

# **A Psychometric Analysis of an Anti-Semitism IAT**

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### **Abstract**

The Implicit Association Test (IAT) ranks among the most widely used measures in research on intergroup relations and implicit social cognition. Recently, an IAT was made available that focused on implicit attitudes towards Jewish people. The present work provided a psychometric analysis of the an IAT measuring strength of associations between the categories “Jewish” and “Christian” with the concepts of “Good” or “Bad.” Using a large sample of over 23,000 participants recruited through the Project Implicit website, we found evidence of satisfactory psychometric properties when compared with other prominent IATs. The Jewish IAT demonstrated moderate internal reliability ( $r = 0.63$ ), with overall IAT  $D$  scores suggesting a small implicit preference for Christians. Conceptually relevant self-report measures correlated significantly with both IAT  $D$  score and explicit attitude items. These findings highlight the potential of the Jewish IAT to measure implicit antisemitism, and the test could be applied productively to several research questions.

## Introduction

Implicit attitudes are evaluations or associations held about a person, group, or concept that are less aligned with conscious attitudes or intentions (De Houwer et al., 2009). These attitudes are formed through experiences, stereotypes, and cultural messages (Greenwald & Banaji, 1995). In contrast, explicit attitudes can be readily accessed through introspection, meaning explicit attitudes can be captured via self-report but implicit attitudes cannot. Implicit and explicit attitudes are generally believed to be related but distinct constructs (Nosek, 2005). For instance, one meta-analysis examining the relation between one measure of implicit attitudes, the Implicit Association Test (IAT; Greenwald et al., 2009) and explicit self-report measures, Hofmann et al., (2005) found an effect size of  $r = .24$ . However, while the correlation between implicit and explicit attitudes is consistently positive, the strength of the relationship varies by topic (Nosek, 2005). The relationship between implicit bias and intergroup behaviour is also small but consistent (Kurdi et al., 2019; Buttrick, Axt et al., 2020), so it is possible that instances of discriminatory behavior have a differential relationship with explicit versus implicit attitudes (Nosek et al., 2007).

Antisemitism, a severe form of prejudice against Jewish people, has persisted throughout history and continues to manifest in various ways today. For instance, the FBI's 2022 report highlights this ongoing issue, with anti-Jewish hate crimes accounting for over 60% of religious hate crimes in the United States. Tragic events like the 2018 attack on the Tree of Life synagogue and the 2017 "Unite the Right" rally in Charlottesville stand as recent reminders of the stark dangers of antisemitism. However, understanding the causes and prevalence of antisemitism requires looking further than outward expressions of hatred. As previously stated, many prejudices operate at the implicit level, making it crucial to employ indirect measures for their

assessment. One potential explanation for the persistence of implicit biases that counter explicit, self-reported attitudes lies in system justification theory (Jost & Banaji, 1994). This theory proposes that individuals hold a subconscious motivation to maintain the existing social order, even if it results in certain groups being disadvantaged. Stereotyping, according to this perspective, serves a system justification perspective, reinforcing existing hierarchies and fostering “false consciousness.” It is then crucial to move beyond relying solely on explicit measures of prejudice and also explore the development and expression of more indirect forms of prejudice.

The IAT – the most popular measure of implicit attitudes (Nosek et al., 2011) – offers a unique window into implicit cognition. Unlike self-report measures, the IAT operates indirectly. The test involves categorizing words or images, typically representing contrasting concepts (e.g., Black and White, Good and Bad). Throughout the task, participants are presented with different categorization instructions during the IAT’s various blocks. In one block, participants may be instructed to press the “i” key when words related to “Good” or a Black face appears (and the opposite key for “Bad” words and White faces). Other stages will use the reverse pairing. The reaction time needed to correctly categorize stimuli is measured, and the IAT works on the assumption that faster response times indicate a stronger association or mental link between concepts. The difference in reaction times between congruent and incongruent pairs can be used to calculate a *D* score (Greenwald et al., 2003), which indexes the relative differences in reaction times across the two possible pairings that make up an IAT.

It has been demonstrated that the IAT can effectively reveal implicit biases that may not be apparent through self-reported measures (Greenwald & Banaji, 1995). In social psychology, the IAT is often used to investigate implicit associations between social groups. For instance, a

study by Axt et al., (2014) examined implicit associations between religion and social status. The results of a modified IAT (the multi-category IAT) demonstrated that generally, participants favoured their own religion (ingroup), followed by Christianity, then Judaism, Hinduism or Buddhism, and then Islam. While an ingroup preference remained present, not all findings were matched when explicit measures were used. For example, explicit measures showed that Judaism was viewed more positively than Christianity by Hindus and Buddhists, but the same did not emerge in the IAT measure.

In another study, Rudman et al., (1999) looked at implicit associations between Jewish or Christian names and pleasant or unpleasant words. Both Christian and Jewish participants showed superior performance on IAT tasks where their ingroup was mapped to pleasant words. This study also provided evidence that IAT effects were not associated with prior exposure (i.e., self-reported familiarity or contact with Jewish people), meaning the implicit preference measured is independent of a preference for familiarity. The impact of minority vs. majority social status on implicit association has also been examined by Rudman et al., (2002). Here, results found that each minority group (Jewish, Asian, overweight, and poor participants) saw themselves as lower in status than the majority group (Christian, White, slim, and rich participants). However, among minority groups, an implicit ingroup preference remained present and the effect was strongest for group members of minorities with higher social status. For example, Jewish participants showed an implicit bias towards Judaism even though they explicitly rated themselves as lower in status than the majority group (Christians). These findings reinforce that the IAT is a valuable tool for uncovering implicit biases that may not always align in direction or magnitude with self-reported preferences.

In the present study, we investigated the implicit associations between Christian people and Jewish people with words representing good or bad using a novel IAT that was recently added to the Project Implicit demonstration site in May 2023. To capitalize on this large sample ( $N > 23,000$ ) spanning many religious background, we present a psychometric analysis of the measure that may aid future efforts to use this antisemitism IAT. Below, we detail the key analyses that will be completed in order to assess the measure's psychometric properties.

### **Common Analyses of Implicit Association Measures**

***Mean effects.*** One analysis focused on the overall effect size of the IAT, which reflects the strength of implicit bias between religious groups. This is a well-established validation approach, as the reasoning is that as measurement error decreases, the overall effect size increases (Nosek et al., 2014).

***Known-group differences.*** In order for a measure to be effective, it needs to be sensitive to known group differences (Greenwald et al., 2003). In the present work, an analysis was completed to measure the variation in implicit and explicit attitudes across all religious backgrounds, and specifically between Jewish and Christian participants. The logic of this analysis is that more sensitive measures will maximize attitudinal differences between Jewish and Christian participants.

***Correlations with direct measures.*** The IAT and self-report measures concerning antisemitism are expected to reflect distinct but related constructs, meaning we should expect a moderate but reliable correlation between the two measurement forms (Hofmann et al., 2005). Specifically, we investigated the correlation between IAT *D* scores and self-report measures of Christian-Jewish preference, as well as a number of self-report items concerning attitudes or beliefs about Jewish people.

**Internal reliability.** Greater internal reliability doesn't automatically equate to enhance quality of measurement, but all else being considered equal, greater reliability is preferable (Axt et al., 2021). In this analysis, internal reliability was calculated by correlating the IAT *D* score from IAT blocks 4 and 7 with the *D* score from blocks 3 and 6 (Greenwald et al., 2022).

## Methods

### *Participants*

Data was collected from volunteers who completed the study on the Project Implicit demonstration website (<https://implicit.harvard.edu/implicit/selectatest.html>), and selected the "Jewish IAT" task between May 1, 2023 and December 31, 2023. Analyses focused on those participants who completed the IAT ( $N = 23,838$ ,  $M_{age} = 33.41$ , 51.4% female, 57.3% White). Participants were excluded from data analysis if more than 10% of critical IAT trials were faster than 300 milliseconds (Greenwald et al., 2003).

### *Measures*

In a randomized order, participants answered demographic questions, responded to a self-report questionnaire, and completed the Jewish IAT. In the demographic survey, participants were asked to report their gender identity, age, education level, ethnicity, country, religion, and other relevant variables. After completing the study, participants were given feedback on their IAT performance and debriefed.

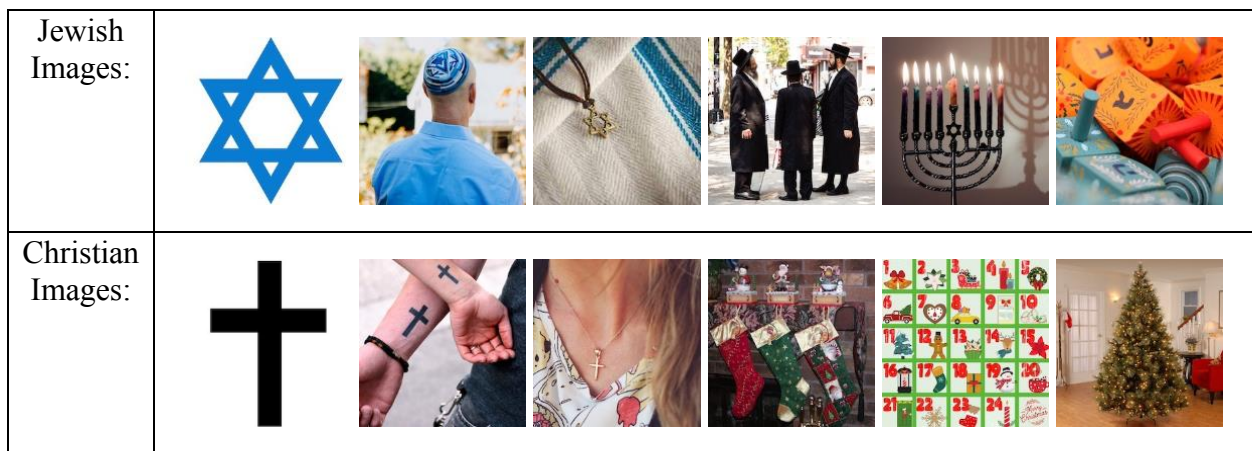
### *Implicit Association Test*

Participants completed a seven-block IAT. The IAT consisted of six images indicative of Jewish people and six images indicative of Christian people (see Figure 1), and words related to 'Good' ("Beautiful," "Friendship," "Attractive," "Glad," "Fabulous," "Happy," "Spectacular," "Fantastic") and 'Bad' ("Nasty," "Humiliate," "Hate," "Evil," "Poison," "Awful," "Horrific,"

“Selfish”). Participants were directed to respond quickly by pressing the ‘E’ or ‘I’ keys on the keyboard as each item was presented individually. Immediate feedback was given for errors, which had to be corrected before the task continued. IAT performance was scored by the *D* algorithm (Greenwald et al., 2003), such that higher scores meant stronger associations between Christian people with “good” and Jewish people with “bad”.

**Figure 1**

*Image Stimuli used in IAT*



***Explicit Preference for Christian vs. Jewish***

To measure explicit attitudes towards Jewish peoples compared to Christians, participants answered a question on a Likert-scale regarding their preference (Axt, 2018). The response options ranged from 1 = “I strongly prefer Jewish people to Christian People, to 7 = “I strongly prefer Christian people to Jewish people.”

***Jewish Opinion Survey***

Participants also answered a survey questionnaire. It consisted of 27 questions regarding their opinions on the societal roles, interactions with, and feelings toward Jewish people (Davis, 2023; Smith, 1993; Tropp & Brown, 2004; Voci & Hewstone, 2003). These questions were



answered on a 7-point Likert scale, ranging from 1= “Strongly Disagree” to 7 = “Strongly Agree,” with a neutral value of 4 = “Neither Agree nor Disagree.” Based on item content, eight of these items were selected for further analysis due to a belief that they would be most conceptually relevant to implicit and explicit attitudes towards Jewish people. These items measured various negative stereotypes and prejudices that have been historically perpetuated and commonly associated with Jewish people. Specifically, the following items were selected:

AS1: “Jews are more willing than others to use shady practices to get what they want.”

AS2: “Jews are more loyal to Israel than they are to America.”

AS5: “Jews have too much control and influence on Wall Street.”

AS7: “Jews don’t care what happens to anyone but their own kind.”

AS8: “Jews always like to be at the head of things.”

AS9: “Jews stick together too much.”

AS10: “Jews are always stirring up trouble with their ideas.”

AS15: “Jews have stirred up a lot of trouble between White and Black people.”

See Appendix A for all survey questions.

## Results

***IAT Internal reliability.*** Internal reliability for the IAT was analyzed by correlating the *D* score produced from IAT blocks 3 and 6 with the *D* score from IAT blocks 4 and 7. This analysis found a moderate level of internal reliability,  $r = 0.63$ , 95% CI [.62, .64], an estimate that was slightly higher than the internal reliability found with other versions of the IAT (meta-analytic  $r = .50$  in Greenwald & Lai, 2020).

***Overall IAT D score and Explicit Preference score.*** The overall *D* score for our sample was  $M = 0.11$  ( $SD = 0.51$ ). A one-sample *t*-test against a neutral zero value was reliable,

$t(23837) = 33.57, p < .001, d = 0.22, 95\% \text{ CI } [.21, .23]$ , indicating a small overall effect for stronger associations between “Christian” with “Good” and “Jewish” with “Bad.” The overall score on the explicit preference item with a neutral score of 4 was  $M = 3.76 (SD = 1.15)$ . A one-sample  $t$ -test against a neutral value of 4 also indicated a small overall effective size,  $t(21465) = -30.0, p < .001, d = -0.21, 95\% \text{ CI } [-.22, -.19]$ . However, while the IAT  $D$  scores on average revealed pro-Christian attitudes, the average score on the relative preference item revealed a pro-Jewish attitude.

***Differences across religious backgrounds.*** As a test of known group differences, we examined variation in implicit and explicit attitudes among participants of different religious backgrounds (see figures 3 and 4). Analyses were limited to participants who self-identified as belonging to one of seven categories: 1) Buddhist/Confucian/Shinto ( $N = 202$ ), 2) Christian: Orthodox or Catholic ( $N = 3327$ ), 3) Christian: Protestant or other ( $N = 4087$ ), 4) Hindu ( $N = 200$ ), 5) Jewish ( $N = 4796$ ), 6) Muslim/Islamic ( $N = 428$ ), 7) Not Religious ( $N = 7330$ ), or 8) Other Religion ( $N = 949$ ). A one-way ANOVA and post-hoc Tukey test were conducted. Results of the one-way ANOVA showed reliable differences across religious groups for both IAT  $D$  scores,  $F(7, 21318) = 1317.315, p < .001, \eta^2 = 0.30$  and explicit attitudes,  $F(7, 20489) = 1052.339, p < .001, \eta^2 = 0.26$ .

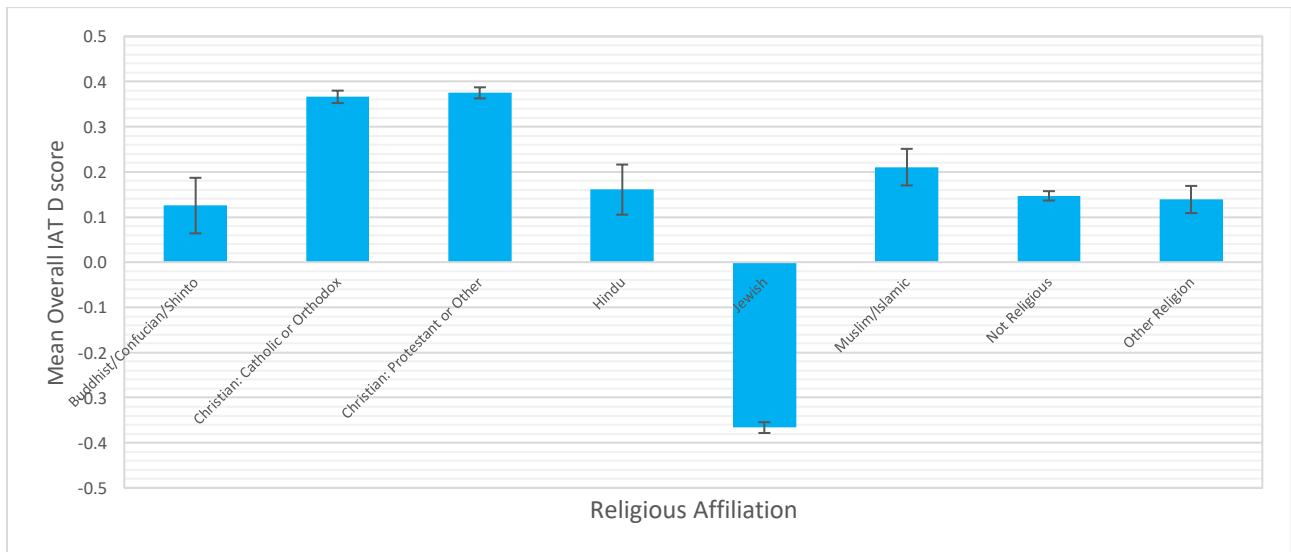
A series of post-hoc Tukey tests found that IAT  $D$  scores of Jewish participants were reliably more pro-Jewish than those from all other religious groups (Median  $d = .52$ , Minimum  $d = .49$ , Maximum  $d = .74$ ). Conversely, post-hoc Tukey tests found that IAT  $D$  scores of Christian participants were reliably more pro-Christian than those from all other religious groups (Median  $d = .23$ , Minimum  $d = .16$ , Maximum  $d = .74$ ). A similar – though stronger – pattern emerged in explicit attitudes. Jewish participants were reliably more pro-Jewish than all other religious

groups (Median  $d = 1.24$ , Minimum  $d = .84$ , Maximum  $d = 1.82$ ), and Christian participants were reliably more pro-Christian than all other religious groups (Median  $d = .68$ , Minimum  $d = .26$ , Maximum  $d = 1.59$ ). See Appendix B for full reporting of these comparison tests.

To investigate which groups demonstrated pro-Christian or pro-Jewish attitudes on the IAT and explicit preference measure, a series of one-sample  $t$ -tests were run. Only Jewish participants were reliably pro-Jewish on both the implicit and explicit measures. However, the scores of participants identified as Buddhist, not religious, or from another religion had reliably pro-Christian IAT scores but pro-Jewish values on average for the explicit attitude item. Christian and Muslim participant scores indicated pro-Christian views on both scales. See Table 5 for a reporting of the IAT  $D$  scores and explicit scores across religious affiliations.

### Figure 3

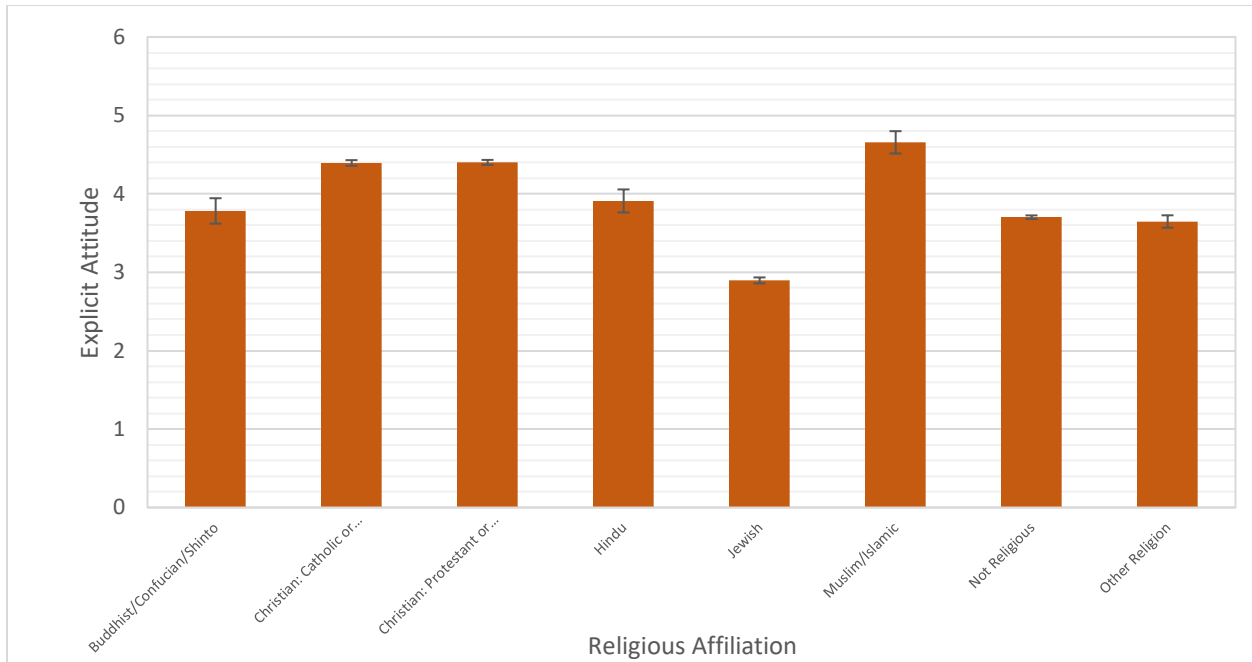
*Mean IAT D scores across Religious Affiliation*



More positive values depict a greater association between “Christian” with “Good.” Error bars depict a 95% confidence interval.

### Figure 4

*Mean explicit attitude scores across Religious Affiliation*



Depicts responses on a Likert scale with a neutral value of 4. Scores below 4 indicate a pro-Jewish preference, scores above 4 indicate a pro-Christian preference. Error bars depict a 95% confidence interval.

**Table 5**

*Mean IAT D score and Explicit score across Religious Affiliation*

	IAT D Score		Explicit Score	
	M	SD	M	SD
<b>Buddhist/Confucian/Shinto</b>	0.13*	0.45	3.73*	1.15
<b>Christian: Catholic or Orthodox</b>	0.38*	0.39	4.40*	0.96
<b>Christian: Protestant or Other</b>	0.38*	0.40	4.39*	0.92
<b>Hindu</b>	0.17*	0.40	3.99	1.04
<b>Jewish</b>	-0.37*	0.42	2.84*	1.10
<b>Muslim/Islamic</b>	0.23*	0.42	4.59*	1.28
<b>Not Religious</b>	0.15*	0.45	3.69*	0.92
<b>Other Religion</b>	0.14*	0.14	3.65*	1.05

\*Indicates the mean was reliably different from neutral.

**Correlations with self-report outcomes.** IAT D scores showed a reliable correlation with self-reported preferences between Christian and Jewish people,  $r = .44$ ,  $p < .001$ , 95% CI [.43,

.45]. This is higher than the average correlation found in a meta-analysis by Hofmann et al., (2005). In addition, all eight of the selected self-report measures were reliably correlated with both IAT *D* scores (median  $r = .23$ , minimum  $r = .13$ , maximum  $r = .28$ ) and the explicit preference item (median  $r = .37$ , minimum  $r = .21$ , maximum  $r = .40$ ). See Table 6 for full correlation matrix.

Finally, multiple linear regression analyses were conducted predicting each self-report item from both the IAT *D* scores and then explicit attitude scores. These analyses found that both the IAT *D* score and the explicit preference item independently predicted each of the eight outcome variables. See Table 7 for coefficients and test statistics.

**Table 6**

*Correlation Matrix of IAT D Score, Explicit Score and eight self-report items*

	<b>IAT D Score</b>	<b>Explicit score</b>	<b>as1</b>	<b>as2</b>	<b>as5</b>	<b>as7</b>	<b>as8</b>	<b>as9</b>	<b>as10</b>
<b>IAT D Score</b>									
<b>Explicit score</b>	0.44								
<b>as1</b>	0.25	0.38							
<b>as2</b>	0.20	0.27	0.48						
<b>as5</b>	0.28	0.39	0.68	0.55					
<b>as7</b>	0.25	0.40	0.71	0.52	0.67				
<b>as8</b>	0.13	0.21	0.60	0.53	0.62	0.55			
<b>as9</b>	0.13	0.25	0.53	0.44	0.60	0.53	0.54		
<b>as10</b>	0.21	0.36	0.73	0.48	0.69	0.68	0.49	0.50	
<b>as15</b>	0.26	0.39	0.69	0.48	0.71	0.69	0.48	0.47	0.74

All correlations are significant,  $p < .001$ .

**Table 7**

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

	as1	as2	as5	as7	as8	as9	as10	as15
<b>Intercept</b>	.45**	1.97**	.69**	.36**	2.10**	1.77**	.37**	.33**
<b>IAT D Score</b>	.24**	.28**	.40**	.23**	.09*	.05	.11*	.22**
<b>Explicit Score</b>	.45**	.33**	.49**	.49**	.29**	.34**	.424**	.45**

\*\*Indicates a coefficient of  $p < .001$ , \*Indicates a coefficient of  $p < 0.05$ .

### Discussion

The present study investigated the psychometric properties of the “Jewish IAT” published on the Project Implicit website, measuring associations of Christian or Jewish symbols with the concepts of “Good” or “Bad.” The results of the IAT demonstrated an internal reliability of  $r = 0.63$ , which is slightly higher than was found with proper uses of the IAT (Greenwald & Lai, 2020). This suggests that the Jewish IAT is a reliable measure of implicit attitudes towards Christian versus Jewish people, at least relative to other prominent IATs.

Secondly, we examined implicit and explicit attitudes across all eight religious groups and conducted a one-way ANOVA to see the group differences. The overall IAT *D* score was indicative of a minor implicit preference for Christians. However, the overall explicit score showed a pro-Jewish preference. Because of this discrepancy, a series of follow-up *t*-tests were run. All religious groups, other than Jewish participants, demonstrated this pro-Christian IAT *D* score. However, Buddhist, Jewish, “no religion,” and “other religion” participants demonstrated a pro-Jewish score on the explicit measure. This is despite Buddhist, “no religion,” and “other religion” participants have pro-Christian IAT scores. One possible explanation of this discrepancy is the social desirability hypothesis. Generally, this means that participants may be providing responses on explicit measures that are consistent with societal norms or values rather than their true feelings. Past research demonstrated that both social desirability and impression management can impact the responses the participants provide on explicit measures (Paulhus,

1984). Participants may want to present pro-Jewish responses as they do not want to appear antisemitic.

Another possible explanation for the discrepancy between implicit and explicit scores is that, as past research suggests, these attitudes may be coming from different sources. Explicit attitudes may better reflect personal values, whereas implicit attitudes may be more tied to cultural messages about different group values. Rudman (2004), examined sources that implicit attitudes may be originating from and proposed that early experiences, affective experiences, cultural biases and cognitive consistency principles may be influencing our implicit attitudes more greatly than our explicit attitudes. Past work supports the principle that implicit scores are related to culture and group values. As demonstrated by Axt, Moran, & Bar-Anan (2018), non-dominant social groups show ingroup and dominant-group favouritism on implicit tasks. This could help explain why some participants had pro-Christian IAT scores but pro-Jewish explicit scores. Scores from participants on the IAT from cultural biases or demonstrating a dominant-group favouritism while their explicit measures may be showing their values. This study may reveal a unique context where participant groups show a dissociation between their mean-level implicit and explicit attitudes.

To examine the predictive validity of the IAT, we next conducted a number of linear regression analyses to predict the outcomes of the self-report questionnaires. These items were conceptually related to attitudes towards Jewish people, such as by measuring antisemitic stereotypes and prejudices. A reliable correlation was found between the self-report items and IAT *D* score and the explicit preference item. These analyses demonstrate the predictive validity of the measure, though future analyses will want to use structural equation modeling approaches that can properly account for measurement error (Buttrick et al., 2020).

A significant strength of this study lies in the large and diverse sample size ( $N > 23,000$ ). This allows for greater generalizability of the findings to a broader population compared to smaller homogenous samples (Tipton et al., 2017), though a clear limitation of our sample is that it came from volunteer participants who visited a website dedicated to the study of intergroup biases. However, this demonstration of pro-Christian responses on the IAT, even among non-Christian participants, shows the pervasiveness of antisemitism, a finding that has the potential to help shed light on forms of discriminatory behavior. For example, negative implicit association can predict discriminatory judgment in hiring contexts (Rooth, 2010). Understanding the existence and continuing consequences of antisemitism is crucial for developing strategies to mitigate its effects.

A number of different methods have been proposed to reduce expressions of implicit prejudice on the different IATs. To examine these methods, Lai et al. (2014) held a contest to find the most effective strategy. The findings indicated that providing participants with counter-stereotypical examples had the greatest impact on their subsequent IAT scores,  $d = .38$ , 95% CI [.32, .44]. In this scenario, participants imagined themselves in a life-threatening situation which had a Black hero and a White villain. Participants also set goals of associating Black with “good” and White with “bad.” While this intervention was used to reduce implicit racial bias, a similar method can be applied to the current context. The next step would be testing the ability of this method to reduce implicit preference for Christian people compared with Jewish people by examining if there is a change in IAT  $D$  scores. In this implementation, the hero in the story could be a Jewish person and the villain could be Christian. If it was successful, we would expect to see a reduction in pro-Christian preference.



This analysis also has several limitations. As previously discussed, participants who visited the Project Implicit website and completed the Jewish IAT were aware of implicit attitudes and prejudice. Because of this awareness, participants could have attempted to alter their IAT scores or could have self-selected into tests where they believed they were less likely to reveal biases. This process of self-selection could result in a skewed sample, harming the generalizability of the study. This would make our findings more relevant to individuals who are interested in implicit bias or have some background knowledge of psychology than those who do not. In order to mitigate this in the future, a different sample could be selected that is screened for background knowledge of the implicit association task. This could include pre-screen questions such as: “have you previously completed a study on Project Implicit?” or “are you familiar with the IAT?” The most informative sample would be reflective of the general population. It would be ideal to include participants of diverse age, gender, socioeconomic status, geographic locations, political affiliation, and religiosity because this would result in the findings of the IAT being most widely applicable.

An additional limitation of the present study is the contrasting of Christian people with Jewish people. It is hard to specify if the results of the IAT can be used as a representation of antisemitism or if they simply show a preference for Christians. While this choice was made to ease navigation of the IAT and create a clear distinction between the target group (Jewish people) and another group which is often perceived as the majority in the United States (Christian people), it means that the IAT was not really about antisemitism but instead about Jewish-Christian attitudes. Using a different contrast category, such as one’s own ingroup (e.g., Buddhist participants completing a Buddhist-Jewish IAT, Muslim participants completing a Muslim-Jewish IAT, etc.), could result in different patterns of responses. This is because ingroup bias

could become prominent as the influence of historical interactions and cultural contexts would be applicable for all participants. While these results provide valuable insights into attitude between Jewish and Christian individuals, they may not reflect attitudes towards Jewish peoples in all contexts or among all populations. When interpreting the results of this study, researchers should be cautious of the limitations added by this choice of contrast group.

In the future, it would be of interest to examine how IAT results differ by region. Looking at these differences would provide insight into how different implicit attitudes shape, or are shaped by, behaviours or actions in these areas. Work completed by Hehman et al. (2019), finds strong implicit-explicit correlations when examining IAT responses at regional level and showed construct validity. Additional studies found that implicit biases predicted excessive use of force by police against Black individuals (Hehman et al., 2018), and harsher punishment of Black children in schools (Riddle & Sinclair, 2019). A similar approach could be used to examine regional IAT results of the Jewish IAT by aggregating the data. Specifically, regions with histories of interfaith cooperation could be examined, as they may show weaker implicit bias. It would also be interesting to investigate the differences between urban and rural areas. Urban areas may show a reduction in implicit bias because of increased diversity. These results could also then be compared with explicit demonstrations of prejudice in each area. This could be completed by collating the IAT data with the instances of anti-Jewish hate crimes in the United States that the Federal Bureau of Investigation captures.

Another future direction would be to investigate if and how results of the Jewish IAT change over time. Throughout the late 20<sup>th</sup> century, expressing prejudice explicitly became significantly less socially acceptable. Both explicit and implicit attitudes have been examined from 2007 to 2020 and have become more neutral in regard to sexuality, race, and skin tone

(Charlesworth & Banaji, 2019, 2022). When events of intense sociopolitical significance occur, group differences become more salient, but implicit attitudes have been shown to remain stable (Schmidt & Nosek, 201). The Jewish IAT could also be used in longitudinal studies to document changes to implicit attitudes over time. This would be particularly interesting because it would allow implicit attitudes to be tracked before and after significant events. There could be an increase in negative attitudes towards Jewish individuals during times of heightened tension or conflict. Generational shifts may also emerge. Younger generations, who are exposed to more diverse environments and media, may exhibit lower levels of implicit anti-Jewish bias when compared to older generations. Overall, leveraging the Jewish IAT in longitudinal studies offers the chance to enhance our knowledge on how implicit biases are changing over time and in response to socio-political landscapes.

While the current study contributes to the understanding of implicit antisemitism, further research is needed to address the limitations discussed above and explore additional avenues. In the future, work should address methods of reducing bias in IAT performance and investigating if this is indicative of reduced behaviours of discrimination. While this measure of implicit antisemitism demonstrated reasonable levels of validity, future uses of the measure will benefit from more in-depth analyses of how implicit attitudes about Jewish people develop over time, change in response to interventions, and predict relevant behaviors.

### **Conclusion**

In conclusion, our study aimed to investigate the psychometric properties of the Jewish IAT, which measured implicit associations of 'Jewish' and 'Christian' with 'Good' and 'Bad'. Our findings suggest that this IAT was an acceptably reliable and valid measure, providing evidence for the Jewish IAT's potential as a tool to measure implicit antisemitism. The observed discrepancy between the implicit and explicit attitudes, with pro-Christian bias on the IAT but a pro-Jewish explicit score, highlights the limitations of self-reported measures and the potential influence of social desirability. However, the moderate correlation between the IAT scores and self-reported antisemitism warrants further research to refine the IAT and explore its ability to predict behaviour. Ultimately, this research contributes to understanding the complex nature of antisemitism and lays the groundwork for future work to examine effective interventions to reduce prejudice.

**Statement of Contribution**

Dr. Jordan Axt provided data from the Project Implicit website and several background papers to M. S. M. S. then conducted additional literature review and wrote the manuscript. Dr. Jordan Axt provided critical feedback on all stages of analysis and writing.

**Appendix A**

<b>Item</b>	<b>Content</b>
<b>as1</b>	<b>Jews are more willing than others to use shady practices to get what they want.</b>
<b>as2</b>	<b>Jews are more loyal to Israel than they are to America.</b>
as3	Jewish businesspeople are just as honest as other businesspeople.
as4	Jews have a lot of irritating faults.
<b>as5</b>	<b>Jews have too much control and influence on Wall Street.</b>
as6	Jews are losing their distinctive identity and becoming more like other Americans all the time.
<b>as7</b>	<b>Jews don't care what happens to anyone but their own kind.</b>
<b>as8</b>	<b>Jews always like to be at the head of things.</b>
<b>as9</b>	<b>Jews stick together too much.</b>
<b>as10</b>	<b>Jews are always stirring up trouble with their ideas.</b>
as11	Jews are warm and friendly people.
as12	Jews still talk too much about what happened to them in the Holocaust.
as13	You can usually tell whether or not a person is Jewish just by the way they look.
as14	The movie and television industries are pretty much run by Jews.
<b>as15</b>	<b>Jews have stirred up a lot of trouble between White and Black people.</b>
as16	Jewish businesspeople are so shrewd that other people do not have a fair chance at competition.
as17	Jews still think of themselves as God's Chosen People.
as18	Jewish employers go out of their way to hire other Jews.
as19	Jews have a strong faith in God.
as20	Jews have contributed much to the culture life of America
con1	How often do you interact with Jewish people?
con2	How many Jewish people do you know, at least as acquaintances?
con3	When you interact with Jewish people, to what extent do you experience the following: The contact is friendly?
con4	When you interact with Jewish people, to what extent do you experience the following: You cooperate well with each other?
con5	When you interact with Jewish people, to what extent do you experience the following: You interact as equals?
cn1	The federal government should advocate Christian values.
cn2	The federal government should declare the United States a Christian nation.
cn3	The federal government should allow prayer in public schools.
cn4	The federal government should allow religious symbols in public spaces.
cn5	The success of the United States is part of God's plan.
cn6	The federal government should enforce strict separation of church and state.

*Eight bolded items were selected for analysis.*

**Appendix B**

*Post-Hoc Tukey Test across religious groups*

	<b>IAT D Score</b>	<b>Explicit Attitude Score</b>

		<b>Mean Difference</b>	<b>Std. Error</b>	<b>Mean Difference</b>	<b>Std. Error</b>
<b>Buddhist/ Confucian/ Shinto</b>	Christian: Catholic or Orthodox	-.25*	0.031	-.66*	0.074
	Christian: Protestant or Other	-.25*	0.031	-.66*	0.074
	Hindu	-0.04	0.042	-0.26	0.102
	Jewish	.50*	0.03	.90*	0.073
	Muslim/Islamic	-0.1	0.036	-.86*	0.087
	Not Religious	-0.02	0.03	0.04	0.073
	Other Religion	-0.01	0.033	0.09	0.079
<b>Christian: Catholic or Orthodox</b>	Christian: Protestant or Other	0	0.01	0	0.023
	Hindu	.21*	0.031	.40*	0.075
	Jewish	.75*	0.01	1.56*	0.023
	Muslim/Islamic	.15*	0.022	-.19*	0.052
	Not Religious	.23*	0.009	.71*	0.021
	Other Religion	.24*	0.016	.75*	0.037
<b>Christian: Protestant or Other</b>	Hindu	.21*	0.031	.40*	0.074
	Jewish	.75*	0.009	1.56*	0.021
	Muslim/Islamic	.15*	0.022	-.20*	0.052
	Not Religious	.23*	0.008	.70*	0.02
	Other Religion	.24*	0.015	.75*	0.036
<b>Hindu</b>	Jewish	.54*	0.031	1.16*	0.074
	Muslim/Islamic	-0.06	0.036	-.59*	0.088
	Not Religious	0.02	0.03	.30*	0.073
	Other Religion	0.03	0.033	.35*	0.08
	Buddhist/Confucian/Shinto	-.50*	0.03	-.90*	0.073
	Christian: Catholic or Orthodox	-.75*	0.01	-1.56*	0.023
	Christian: Protestant or Other	-.75*	0.009	-1.56*	0.021
<b>Jewish</b>	Muslim/Islamic	-.60*	0.021	-1.75*	0.051
	Not Religious	-.52*	0.008	-.85*	0.019
	Other Religion	-.51*	0.015	-.81*	0.036
<b>Muslim/Islamic</b>	Not Religious	.08*	0.021	.90*	0.051
	Other Religion	.09*	0.025	.94*	0.059
<b>Not Religious</b>	Other Religion	0.01	0.015	0.04	0.035

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