater support for AI nation sovereignty. Table 1 presents results of principal components analysis with Varimax rotation.

Support for AI Trust Relationship. This measure began by explaining the US government trust relationship with federally-recognized AI nations:

> Based on treaties between the US government and specific Native American tribes, as well as court cases associated with these treaties, the US federal government has a trust responsibility toward these Native American tribes. This means that the US government is required to look out for the welfare of these tribes, including provision of services such as education and healthcare for these tribes.

Then, using a 5-point scale that ranged from "strongly disagree" to "strongly agree", participants responded to three randomized statements (one reverse-scored) about this trust relationship (e.g. "The US government should honor treaties with Native American tribes by providing services for these tribes"). Higher scores indicate greater support for trust responsibilities. Table 1 presents the principal components analysis with Varimax rotation.

Support for Improving Representations of AIs. This variable was a composite score of three measures assessing participants' attitudes about increasing the quantity of representations of AI Peoples in education and media. First, participants noted if they disagreed or agreed with three randomized statements about increasing the quantity of education about AI history (e.g. "Government should pass laws that require schools in the US to cover more information about Native American history"). Three items assessed attitudes about increasing the quantity of education about contemporary AI Peoples (e.g. "Schools in the US should teach more information about contemporary Native American people and tribes"). Six randomized statements inquired

about increasing the quantity of representations of AI Peoples in news, movies, and television programs (e.g. "Even if it costs more money, news organizations should generate more news coverage about Native American people and tribes"). All three measures included at least one reverse-scored item and utilized a 5-point scale that ranged from 1 = "strongly disagree" to 5 = "strongly agree". The three variables were very strongly intercorrelated (r ranged from .73 to .84), so a composite "support for improving representations" variable was calculated as the average of the three scores. Table 1 displays the results of principal components analysis of the three contributing measures.

Opposition to AI Appropriation. This measure combines two original measures. The first consisted of three randomized statements about AI mascots (e.g. "Native American mascots should not be eliminated" – reverse scored). The second measure consisted of eight randomized statements about other types of AI cultural appropriation (e.g. "It is a good thing when non-Native people run sweat lodges, so that non-Native people can participate in Native American spiritual practices" – reverse scored). See Table 1 for results of principal components analyses that resulted in one 3-item scale assessing opposition to AI mascots and one 5-item scale for opposition to other types of AI appropriation. Opposition to AI mascots and opposition to other appropriation were strongly correlated (r = .61), so we calculated a composite "Opposition to AI Appropriation" variable as the average of scores on both variables. Both parts of this measure included reversed-score items; and in both cases participants answered using a 5-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". Higher scores indicate greater opposition to AI appropriation.

Actions Taken to Support AI Interests. Moving beyond attitudes and policy positions, we asked participants: "Have you taken any of the following actions to support the rights of Native Americans or reduce the injustices Native Americans face?" Participants indicated whether they had "never", "once", "twice", or "three or more times" taken nine actions (e.g. "contacted a political leader about these rights/injustices"). Although we wrote this measure, we borrowed from a list of actions created by Duncan (1999). Cronbach's alpha was .85.

Results

Descriptive statistics

Table 2 contains descriptive statistics for variables in the mediation models. Scores indicate that most participants had minimal exposure to representations of famous living AI persons, but the full range of scores was represented in the data. On average, scores were higher on Belief-AI-are-

Table 2. Means and standard deviations for main variables in models.

	Median	Mean	SD	Minimum	Maximum
Exposure to Representations of Contemporary AI	5	4.69	0.71	0	5
Belief AI People are Contemporary	3.5	3.47	0.82	1	5
Belief AI People are from the Past	1.67	1.82	0.66	1	4.17
Modern Prejudice	2.36	2.34	0.72	1	4.71
Support for AI Nation Sovereignty	3.83	3.74	0.86	1	5
Support for AI Trust Relationship	4.00	4.15	0.77	1	5
Support for Improving Representation	3.83	3.81	0.72	1	5
Opposition to Appropriation	2.80	2.88	0.90	1	5
Activism	1.00	1.30	0.50	1	3.44

Note: "Minimum" and "Maximum" represent lowest and highest observed scores.

Contemporary than Belief-AI-are-Of-the-Past. Scores for Modern-Prejudice and Opposition-to-Appropriation were roughly normally distributed around the midpoint of the scale. Scores for the three variables assessing approval of policies beneficial to AI Peoples (i.e. Support-for-Sovereignty, Support-for-the-Trust-Relationship, and Support-for-Improved-Representations-of-AI) were slightly negatively skewed, such that the bulk of participants scored toward the higher end of the distribution. However, most participants reported little or no Activism to support AI people.

Bivariate correlations

Table 3 shows bivariate correlations among our main variables. Less Exposure-to-Representations-of-Contemporary-AI was related to lower Belief-AI-are-Contemporary and higher Belief-AI-are-Of-the-Past. Bivariate correlations between Exposure-to-Representations-of-Contemporary-AI and the six dependent variables were all small in size, but four of the six correlations were statistically significant. Belief-AI-are-Contemporary and Belief-AI-are-Of-the-Past were consistently linked to all dependent variables in theoretically meaningful ways. Higher scores on Belief-AI-are-Contemporary were associated with less Modern-Prejudice, more Opposition-to-

Table 3. Bivariate correlations among main variables in models.

	1	2	3	4	5	6	7	8	9
1. Lack of Exposure	1	−.14*	.06	.07*	−.01	−.11*	−.03	−.09*	−.11*
2. Belief Contemporary	–	1	−.29*	−.23*	.19*	.22*	.23*	.18*	.10*
3. Belief Past	–	–	1	.33*	−.28*	−.32*	−.33*	−.22*	−.15*
4. Modern Prejudice	–	–	–	1	−.62*	−.67*	−.75*	−.60*	−.37*
5. Support Sovereignty	–	–	–	–	1	.62*	.55*	.36*	.34*
6. Support Trust Rel.	–	–	–	–	–	1	.57*	.27*	.30*
7. Support Improve Representations	–	–	–	–	–	–	1	.44*	.40*
8. Opposition Appropriation	–	–	–	–	–	–	–	1	.29*
9. Activism	–	–	–	–	–	–	–	–	1

Note: * $p < .01$.

Appropriation, more positive attitudes about policies beneficial to AI Peoples, and higher Activism, while the opposite pattern emerged with Belief-AI-are-Of-the-Past.

Tests of indirect effects

Tests of indirect effects were conducted using the PROCESS macro in Statistical Package for the Social Sciences (Hayes 2018; IBM Corp 2017). The PROCESS macro utilizes bootstrapping (a random sampling technique to test model fit) and ordinary least squares regression to calculate direct effects of the independent variable (Exposure-to-Representations-of-Contemporary-AI) on the dependent variables (Modern-Prejudice, Opposition-to-Appropriation, support for policies, and Activism), as well as the indirect effect of the independent variable through the mediators. Tests of indirect effects test simple indirect paths from Exposure-to-Representations-of-Contemporary-AI to the mediator Belief-AI-are-Contemporary to the dependent variables, and from Exposure-to-Representations-of-Contemporary-AI to the mediator Belief-AI-are-Of-the-Past to the dependent variables. In addition, the model tests double mediation, from Exposure-to-Representations-of-Contemporary-AI to (the first mediator) Belief-AI-are-Contemporary to (the second mediator) Belief-AI-are-Of-the-Past to the dependent variables. The significance of indirect paths is tested using confidence intervals. Confidence intervals that do not contain zero indicate statistically significant indirect paths.

All models included the following covariates: age, education, political beliefs, presence/absence of close AI relationships, and exposure to representations of famous historical AI persons. Political beliefs were a significant predictor in all six models, with more liberal political beliefs related to less Modern-Prejudice and more support for policies. Age was a significant predictor in four of the six models, with higher age associated with less support for policies, less Opposition-to-Appropriation, and less Activism. The presence of close AI relationships was significant in three models. Reporting at least one close relationship was associated with more Support-for-Sovereignty, Support-for-Improved-Representations-of-AI, and Activism. Education was significant in only one model, in that it was negatively associated with Support-for-Sovereignty. Finally, less Exposure-to-Representations-of-Historical-AI was only a significant negative predictor of Activism.

Table 4 presents the results of regression models assessing indirect effects for the dependent variable of Modern-Prejudice. The direct effect from Exposure-to-Representations-of-Contemporary-AI to Modern-Prejudice was not significant. However, significant direct relationships were observed between both Belief-AI-are-Contemporary (negative) and Belief-AI-are-Of-the-Past (positive) on Modern-Prejudice. The indirect relationship from less Exposure-to-Representations-of-Contemporary-AI to lower Belief-AI-are-

Table 4. Direct and indirect effects of lack of exposure to representations of contemporary AI Persons on attitudes and activism.

Dependent Variable	Effect	B	SE	T	P	LLCI	ULCI
Modern Prejudice ($R^2 = .35$)							
Direct Effects							
	Lack of Exposure > Prejudice	−.037	.029	−1.27	.204	−.095	.020
	Belief AI are Contemporary > Prejudice	−.093	.025	−3.68	.001	−.143	−.043
	Belief AI are of the Past > Prejudice	.255	.031	8.23	<.001	.194	.315
Indirect Effects of Lack of Exposure on Prejudice							
	Through Belief AI are Contemporary	.007	.005			.0003	.019
	Through Belief AI are of the Past	−.008	.009			−.024	.011
	Double Mediation	.005	.002			.0003	.001
Opposition to Appropriation ($R^2 = .29$)							
Direct Effects							
	Lack of Exposure > Opposition	−.020	.038	−0.53	.597	−.096	.055
	Belief AI are Contemporary > Opposition	.093	.033	2.81	.005	.028	.158
	Belief AI are of the Past > Opposition	−.198	.041	−4.89	<.001	−.278	−.119
Indirect Effects of Lack of Exposure on Opposition							
	Through Belief AI are Contemporary	−.008	.005			−.021	−.0001
	Through Belief AI are of the Past	.005	.007			−.009	.019
	Double Mediation	−.004	.002			−.008	−.0001
Activism ($R^2 = .35$)							
Direct Effects							
	Lack of Exposure > Activism	−.041	.022	−1.87	.062	−.085	.002
	Belief AI are Contemporary > Activism	.033	.019	1.73	.083	−.004	.070
	Belief AI are of the Past > Activism	−.067	.023	−2.86	.004	−.112	−.021
Indirect Effects of Lack of Exposure on Activism							
	Through Belief AI are Contemporary	−.003	.002			−.009	.001
	Through Belief AI are of the Past	.002	.002			.003	.007
	Double Mediation	−.001	.001			−.003	−.0001

Contemporary to Modern-Prejudice was significant. Further, the double mediation path from less Exposure-to-Representations-of-Contemporary-AI to lower Belief-AI-are-Contemporary to greater Belief-AI-are-Of-the-Past to Modern-Prejudice was significant. The simple indirect effect of Exposure-to-Representations-of-Contemporary-AI on Modern-Prejudice through Belief-AI-are-Of-the-Past was not significant. Table 4 also presents the results of tests of direct and indirect effects of Exposure-to-Representations-of-Contemporary-AI on Opposition-to-Appropriation. The same pattern emerged, with no significant direct effect of less Exposure-to-Representations-of-Contemporary-AI, but significant indirect effects through Belief-AI-are-Contemporary

and through the double mediation pathway from Belief-AI-are-Contemporary to Belief-AI-are-Of-the-Past. Finally, Table 4 presents the results of tests of direct and indirect effects of Exposure-to-Representations-of-Contemporary-AI on Activism. The only significant direct predictor of Activism was Belief-AI-are-Of-the-Past, and therefore the only indirect effect of less Exposure-to-Representations-of-Contemporary-AI on Activism was through Belief-AI-are-Of-the-Past.

Table 5 presents the results of models of direct and indirect effects on the three policy attitudes: Support-for-Sovereignty, Support-for-the-Trust-Relationship, and Support-for-Improved-Representations-of-AI. Similar to

Table 5. Direct and indirect effects of lack of exposure to representations of contemporary AI persons on policy attitudes.

Dependent Variable	Effect	B	SE	T	P	LLCI	ULCI
Support for Sovereignty ($R^2 = .17$)							
Direct Effects							
	Lack of Exposure > Support	.025	.039	0.64	.525	−.052	.102
	Belief AI are Contemporary > Support	.125	.034	3.67	<.001	.058	.192
	Belief AI are of the Past > Support	−.297	.042	−7.12	<.001	−.379	−.215
Indirect Effects of Lack of Exposure on Support							
	Through Belief AI are Contemporary	−.012	.007			−.028	−.001
	Through Belief AI are of the Past	.004	.010			−.016	.022
	Double Mediation	−.006	.003			−.013	−.001
Support for Trust Relationships ($R^2 = .18$)							
Direct Effects							
	Lack of Exposure > Support	−.037	.035	−1.05	.294	−.105	.032
	Belief AI are Contemporary > Support	.105	.030	3.44	.001	.045	.164
	Belief AI are of the Past > Support	−.277	.037	−7.48	<.001	−.350	−.205
Indirect Effects of Lack of Exposure on Support							
	Through Belief AI are Contemporary	−.010	.005			−.023	−.001
	Through Belief AI are of the Past	.004	.009			−.015	.022
	Double Mediation	−.006	.003			−.012	−.001
Support for Improving Representation ($R^2 = .26$)							
Direct Effects							
	Lack of Exposure > Support	.023	.031	−0.87	.387	−.034	.087
	Belief AI are Contemporary > Support	.116	.027	4.32	<.001	.063	.169
	Belief AI are of the Past > Support	−.278	.033	−8.47	<.001	−.343	−.214
Indirect Effects of Lack of Exposure on Support							
	Through Belief AI are Contemporary	−.011	.006			−.024	−.002
	Through Belief AI are of the Past	.004	.009			−.016	.022
	Double Mediation	−.006	.003			−.012	−.001

the findings for the first two models described in Table 4, there were no significant direct effects from Exposure-to-Representations-of-Contemporary-AI to these policy attitudes. However, Belief-AI-are-Contemporary and Belief-AI-are-Of-the-Past were both strongly related to all three policy attitudes. The three models in Table 5 also yielded the same patterns of indirect paths. Less Exposure-to-Representations-of-Contemporary-AI was linked to less support for all three policies through less Belief-AI-are-Contemporary, and also via the double-mediated pathway from Belief-AI-are-Contemporary to Belief-AI-are-Of-the-Past. Almost all significant effects in Tables 4 and 5 are small in magnitude, with the exception of moderate to large direct effects of Belief-AI-are-Of-the-Past and Belief-AI-are-Contemporary on all dependent variables except Activism.

Discussion

In mainstream US culture, representations of contemporary AI nations and people are rare (e.g. Shear et al. 2015; Tukachinsky, Mastro, and Yarchi 2015). In this study, we empirically examined the theoretical premise that the settler colonial practice of rendering contemporary AI people invisible in representations fuels settler colonial ideology that then legitimates other harmful settler colonial practices. More specifically, we tested the premise that less exposure to representations of contemporary AI Peoples is associated with less support for challenges to settler colonialism. We compared White American participants who reported less exposure to representations of famous contemporary AI persons to those who reported more exposure. Aligned with the theoretical model articulated by Fryberg, Dai, and Eason (2023), we predicted that participants with less exposure to representations of contemporary AI persons would be more apt to believe the ideology that AI Peoples are not contemporary and thus are "a people of the past". Further, we predicted that these beliefs would be associated with less support for challenges to settler colonialism as evident by: more endorsement of modern prejudice against AI Peoples (which indicates disapproval of challenges to settler colonial oppression); less opposition to appropriation of AI cultures (which rejects AI efforts to resist settler colonial control of their cultures); less support for policies that challenge settler colonialism; and less personal activism that challenges settler colonialism.

Discussion of findings

Results from five of the six double mediation models demonstrate that less reported exposure to representations of contemporary AI Peoples (independent variable) is associated with more belief that AI Peoples are not contemporary (first mediator), which is then associated with more belief that AI

Peoples are "of the past" (second mediator), and then belief that AI Peoples are "of the past" is associated with less support for challenges to settler colonialism that are beneficial to AI Peoples (dependent variables). More specifically, less reported exposure to representations of contemporary AI Peoples is associated, via this double mediation, with the following outcomes: more modern prejudice against AI Peoples, less opposition to appropriation of AI cultures, less support for AI nation sovereignty, less support for the US government trust relationship with AI nations, and less support for improving representations of AI Peoples in media and education. The mediating variables, especially the placement of belief AI Peoples are not contemporary as the first mediator, are essential to the associations between our independent variable of reported exposure to representations of contemporary AI persons and these five dependent variables.

Although we cannot claim that our findings are causal, given the dearth of representations of contemporary AI persons in media and education curricula, it is unlikely that people who start with the belief that AI persons are not contemporary take actions to reduce (even further) their exposure to representations of contemporary AI persons. It is possible that those who begin with less support for challenges to settler colonialism avoid representations of contemporary AI persons. But, what might lead to their less supportive attitudes to begin with? One possibility is perceived group interest (e.g. Bobo and Tuan 2006; Davis-Delano et al. 2020a). Another possibility is lack of interpersonal contact with AI persons. We found that having no close relationships with AI persons was associated with less support for challenges to settler colonialism in three of our models. More broadly, perhaps percentage of AI persons in participants' area of residence plays a role.

It is important to discuss a few other control variables. Given that political ideology is significant in all six models, it is likely that being more conservative contributes to less support for challenges to settler colonialism beneficial to AI Peoples, similar to how conservatism is associated with less support for Black and Latine Americans. Age also likely plays a role, as evident in four models in which younger age was associated with more support for challenges to settler colonialism beneficial to AI Peoples, which parallels others' findings on support for some other groups that face oppression.

We found that more exposure to representations of famous historical AI persons was associated with support for challenges to settler colonialism in only one of our models, suggesting that the invisibility of contemporary AI Peoples functions independently from the historical (often stereotypical) representation of AI Peoples in educational and media content. It is important to note that despite our findings that education (which was significant in only one model), age, political ideology, close relationships, and exposure to representations of historical AI persons are significant in at least one model, in

five cases our models remained significant after controlling for these variables.

In contrast to findings for the five dependent variables focused on attitudes (whether more general attitudes or attitudes toward policies), we did not find significant sequential double mediation in our model predicting activism beneficial to AI Peoples. There was no direct relationship between activism and either exposure to representations of contemporary AI individuals or belief AI Peoples are contemporary. Instead, only belief that AI Peoples are "of the past" was directly related to activism, and thus this belief was the only mediator between exposure to representations of contemporary AI people and activism. Activism was the only dependent variable that measures reports of actual behavior, rather than of attitudes. There is a long history of research (e.g. Ajzen and Sexton 1999) focused on factors associated with correspondence (or lack thereof) between attitudes and behaviors. Scholars have identified numerous personal and social factors that explain different patterns for attitudes versus behaviors.

Contributions and implications

Our findings offer solid support for Fryberg and Eason's (2017) assertion that both omissions and commissions are key to the oppression experienced by AI Peoples. In particular, we demonstrate that less exposure to representations of contemporary AI people – which is a form of omission – is associated with less support for challenges to settler colonialism beneficial to AI Peoples. And we demonstrate that commissions, in the form of belief that AI Peoples are not contemporary, and then belief AI are "of the past", fuel this association. Our findings on these particular commissions are consistent with the findings of Orr, Sharratt, and Iqbal (2019) and Lopez, Eason, and Fryberg (2022), as well as unpublished findings discussed in Fryberg, Dai, and Eason (2023), in that all of these findings reveal that these beliefs are harmful to AI interests.

Our findings demonstrate empirical support for particular aspects of settler colonial theory, in the US context. Along with Turner (2005), and unpublished findings described by Fryberg, Dai, and Eason (2023), we reveal – via empirical research – probable *consequences* of ongoing settler colonial practices that render contemporary Indigenous Peoples invisible in representations. We are the first academic publication to demonstrate empirical associations between (a) experiencing representational invisibility of contemporary AIs with (b) greater endorsement of settler colonial ideology (in the form of beliefs that AI Peoples are not contemporary and "of the past") with (c) legitimation of settler colonial policies and practices (as measured by less support for challenges to these policies and practices). When White Americans are unaware of, or do not think about, contemporary AI

Peoples, at least partly due to omission in representations, then it is unlikely they will consider the rights, goals, and struggles of these Peoples; and then White Americans can continue to benefit from settler colonialism without concerns. In this case, White Americans are unlikely to take actions to support AI interests and reduce settler colonial domination. Yet, the results of our study, along with the findings of Turner (2005) and unpublished findings described by Fryberg, Dai, and Eason (2023), also suggest that generating more awareness about contemporary AI nations and people via increasing representations of them in US culture could increase non-AI support for challenges to ongoing settler colonial domination faced by AI Peoples. Beyond the United States, our findings suggest that rendering contemporary Indigenous Peoples invisible in societal representations is an ongoing settler colonial practice that may fuel present-day settler colonial ideology (including beliefs) that then legitimates other ongoing settler colonial practices (i.e. continued violation of Indigenous rights).

More narrowly, we empirically demonstrate what theorists have asserted, that the particular beliefs that Indigenous Peoples are not contemporary and are "a people of the past", which is a particular settler colonial ideology (Fryberg, Dai, and Eason 2023; Veracini 2010), legitimate ongoing settler colonial policies and practices (e.g. Johnston and Lawson 2000; Veracini 2010). In our study, these beliefs are associated with less support for policies and practices that aim to increase visibility of AI Peoples and strengthen AI nations, and thus these beliefs reduce support for efforts to resist ongoing settler colonial processes of elimination and erasure of AI Peoples.

The practical implications of our findings are clear: Mainstream media and education curricula in the United States should include a significant quantity of (quality) representations of contemporary AI nations and people. Fryberg, Dai, and Eason (2023) make concrete policy recommendations toward this end.

Regarding media, the good news is that some AI organizations (e.g. Illumi-Native and Indigenous Journalists Association) are resisting erasure by actively working toward this end. And, there has been some recent success. For example, the news organization *Indian Country Today* began to collaborate with the Associated Press, which may result in more mainstream news focused on AI nations and people. Also, in 2021 two new television shows focused on contemporary AI people aired: *Reservation Dogs* and *Rutherford Falls*.

There is less hope in the field of education, which – when it does focus on AI Peoples – seems to focus almost exclusively on the past (e.g. Shear et al. 2015). More generally, there seems to be minimal attention devoted to contemporary social science in US schools. Despite these barriers, Indigenous individuals, organizations, and nations resist erasure by advocating – and

generating materials – for increased coverage of contemporary Indigenous Peoples in education curricula (e.g. Sabzalian and Shear 2018).

Another barrier to addressing omissions is that people are less critical of omissions than commissions (e.g. stereotypes) because omissions are perceived as less harmful than commissions. The reasons for this phenomenon are multiple, including that while commissions are often perceived as due to action omissions are often perceived as due to inaction, and while commissions are often associated with bias omissions are often associated with being uninformed (Spranca, Minsk, and Baron 1991).

Limitations and future research

Our research has multiple limitations, two of which are especially important for future research. First, even though our White American sample is diverse in some ways (e.g. age, education), this sample is not representative of White Americans; and we did not include participants of color. We recommend that scholars replicate our study, or undertake a similar study, with representative samples from US society. Beyond the United States, there is evidence that contemporary Indigenous Peoples in other settler colonial societies are omitted from representations and depicted as primarily "a people of the past" (e.g. Lowe and Yunkaporta 2013; Schaefli, Godlewska, and Lamb 2019). Likely influenced by this representational pattern, Schaefli, Godlewska, and Lamb (2019) found that many university students in their samples described Indigenous Peoples in Canada as "a people of the past". We urge scholars from other settler colonial societies to explore whether lack of exposure to representations of contemporary Indigenous Peoples in their societies is associated with less support for these Peoples.

Second, although our measure of reported exposure to representations of famous contemporary AI persons is innovative, this measure is limited, simply because there are other possible measures of such exposure. In the future, we recommend that scholars design other measures of exposure to representations of contemporary AI persons, such as a set of questions focused on recall of particular news stories (e.g. the Supreme Court case focused on the Indian Child Welfare Act). Lastly, we recommend that scholars conduct experiments focused on short-term exposure, such as comparing outcomes after exposure to no representations of AI Peoples, representations of AI Peoples from the past, and representations of contemporary AI Peoples.

More broadly, although there are many publications focused on various aspects of settler colonial theory, few researchers have used quantitative survey data to examine aspects of this theory. We urge scholars to undertake more quantitative research focused on aspects of settler colonial theory. In particular, we urge researchers in settler colonial societies to empirically examine – with survey data – the role representations may play in

legitimating other aspects of present-day settler colonialism. The results of such research could inform strategies used to challenge settler colonialism.

Conclusion

Theorists assert that in settler colonial societies, settlers endeavor to eliminate, replace, and erase Indigenous Peoples via a variety of policies, practices, ideologies, and representations (e.g. Veracini 2010). Scholars suggest that the practice of omitting contemporary Indigenous Peoples from representations is a settler colonial practice that legitimates other aspects of settler colonialism (Davis-Delano et al. 2021; Fryberg, Dai, and Eason 2023; O'Brien 2010). In this study, using survey data from 903 White Americans, we examined the question of whether less exposure to representations of famous contemporary AI persons was associated with less support for challenges to settler colonialism, via the mediators of less belief that AI Peoples are contemporary and more belief they are "a people of the past".

We found that less reported exposure to representations of contemporary AI Peoples was indirectly associated with: more modern prejudice against AI Peoples (which indicates disapproval of challenges to settler colonialism), more support for appropriation of AI cultures (which indicates more support for settler control of AI cultures), and less support for policies that challenge settler colonialism. This association occurred via mediation, in the form of belief in the ideology that AI Peoples are not contemporary and thus are "a people of the past". Aligned with the theoretical model proposed by Fryberg, Dai, and Eason (2023), as well as their unpublished research findings, our findings suggest that one likely cause of believing AI Peoples are not contemporary and are primarily "a people of the past" is omission of representations of contemporary AI Peoples. Overall, our findings provide empirical support for the theoretical premise that the settler colonial practice of omission of representations of contemporary Indigenous Peoples plays a role in legitimating other aspects of settler colonialism. Our findings suggest that increasing representations of contemporary Indigenous Peoples may increase support for challenges to settler colonialism.

Notes

1. We use the term "American Indian" because of its association with AI nation sovereignty. To reduce verbiage and ease reading we abbreviate this term as "AI". When referring to individuals or collections of individuals we use "AI people", while for multiple AI nations and pan-nation ethnic groups we use "AI Peoples".
2. Fryberg, Dai, and Eason (2023) refer to this phenomenon as a "relative omission", rather than as a commission.

3. We use the term "Indigenous" when referring to both American Indians and people indigenous to other settler colonial societies.
4. For an explanation of the trust relationship, see the measure "Support for the AI Trust Relationship" in the Method section.
5. We excluded participants from Alaska and Hawaii because settler colonial history and the present-day situation of Indigenous Peoples in these states differs in some ways from the 48 contiguous states (e.g. regarding treaty rights).

Data availability statement

The dataset associated with this journal article is available from the corresponding author on reasonable request.

Statement of ethics

This research project was approved on July 7, 2021 by the Institutional Review Board at Springfield College (#3262021), and we secured informed consent from all participants.

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