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Intolerant of being tolerant? Examining the impact of intergroup toleration on relative left frontal activity and outgroup attitudes

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Abstract

Increases in cultural and religious diversity have led to calls for toleration of differences, although it is unclear how calling for toleration impacts people's affective and attitudinal responses. The present research conducted in a small western nation examines if calling for toleration of Muslim minority practices elicits an aggressive backlash against the group amongst those relatively conservative, using relative left frontal EEG activity to examine the motivational processes involved. Non-Muslim participants from New Zealand ($N = 172$) self-reported their political orientation before being randomly assigned to a toleration or control condition involving writing and reflection tasks about Muslims. Participants then evaluated various groups including Muslims while EEG was recorded. Results revealed that among those relatively conservative, toleration produced higher levels of relative left frontal activity, which in turn led to more negative evaluations of Muslims (relative to control participants). However, for those relatively liberals, toleration had no impact on neuropsychological or attitudinal responses relative to controls. Collectively, these findings suggest that intergroup toleration may backfire amongst those relatively conservative, undermining its intended purpose.

Keywords Intergroup relations · Toleration · Tolerance · EEG · Political ideology · Social neuroscience

As many nations become more culturally and religiously diverse than ever before, there has been a growing call among organizations and governmental bodies, including the United Nations, the European Union, national governments, and local communities, to promote toleration to help ensure peaceful coexistence (Verkuyten, Yogeeswaran & Adelman, 2019). For example, a 1995 United Nations Declaration of Principles on Tolerance calls for toleration and clarifies that "*the practice of tolerance does not mean toleration of social injustice or the abandonment or weakening of one's convictions. It means that one is free to adhere to one's own convictions and accepts that others adhere to theirs*".[1] Further, in its White Paper on Toleration, the European Council on Tolerance and Reconciliation explains that "*the absolutes required by our guiding morality or convictions demand not that the Other abandons his or her own conviction, but that he or she demonstrate absolute respect for these convictions, despite the fact that he or she will never share them*".[2] While toleration is presented as generally leading to peaceful coexistence, how does practicing toleration actually impact evaluations of outgroups we are being asked to be tolerant toward? The present research proposes that toleration of culturally or religiously diverse practices and beliefs may not have uniformly positive or negative consequences, but may vary depending on perceivers' political ideology. Specifically, while toleration may be beneficial for improving intergroup outcomes for some people, it may backfire among others because it increases uncertainty and frustration. Using electroencephalography (EEG), the present work examines in the context of New Zealand how practicing intergroup toleration impacts a neuropsychological marker of affect and evaluations of Muslim minorities depending on perceivers' political ideology.

[1] https://unesdoc.unesco.org/ark:/48223/pf0000101803.page=75

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[2] http://ectr.eu/en-projects-and-initiatives/national-statue-for-the-promotion-of-tolerance

What Is Intergroup Toleration?

Though being tolerant is sometimes conflated with full acceptance of differences or being unprejudiced, extant writing in philosophy (e.g., Cohen, 2004; Forst, 2012), political science (e.g., Gibson, 2006; Mondak & Sanders, 2003), and psychology suggests otherwise (Jackman, 1977; Verkuyten & Yogeeswaran, 2017). The defining characteristic of intergroup toleration is that one *endures* or *puts up* with beliefs, practices, or norms of another group that they personally disapprove of: you tolerate what you feel negatively about. Toleration, thereby, involves restraint from acting upon one's disapproval of outgroup beliefs or practices (for a review, see Verkuyten & Yogeeswaran, 2017). Toleration is not the same as cultural relativism, apathy, or indifference, which all involve abstention of judgment. It also does not imply full acceptance of another group's practices, beliefs, way of life, or obstruction of the same. Rather, toleration involves a balancing of one's negativity toward outgroup beliefs and practices with reasons to nevertheless allow the outgroup to live their preferred way. Toleration, therefore, involves cognitive inconsistency between one's negative attitude toward outgroup beliefs and practices and the non-interference practiced in one's behavior.

Despite the widespread emphasis on toleration in many organizational and governmental circles (Verkuyten et al., 2019), there is no empirical work examining how practicing intergroup toleration influences neuropsychological processes and attitudes toward outgroups that are the object of toleration. Toleration involves a complex process of weighing reasons for disapproval against reasons for nevertheless accepting these dissenting outgroup beliefs and practices making it distinct from typical research on prejudice and prejudice-reduction in psychology (Verkuyten, Yogeeswaran, & Adelman, 2020). Here, we examine how practicing intergroup toleration impacts attitudes toward the Muslim minority group being tolerated, while testing if these effects are moderated by perceiver's political orientation. Specifically, we hypothesize that political liberals and conservatives may have differential reactions to practicing toleration toward Muslim minorities.

Toleration and Political Ideology

According to the model of motivated social cognition, core conservative beliefs of *resistance to change, upholding traditional values,* and *preference for the status quo* appear to be partly motivated by increased aversion to uncertainty and frustration (for a review, see Jost, Glaser, Kruglaski & Sulloway, 2003; see also Hibbing, Smith & Alford, 2014 on a similar negativity bias underpinning conservativism). These core conservative beliefs immerse the individual in a psychological system that limits ambiguity and the potential for risky social change, boosts ingroup consensus, and sets clear guides for action (for a review, see Jost & Amodio, 2012). By contrast, liberals are argued to be more supportive of change and open to ambiguity (Jost et al., 2003), although they too can demonstrate negative reactions to ideological outgroups (e.g., Brandt & Crawford, 2020; Brandt, Reyna, Chambers, Crawford & Wetherell, 2014; Brandt, Chambers, Crawford, Wetherell & Reyna, 2015; Chambers, Shlenker & Collisson, 2013; Conway, Houck, Gornick, & Repke, 2018; Crawford, 2014).

Toleration of Muslim minorities, then, should be especially frustrating for conservatives because, by definition, toleration involves the simultaneous activation of central attitudes that are in direct conflict, akin to a state of cognitive dissonance (McGregor, Newby-Clark, & Zanna, 1999) or anxious uncertainty (Hirsh, Mar, & Peterson, 2012). Disapproval of specific outgroup beliefs and practices conflicts with attempts to nevertheless allow for these may be especially frustrating for conservatives because they find cognitive conflict aversive. Moreover, allowing for divergent beliefs and practices threatens core conservative values of upholding social order, maintaining traditional values, and a preference for the status quo. Research on moral foundations theory (Graham et al., 2013; Graham, Haidt & Nosek, 2009; Haidt & Graham, 2007) further reveals that, at least in western nations, political conservatives place greater value on group-binding moral foundations such as protecting the ingroup and endorse ethics of community than political liberals which may mean that conservatives are more sensitive to culturally dissimilar practices and beliefs that conflict with their own (but see Brandt et al., 2014 and Brandt & Crawford, 2020 for reviews on ideological conflict).

If conservatives find diverging cultural or religious beliefs and practices particularly frustrating, then engaging in toleration might cause them to push back against the very group targeted for increased toleration. Broadly, psychological conflict involving dissonant cognitions or anxious uncertainty reliably causes increased aggression and outgroup derogation (Grieve & Hogg, 1999; Harmon-Jones & Sigelman, 2001; Harmon-Jones, 2004; Hogg, Kruglanski, & Van Den Bos, 2013; Jonas et al., 2014; McGregor et al., 1998; Van Den Bos, Euwema, Poortvliet, & Maas, 2007). As conflict and uncertainty tends to be aversive (Hofstede, 2001), conservatives may have prejudiced reactions to conflicts with minority groups that challenge their core beliefs. For example, uncomfortable thoughts of personal demise lead conservatives to show increased hostility towards outgroups (Greenberg et al., 1992; Hirschberger & Ein-Dor, 2006; Pyszczynski et al., 2006), and the link between extreme right-wing beliefs and derogation of immigrants is mediated by socio-economic fear (van Proojen, Krouwel, Boiten, & Eendebak, 2015). Similarly, reactions to diversity messaging and multiculturalism can be moderated by perceivers' political ideology. For example, political conservatives showed increased prejudice and social distancing from ethnic minorities after reflecting on

concrete ways in which multiculturalism can be achieved, relative to political liberals (Yogeeswaran & Dasgupta, 2014). Further, people high (but not low) in right-wing authoritarianism showed increased prejudice toward immigrants and opposition to diversity when they were exposed to a video promoting multiculturalism or stimuli showing a multicultural group (Kauff, Asbrock, Thorner & Wagner, 2013). Taken together, such findings suggest that intergroup toleration of a dissimilar religious group's practices and beliefs may be especially unsettling for conservatives and guide their attitudinal response to the group.

The Current Research

The current study probes the motivational processes that might underlie a backlash against a minority group targeted for toleration. We used a neurophysiological measure linked to motivational direction: relative frontal alpha activity (Reznik & Allen, 2018). Research reliably demonstrates that relative left frontal cortical activation (as indexed with EEG as relatively less alpha activation in the left, compared to the right, frontal cortex) is associated with approach motivation (Coan & Allen, 2004; Davidson, 2004). For example, this pattern of brain activity has been linked with positive affect, trait behavioral activation, promotion focus orientation, social power, reward sensitivity, and risk-taking (Amodio et al., 2004; Boksem, Tops, Kostermans, & De Cremer, 2009; Gianotti et al., 2009; Harmon-Jones, 2003; Harmon-Jones, 2004; Harmon-Jones & Allen, 1998; Harmon-Jones & Sigelman, 2001; Pizzagalli, Sherwood, Henriques, & Davidson, 2005; Studer, Pedroni, & Rieskamp, 2013; Tomarken, Davidson, Wheeler, & Doss, 1992; but see meta-analytic evidence in Kuper, Käckenmester & Wacker, 2019 which suggests that frontal asymmetry and certain trait measures share a weak relationship. Notably, these researchers propose a focus on state measures of frontal asymmetry, as in the current research). Relative left frontal activity has also been reliably associated with anger, an approach-motivation emotion, particularly in response to provocation or frustration. Personal insults, irritating tuition hikes, offensive images of social injustice, mimicry of angry facial expression, and ostracism have all been found to increase relative left frontal activity and in each of these studies, this increase was associated with self-reported anger (Harmon-Jones, 2004; Harmon-Jones & Allen, 1998; Harmon-Jones, Lueck, Fearn, & Harmon-Jones, 2006; Harmon-Jones & Sigelman, 2001; Harmon-Jones, Sigelman, Bohlig, & Harmon-Jones, 2003; Peterson, Gravens, & Harmon-Jones, 2010; Stewart, Coan, Towers, & Allen, 2011). Induction of relative left frontal activity has also been found to heighten anger and aggression (Hortensius, Schutter, & Harmon-Jones, 2011; Peterson et al., 2010). Anger provoked by practicing toleration and heightened negativity against a group targeted for toleration should thus be mediated by relative left frontal activity.

Additionally, relative left frontal activity has been reliably associated with regulatory efforts to resolve conflicting cognitions. According to the action-based model of cognitive dissonance, inconsistent cognitions (like those inherent to toleration) interfere with action tendencies and dissonance reduction brings cognitions into consonance, restores an action-oriented mindset, and activates approach motivation processes (Harmon-Jones & Harmon-Jones, 2008). Consistent with this, conditions of dissonance reduction cause increased relative left frontal activity (Harmon-Jones, Gerdjikov, & Harmon-Jones, 2008a; Harmon-Jones, Harmon-Jones, Fearn, Sigelman, & Johnson, 2008b), trait approach motivation is associated with dissonance reduction, and manipulations that reduce approach motivation diminish dissonance reduction. Backlash against a minority group targeted for toleration could reflect an attempt to resolve the inherently dissonant cognitions in tolerance by increasing negative evaluations of the target group and obviating the need for toleration (i.e., one need not tolerate a group that is unworthy). This new behavioral commitment should engage an action-oriented state and increased relative left frontal activity.

In sum, we examined if the practice of toleration elicits an approach motivated backlash against the to-be-tolerated group, in the form of anger or dissonance reduction, particularly amongst relatively conservative individuals. Given the association with anger and dissonance reduction, we used relative left frontal EEG activity to probe the approach motivation processes underlying this potential backlash (Coan & Allen, 2004; Reznik & Allen, 2018). In the present research, conducted in the context of New Zealand, we chose Muslims as the ideal target group for intergroup toleration because Muslim religious practices, norms, and beliefs are often at the centre of political debate about cultural diversity in western nations (Verkuyten et al., 2019; Verkuyten & Yogeeswaran, 2017), including New Zealand. Additionally, Muslims represent the least liked group in New Zealand (Sibley et al., 2020) making Muslims the ideal target group for an examination of intergroup toleration, which requires objections to the practices and beliefs of the target group.

Method

Participants

One hundred and seventy-five, right-handed, adults (49 male, 126 female) were recruited for the study from a large public university in New Zealand. Participants completed the study in exchange for course credit or a $10 gift voucher. Data from three Muslim participants were excluded from the analyses (as Muslims were the target group in the study) resulting in a final

sample of 172 adults (47 male, 125 female) between the ages 18–62 years ($M = 21.73$, $SD = 6.19$). Of these participants, the vast majority ($n = 147$) were between the ages 18–25 years and none of the participants would be categorized as elderly (a target group used in the study). A sensitivity power analysis suggests that this sample was sufficient to detect an effect size of $f = .22$ with $\alpha = .05$ and power of .80, implying a small to medium effect for the interaction. Of these participants, 124 identified as White/European (72.1%), 20 as Asian (11.6%), while the remaining comprised people of Māori (indigenous New Zealanders) (0.6%), 'other' (3.5%), and multiple-ethnicities (12.8%). A total of 41 participants were Christian, 62 were Agnostic, Atheist, or listed 'none' for religion, while the remaining sample indicated other religions (e.g., Hindu, Buddhist) or simply left the question blank. All participants offered informed consent to participate in the research and consented to their data being used in publication. This research was approved by the relevant Human Ethics Committee, and all research was carried out in compliance with the Declaration of Helsinki.

Design and Procedure

The current study used a between-subjects design where participants were randomly assigned to a toleration or control condition after self-reporting their political ideology, which was used as the key moderator variable. The outcome measures were relative left frontal activity while evaluating Muslims, and self-reported warmth toward Muslims. Participants in the study were first provided an information sheet and consent form they needed to sign before proceeding with the study. In the Pre-EEG phase of the study, participants completed the demographic questionnaire and a measure of political orientation, which took a few minutes. After completing these questionnaires, participants were set up with an EEG headset. All participants were first provided with general information about Muslims (e.g., how many live in New Zealand) before being asked to reflect on Islamic practices and beliefs they know of, including specific practices, norms, or beliefs of the group they disapprove of and write about these. EEG recording during this phase was used as a baseline measure as all participants completed the same task for 3–5 min.

Our experimental manipulation was based on seminal research on the intergroup implications of cultural diversity ideologies (Wolsko, Park, Judd, & Wittenbrink, 2000) later adapted in other research (e.g., Mahfud, Verkuyten, Badea & Reynolds, 2018; Verkuyten, 2009, 2010; Vorauer & Sasaki, 2011; Yogeeswaran & Dasgupta, 2014). After participants were asked to list up to three norms, values, or practices they object to, they were provided with a list of Muslim practices, norms, or values that they were told other participants identified as ones they disapprove of. These included contemporary examples of disapproval people have such as the creation of Islamic schools, formation of an Islamic political party, wearing of the hijab and burqa in public places, the creation of separate swimming pools for men and women, and the practice of not shaking hands between people of the opposite sex. Participants were asked to indicate which of those practices, beliefs, or values were most similar to their own generated list.

At this stage, participants were randomly assigned to the experimental or control conditions. In the experimental condition, participants were asked to provide reasons why they thought that despite their disapproval of these practices, norms, or values, they should nevertheless allow these in society. Participants generated a list of reasons to tolerate these dissenting practices before browsing a list of reasons to tolerate (e.g., freedom of religion, freedom of speech, etc.), allegedly provided by other participants, before indicating which of those reasons matched most closely to their own suggestions (a task that took 3–4 min). However, in the control condition, participants skipped over this final task and directly completed the attitudinal measures similar to other studies examining cultural diversity ideologies (Verkuyten, 2009, 2010; Vorauer & Sasaki, 2011; Wolsko et al., 2000). By doing so, control participants completed all the same tasks as the experimental condition, except that they did not have the chance to specifically weigh reasons to nevertheless tolerate those outgroup norms, values, and practices they disapproved of earlier (see Fig. 1).

All participants completed the attitudinal measures, while wearing the EEG headset – this task took a few more minutes. In total, EEG recording lasted between 10 and 15 min. EEG headsets were then removed and participants were fully

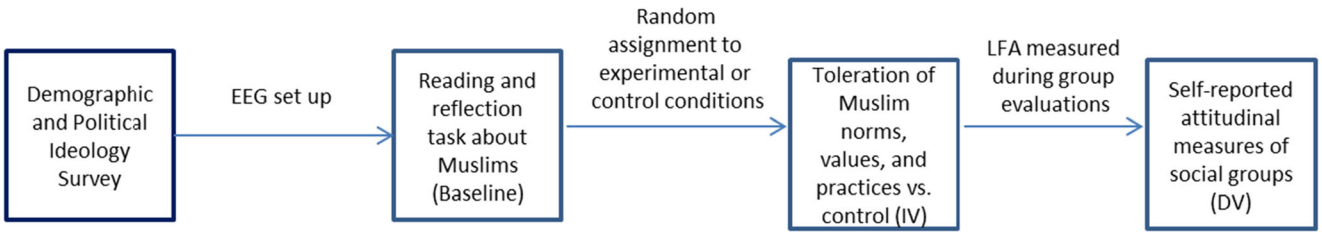

Fig. 1 Conceptual diagram representing study design

debriefed. They were finally thanked for their participation, and offered an incentive for their time (either course credit or a $10 gift voucher). Both the experimental and control conditions had 86 participants each, and demographics appeared comparable across conditions. Specifically, the control condition had 22 men and 64 women, with a mean age of 21.29 years ($SD = 5.34$), while the experimental condition had 25 men and 61 women, with a mean age of 22.15 years ($SD = 7.03$).

Measures

Demographic Information Participants were asked to complete a 6-item demographics questionnaire that gathers information regarding age, gender, level of education, ethnicity, religion, and nationality.

Political Ideology Additionally, participants completed a 3-item measure of political ideology (Pratto, Sidanius, Stallworth & Malle, 1994) assessing self-reported political orientation on social issues, economic issues, and foreign-policy issues, where 1 = Very Liberal, 2 = Liberal, 3 = Somewhat Liberal, 4 = Neither Liberal nor Conservative, 5 = Somewhat Conservative, 6 = Conservative, 7 = Very Conservative ($\alpha = .80$).

EEG Recording and Preprocessing EEG was recorded with the 14-electrode Emotiv EPOC+ headset and the Emotiv TestBench software (Emotiv Systems Inc., San Francisco, CA, USA). Emotiv EEG technology is a cost-effective, rapid-application alternative to standard EEG systems, used in social and cognitive neuroscience research (Louwerse & Hutchinson, 2012; Prentice et al., 2018; Steinhubl et al., 2015) and in brain-computer interface (BCI) research and application (Bobrov et al., 2011; Choi & Jo, 2013; Debener, Minow, Emkes, Gandras & De Vos, 2012; De Vos, Gandras & Debener, 2014; Khushaba et al., 2013; O'Regan & Marnane, 2013; Vourvopoulos & Liarokapis, 2014). Validation research demonstrates that this EEG headset system proves comparable to standard systems. In relation to frequency and alpha activity, comparisons of Emotiv headsets and Biosemi Active Two systems found similar frequency contributions to the resting state, long-range temporal correlations in the alpha band, and a similar ability to detect alpha suppression (Pietto, Gatti, Raimondo, Lipina, & Kamienkowski, 2018; Stopczynski, Stahlhut, Larsen, Petersen, & Hansen, 2014). Further, the Emotiv EPOC system appears to reliably index approach related relative left frontal activity. For example, positive mood induction causes increased relative left frontal activity, and relative left frontal activity correlates with preferred social stimuli and positive attitudes, while a sad mood induction causes decreased relative left frontal activity (Bailey, Johann, & Kang, 2017; Maison, & Oleksy, 2017; Rodriguez Ortega, Rey Solaz, Raya, & Luis, 2013a, b). Emotiv headsets were positioned on the scalp of each participant prior to the start of the study according to the 10–20 international system and data was sampled at a rate of 128 Hz from the following electrodes (gold-plated contact-grade hardened copper with saline moistened felt pads): AF3, AF4, F3, F4, F7, F8, FC5, FC6, P7, T7, T8, P8, O1, and O2.

EEG recorded during the reflection phase (for Baseline calculation) and during Muslim evaluation (for primary DV calculation) were digitized at 128 Hz with a common mode sense reference and driven right-leg ground within a .16–43 Hz bandwidth (digital 5th order Sinc filter). All impedances were below 5000 Ω. Offline, digitized EEG was bandpass filtered at .1–30 Hz and notch filtered at 50 Hz (IIR zero phase shift Butterworth filter, slopes 24db/octave). Movement and eye-blinks artefacts were automatically detected in each electrode with a −100 μV and +100 μV threshold and maximal allowable voltage step of 50 μV/ms. Blocking artefacts were detected with lowest allowed activity in intervals of 200 ms of 0.5 μV. Data was marked as bad 200 ms before and after the event. Epochs of 2 s were extracted through a hamming window and overlapped by 75% to avoid data loss across both the baseline and Muslim evaluation periods. Power spectra were calculated via fast Fourier transform and power values (in μV^2) were averaged over artefact-free epochs in each individual electrode and total alpha band power (8–12 Hz), an inverse indication of cortical activity, was logarithmically transformed (natural log). Relative left frontal activity was calculated as F4 minus F3 electrode in alpha power for two scores across (a) the baseline (average number of epochs = 253) and (b) the Muslim evaluation (average number of epochs = 15.3). Higher scores indicate relatively greater left-than-right cortical activation and higher levels of approach motivation (Reznik & Allen, 2018).

Outgroup Attitudes Attitude toward various groups including Muslims, Atheists, Elderly, and Christians were measured using feeling thermometers (Converse, Dotson, Hoag & McGee, 1980), a standard measure of outgroup attitudes used widely in the intergroup literature (e.g., Sibley et al., 2020). Participants indicated how they felt about various groups on a scale going from 0 (indicated cold or unfavorable feelings) to 100 (indicating warm or favorable feelings). The inclusion of other groups was done for two reasons: (a) to avoid suspicion about the nature of the study; and (b) in order to examine whether practicing toleration toward one group carried over to evaluations of other groups. Both theoretical and

empirical research on toleration reveals that people tend to tolerate certain outgroup practices or beliefs while rejecting or embracing others (e.g., Adelman & Verkuyten, 2020; Dangubic et al., 2020; Verkuyten et al., 2020) suggesting that the process of toleration of Muslim practices should not have carry over effects on attitudes toward a range of other groups. Nevertheless, in order to avoid suspicion during the study and establish that practicing toleration does not impact relative left frontal activity and attitudes toward various social groups, we included measures relating to other social groups.

Results

Descriptive Data

First, we examined within-subject differences in ratings of the 4 target groups using paired-sample t-tests. In line with previous work (e.g., Sibley et al., 2020), Muslims were less favorably evaluated ($M = 52.30$; $SD = 18.24$) than all other groups in the study including Christians ($M = 60.38$; $SD = 21.03$), Atheists ($M = 58.24$; $SD = 17.44$), and Elderly ($M = 72.14$; $SD = 18.04$), all $ts > 3.70$, all $ps < .001$, all $\eta^2_p > .07$.

Main Analyses

Attitudes toward Muslims One-way Analysis of Variance (ANOVA) examining differences between the toleration and control condition revealed no difference in attitudes toward Muslims, $F(1, 170) = 2.168$, $p = .14$, $\eta^2_p = .013$. However, we then tested whether political ideology moderated the impact of toleration on attitudes toward Muslims. To do so, we used multiple regression analyses involving Hayes (2013) PROCESS macro (Model 1) with 1000 bootstrapped resamples, a widely used approach for conducting moderation analyses. Specifically, we entered political ideology, condition, and their interaction as predictors, and attitudes toward Muslims as the dependent measure. Multiple regression analyses revealed a significant interaction of political ideology x condition on attitudes toward Muslims, $B = -4.905$, $SE = 2.353$, $p = .039$, 95% CI [−9.55, −0.26], $R^2 = .024$ (see Fig. 2). Decomposing this interaction by political orientation in order to test the effects of our manipulation on those relatively liberal vs. relatively conservative separately, analyses examined the effects of intergroup toleration among those ±1 SD from the mean on political ideology similar to the standard procedure outlined in Aiken and West (1991) as well as Cohen, Cohen, West and Aiken (2003). These analyses revealed that toleration reduced positive attitudes toward Muslims among those relatively conservative (i.e., those 1 SD above the mean on political conservatism), $B = -8.804$, $SE = 3.92$, $p = .026$, 95% CI [−16.54, −1.07], $d = .35$, while toleration had no effect on attitudes toward Muslims among those relatively liberal (i.e., those 1 SD below the mean), $B = 2.759$, $SE = 3.913$, $p = .48$, 95% CI [−4.97, 10.48], $d = .11$.

Attitudes toward Other Groups Similar to the analyses above, a series of one-way ANOVAs examining the effects of toleration of Muslims (vs. control) on attitudes toward Christians, Atheists, or Elderly revealed no mean differences between

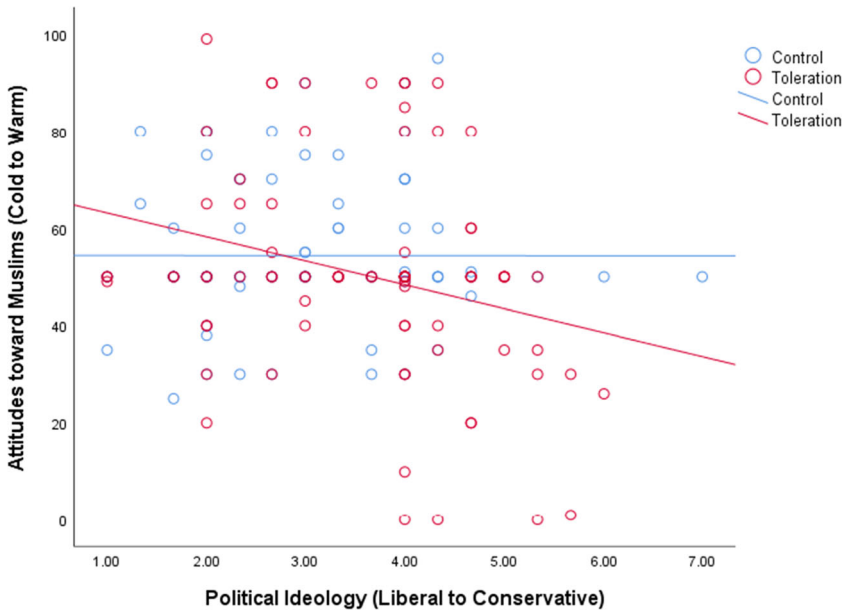

Fig. 2 Interaction between political ideology and toleration vs. control manipulation on attitudes toward Muslims

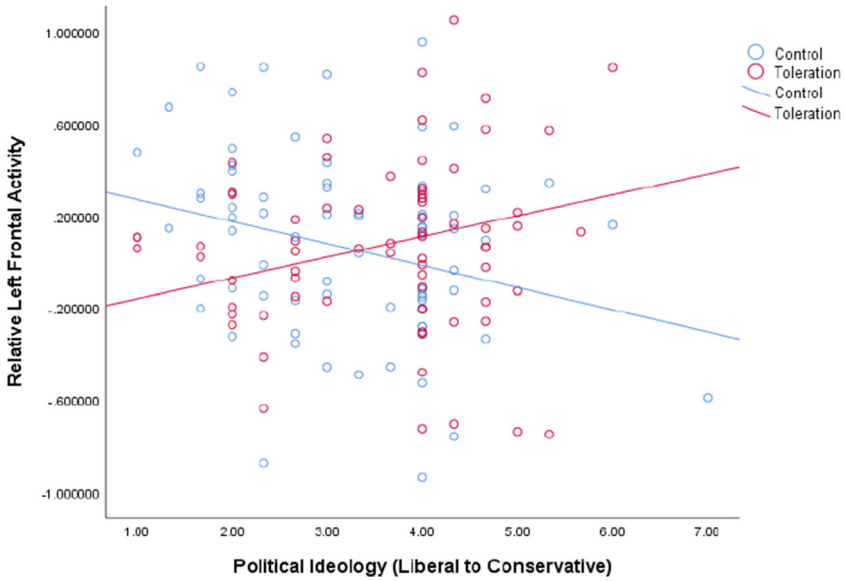

Fig. 3 Interaction between political ideology and toleration vs. control manipulation on left frontal asymmetry

conditions, all Fs < 1.56, all ps > .21, η^2_p < .01. Additionally, as expected, multiple regression analyses using Hayes (2013) PROCESS macro (Model 1) with 1000 bootstrapped resamples revealed that political ideology did not interact with condition to impact on attitudes toward Christians, Atheists, or the elderly, ps > .15, all $R^2 \leq .01$. This suggests that the interactive effects of toleration of Muslims x political ideology are specific to attitudes toward Muslims and not social evaluations more broadly.

Relative Left Frontal Activity During EEG recording, a rare problem was encountered in which the EEG headset did not properly communicate with the Testbench recording software. Consequently, a total of 13 participants did not have EEG recordings and were not included in these analyses. Additionally, a further 7 participants had artifacts at F3 or F4 throughout the Muslim evaluation and a relative left frontal activity score could not be computed. Therefore, we analysed the remaining 152 participants that had usable EEG data. As mentioned earlier, higher relative left frontal activity scores indicate increased approach motivation. One-way ANOVA comparing the toleration vs. control conditions revealed that there were no difference in relative left frontal activity between these two conditions, $F(1, 150) < 1$, $p = .977$. However, multiple regression analyses using Hayes (2013) PROCESS macros (Model 1) controlling for the baseline relative left frontal activity revealed a significant interaction between political ideology and intergroup toleration on relative left frontal activity during the evaluation of Muslims, $B = .094$, $SE = .047$, $p < .05$, 95% CI [0.001, 0.19], $R^2 = .015$ (see Fig. 3).[3] Analyses demonstrated that for those relatively conservative (those 1 SD above the mean on political ideology), intergroup toleration increased relative left frontal activity compared to the control condition, $B = .166$, $SE = .076$, $p = .03$, 95% CI [0.02, 0.32], $d = .36$, while for those relatively liberal (those 1 SD below the mean on political conservatism), intergroup toleration had no effect on relative left frontal activity, $B = -.053$, $SE = .078$, $p = .49$, 95% CI [−0.21, 0.10], $d = .11$.[4]

Moderated Mediation We finally tested whether relative left frontal activity mediated the effects of intergroup toleration (vs. control) on attitudes toward Muslims for those relatively liberal vs. conservative, while controlling for baseline activity similar to above. Such a test would inform whether left frontal activity during the outgroup evaluation mediated the effects of the toleration manipulation on self-reported outgroup attitudes among political conservatives versus liberals. To do so, we conducted a conditional process model (Model 8 in PROCESS; Hayes, 2013) with 1000 resamples. These analyses revealed a significant moderated mediation effect, *Index* = −0.782, $SE = 0.603$, 95% CI [−2.589, −0.327] (see Fig. 4).

[3] The findings remain unchanged regardless of whether or not we control for the baseline activity.

[4] In order to ensure that the interactive effect of political ideology and condition on relative left frontal activity while evaluating Muslims would not be driven by cognitive activity, differences in verbal processing between conditions, or evaluations of any kind as opposed to evaluations of Muslims in particular, we conducted the same multiple regression analysis as above, but instead looking at EEG activity while evaluating the elderly as they represent an outgroup to all participants (i.e., none of the participants were classified as 'elderly') similar to Muslims. Multiple regression analyses involving condition, political ideology, and their interaction on relative left frontal activity while evaluating elderly revealed a non-significant interaction, $B = .149$, $SE = .100$, $p = .14$, $R^2 = .015$. Analyses revealed that tolerance did not impact relative left frontal activity while evaluating elderly among political liberals $B = -.264$, $SE = .162$, $p = .11$, 95% CI [−.585, .056], nor political conservatives, $B = .077$, $SE = .161$, $p = .63$, 95% CI [−.241, .396].

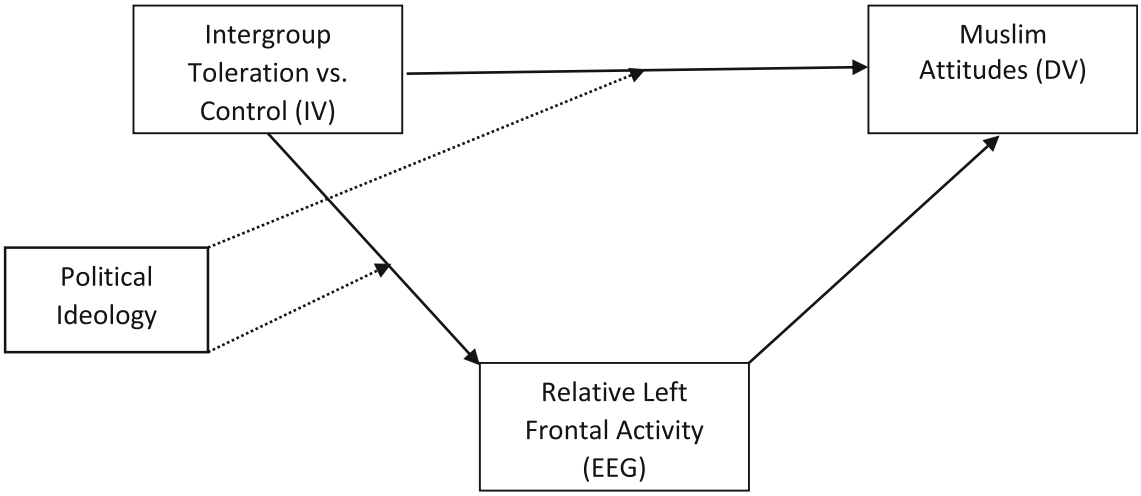

Fig. 4 Conceptual diagram of the moderating role of political ideology on the effects of intergroup toleration on attitudes toward Muslims via relative left frontal activity from EEG

Decomposing this effect by political ideology, analyses revealed that specifically among those relatively conservative, there was a significant indirect effect of intergroup toleration on attitudes toward Muslims through relative left frontal activity, $B = -1.383$, $SE = 1.014$, 95% CI [−4.384, −0.070]. However, for those relatively liberal, there was no indirect effect of relative left frontal activity on the effect of intergroup toleration for attitudes toward Muslims, $B = 0.446$, $SE = 0.684$, 95% CI [−0.374, 2.523].[5] These effects suggest that for those relatively conservative, being told to tolerate Muslim beliefs and practices they object to increases approach motivation that in turn drives greater dislike of Muslims as a group.[6]

Discussion

The current research utilized a novel paradigm to examine the effects of practicing intergroup toleration on a neuropsychological marker of affect and attitudes toward Muslim minorities depending on perceivers' political ideology. Using a large sample of non-Muslims in the context of New Zealand, we found that reflecting on reasons to tolerate Muslim beliefs and practices that we object to (i.e., intergroup toleration) increased negative attitudes toward Muslims among those relatively conservative, and this increased negativity toward Muslim minorities was driven by a neuropsychological indicator of approach motivation, relative left frontal activity. By contrast, those relatively liberal showed no changes in relative left frontal activity or attitudes toward Muslims when practicing intergroup toleration. We also establish that practicing toleration of Muslim outgroup practices has a unique effect on EEG activity and evaluations of the group they were asked to practice toleration toward earlier.

The present research is the first empirical study to directly examine how practicing intergroup toleration by situationally having people consider outgroup practices, norms, or beliefs they disapprove of, and then consider reasons to nevertheless endure these practices (see Verkuyten & Yogeeswaran, 2017) impacts on people's affective and attitudinal responses. Our findings reveal that toleration does not uniformly have positive or negative consequences, but its effects are moderated by perceivers' political ideology. Specifically, practicing intergroup toleration of Muslim minorities may backfire among relatively conservative people in Western societies by inducing the consideration of inconsistent cognitions, provoking anger or regulatory efforts to reduce the inconsistency, and in turn increasing negative evaluations of Muslims. By focusing on the implications of intergroup toleration, the current work makes a valuable contribution to the literature on intergroup relations by examining conflict emerging from disapproval of outgroup beliefs and practices, rather than direct dislike or group-based antipathy like most prior research (see Verkuyten et al., 2020 for conceptual distinction). Moreover, by using neuroscientific methods, we are able to better understand how intergroup toleration impact basic motivational processes in the brain and how these neuropsychological processes in turn drive people's evaluations of social groups.

Limitations and Future Directions

Although the current work sheds a novel perspective on the implications of intergroup toleration for those relatively conservative versus liberal, it is important to note that our conclusions may be due to the choice of our target group: Muslim

[5] The findings remain the same regardless of whether or not we control for baseline EEG activity.

[6] Controlling for the effects of age and/or gender do not alter the interpretation of any of the results reported above.

minorities in New Zealand. Recent research on the ideological-conflict hypothesis (e.g., Brandt et al., 2014, 2015; Chambers et al., 2013; Crawford, 2014) demonstrates that both liberals and conservatives may be equally intolerant of ideological outgroups. Similarly, other research reveals that left-wing authoritarians reveal high levels of dogmatism and prejudice toward other outgroups challenging the notion of the 'rigidity of the right' (e.g., Conway et al., 2018). Such findings collectively suggest that the current results may be specific to reactions toward Muslim minority outgroups, and that intergroup toleration might increase conflict, frustration, and/or prejudice among liberal (but not conservative) participants if the target group were ideologically dissimilar (e.g., Orthodox Christian religious minorities, pro-life groups, Tea-party supporters). However, other work suggests that individual differences in the tendency to avoid uncertainty and ambiguity makes conservative beliefs about societal order and the preservation of traditional norms and conventions unique (Jost et al., 2003), suggesting that more work is needed to examine if intergroup toleration would shift liberal's relative left frontal activity and lead to more negative outgroup attitudes if an ideologically dissimilar group to political liberals was the target outgroup in this work.

Another limitation of the current study is that the present work used a control condition that varied slightly in length from the experimental condition. Although this strategy is in line with other research on cultural diversity ideologies (Verkuyten, 2009, 2010; Vorauer & Sasaki, 2011; Wolsko et al., 2000), future work would benefit from identifying a control condition that could have participants engage in a final task that is of comparable length. This would ensure that the control condition elicits similar levels of verbal processing and cognitive demand as our toleration task. However, given that our current findings emerge only among relatively conservative participants and specifically in response to Muslim evaluations and not evaluations of another outgroup (i.e., the elderly), we suspect that the current findings are not due to differences in cognitive demand or verbal processing across conditions. However, future work is needed to more rigorously examine this possibility.

Further, another limitation of the current work is the relatively small effect sizes observed here. It is unclear if these relatively small effects are due to the reliance on a convenience sample with a more limited spread of political ideology, or if the manipulation is indeed relatively weak in its impact. Future work should replicate and extend this work. It is also important to note that this research was conducted in a unique context, and may not generalize to other national contexts. Though New Zealand is indeed similar to other English-speaking nations with a European majority, a multiethnic population, and is exposed to similar media as the USA, UK, and other western nations, New Zealand is unique in that biculturalism is a defining aspects of its national identity which recognizes the unique status of Māori, the minority indigenous population (Sibley & Ward, 2013), and Muslims comprise only 1% of the total population. Future work should therefore try to replicate and extend these findings to other national context.

And lastly, our work demonstrates that a basic motivational process mediated the increased negativity towards Muslims. We speculate that this shift towards approach motivation amongst conservatives reflects either an angry reaction to the frustration of opposing cognitions, or dissonance reduction achieved by adding negative cognitions about Muslims, rendering them less worthy of tolerant consideration. Perhaps this pattern of brain activity reflects some combination of both of these processes, but future work could incorporate measures of specific emotions like anger to help tease apart (or integrate) these explanations. More broadly, these findings fit with other models in which psychological conflicts or expectancy violations can be regulated through re-engaged approach motivation (Jonas et al., 2014; Nash, McGregor, & Prentice, 2011; Proulx, Inzlicht, & Harmon-Jones, 2012). Future research could also examine the extent to which toleration and reactance amongst conservatives reflects a special case or reflects a more general process in which conservatives react with approach motivation to other types of conflict to alleviate the uncomfortable, dissonant state.

Closing Remark

As various local, national, and international organizations promote toleration as foundational to peaceful coexistence in our increasingly diverse nation states, it is important to better understand its practical implications, especially as people involved in the formulation of such approaches may be ideologically homogenous. Our data suggest that while toleration can be valuable for pluralistic nations (Verkuyten et al., 2019), its effects may not *always* be positive. At least among some perceivers, a message of toleration can even backfire by instigating frustration, uncertainty, and increase negativity toward the very same minority groups one is trying to improve relations with. However, it is important to note that the current work does not suggest that there is no benefit to intergroup toleration, which is a bare minimum requirement for managing pluralistic societies comprised of cultural, religious, and ideological differences by improving certain aspects of intergroup relations (see Verkuyten et al., 2019, 2020; for reviews). The current work simply suggests that there may also be unintended side effects of such an approach, specifically on outgroup attitudes among some perceivers. Taken together, the current research provides a starting point for future exploration on the nuanced implications of intergroup toleration in pluralistic nations.

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Compliance with Ethical Standards

Competing Statement The authors have no competing interests to declare.

Ethics Approval and Informed Consent This research was approved by the Human Ethics Committee of the University of Canterbury, New Zealand. All participants provided informed consent for their participation in the study and inclusion of their data for publication.

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