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Evaluating the Effectiveness of Interventions to Reduce Islamophobia in Post-9/11 Citizen Diplomacy Settings: A Bayesian Meta-Analysis

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Abstract

Purpose: This study aims to evaluate the effectiveness of interventions designed to reduce Islamophobia, particularly in the context of citizen diplomacy, following the rise in Islamophobia after the 9/11 attacks. Specifically, it investigates the impact of both face-to-face and virtual intergroup contact in mitigating Islamophobia, addressing the growing need for effective strategies to counter negative perceptions of Muslims in the post-9/11 era. Methodology: A Bayesian meta-analysis was conducted using data from 760 studies indexed in Scopus, focusing on interventions targeting Islamophobia. After screening for eligibility, 4 studies were included for analysis. Both fixed-effects and random-effects models were employed within the Bayesian framework to assess the intervention's impact and account for variability across studies. Findings: The results show strong support for the effectiveness of interventions in reducing Islamophobia, with a posterior probability of 77.7% for the fixed-effects model, suggesting consistent reductions across studies. The random-effects model revealed some variability in the effectiveness of interventions, though the overall impact was still significant. These findings emphasize the potential of citizen diplomacy, including both in-person and virtual engagement, to reduce prejudice and foster greater intergroup understanding. Research Implications: This study underscores the critical role of citizen diplomacy in countering Islamophobia. The findings provide valuable insights for policymakers, non-governmental organizations, and educational institutions seeking to implement or enhance initiatives aimed at promoting intercultural dialogue. The study also demonstrates the utility of Bayesian metaanalysis in synthesizing research on intervention efficacy, offering a rigorous framework for future investigations into prejudice reduction strategies across various cultural contexts. Originality/Value: This research is one of the first to apply Bayesian meta-analysis to evaluate interventions aimed at reducing Islamophobia within citizen diplomacy. It offers a novel perspective by examining both face-toface and virtual contact as methods of combating Islamophobia, areas that have been underexplored in existing literature. The integration of Bayesian techniques allows for more accurate, dynamic insights into the effectiveness of these interventions, providing a flexible model that can be adapted to other areas of social prejudice reduction.

Keywords: Islamophobia, Citizen diplomacy, prejudice reduction, intervention, Bayesian metaanalysis

Abstrak

Tujuan: Penelitian ini bertujuan untuk mengevaluasi efektivitas intervensi yang dirancang untuk mengurangi Islamofobia, khususnya dalam konteks diplomasi warga negara, setelah meningkatnya Islamofobia pasca serangan 9/11. Secara spesifik, penelitian ini menyelidiki dampak dari kontak antar kelompok secara tatap muka dan virtual dalam mengurangi Islamofobia, serta mengatasi kebutuhan akan strategi yang efektif untuk melawan persepsi negatif terhadap Muslim di era pasca-9/11. **Metodologi**: Sebuah meta-analisis *Bayesian* dilakukan dengan menggunakan data dari 760 studi yang terindeks di Scopus, yang berfokus pada intervensi yang menargetkan Islamofobia. Setelah dilakukan penyaringan kelayakan, 4 studi dipilih untuk dianalisis. Model efek tetap dan model efek acak diterapkan dalam kerangka *Bayesian* untuk menilai dampak intervensi dan memperhitungkan variasi antar studi. **Temuan**: Hasil penelitian menunjukkan dukungan yang kuat terhadap efektivitas intervensi dalam mengurangi Islamofobia, dengan probabilitas posterior sebesar 77,7% untuk model efek tetap, yang menunjukkan

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pengurangan yang konsisten di seluruh studi. Model efek acak menunjukkan adanya variasi dalam efektivitas intervensi, meskipun dampak keseluruhan tetap signifikan. Temuan ini menekankan potensi diplomasi warga negara, termasuk keterlibatan baik secara langsung maupun virtual, dalam mengurangi prasangka dan mendorong pemahaman antar kelompok yang lebih besar. Implikasi Penelitian: Penelitian ini menekankan peran penting diplomasi warga negara dalam melawan Islamofobia. Temuan ini memberikan wawasan yang berharga bagi pembuat kebijakan, organisasi non-pemerintah, dan institusi pendidikan yang ingin melaksanakan atau meningkatkan inisiatif yang bertujuan untuk mempromosikan dialog antarbudaya. Penelitian ini juga menunjukkan kegunaan meta-analisis Bayesian dalam menyintesis penelitian mengenai efektivitas intervensi, memberikan kerangka kerja yang ketat untuk penyelidikan di masa depan mengenai strategi pengurangan prasangka di berbagai konteks budaya. Orisinalitas/Nilai: Penelitian ini merupakan salah satu yang pertama kali menerapkan meta-analisis Bayesian untuk mengevaluasi intervensi yang bertujuan mengurangi Islamofobia dalam diplomasi warga negara. Penelitian ini menawarkan perspektif baru dengan memeriksa baik kontak tatap muka maupun virtual sebagai metode dalam memerangi Islamofobia, yang merupakan area yang masih kurang dieksplorasi dalam literatur yang ada. Integrasi teknik Bayesian memungkinkan wawasan yang lebih akurat dan dinamis mengenai efektivitas intervensi-intervensi ini, serta memberikan model yang fleksibel yang dapat diterapkan pada area lain dalam pengurangan prasangka sosial.

 $\textbf{Kata Kunci:} \ Islamo fobia, Diplomasi warga negara, pengurangan prasangka, intervensi, meta-analisis \\ \textit{Bayesian}$

INTRODUCTION

The events of September 11, 2001, the terrorist attacks, had a significant impact on the phenomenon of Islamophobia worldwide, particularly in the United States, Europe, and Asia (Cheikh Husain, 2020). Since this event, Muslim communities in many countries have faced increased discrimination and prejudice, often linked to terrorism stereotypes (A. Farhadi, 2020). Amid globalization, Islamophobia has grown, especially in European countries. According to the EU Agency for Fundamental Rights (FRA), one in two Muslims in the European Union is currently a victim of "racism and discrimination in daily life." The report shows a significant increase from the last survey in 2016, with Muslims experiencing racial discrimination increasing from 39% to 47%. With over 13 million Muslims in the EU, this data highlights the profound impact of Islamophobia in the region. This phenomenon is further exacerbated by dehumanizing anti-Muslim rhetoric, which deepens negative perceptions of Islam. Islamophobia is not only influenced by religious elements but also by skin color and the ethnic or immigrant backgrounds of the European Muslim population (Feld, 2024).

In response to the increasing discrimination and prejudice, traditional diplomacy—which usually focuses on fostering intergovernmental relations—has proven inadequate for religious communities such as Islam (Riordan, 2005). Religious diplomacy emerged as a vital tool to restore the image of Islam in the post-9/11 context, where formal diplomatic efforts often face obstacles. Informal diplomatic initiatives such as interfaith dialogue and public diplomacy have increasingly played a crucial role in bridging cultural gaps and challenging the negative stereotypes that have developed (Lakatos, 2022). Citizen diplomacy—which encourages direct interaction between individuals from different cultures—has been one effective approach to countering negative perceptions of Islam, particularly in the Western world (Center for Citizen Diplomacy, 2019; Lawton & Sharnak, 2010).

This approach has become increasingly relevant in today's interconnected world, where global communication platforms facilitate intercultural connections. Therefore, citizen diplomacy plays a crucial role in reducing tensions between Muslims and non-Muslims, while also improving understanding and reducing negative stereotypes about Islam (Hanada, 2022). While citizen diplomacy has gained growing

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recognition since 9/11, further research is still needed on the effectiveness of the interventions undertaken to reduce Islamophobia, especially with a more comprehensive data-driven approach (Mueller, 2020).

To gain a deeper understanding of the Islamophobia phenomenon and efforts to counter it, several previous studies have provided important insights into the symbolic, social, and strategic aspects related to this issue. First, prior research has extensively focused on the symbolic and social aspects of Islamophobia, particularly its impact on the cultural and social identities of Muslim communities. For instance, El-Nawawy (2013) noted how the media often reinforces negative stereotypes that contribute to the perception of Islam as a threat. Sanjeev Kumar (2015) extended this research by exploring the relationship between media perceptions and the increasing anti-Muslim policies in the West. These studies provide an overview of how Islamophobia developed at the societal level and how the media plays a key role in its spread.

Second, literature related to citizen diplomacy has also developed rapidly as one of the methods for addressing discrimination and enhancing intercultural understanding. Huda (2006) highlighted how interfaith dialogue and public diplomacy became essential tools in building better relationships between Muslim and non-Muslim communities. Research by El-Nawawy (2006) shows that citizen diplomacy can help change negative perceptions of Islam by leveraging personal interactions as a channel to reduce tension and foster deeper understanding.

Third, although much has been discussed about Islamophobia and its impacts on Muslim communities, there is still a gap in research regarding the effectiveness of interventions to reduce Islamophobia through citizen diplomacy (Azeez & Jimoh, 2023; Farhadi, 2020). Many studies have focused more on qualitative analysis or single case studies, with few approaches being more comprehensive and empirically data-driven, measuring the effectiveness of interventions quantitatively (Parveen & Rehman, 2024; Sadia, 2019). Therefore, this study adopts a Bayesian meta-analysis approach, which allows the researcher to combine data from various sources and provide a more holistic understanding of the success of interventions in reducing Islamophobia. This approach is more capable of offering a deeper perspective as it updates the results with new data and incorporates existing knowledge (Sarrang & Sangiamvibool, 2024).

Despite the large body of research on the phenomenon of Islamophobia and citizen diplomacy, a major gap in the literature is the lack of studies measuring the effectiveness of interventions to reduce Islamophobia, especially using the Bayesian meta-analysis method. Most prior research has focused on qualitative analysis or in-depth interviews, with little use of a more comprehensive approach based on numerical data. Bayesian meta-analysis offers an advantage by combining multiple data sources and updating the understanding based on existing results, enabling more accurate measurement of the success of efforts to reduce discrimination against Muslims (Peucker, 2020). Therefore, this study seeks to fill this gap by providing a broader analysis and stronger data-driven insights to evaluate the effectiveness of interventions in the Islamophobia context.

This study aims to evaluate the effectiveness of various interventions to reduce Islamophobia using a Bayesian meta-analysis approach. This research focuses on the empirical evaluation of interventions carried out in various European countries to provide a clearer picture of which strategies are most effective in reducing discrimination against Muslims and improving cross-cultural understanding. By using this approach, the study hopes to provide new, more accurate insights into citizen diplomacy as a tool to reduce Islamophobia in Europe post-9/11.

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This study argues that citizen diplomacy is an effective instrument in reducing Islamophobia because it enables direct interaction between Muslims and non-Muslims, leading to better understanding and reduction of negative stereotypes. Bayesian meta-analysis will provide a clearer picture of the most effective strategies in the context of cultural interventions, as well as how various social, economic, and political factors affect the success of these efforts. Therefore, this study aims to make a significant contribution to efforts in reducing Islamophobia by offering a better understanding of citizen diplomacy in addressing cultural tensions and increasing social cohesion.

RESEARCH METHOD

Meta-analysis is a widely used quantitative method for combining results from multiple studies on a given topic, providing an objective, systematic, and replicable approach. Unlike qualitative reviews, meta-analysis employs statistical techniques to integrate study findings. While its origins date back to the 1930s, the term "meta-analysis" was introduced by G. V. Glass in 1976 and became prominent through studies in fields like psychology and education, particularly those on psychotherapy and class size effects. The process typically involves five steps: defining the research question, conducting a literature review, coding studies, performing statistical analysis, and reporting results (Sánchez-Meca & Marín-Martínez, 2010).

This paper uses a Bayesian meta-analysis, which offers several advantages over traditional methods. As Berkhout et al. (2023), note, Bayesian analysis allows for evaluating evidence across multiple hypotheses, including the null hypothesis. It also accounts for model uncertainty, reducing overconfidence, especially with small sample sizes (Hinne et al., 2020). Bayesian meta-analysis enables continuous evidence updating as new studies are published (Rouder, 2014b), and incorporates prior knowledge about effect sizes (Vohs et al., 2021) or heterogeneity (Van Erp et al., 2017), enhancing the accuracy of the analysis.

In conducting a meta-analysis, the first step involves defining a clear and focused research question (Herrera Ortiz et al., 2021). This research is inquiring about How effective intervention onreducing Islamophobia in citizen diplomacy setting. From here, we formulate the hypothesis:

H₀: There is no effectiveness in effort of reducing Islamophobia in citizen diplomacy setting

H₁: Efforts for reducing islamophobia are effective in citizen diplomacy setting

The next step is to write and publish the protocol which outlines the methods and criteria to be used. The guideline used for assessing the literature are PRISMA 2020 protocol (Page et al., 2021). Following the protocol, a comprehensive literature search is carried out to gather relevant studies. We identify that there are 760 articles related to Islamic-based counseling and therapy in the Scopus database on 12 September 2024 using the keyword:

(islamophobia OR (islam* OR muslim) AND (stigma OR persecution OR oppression OR abuse)) AND (student OR education OR school OR university OR campus OR academ*) OR (volunteer* OR "non-profit")

After obtaining the initial set of studies, duplicate articles are removed to avoid redundancy. The remaining studies are then screened for eligibility based on pre-determined inclusion and exclusion criteria. For the studies that pass the screening process, their methodological quality is assessed to ensure reliability and rigor. This process was aided by Rayyan (Ouzzani et al., 2016) a web and mobile app for systematic review. Using the PRISMA Flow Diagram tool (Haddaway et al., 2022) Figure 1 shows the overview of the literature selection process. Initially, 760 records were identified from databases, with no

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duplicates found. However, 629 records were automatically excluded as ineligible, leaving 131 records for manual screening. After reviewing these, 89 records were excluded, leading to 42 reports being sought for retrieval. Of these, 13 reports could not be retrieved, leaving 29 reports for full eligibility assessment. During this phase, 16 reports were excluded for focusing on in-group studies, 3 were too general, 1 was a scale development study, 1 was promotional, and 3 lacked control groups. Ultimately, 4 new studies met the inclusion criteria and were incorporated into the final review.

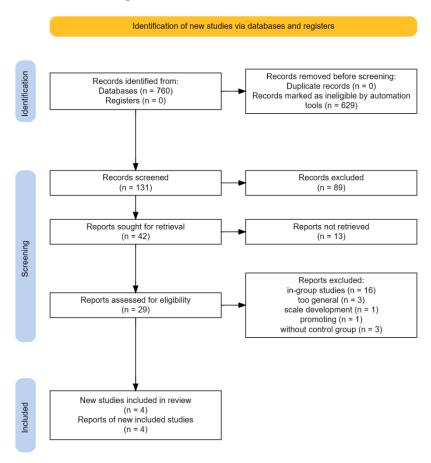


Figure 1. The PRISMA 2020 statement for this meta-analysis

Data extraction is then performed, followed by quantitative synthesis to statistically combine the results. While the articles may have a different statistical calculation and method, we standardized each effect measure to Cohen's d using the Practical Meta-Analysis Effect Size Calculator (Wilson, 2023). The calculated data is then processed in JASP Version 0.19.0 (2024).

RESULTS AND DISCUSSION

The Characteristics of Studies

Upon further review, the following studies were excluded from the meta-analysis on efforts to reduce Islamophobia for various reasons, categorized into three main themes: lack of specific data on Muslims, absence of an intervention, and overly broad or general focus. Some studies were excluded

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because they did not provide a specific data. White et al. (2015) focused on emotion expression and intergroup bias reduction between Christian and Muslim students through a dual identity-electronic contact experiment, but the study did not isolate response toward Muslim data –unlike the initial research (White & Abu-Rayya, 2012) which included in this study. Similarly, Vilà Baños et al. (2022) assessed high school students' attitudes toward migrant youth in general, without a particular focus on Muslims, making it unsuitable for inclusion.

Several studies lacked intervention, which is a critical criterion for the meta-analysis. Ata (2016) explored how Muslims are perceived in Catholic schools, but the research was purely observational and did not include any intervention aimed at changing perceptions. Novotný and Polonský (2011) also lacked an intervention, as their study focused on the relationship between knowledge of Islam and attitudes toward Islam among Czech and Slovak students, without testing any reduction toward Islamophobia strategies. Similarly, Hopkins and Shook (2017) developed an intergroup anxiety scale toward Muslims, but the study was focused on scale development rather than testing an intervention.

Finally, some studies were excluded due to their general focus on prejudice, without a targeted emphasis on Islamophobia or Muslim-specific issues. Blinder et al. (2019) examined discrimination and public support for multicultural policies in Europe but did not directly address attitudes toward Muslims. Bruneau et al. (2020) investigated the effect of a "collective blame hypocrisy" intervention on anti-Muslim sentiment, but the population was too broad to fit the meta-analysis criteria. Likewise, van der Noll (2014) focused on religious tolerance of Muslims in Germany but emphasized general values and attitudes rather than specific interventions. Thomas et al. (2020) was also excluded, as it promoted a broader prejudice reduction program that did not exclusively target Islamophobia or Muslim-specific bias.

Table 1. The Research Included in The Meta-Analysis

Study	PICO Statement	
(Nordstrom, 2015)	Among White Psychology students (N = 43), what is the effect of student	
	involved The Voices Project compared with control group on reducing	
	Islamophobia	
(White & Abu-	Among Christian student in Australia (N = 104), what is the effect of dual	
Rayya, 2012)	identity-electronic contact experiment compared with control group or	
	promoting intergroup harmony	
(Walther et al.,	Among Israeli Jewish student (N = 43), what is the effect of multi-cultura	
2015)	course compared with control group on reduction of prejudice toward	
	Arabs	
(Bruneau et al.,	Among American non-Muslim college student (N = 633), what is the	
2021)	effect of virtual contact program compared with control group on	
	reducing dehumanization toward Muslim	

Table 1 presents the four studies included in this meta-analysis and accompanies it with the PICO (population, intervention, comparation, outcome) statement. The PICO for synthesis provides a framework for examining similarities and differences in the characteristics of studies contributing to each analysis, facilitating qualitative synthesis of characteristics needed to interpret results (Cumpston et al., 2021). Each study incorporates multiple trials and comparison groups. For instance, in Nordstrom's (Nordstrom, 2015) study, "The Voices Project" (TVP), students interviewed individuals from marginalized groups (e.g., Muslims, African Americans). The students attended cultural events, wrote memoirs from the interviewees' perspectives, and presented them in a staged reading. In the control condition, students

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completed a term-paper assignment analyzing stereotypes without direct intergroup contact. Islamophobia was measured through a post-program survey.

In the study by White & Abu-Rayya (White & Abu-Rayya, 2012) Christian participants completed online questionnaires six months before the intervention, measuring intergroup bias, anxiety, prejudice, and other factors. During the Dual Identity E-Contact (DIEC) program, participants (n=61) engaged in nine sessions with Muslim peers, discussing environmental issues and building friendships through online chats and a final poster presentation. The control group (n=42) participated in similar sessions but with ingroup-only content. Both groups completed the same questionnaires two weeks and six months after the intervention, assessing (a) intergroup bias, (b) intergroup anxiety, (c) blatant prejudice, and (d) subtle prejudice.

In the study by Walther et al. (Walther et al., 2015) changes in prejudice toward Arabs were examined among Jewish participants in a multicultural online course. The study involved (a) religious Jewish participants (intervention n=17, control n=11) and (b) secular Jewish participants (intervention n=23, control n=12). The course, which lasted an academic year, employed online collaboration tools with Arab students. Prejudice was measured before and after the course, and changes in attitudes among Jewish participants were compared to the control groups to evaluate the course's impact.

Bruneau et al. (Bruneau et al., 2021) assessed the impact of virtual intergroup contact between American and Muslim students on (a) dehumanization and (b) meta-dehumanization. The study extended previous findings by including a control group and improving participant retention. Pre- and post-program surveys compared the attitudes of participants and controls, measuring changes in (c) dehumanization and (d) meta-dehumanization, thereby enhancing the validity of the results.

Although many studies were excluded from this meta-analysis for various reasons, the studies included in the analysis were selected for their high relevance to the research objectives. For instance, the studies by White & Abu-Rayya (2012) and Nordstrom (2015) present direct interventions that allow for a more accurate evaluation of how direct interactions between individuals from different groups can reduce Islamophobia. Programs like Dual Identity E-Contact (DIEC) and The Voices Project focus on deep efforts to enhance intercultural understanding through personal engagement, which is at the core of citizen diplomacy. This aligns with the objective of this research to evaluate the success of citizen diplomacy interventions in reducing Islamophobia. Therefore, these studies are highly relevant in providing insights into how such interventions can reduce prejudice and improve intergroup relationships.

Despite the many studies included, there remains a significant gap in the systematic measurement of the effectiveness of interventions in reducing Islamophobia, particularly regarding their long-term effects. Some of the studies excluded, such as Ata (2016) and Novotný & Polonský (2011), did not include effective interventions, meaning that no significant changes in attitudes or understanding regarding Islamophobia were made. On the other hand, the studies included show variation in their measurement methodologies—for example, the intergroup anxiety scale in Hopkins & Shook (2017) and the intergroup comparison approach in other studies—which could lead to measurement errors or uncertainty in gauging the impact of these interventions. This gap is the primary reason why Bayesian meta-analysis was used in this research, as this method allows for combining and updating existing data, providing a more comprehensive and valid picture of the effectiveness of interventions in reducing Islamophobia. Therefore, this study aims to address the methodological gaps that exist, such as the inability of previous studies to quantitatively assess the long-term impact of citizen diplomacy interventions on changing perceptions of Islam.

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Meta-analyses

The Table 2 present posterior estimates for both fixed-effects and random-effects models using Bayesian inference to compare the two approaches. Key terms in the analysis include the posterior distribution, which represents the uncertainty about parameters (such as μ and τ) after observing the data. Here, μ refers to the mean effect size, while τ represents heterogeneity or variability in effect sizes across studies in the random-effects model. Additionally, the Bayes factor (BF10) is used to compare the likelihood of the data under models with and without an effect (Berkhout et al., 2023).

Table 2. Posterior Estimates per Model

95% Credible Interval Mean SD Lower Upper BF_{10} **Fixed effects** 0.056 -0.377 -0.155 5230.286 -0.267 μ Random -0.2780.069 -0.414 -0.145112.859 effects 0.030 0.253 0.284 0.100 0.058 $\mu^{\ b}$ -0.270 0.059 **Averaged** -0.388 -0.155473.636 $\tau^{\ c}$ 0.287

Note. μ and τ are the group-level effect size and standard deviation, respectively.

Next, Table 3 reports the prior and posterior probabilities for fixed and random-effects models, as well as null and alternative hypotheses, to assess the effectiveness of interventions aimed at reducing Islamophobia. Initially, the prior probabilities for each model—Fixed H_0 (null), Fixed H_1 (alternative), Random H_0 (null), and Random H_1 (alternative)—are set to 0.25 (25%). This reflects an assumption of equal likelihood for all models before considering the data, implying no preference for either the presence or absence of an effect, or for fixed versus random-effects models.

Table 3. Model Probabilities

	Prior	Posterior
Fixed H ₀	0.250	1.485×10 ⁻⁴
Fixed H ₁	0.250	0.777
Random H ₀	0.250	0.002
Random H ₁	0.250	0.221

^a Bayes factor of the random effects H₁ over the fixed effects H₁.

^b Posterior estimates are based on the models that assume an effect to be present. The Bayes factor is based on all four models: fixed effects H_1 & random effects H_1 over the fixed effects H_0 & random effects H_0 .

 $^{^{}c}$ Model averaged posterior estimates for τ are not yet available, but will be added in the future. The Bayes factor is based on all four models: random effects H_0 & H_1 over the fixed effects H_0 & H_1 .

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After analyzing the data, the posterior probabilities provide updated insights. The posterior probability for Fixed H_0 (no effect in the fixed-effects model) is 0.0001485, indicating that the likelihood of no effect under the fixed-effects model is almost negligible. This strongly suggests that interventions aimed at reducing Islamophobia are unlikely to have no effect under this model. Conversely, the posterior for Fixed H_1 (the fixed-effects alternative) is 0.777 (77.7%), providing strong evidence that the interventions are likely to have a consistent, true effect across studies with minimal variation.

For the random-effects model, the posterior for Random H_0 (no effect in the random-effects model) is 0.002, similarly indicating that the null hypothesis is highly unlikely. The posterior for Random H_1 (the random-effects alternative), however, is 0.221 (22.1%). While this suggests that an effect exists under the random-effects model, it is less favored than the fixed-effects alternative, implying some potential variability between studies but with less confidence than a consistent effect across studies.

The analysis indicates that the Fixed H_1 model (77.7%) is the most probable, suggesting that the interventions have a consistent effect in reducing Islamophobia across all studies. The Random H_1 model (22.1%) supports the presence of an effect but suggests some variability in effectiveness between studies. Both null models—Fixed H_0 and Random H_0 —have very low posterior probabilities, reinforcing the conclusion that a null effect is highly improbable.

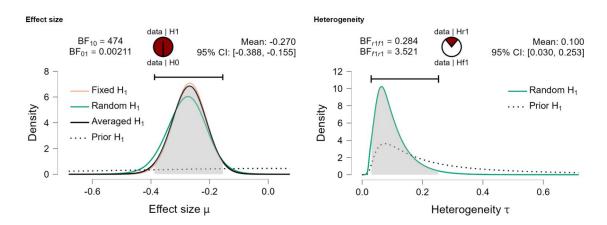


Figure 2. Prior and Posteriors

In Figure 2, the left panel focuses on the effect size (μ), where Bayes factors (BF₁₀ = 474 and BF₀₁ = 0.00211) show overwhelming evidence in favor of the alternative hypothesis (H₁), indicating that the interventions are 474 times more likely to be effective in reducing Islamophobia than having no effect. The posterior distribution for the effect size is plotted against the prior distribution, with the solid lines representing the posterior estimates after incorporating the data and the dotted line showing the prior belief. The notable shift from the prior to the posterior distribution reveals that the data provide strong evidence for a significant negative effect, with a mean effect size of -0.270. This effect size, alongside a credible interval that excludes zero, supports the conclusion that interventions are effective in reducing Islamophobia, with the posterior distribution closely concentrated around the most likely value for the effect size, reinforcing high certainty in the intervention's impact.

Regarding Heterogeneity (τ) (Right Panel), the Bayes Factors (BF_{r1o} = 0.284 and BF_{r1r1} = 3.521) show mixed evidence for variability between studies. BF_{r1o} suggests weaker evidence for heterogeneity, favoring a fixed-effects model. However, BF_{r1r1} (3.521) supports some variability under a random-effects

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model. The posterior distribution for heterogeneity (τ = 0.100, 95% CI: [0.030, 0.253]) indicates small to moderate differences between studies. The average τ of 0.100 points to modest variability, with a range from minimal (0.030) to moderate (0.253). This is similar to Berkhout et al.'s (Berkhout et al., 2023) findings, where the heterogeneity estimate is also small but slightly skewed. The green curve in the plot shows moderate variability between studies, and the dotted prior curve represents the initial assumption. The narrower posterior distribution suggests the data added insight but didn't drastically change the initial belief, showing moderate confidence in some heterogeneity.

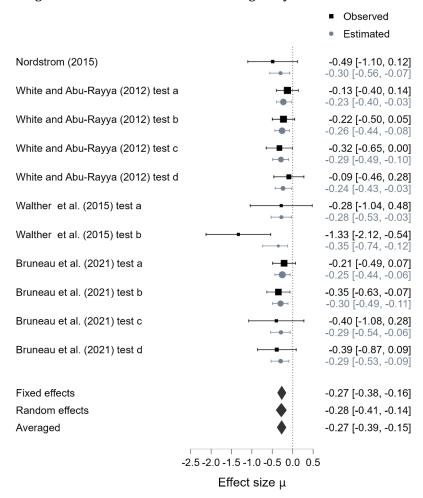


Figure 3. Observed and estimated effect size

This forest plot in Figure 3 illustrating the effect of various interventions aimed at reducing Islamophobia. The x-axis represents the effect size (μ), where negative values indicate a reduction in Islamophobia, and positive values would indicate an increase. Each study or test is represented by a black square (observed effect) and a grey circle (estimated effect), with horizontal lines denoting the 95% credible intervals. Studies such as "Nordstrom (2015)" and "White and Abu-Rayya (2012) test a" show negative effect sizes, suggesting that these interventions led to a reduction in Islamophobia. However, some intervals (e.g., "White and Abu-Rayya (2012) test d") cross zero, indicating uncertainty or a lack of significant effect.

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At the bottom of the plot, cumulative results are summarized using fixed effects (-0.27 [-0.38, -0.16]), random effects (-0.28 [-0.41, -0.14]), and an averaged effect (-0.27 [-0.39, -0.15]), all of which show a consistent negative impact. Since these credible intervals do not overlap with zero, they suggest that the interventions are generally effective in reducing Islamophobia. Despite some heterogeneity among the studies, with varying effect sizes and credible intervals, the overall conclusion of the meta-analysis is that the interventions had a meaningful and statistically significant effect in reducing Islamophobia.

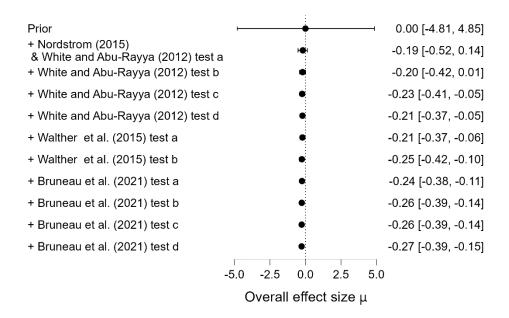


Figure 4. Cumulative forest plot

The cumulative forest plot in Figure 4 illustrates how the posterior model-averaged estimates evolve as additional studies are progressively included in the Bayesian meta-analysis. This visualization mirrors the process described by Berkhout et al. (Berkhout et al., 2023), where each row represents a posterior estimate updated with new data as studies are incorporated one-by-one.

In this plot, the first row shows the prior distribution, a neutral starting point without any studies included. As each study is added (from Nordstrom, 2015 onward), the posterior estimate for the overall effect size (μ) is recalculated, leading to an increasing refinement in the plausible effect size values. This process reflects the accumulation of evidence, which narrows the credible intervals for the overall effect size, thereby increasing certainty about the intervention's true impact on reducing Islamophobia.

For instance, after the first study is added, the posterior effect size is -0.19 with a wide credible interval [-0.52, 0.14], indicating initial uncertainty. As more studies are added, such as "White and Abu-Rayya (2012) test b" and "Walther et al. (2015) test a," the credible intervals shrink. By the time all studies are included in the analysis, the final posterior estimate for the overall effect size stabilizes at -0.27 [-0.39, -0.15], showing a clearer reduction in Islamophobia with more confidence.

This cumulative approach mirrors how knowledge in scientific research develops over time. As more evidence becomes available, the uncertainty decreases, and the estimate becomes more reliable, reflecting greater confidence in the overall effect. In this context, the cumulative meta-analysis demonstrates a significant and consistent reduction in Islamophobia across the studies analyzed.

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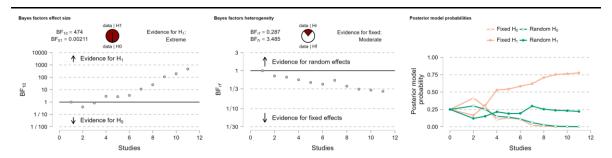


Figure 5. Sequential analysis

Figure 5 shows the sequential analysis generated by JASP. In bayes factor effect size (left), the Bayes Factor for effect size (BF $_{10}$ = 474) provides overwhelming evidence in favor of the alternative hypothesis (H $_1$) over the null hypothesis (H $_0$), indicating that interventions to reduce Islamophobia are having a significant positive effect. The reciprocal value (BF $_{01}$ = 0.00211) shows minimal support for the null hypothesis, reinforcing the strength of the alternative hypothesis. The sequential analysis reveals that as more studies are included, the cumulative Bayes factor for effect size rapidly increases and stabilizes, confirming that the effectiveness of these interventions becomes more certain with additional data. For heterogeneity (middle), Bayes Factors (BF $_{t1t1}$ = 0.287 and BF $_{t10}$ = 3.485) suggest moderate evidence for variability between studies, though the sequential analysis indicates that this variability remains modest as more data are incorporated. Overall, the results demonstrate strong support for the effectiveness of interventions aimed at reducing Islamophobia, with only moderate evidence for study-to-study variability, suggesting robust and consistent findings across the meta-analysis.

The posterior model probabilities (right) show a similar progression in comparison to Berkhout et al.'s (Berkhout et al., 2023) depiction of the flow of belief. Initially, the random-effects model (green line) gradually gains more posterior probability, eventually surpassing the fixed-effects model (orange line) as more studies are added. This shift suggests that heterogeneity between studies becomes increasingly important in understanding the true effect of interventions to reduce Islamophobia. This mirrors Berkhout et al.'s (Berkhout et al., 2023) observation, where the random-effects model became just as plausible as the fixed-effects alternative after including several studies, indicating that both models are valid but with growing support for random-effects as more data accumulates. The increasing posterior probability of the random-effects model in your analysis implies that variability across studies is a significant factor in assessing these interventions. Meanwhile, both the fixed-effects null hypothesis (Fixed H_0) and the random-effects null hypothesis (Random H_0) consistently show a decline in posterior probabilities with each additional study. This trend suggests that the likelihood of no effect diminishes over time. In the analysis, this trend underscores the strength of the alternative hypothesis (H_1), reinforcing the conclusion that interventions to reduce Islamophobia have a measurable impact.

Evaluations

The first aspect we shall evaluate is that during the literature screening process, Islamophobia reduction efforts were predominantly found in educational settings, with fewer studies focusing on initiatives like citizen diplomacy, which Hanada (2022) associates with volunteering and nonprofit organizations. This focus on educational settings likely stems from the structured environments schools and universities provide, making them ideal platforms for intervention and evaluation. Educational

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institutions allow for curriculum development, fostering intercultural dialogue, and building long-term empathy among students, which facilitates measurable outcomes (López-Rocha, 2021).

In contrast, efforts such as citizen diplomacy through volunteering and nonprofits occur in decentralized, informal environments (Georgeou, 2021). These initiatives rely heavily on individual motivation, community engagement, and variable resources (J. T. Garner & Garner, 2011), making them harder to standardize or assess compared to educational efforts. Despite their potential to foster personal connections and reduce prejudice at the grassroots level, the lack of a centralized structure may contribute to the limited academic focus on these initiatives. However, while underrepresented in the literature, volunteering and nonprofit activities remain important components of broader strategies to reduce Islamophobia within the citizen diplomacy setting. Their community-based approach allows for flexible and direct engagement, which can humanize Muslims and break down stereotypes (Peucker & Ceylan, 2017), even though the impact of these efforts may be less visible in the academic discourse.

Additionally, it was found that various interventions aimed at reducing Islamophobia are closely tied to the concept of intergroup contact, which can occur in both face-to-face and virtual settings. The underlying theory behind these interventions is rooted in "contact hypothesis," which suggests that meaningful interactions between groups, especially those divided by social, cultural, or religious differences, can help reduce prejudice and foster greater understanding (Brewer & Gaertner, 2003). This concept has been applied in numerous initiatives designed to address Islamophobia, recognizing that direct or mediated contact between Muslims and non-Muslims can play a crucial role in breaking down stereotypes and reducing fear or hostility (Francis et al., 2020; Gravelle, 2021; Moore-Berg et al., 2023).

Face-to-face contact, in particular, offers opportunities for personal interactions, where individuals can engage in conversations, share experiences, and challenge misconceptions. In these settings, participants often find common ground, which helps humanize the "other," making it harder for negative stereotypes to persist (Lindsay, 2021). Such interventions often take the form of community dialogue programs, interfaith gatherings, or educational workshops, where participants can ask questions and form meaningful relationships (Dessel et al., 2006; Tyler et al., 2005). These personal encounters create space for empathy, which has been shown to significantly reduce negative attitudes toward marginalized groups, including Muslims (Sekerka & Yacobian, 2018).

On the other hand, virtual contact has emerged as an important tool for reducing Islamophobia, especially in an increasingly digital world. Online platforms allow for broader outreach, connecting individuals who may not have the opportunity for face-to-face interactions due to geographical or social barriers (Rainford, 2021). Virtual contact can take many forms, including social media campaigns, virtual dialogue sessions, or online educational programs that promote intercultural understanding (O'Dowd & Dooly, 2020). While virtual contact lacks the immediacy and emotional depth of in-person encounters, it still offers significant potential to challenge stereotypes and foster greater awareness (Hian et al., 2006).

Both forms of contact—face-to-face and virtual—are essential in today's context, as they provide diverse and adaptable methods for tackling Islamophobia. Together, these strategies emphasize the importance of direct engagement in reducing prejudice and building bridges between Muslim and non-Muslim communities.

Discussion

This study aimed to evaluate the effectiveness of various interventions designed to reduce Islamophobia, specifically within the framework of citizen diplomacy. The Bayesian meta-analysis revealed strong support for the effectiveness of these interventions, particularly through both face-to-face

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and virtual intergroup contact, with a posterior probability of 77.7% for the fixed-effects model. While some variability was observed under the random-effects model, the overall impact remained significant, demonstrating that citizen diplomacy can effectively reduce Islamophobia and foster better intergroup understanding.

The effectiveness of interventions in reducing Islamophobia can be understood through the lens of the contact hypothesis, which posits that intergroup interactions, especially those that involve mutual understanding and empathy, can reduce prejudice. The findings suggest that when Muslims and non-Muslims engage in direct or mediated contact, either in-person or online, stereotypes are challenged, and relationships are strengthened. This process aligns with the goals of citizen diplomacy, which aims to create personal connections and build bridges between communities. The variability observed under the random-effects model might be due to differences in the scope, intensity, and structure of the interventions across studies.

Previous research on Islamophobia has primarily focused on the symbolic and social dimensions of this phenomenon. Studies like those by El-Nawawy (2013) and Sanjeev Kumar (2015) explored the media's role in reinforcing negative stereotypes, contributing to the spread of Islamophobia. The studies in this paper, however, focus on interventions aimed at reducing these stereotypes through direct or mediated contact, providing a more action-oriented perspective. In addition, research on citizen diplomacy, such as Huda (2006) and El-Nawawy (2006), has pointed out its importance in reducing negative perceptions of Islam. However, while there is a growing body of research on citizen diplomacy, much of the work is qualitative or case-based. This study fills the gap by applying a Bayesian meta-analysis, which offers a more robust and empirical approach to measuring the effectiveness of such interventions.

Historically, the shift from traditional state-to-state diplomacy to citizen diplomacy reflects the broader changes in how intercultural communication has evolved post-9/11. The need for citizen diplomacy, which focuses on non-governmental actors such as individuals, NGOs, and educational institutions engaging in direct, personal interactions, has become more crucial as a means to address deep-seated Islamophobia. Studies such as those by Zaharna (2010) and Omidi & Roustaie (2024) underscore the importance of people-to-people communication in building trust and understanding between Muslim and non-Muslim communities. This shift has been particularly significant in the context of global media and technological advancements, which offer new platforms for intercultural engagement (De Barros, 2010; Lull, 2007). The findings emphasize that, while traditional diplomacy remains essential, grassroots efforts through citizen diplomacy have become a necessary tool for combating stereotypes and building lasting intergroup harmony (Payne, 2009). However, challenges such as distrust, the complexity of intercultural dialogue, and the need for culturally sensitive approaches remain, as noted by Gallois (2003) and Morrison (2010). These challenges highlight the need for evolving strategies that integrate both face-to-face and virtual interactions, as demonstrated by Hanada (2022), to reduce Islamophobia and foster deeper, more meaningful relationships across cultural divides.

Socially, social cohesion is a central goal of citizen diplomacy, and this study shows that interventions aimed at reducing Islamophobia can effectively foster stronger relationships between Muslim and non-Muslim communities. The reduction in negative stereotypes and prejudice through intergroup contact helps create a sense of shared identity and belonging. This is particularly important in the context of multicultural societies where social fragmentation can exacerbate tensions between groups. According to Popkova (2022), citizen diplomacy plays a vital role in fostering understanding and collaboration across cultural boundaries, ultimately contributing to social cohesion. Additionally, citizen diplomacy helps build trust and solidarity, which are fundamental components of social cohesion, as

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highlighted by Macisaac et al. (2023), where direct engagement through dialogue programs helps bridge gaps between diverse communities. The importance of fostering shared values through intercultural programs is also crucial, as suggested by Khoo (2007), who emphasized the role of educational exchanges and intercultural initiatives in enhancing social unity. However, citizen diplomacy efforts also face challenges, such as navigating political and social complexities, as noted by Cooper (2019), particularly when geopolitical tensions or populist movements strain intergroup relations. Despite these challenges, this study affirms that citizen diplomacy remains a critical tool for reducing Islamophobia and fostering long-term social cohesion, particularly when it focuses on grassroots, people-to-people interactions.

Ideologically, this study emphasizes the need to reconcile traditional cultural values with modern diplomatic practices, especially in the context of citizen diplomacy. Citizen diplomacy, which emphasizes personal engagement and intercultural understanding, signifies a departure from state-centric diplomatic methods, focusing on individual and community-based interactions to foster mutual respect. This shift reflects a deeper ideological belief that individuals, through direct engagement, can challenge and dismantle negative stereotypes, fostering peace and understanding between diverse groups. It highlights the growing role of non-state actors in addressing global challenges, a theme central to the evolution of diplomacy in the post-9/11 era.

In this context, the study underscores the role of citizen diplomacy in fostering intercultural understanding and reconciling different cultural values. As Hanada (2022) and Popkova (2022) discuss, citizen diplomacy enables a two-way exchange of cultural values, encouraging mutual respect and collaboration through grassroots efforts like international volunteer programs and cross-cultural exchanges. These efforts emphasize intercultural competence, enabling participants to learn and adapt to different cultural norms, which plays a crucial role in dismantling stereotypes. Furthermore, cultural diplomacy, as discussed by Simic (2024) and Lee (2018), fosters positive interactions through soft power, allowing for the promotion of shared values and societal norms across borders. Citizen diplomacy, therefore, does not only build relationships but also enhances global understanding by leveraging cultural assets, allowing for mutual influence while promoting peace.

Despite the opportunities citizen diplomacy offers, it is not without challenges. There is a need to balance authenticity and representation in diplomacy, ensuring that cultural exchanges present genuine, holistic views of societies without oversimplifying or romanticizing differences (Fouinna & Lafram, 2023). Additionally, challenges arise when navigating political complexities, as seen in the Australia-China relations (Johanson et al., 2019), where diplomatic efforts must balance various interests and be sensitive to the broader geopolitical context. Thus, while citizen diplomacy serves as an essential tool in promoting intercultural dialogue and reducing prejudice, these complexities necessitate a nuanced and well-coordinated approach to maximize its effectiveness.

The primary function of this study is to provide empirical evidence on the effectiveness of citizen diplomacy interventions in reducing Islamophobia. By analyzing a wide range of studies and synthesizing the data through Bayesian meta-analysis, the study offers a more comprehensive understanding of how such interventions work. However, a potential dysfunction lies in the variability of effectiveness observed across different studies. The lack of standardized approaches in citizen diplomacy interventions, along with inconsistent measurement methods, makes it difficult to generalize findings. Moreover, the effectiveness of interventions may be influenced by broader socio-political factors that are not always captured in the studies included in the meta-analysis.

However, a potential dysfunction lies in the variability of effectiveness observed across different studies. The lack of standardized approaches in citizen diplomacy interventions, along with inconsistent

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measurement methods, makes it difficult to generalize findings. Moreover, the effectiveness of interventions may be influenced by broader socio-political factors that are not always captured in the studies included in the meta-analysis. Citizen diplomacy efforts, for example, are often shaped by contextual factors such as socio-cultural, political, and economic environments. The studies reviewed suggest that interventions need to be adapted to fit these contexts for optimal effectiveness (Hawe et al., 2004; Omidi & Roustaie, 2024). Programs in different settings (e.g., educational, volunteering, nonprofit) demonstrate varied success, with differences in local demographics and external contexts significantly influencing outcomes (Squires et al., 2023; Ziemann et al., 2019).

Additionally, interventions, especially those that involve face-to-face contact, need to balance between complexity and transferability. Interventions that work well in one region or context may not yield similar results in another without adequate adaptation to local needs and conditions. Systematic adaptation and understanding of the intervention's mechanisms and contextual interactions are necessary for successful transferability (Movsisyan et al., 2019; Pfadenhauer et al., 2017). Furthermore, the diversity in intervention design, including the use of mixed methods (Gallois, 2003), makes it difficult to compare and synthesize findings across studies. This diversity contributes to the heterogeneity observed in the meta-analysis, where varying methodologies, from intergroup contact models to volunteer-driven initiatives, create challenges for consistent evaluation and generalization (R. Garner & Garner, 2011).

To address this gap, this study adopts a Bayesian meta-analysis framework, allowing for continuous updating of results and incorporating prior knowledge about the effect sizes and heterogeneity (Rouder, 2014a). By combining data across multiple studies, this method provides a more holistic view of intervention effectiveness while accounting for variability between studies, offering deeper insights into the factors that influence the success of interventions in reducing Islamophobia.

To address these dysfunctions, a key action plan would be to establish standardized protocols for citizen diplomacy interventions, ensuring that future studies employ consistent methods and measures to assess their impact. This could include developing clear guidelines for intergroup contact programs, both face-to-face and virtual, and setting benchmarks for evaluating their effectiveness. Additionally, there is a need for more institutional support for such programs, including funding and training for community organizers, educators, and volunteers involved in citizen diplomacy efforts. Governments and non-governmental organizations (NGOs) should collaborate to create sustainable, long-term strategies that promote intergroup understanding and counter Islamophobia. Moreover, further research should focus on identifying specific factors that contribute to the success of these interventions, including cultural, socio-economic, and political variables, to refine and improve future efforts.

CONCLUSION

The results of the Bayesian meta-analysis provide strong evidence that interventions aimed at reducing Islamophobia are effective across various studies. The analysis favors the fixed-effects model, suggesting that the interventions have a consistent and measurable effect in reducing Islamophobia. The very low posterior probabilities for the null hypotheses indicate that the likelihood of no effect is negligible, reinforcing confidence in the interventions' success. Although there is some indication of variability between studies, as evidenced by the random-effects model, this heterogeneity appears modest. This suggests that while the effectiveness of the interventions may vary slightly across different contexts, the overall impact remains significant. The cumulative forest plot and sequential analysis further confirm that, as more data are included, the estimated effect size stabilizes, increasing certainty in the interventions'

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ability to reduce Islamophobia. Ultimately, the data strongly supports the alternative hypothesis, demonstrating that these interventions are not only effective but also reliable across diverse studies, with only minor variations in effectiveness. The consistency of the findings across both fixed and random models solidifies the conclusion that efforts to reduce Islamophobia through targeted interventions are impactful and meaningful.

While this research offers compelling evidence for the effectiveness of interventions aimed at reducing Islamophobia, several limitations must be acknowledged. One key weakness is the potential for publication bias, where studies with positive results are more likely to be published than those that report null or negative findings. This could skew the overall results and inflate the perceived effectiveness of the interventions. Additionally, the variability among studies—such as differences in sample size, intervention design, and cultural contexts—can impact the generalizability of the findings. The modest heterogeneity observed suggests that while the interventions are generally effective, they may not translate equally across all populations or settings. Furthermore, the reliance on self-reported measures in some studies may introduce bias, as participants might overstate their positive experiences or perceptions. Lastly, the rapid evolution of societal attitudes towards Muslims and Islamophobia means that the relevance of some studies may diminish over time, potentially affecting the applicability of the findings in contemporary contexts. Addressing these limitations in future research will be crucial for strengthening the evidence base and enhancing our understanding of effective strategies for combating Islamophobia.

The findings of this research have significant theoretical and practical implications. Theoretically, the strong support for the effectiveness of interventions aimed at reducing Islamophobia enriches the existing literature on intergroup contact theory, highlighting the importance of both face-to-face and virtual interactions in fostering understanding and reducing prejudice. This reinforces the idea that structured interventions can create meaningful opportunities for dialogue and empathy, which are essential for promoting social cohesion. Practically, the results suggest that policymakers and community leaders should prioritize the development and implementation of diverse intervention strategies in educational and community settings. By investing in programs that facilitate intercultural dialogue and cooperation, stakeholders can contribute to long-term reductions in Islamophobia and enhance community relations.

For future research, there is a need to explore the specific elements of these interventions that contribute most significantly to their effectiveness. Investigating the role of various factors, such as the type of contact, duration, and the socio-cultural context, can provide deeper insights into how to optimize these strategies. Additionally, longitudinal studies could help assess the sustained impact of these interventions over time, as well as their effectiveness in diverse demographic settings. Future research should also examine the potential for integrating interventions within broader anti-discrimination frameworks, looking at how they can complement existing efforts in combating various forms of prejudice. Finally, expanding the focus to include the perspectives and experiences of marginalized communities involved in these interventions would provide a more comprehensive understanding of their dynamics and outcomes.

In terms of the meta-analysis approach, future research could benefit from several methodological enhancements. Firstly, employing more rigorous inclusion criteria for studies could improve the quality of the data analyzed. This includes prioritizing peer-reviewed studies and ensuring a diverse range of intervention types and settings are represented to capture a more comprehensive understanding of the interventions' effectiveness. Additionally, incorporating a larger pool of studies from different geographical regions and cultural contexts would enhance the generalizability of the findings.

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