

**Exploring Implicit Bias: A Psychometric Analysis of an IAT on Past-  
Present Associations with Native Americans**

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**Abstract**

The Implicit Association Test (IAT) is one of the most popular measures in prejudice research but has not been extensively applied to the issue of attitudes or stereotypes toward Native Americans. The present work sought to address this issue by examining the measurement validity of a novel IAT that assessed implicit associations between “Native Americans” and “White Americans” with the concepts of “past” and “present”. Using a sample of over 35,000 participants recruited on the Project Implicit website, we found evidence for satisfactory psychometric properties (i.e., internal reliability, known groups differences), especially relative to other prominent IATs measuring intergroup associations. The present work then introduces and validates a reliable measure of a common and potentially impactful implicit stereotype concerning Native Americans.

### **Introduction**

Native Americans are underrepresented in popular culture. For instance, there are very few modern Native American figures in the entertainment sector (Leavitt et al., 2015). One reason for this lack of representation may come from the Settler Colonialist Theory, which argues that European Americans work to implicitly avoid and erase the contemporary representations of the Native population (Elliott-Groves & Fryberg, 2017). For example, many people think of stereotypes like “casino Indians” when they think of the indigenous tribes in the contemporary setting (Lacroix, 2011), and past-focused stereotypes of Native Americans are maintained and reinforced as a result. In another instance of this phenomenon, sport team mascots are frequently Native Americans, which are implicitly dehumanizing to indigenous people, as the mascots are usually depicted as dangerous, aggressive, and culturally foreign (Davis-Delano et al., 2021).

Furthermore, movements to support Native tribes are perceived as contradicting core American values of moral superiority, equality, and justice to average Americans (Dai et al., 2021). Native oppression is theorized as a mechanism to protect Americans’ national identity, self-concept, and sense of belonging (Kraus et al., 2019), resulting in images or depictions of Native Americans receding in contemporary life. These stereotypes and perceptions of Native Americans can also lead to adverse physical and psychological consequences, such as depression and suicide (Elliott-Groves & Fryberg, 2017).

In this paper, we investigated the implicit associations towards Native Americans on a large scale, specifically the associations of Native Americans (versus White Americans) with the concepts of “past” and “present”. To do so, we used the Implicit Association Test (IAT), a measure of implicit social cognition distinct from self-reported stereotypes or evaluations (Nosek

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& Smyth, 2007). The IAT is a categorization task that works through the assumption that the speed and accuracy of responses can indicate our underlying unconscious mental processes, which can, in turn, predict our behaviour and attitudes or stereotypes (Greenwald & Banaji, 1995). Since the measure's introduction twenty-five years ago, the IAT has been used to assess implicit associations in various intergroup contexts (Jin et al., 2022). For example, past studies using the IAT have used the measure to shed light on the mistreatment of Native Americans in the healthcare sector. Specifically, researchers found evidence of the presence of negative implicit attitudes in medical residents and physicians towards Native Americans (Zestcott et al., 2021). Overall, the IAT provides essential insights into how prejudicial associations develop, which could reveal broader impacts of such associations (e.g., Ofofu et al., 2019) and can be used to argue for more structural changes.

In the present work, we present a psychometric analysis of a novel IAT concerning past-present associations with Native Americans. This IAT has the opportunity to investigate aspects of implicit cognition regarding Native Americans that are more nuanced than attitudes towards Native versus White Americans, which has already been studied (e.g., Ratliff et al., 2020). However, this updated version of the IAT has yet to be examined regarding internal and convergent validity. The purpose of this study was to then leverage access to a large dataset of participants completing the measure to provide insight into information regarding basic validity. To do so, we draw from prior work (e.g., Axt et al., 2021; Nosek et al., 2014) that provides a template for validating indirect measures like the IAT.

### **Common Tests for Validating Implicit Association Measures**

**Mean-level effects.** A well-established measure should be sensitive to changes in the stimuli, shown as effect sizes, and measurement errors will reduce the statistical power and

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undermine the target effect size (Phillips & Jiang, 2016). As a result, a larger mean-level IAT effect would indicate a superior measure. As a result, one of the primary analyses was a simple test of the overall effect size created by the novel past-present Native American IAT.

**Known-groups differences.** Similarly, a well-established measure should be sensitive to differences between groups known to have different outcomes on the target construct (Greenwald et al., 2003). By minimizing measurement error, the variance should decrease and maximize pre-existing differences across groups in the targeted construct. Given this prior work, we also completed an analysis that compared the implicit associations (and explicit attitudes) both across all race/ethnic groups in the sample, as well as specifically between White American versus Native American participants.

**Correlations with self-report.** A satisfactory measure should also correlate with other related well-established measures strongly. Again, measurement error would undermine this correlation, introducing noise into measurement that will suppress correlations with related constructs. However, the IAT and self-report methods measure distinct but related constructs (Hofmann et al., 2005). Thus, a moderate correlation should be expected, and stronger correlations between IAT results and self-report indicate better quality of the IAT design (Axt, 2018). We then investigated the correlation between the IAT and 1) a parallel self-report measure of past-present Native American stereotypes as well as 2) a series of conceptually related self-report items (e.g., perceptions of Native American representation in contemporary American culture).

**Internal reliability.** Higher internal reliability does not necessarily mean a higher quality of measure (Axt et al., 2021), but at least moderate internal reliability should be strived for

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(Tavakol & Dennick, 2011). In the present work, internal reliability was calculated by correlating *D* scores from IAT blocks 3 and 4 and blocks 6 and 7.

### **Method and Procedure**

#### **Participants**

We analyzed data from volunteers completing IATs at the Project Implicit website (<https://implicit.harvard.edu/implicit/selectatest.html>). The participants ( $N = 43,164$ ,  $M_{\text{age}} = 35.82$ ,  $SD_{\text{age}} = 14.80$ , 58.0% White, 65.2% female) completed the ‘Native IAT’ on the demonstration website. In this sample, we excluded participants who responded faster than 300 ms in more than 10% of the trials throughout the IAT (3.6% of participants with IAT *D* scores; Nosek et al., 2007).

#### **Measures**

Participants completed the IAT, demographic survey, and a self-report questionnaire in a randomized order. In the demographic survey, participants were asked to report their gender identity, age, education level, ethnicity, country, religion, etc., in the demographic survey. After the study was finished, participants received feedback on their IAT performance and were debriefed.

#### ***Implicit Association Test***

Implicit associations were measured with a seven-block IAT consisting of common Native (“Homma,” “Wahchumwah,” “Ojibway”) and White American last names (“Scott,” “Clark,” “Wright”) and words related to either ‘Past’ (“Deceased,” “Vanished,” “Dead”) or ‘Present’ (“Alive,” “Current,” “Living”). Items were presented one at a time, and the participants were instructed to answer correctly as fast as possible by pressing the ‘E’ or ‘I’ keys on the

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keyboard. Participants were informed if they made an error, which had to be corrected for the task to proceed. See Appendix C for a table of words used in the IAT.

In the first two blocks, participants practiced categorizing ‘Present’ versus ‘Past’ words and Native versus White American last names. Participants then categorized previously practiced words and last names following either (1) ‘Past’-‘Native’ and ‘Present’-‘White’ or (2) ‘Present’-‘Native’ and ‘Past’-‘White’ pairing rules in the following four sections. The order in the latter four sections was randomized, but each condition was tested twice. IATs were designed based on recommendations in (Nosek, Smyth, et al., 2007) and were scored by the *D* algorithm to produce individual *D* scores (Greenwald et al., 2003), with more positive *D* scores indicating stronger Native-past, White-present associations.

### ***Explicit preference for Native vs. European American***

Participants completed a single question measuring their explicit attitudes towards Native Americans relative to European Americans, with responses ranging from 1 = "I strongly prefer Native Americans to European Americans." to " 7 = "I strongly prefer European Americans to Native Americans." with a neutral option of 4 = "I like Native Americans and White Americans equally." Prior work suggests this is a valid approach for measuring intergroup attitudes (Kurdi et al., 2018).

### ***Native American opinion survey***

The survey measured participants’ beliefs and perceptions of various outcomes, such as the contemporary presentation of Native Americans, self-identification with American values, and support for policies favouring Native Americans. It consisted of twenty-seven items in a Likert-scale format, ranging from 1 = “Strongly agree” to 7 = “Strongly disagree” with a neutral option of 4 = “Neither agree nor disagree”. For our analysis, we only focused on eight items

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believed to be most relevant to the IAT. These eight questions were selected because they were thought to be related to concerned implicit and explicit attitudes and could be correlated with IAT  $D$  scores. See Appendix A for all the item codes and stems, with an asterisk marking the eight items that were included in our analysis.

### Results

**Internal reliability.** We found a correlation of  $r = 0.53$ , which shows moderate internal reliability, and is consistent with other versions of the IAT (Greenwald & Lai, 2020).

**Overall IAT  $D$  score.** Within our sample, the overall  $D$  score was  $M = 0.31$  ( $SD = 0.41$ ), and a one-sample  $t$ -test against a neutral value of 0 was significant,  $t(35184) = 140.18$ ,  $p < .001$ ,  $d = .75$ . This demonstrated a relatively large racial effect on participants' implicit associations, showing a robust association between “Native American” and “past” and “White American” with “present”.

**Differences across all ethnic backgrounds.** The overall mean IAT  $D$  scores and explicit attitudes ( $N = 35185$ ,  $M_{D\_score} = 0.31$ ,  $SD_{D\_score} = 0.41$ ,  $M_{explicit} = 3.69$ ,  $SD_{explicit} = 1.06$ ) after removing empty rows with ethnic information and explicit attitudes are displayed in Figures 1 and 2. See Appendix D and E for all mean  $D$  scores, explicit attitudes, and their corresponding standard deviation separated by race/ethnicity.

We conducted one-way ANOVA and post-hoc Tukey tests for both measures to verify group differences and indeed found reliable differences,  $F_{D\_Score}(7, 35177) = 102.4$ ,  $p < .001$ ,  $\eta^2 = 0.02$  and  $F_{Explicit\ Attitude}(7, 35177) = 809.7$ ,  $p < .001$ ,  $\eta^2 = 0.14$ . Initially, we expected significant differences between White and minority participants; meanwhile, we anticipated no significant differences should be observed among minority groups. For the IAT, the results suggest no significant  $D$  score differences between the American Indian, Native Hawaiian or Pacific



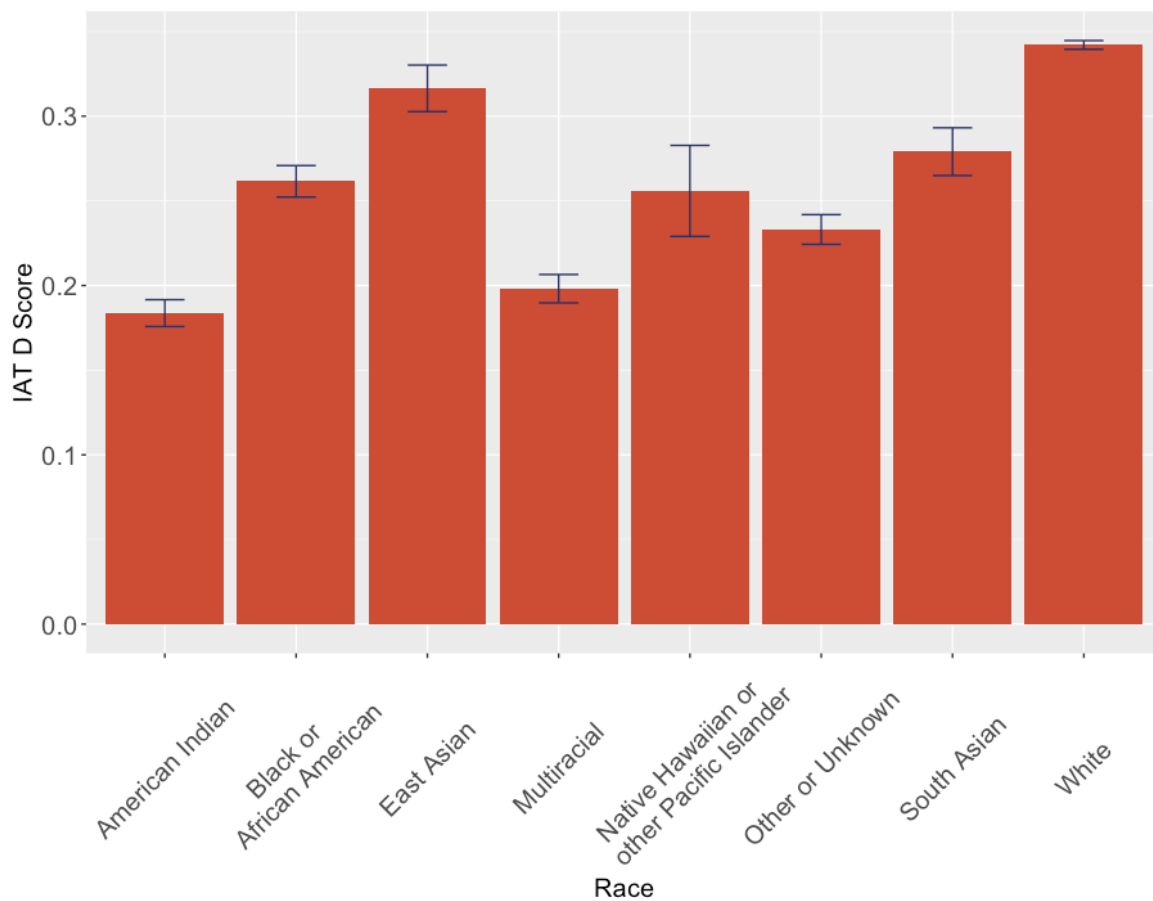
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Islanders, and Multiracial participants. At the same time, there also were no significant differences seen between East and South Asians as well as White participants in terms of their implicit associations.

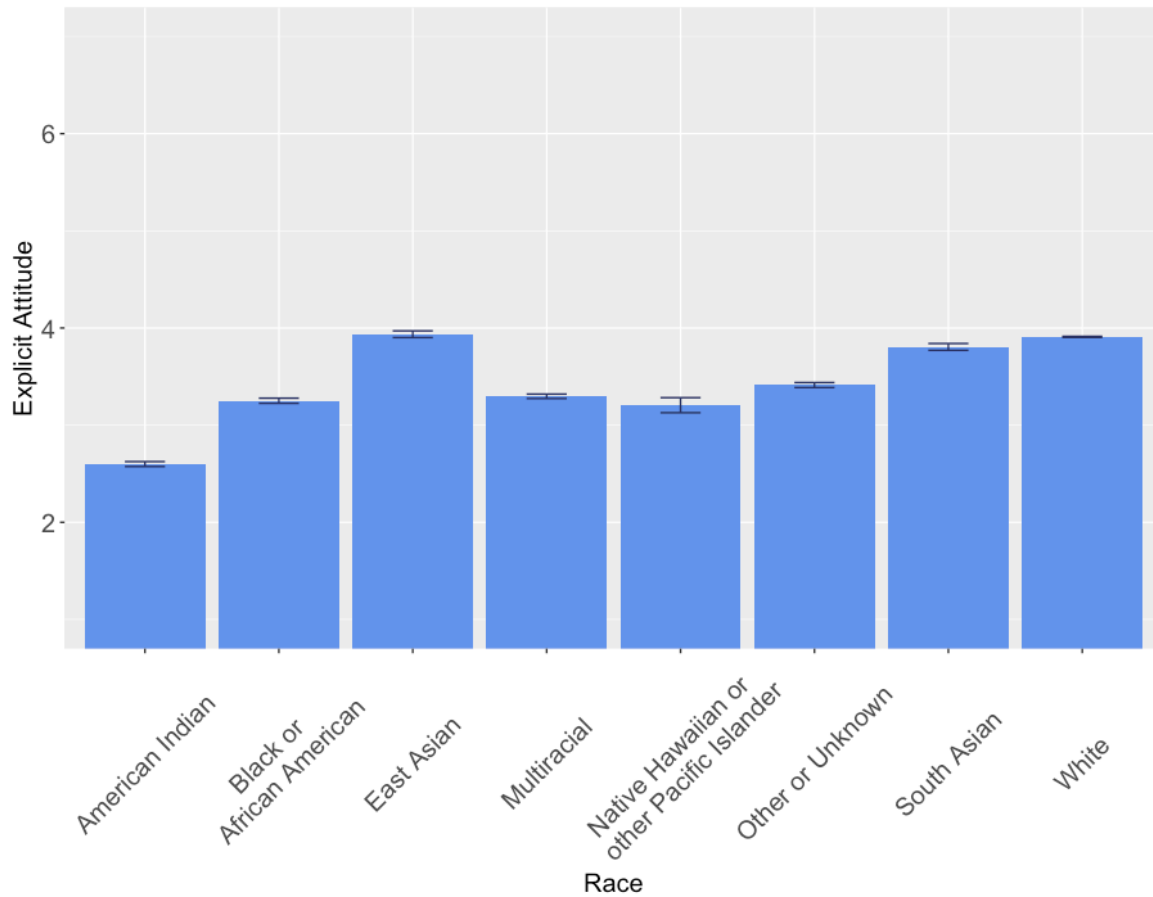
For explicit attitudes, American Indian participants differed from all other participants. In contrast, East Asian, South Asian, and White participants did not differ from each other significantly, following the same pattern observed in *D* scores. See details in Appendix F and G.

**Figure 1**

*Mean IAT D scores across race/ethnicity*



*Note.* A more positive value indicates a stronger implicit association of Native/past and White/present.

**Figure 2***Mean explicit attitudes across race/ethnicity*

*Note.* A more positive value indicates a stronger explicit preference of White Americans relative to Native Americans.

**Known-groups differences between White and Native American participants.** We found evidence of known group differences between Native ( $N = 2737$ ,  $M_{D\_score} = 0.18$ ,  $SD_{D\_score} = 0.41$ ,  $M_{explicit} = 2.60$ ,  $SD_{explicit} = 1.33$ ) and White Americans ( $N = 23817$ ,  $M_{D\_score} = 0.34$ ,  $SD_{D\_score} = 0.40$ ,  $M_{explicit} = 3.91$ ,  $SD_{explicit} = 0.86$ ) in their  $D$  scores and explicit attitudes, as shown in Figure 1 and 2. Specifically, we conducted an independent  $t$ -test with the homogeneity of

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variance assumption to investigate the magnitude of the difference between White Americans (or European Americans, for the explicit attitude measure) and Native Americans. For IAT  $D$  scores, we found a reliable difference between these two groups,  $t(27920) = -20.24, p < .001, d = 0.40$ . The same was true for explicit attitudes, which produced a notably larger effect size,  $t(26552) = -70.385, p < .001, d = 1.42$ .

**Correlations with self-report outcomes.** We selected eight questions from the twenty-seven-item questionnaire for our analysis of implicit-explicit correlations. First, we did a correlational analysis among the eight self-report measures, the IAT, and the explicit attitude item (see Figure 3 for a correlation heat map and Appendix B for correlational values). Of note, IAT  $D$  scores and self-reported prejudice correlated at  $r = .18, p < .001, 95\% \text{ CI } [.1652, .1855]$ , and that the IAT was reliably correlated with each of the eight outcome variables.

Next, we conducted multiple linear regression analyses, predicting each of the eight outcome variables from participants' implicit and explicit attitudes. We found that, for each outcome, both self-reported attitudes and IAT  $D$  scores were reliable and independent predictors, demonstrating incremental predictive validity. However, when looking at the corresponding  $R^2$  values, we found that minimal variance was well-explained by the regression models (e.g., the greatest  $R^2$  in our linear regression analyses was .09). See Table 1 for detailed coefficients.

**Table 1**

*Linear regression of  $D$  score, explicit attitude and the eight self-report items for all participants*

	setx3	setx8	seta2	seta5	setb1	setb2	setb3	setb6
(Intercept)	1.59	3.30	2.64	6.97	2.97	3.47	6.57	6.79

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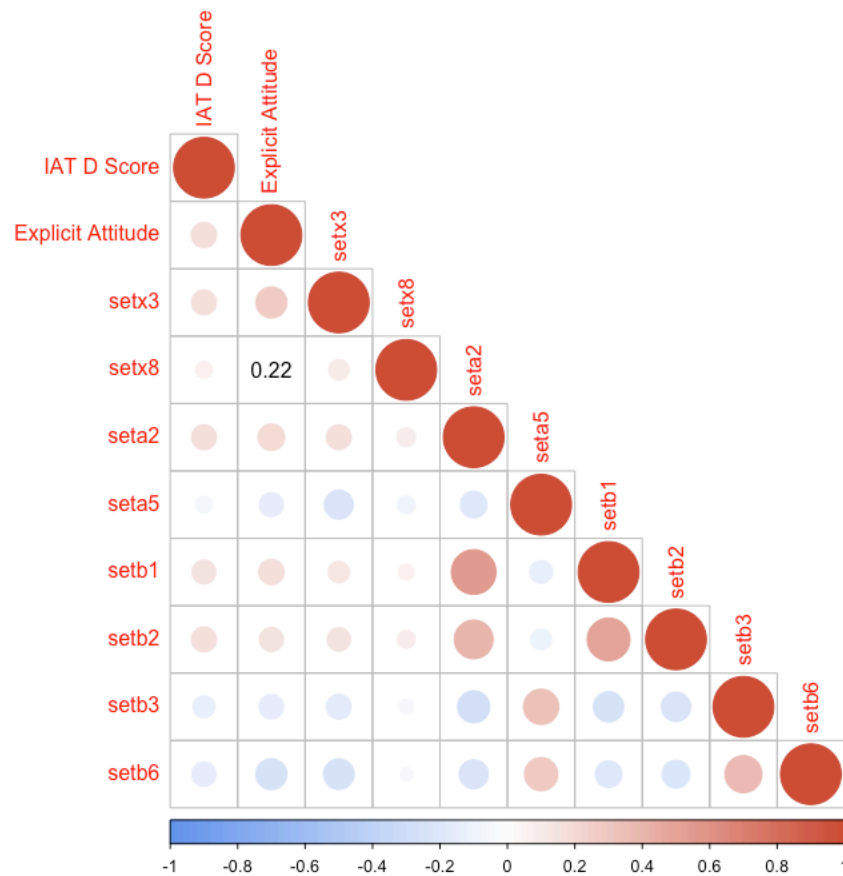
IAT <i>D</i> score	0.45	0.23	0.70	-0.15	0.56	0.55	-0.36	-0.45
Explicit Native-White preference	0.38	-0.04	0.29	-0.14	0.28	0.20	-0.22	-0.37

*Note.* All coefficients have  $p < .001$ .

**Figure 3**

*Correlation Matrix Visualization of IAT D Score, Explicit Preference of Native Americans*

*Versus White Americans and Selected Eight Explicit Attitude Questionnaire for All Participants*



*Note.* ‘0.22’ indicates a correlation with a  $p$ -value greater than 0.22; all other correlations have  $p$ -values of  $p < .001$ .

### Discussion

This work presents an initial investigation into the psychometric properties of a novel IAT measuring associations between White and Native Americans with the concepts of “past” versus “present”. Results found suitable levels of validity based on a number of different analyses. First, the internal reliability of the IAT was  $r = 0.53$ , which was moderate and consistent with prior uses of the IAT (Greenwald & Lai, 2020). While it would be better to obtain even greater internal reliability, the current levels suggest that the measure could be used to provide reliable estimates of past-present associations across different samples.

Next, we examined implicit and explicit attitudes across all eight ethnic groups and conducted one-way ANOVA to verify differences across groups. We initially hypothesized that there were  $D$  scores and explicit attitude differences between White and minority groups, which was confirmed with our analysis. Unexpectedly, however, East and South Asian participants had similar implicit and explicit attitudes toward Native Americans as White. Other minority participants had similar attitudes when compared to each other but were still significantly different from our American Indian participants. Notably, we did not observe a large overall  $\eta^2$  in these ANOVA analyses ( $\eta^2_{D\ Score} = 0.02$ ,  $\eta^2_{Explicit\ Attitude} = 0.14$ ), suggesting that even though there were significant differences, the norm perception of Native Americans did not show substantial variation across groups, a finding that could be viewed as support for Settler Colonialism Theory, which argues for a more culturally shared association between Native Americans and the concept of the “past”.

Second, we verified the predictive validity of the IAT by conducting a multiple linear regression analysis to predict several outcomes in the self-report questionnaire. These items touched on a number of conceptually related outcomes, such as participants’ perceptions of the

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contemporary cultural identity of Native Americans, self-identification with American values, and support for policies concerning the treatment of Native Americans. From our analyses, both the implicit and explicit attitudes measures independently predicted all participants' response outcomes in nearly all the selected questionnaire items, revealing strong support for the predictive validity of the 'Native' IAT. Moreover, we found evidence that participants' *D* scores and explicit preferences predicted their self-report question outcomes regarding their perception of the racial norm against Native Americans. These results provide further evidence of the generally strong psychometric properties of the measure, though subsequent work will want to test this question using more advanced analyses, such as structural equation modelling (e.g., Buttrick et al., 2020).

Regarding previous work, our findings are consistent with earlier findings on implicit Native attitudes, where negative implicit attitudes were observed (e.g., Zestcott et al., 2021) since we found moderate *D* scores with a mean value of 0.31 among all participants (Greenwald et al., 2015) showing an association between Native Americans and the concept of the "past". We speculate that this might be due to using a similar design of IAT in previous work and the IAT itself as a well-established indirect measure (Greenwald et al., 2022). In terms of implicit and explicit attitudes or stereotypes predicting self-report responses, the results from this study showed promising preliminary evidence for future investigations on the 'Native' IAT predictive validity, as *D* scores predicted all eight outcomes and explicit attitude predicted seven. Future work may look to apply the measure to other consequential outcomes, such as policy beliefs regarding land rights and the financial independence of Indigenous populations.

Regarding how this work speaks to the real world, governmental actions such as policies to abolish American Indian representations in sports team mascots could help shape a better

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social norm (Jimenez et al., 2023), which may in turn change the implicit associations studied here. A more progressive social norm regarding the representation of Native Americans could also reduce prejudice towards Native populations, which could in turn limit some of the negative psychological consequences known to follow from experiencing prejudice and discrimination (Lee, 2019; Stangl et al., 2019). Additionally, more resources and programs to support indigenous artists could potentially increase parasocial contact between Native Americans and other groups (e.g., TV shows featuring aboriginal performers and indigenous pop music artists), as parasocial contact can also effectively reduce prejudice (Bond, 2021). That is, greater exposure to present-day Native populations may be an effective means of reducing the type of implicit prejudice observed here.

### **Limitations and Future Directions**

The present work also has several limitations. For one, the sample was not representative of any identifiable population, and it is reasonable to assume that the participants who visited the Project Implicit website were already interested in the topic of implicit attitudes and prejudice. A skewed sample could then limit our research findings to the specific group of participants we studied, thus reducing the generalizability of our conclusions. In this case, our research findings could be more applicable to people interested in implicit attitudes than those who are not. Furthermore, this could help explain the minimal effect size found in the ANOVA analysis, as the participants interested in this field of research may be more aware of the relevant attitude and try to conceal it due to social desirability concerns, meaning greater variation across racial-ethnic groups (at least in self-reported attitudes) could have then been observed with a more representative sample. As a result, a clear direction for future research is to use other sample sources to see if similar results arise.

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In addition, the study was not limited to North American participants. In the eligible data, we found participants coming from 138 countries, which could pose a severe threat to the psychometric evidence of the measure. The erasure of aboriginal identities is a prominent societal issue in North America and other places (e.g., Australia) but less so in other countries (e.g., Western Europe). Given this variability in exposure or relevance to this issue, some participants (e.g., recent immigrants to North America and participants from other countries) may lack the familiarity needed to allow the measure to work correctly. Future studies can address this concern by focusing on North American participants, or only expand to other countries that may have similar histories with the treatment of indigenous populations. We speculate that a more focused analysis may show even stronger evidence of the measure's validity and reliability, which would increase statistical power and enable easier detection of group differences and produce more accurate findings.

Lastly, though this measure was able to assess implicit Native stereotypes with reasonable reliability and validity, more psychometric evidence is needed to validate this IAT before being widely applied in experimental research. Namely, there were significant, but weak correlations in terms of predictive validity and effect sizes were generally small concerning known group differences. As addressed above, restricting the sample with focused criteria and increasing the representativeness of the sample could improve both statistical outcomes. It may also suggest that the underlying mechanisms are unclear and not considered in the measure design or analysis to detect theoretical significance. For instance, we did not consider any other mediators in the linear regression analysis, yet they could predict the outcomes indirectly. For example, motivation to control or express prejudice could affect the expression of prejudice and response in the self-report survey (Forscher et al., 2015). We hypothesize that controlling for



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such variables could clarify the relationship between our implicit and self-report variables, and indeed this approach has been productive in other research in implicit social cognition (e.g., political orientation in Choma & Hafer, 2009; perceived norms in Pryor et al., 2013).

While our study provides valuable insights into the prejudice toward the Native population, there are several avenues for future research that could build upon our findings. For instance, it would be worthwhile to interventions that could alter the IAT performance. Imagined intergroup contact has shown efficacy in improving both implicit and explicit attitudes (Turner & Crisp, 2010). To make this more effective, the imagined contact can be empathizing with a Native American or a counter-stereotypical Native American (Finnegan et al., 2015; Vezzali et al., 2020). This is an example of a strategy with practical implications for policymakers to promote the “modern” Native identity (Crisp et al., 2009), and our ‘Native’ IAT measure could be used to evaluate the effectiveness of such an intervention.

We could also apply interventions related to moral values (e.g., multiculturalism) to reduce the bias observed here (De Freitas & Cikara, 2018). This approach might be particularly powerful because, according to the Settler Colonialism Theory, the aggregated reactions in the European Americans to removing Native mascots of sports teams stemmed from the contradiction with American values of moral superiority, equality, and justice (Dai et al., 2021; Glenn, 2015). A more morally-focused intervention would then target this theoretical cause, which could create more meaningful and lasting changes in bias against the Native Americans. Finally, the ‘Native’ IAT could also be useful in detecting longitudinal changes in attitudes toward the indigenous population to track the progression of social norms and how future policy might shape the general public’s attitudes toward Native Americans.

### **Conclusion**

In conclusion, our study aimed to investigate the psychometric properties of the ‘Native’ IAT, which measured implicit associations toward Native Americans concerning an association with the notion of “past” and “present”. Our findings suggested that this novel IAT was a reliable measure with acceptable levels of internal reliability. In addition, the IAT also demonstrated moderate levels of predictive validity and demonstrated expected instances of known group differences. However, the present work on this measure was weakened by the use of non-representative samples, which could limit the generalizability of findings. Therefore, further research is needed to validate the ‘Native’ IAT before being widely applied in research. Overall, this study provided valuable insights into the prejudice toward the indigenous population. For future work, the ‘Native’ IAT measure could help evaluate the effectiveness of interventions to reduce racial bias against Native Americans in promoting more equal and better outcomes for Native American populations.

**Statement of Contribution**

Dr. Jordan Axt provided data from the Project Implicit website and several background papers to Z.G., then Z.G. conducted more literature reviews on this basis. Z.G. wrote the manuscript independently, and Dr. Jordan Axt provided critical feedback on the writing and validating analytical methods.

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**Appendix A**

*Native American Opinion Survey Questionnaires*

Item	Content
setx1	I rarely hear information about Native Americans in today's society.
setx2	When I think about successful Americans, Native Americans do not come to mind.
setx3*	I rarely think about Native Americans in contemporary society.
setx4	Most people who claim Native American heritage today are just looking for a handout.
setx5	There are hardly any Native American people left in U.S. society.
setx6	In contemporary society, there are not any real Native American individuals.
setx7	It is not really my problem if Native Americans need help.
setx8*	Discussions of Native American issues prevent the United States from being judged positively.
setx9	The number of TV shows/movies featuring Native Americans as main characters and in storylines has increased in recent years. In the past month, have you watched any TV show episodes/movies featuring Native Americans?
seta1	Being an American is an important part of my identity.
seta2*	The United States military is the best in the world.
seta3	Hard-working Native Americans have an equal chance to become rich as hard-working White Americans.
seta4	Schools should not use Native American nicknames and logos/mascots for their sport teams.
seta5*	The U.S. school system should teach students about the diversity of Native American societies and cultures.
seta6	The U.S. should return sacred tribal lands to Native Americans.
setb1*	It is important to me to view myself as an American.
setb2*	One of the important things that we have to teach children is to respect the leaders of our nation.
setb3*	Overall, Native Americans receive lower quality social services (such as type of health care or day care) than Whites in the US.

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setb4	The U.S. government should provide incentives for the mainstream U.S. media to portray present-day Native American people.
setb5	The U.S. government should monitor and penalize discrimination against Native American individuals and groups.
setb6*	Native American tribes should be able to create and enforce their own rules, policies, and laws on reservations without interference from U.S. or state governments.
setc1	I am strongly committed to my nation.
setc2	Relative to other nations, we are a very moral nation.
setc3	Native Americans have an equal chance of success as White Americans.
setc4	The U.S. school system should teach students about the genocide experienced by Native Americans.
setc5	The U.S. government should provide Native American tribes with resources to improve health and education for Native Americans on and near Native American reservations
setc6	The U.S. government should nullify all treaties between the U.S. government and Native American tribes.
setd1	I love the United States.
setd2	The United States is better than other nations in most respects.
setd3	White people in the U.S. have certain advantages over Native Americans because of the color of their skin.
setd4	The U.S. school system should teach students about treaties Native American tribes have with the U.S. government as well as how many of these treaties were – and still are – broken.
setd5	The U.S. should officially apologize to Native American tribes for all broken treaties, illegal appropriation of land, forced displacement, and massacres perpetrated against Native Americans.
setd6	The U.S. government should not allow any Native American tribes to govern themselves.

*Note.* \* Eight explicit norm perception questionnaire items were selected and analyzed.

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**Appendix B**

*Correlation Matrix of IAT D Score, Explicit Preference of Native Americans Versus White*

*Americans and Explicit Attitude Questionnaire for All Participants*

	<i>D</i> Score	Explicit Attitude	setx3	setx8	seta2	seta5	setb1	setb2	setb3	setb6
<i>D</i> Score										
Explicit Attitude	0.18									
setx3	0.16	0.26								
setx8	0.07	-0.01*	0.11							
seta2	0.17	0.20	0.17	0.09						
seta5	-0.07	-0.16	-0.22	-0.09	-0.19					
setb1	0.15	0.18	0.12	0.07	0.54	-0.14				
setb2	0.17	0.16	0.14	0.09	0.40	-0.12	0.49			
setb3	-0.13	-0.16	-0.16	-0.06	-0.27	0.34	-0.24	-0.22		
setb6	-0.15	-0.26	-0.25	-0.04	-0.23	0.31	-0.19	-0.20	0.38	

*Note.* \* Insignificant correlation

### Appendix C

*List of All Words Used in the IAT*

Category	Items
Present	Alive, Current, Living, Present, Now, New, Modern, Contemporary
Past	Deceased, Vanished, Dead, Extinct, Ancient, Historic, Past, Old
White American last names	Scott, Clark, Wright, Anderson, Adams, Campbell, Nelson, and Mitchell
Native American last names	Homma, Wahchumwah, Ojibway, Pappan, Apache, Akiwenzie, Chippewa, and Suwake

**Appendix D***Mean D Scores and Corresponding Standard Deviation Grouped by Race/Ethnicity*

Race	Mean	SD
American Indian	0.18	0.41
East Asian	0.32	0.40
South Asian	0.28	0.42
Native Hawaiian or other Pacific Islanders	0.26	0.43
Black or African American	0.26	0.42
White	0.34	0.40
Other or Unknown	0.23	0.40
Multiracial	0.20	0.42



**Appendix E***Mean Explicit Attitudes and Corresponding Standard Deviation Grouped by Race/Ethnicity*

Race	Mean	SD
American Indian	2.5992	1.3349
East Asian	3.9360	1.0136
South Asian	3.8052	1.0373
Native Hawaiian or other Pacific Islander	3.2054	1.2446
Black or African American	3.2512	1.2064
White	3.9084	0.8615
Other or Unknown	3.4128	1.1718
Multiracial	3.2968	1.1434

**Appendix F**

*Tukey Post-Hoc Test for IAT D Scores across Groups*

		diff	p adj
American Indian	East Asian	0.13	0.00
	South Asian	0.10	0.00
	Native Hawaiian or Pacific Islanders <sup>^</sup>	0.07	0.11
	Black or African American	0.08	0.00
	White	0.16	0.00
	Other or Unknown	0.05	0.00
	Multiracial <sup>^</sup>	0.01	0.90
East Asian	South Asian <sup>^</sup>	-0.04	0.53
	Native Hawaiian or Pacific Islanders <sup>^</sup>	-0.06	0.41
	Black or African American	-0.05	0.02
	White <sup>^</sup>	0.03	0.61
	Other or Unknown	-0.08	0.00
	Multiracial	-0.12	0.00
South Asian	Native Hawaiian or Pacific Islanders <sup>^</sup>	-0.02	0.99
	Black or African American <sup>^</sup>	-0.02	0.96
	White	0.06	0.00
	Other or Unknown <sup>^</sup>	-0.05	0.09
	Multiracial	-0.08	0.00
Native Hawaiian or Pacific Islanders	Black or African American <sup>^</sup>	0.01	1.00
	White	0.09	0.02
	Other or Unknown <sup>^</sup>	-0.02	0.99
	Multiracial <sup>^</sup>	-0.06	0.36
Black or African American	White	0.08	0.00
	Other or Unknown <sup>^</sup>	-0.03	0.32
	Multiracial	-0.06	0.00
White	Other or Unknown	-0.11	0.00
	Multiracial	-0.14	0.00
Other or Unknown	Multiracial <sup>^</sup>	-0.03	0.07

*Note.* <sup>^</sup> Insignificant differences with  $p > .05$ .

**Appendix G**

*Tukey Post-Hoc Test for Explicit Attitudes across Groups*

		diff	p adj
American Indian	East Asian	1.34	0.00
	South Asian	1.21	0.00
	Native Hawaiian or Pacific Islanders	0.61	0.00
	Black or African American	0.65	0.00
	White	1.31	0.00
	Other or Unknown	0.81	0.00
	Multiracial	0.70	0.00
East Asian	South Asian <sup>^</sup>	-0.13	0.10
	Native Hawaiian or Pacific Islanders	-0.73	0.00
	Black or African American	-0.68	0.00
	White <sup>^</sup>	-0.03	0.99
	Other or Unknown	-0.52	0.00
South Asian	Multiracial	-0.64	0.00
	Native Hawaiian or Pacific Islanders	-0.60	0.00
	Black or African American	-0.55	0.00
	White <sup>^</sup>	0.10	0.05
Native Hawaiian or Pacific Islanders	Other or Unknown	-0.39	0.00
	Multiracial	-0.51	0.00
	Black or African American <sup>^</sup>	0.05	1.00
	White	0.70	0.00
Black or African American	Other or Unknown	0.21	0.03
	Multiracial <sup>^</sup>	0.09	0.85
	White	0.66	0.00
White	Other or Unknown	0.16	0.00
	Multiracial <sup>^</sup>	0.05	0.77
Other or Unknown	Other or Unknown	-0.50	0.00
	Multiracial	-0.61	0.00
	Multiracial	-0.12	0.00

*Note.* <sup>^</sup> Insignificant differences with  $p > .05$ .

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