



# Brief Compassion Training Reduces Intergroup Psychological Barriers: An Experimental Study

Jackie C. K. Chow<sup>1</sup> · Winnie W. S. Mak<sup>1</sup> · Larry Auyeung<sup>1</sup>

Accepted: 17 September 2023

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2023

## Abstract

**Objectives** This experimental study aimed to investigate the effect of a brief online compassion induction on the individuals' responses towards different outgroups.

**Method** A single-blinded randomized design was employed. Two hundred twenty-three participants ( $n = 223$ ) completed the baseline questionnaire. They were randomly assigned to either the compassion condition (watch a 20-min video on guided compassion practice) or the attention control condition (watch a 20-min video on rock formation). Experimenters monitored participants' attentiveness. A post-experiment questionnaire was administered immediately afterwards. Generalized linear mixed models (GLMMs) were used for outcome analyses. The independent variables included experimental conditions (compassion vs. attention control), timepoint of the measurement (pre-experiment, post-experiment), and interactions between these variables. Outcome variables included negative outgroup emotions and attitudes, social distance, and donation behavior towards three outgroups (ethnic minorities, Mainland immigrants, people with opposite political views).

**Results** Compared to the control condition, the compassion induction led to a small reduction in the overall negative emotions ( $d = 0.22$ ), attitudes ( $d = 0.24$ ), and social distance ( $d = 0.21$ ) towards outgroup. Small reductions in negative emotions ( $d = 0.26$ ), attitudes ( $d = 0.40$ ), and social distance ( $d = 0.28$ ) towards immigrants were also found. Additionally, a small reduction in negative emotions ( $d = 0.26$ ) towards political partisans was observed. No effect was found for ethnic minorities, while the effect of compassion on donation behavior was not significant.

**Conclusions** A brief online compassion induction could facilitate more favorable responses towards outgroups, reducing intergroup psychological barriers. Generic compassion induction could potentially serve as a convenient tool for intergroup interventions targeting various social groups.

**Preregistration** This study is not preregistered.

**Keywords** Compassion · Intergroup relations · Prejudice · Outgroup · Intergroup emotions theory

Despite evidence demonstrating the benefits of intergroup contact, negative perceptions and emotions towards outgroup members often thwart its effectiveness. When people hesitate or are reluctant in contacting outgroups, group segregation continues as a critical social issue (Paolini et al., 2015, 2018). Research has echoed this contention and has identified various psychological barriers that hinder individuals' willingness to engage with outgroups, including negative emotions (e.g., fear, anxiety) and negative attitudes (e.g., prejudice) towards outgroup members (Bar-Tal, 2013).

The intergroup emotions theory proposed by Smith and Mackie (2016) offered directions to reduce intergroup psychological barriers. For example, the theory suggested that negative intergroup emotions and attitudes were often the results of negative outgroup appraisals, which could lead to avoidance or aggressive behaviors towards outgroup members, perpetuating intergroup conflicts. It could therefore be seen that changing cognitive appraisals might facilitate more favorable intergroup emotions, attitudes, and behaviors, and subsequently reduce psychological barriers between groups (Halperin et al., 2013; Smith & Mackie, 2016).

To promote positive cognitive appraisals towards outgroups, compassion has been increasingly proposed to be one of the means for intergroup intervention. Compassion was defined as a collection of attitudes and actions

✉ Winnie W. S. Mak  
wwsmak@cuhk.edu.hk

<sup>1</sup> Department of Psychology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

characterized by understanding that human pain and suffering are universal, recognizing the suffering of others, accepting the pain, and being motivated to alleviate one's suffering (Strauss et al., 2016; Underwood, 2009). Research has shown that compassion was positively associated with prosocial emotions (e.g., warmth, empathy, sympathy), attitudes (e.g., reduce prejudice, increase acceptance), and behaviors (e.g., helpfulness, volunteerism) (Batson et al., 1987; Fehr, 2013; Fehr et al., 2009; Leiberger et al., 2011; Omoto et al., 2009; Sinclair et al., 2015; Zhang et al., 2019). However, compassion could be conditional. In fact, compassionate feelings and responses were often minimized towards outgroups or people with salient value differences (Cikara et al., 2014; Goldfried & Miner, 2002). Thus, if a compassion induction could alter individuals' cognitive appraisals and induce prosocial responses towards people who are considered "them" but not "us" (Cikara et al., 2014), it would demonstrate the societal value of compassion in intergroup settings. The ideation that "our human compassion binds us the one to the other – not in pity or patronizingly, but as human beings who have learned how to turn our common suffering into hope for future" could be exhibited empirically (Nelson Mandela Foundation, 2000).

Exploring intergroup research using compassion-based interventions, brief compassion training has been found to be effective in improving feelings and attitudes towards political partisans in the USA, reducing prejudice towards people experiencing homelessness, and inducing altruistic behaviors towards victims of a redistribution game (Parks et al., 2014; Simonsson et al., 2022; Weng et al., 2013). However, to our knowledge, few studies experimentally conjointly examined if and to what extent brief compassion training could influence intergroup emotions, perception, and behavioral responses. Moreover, there was mixed evidence on the use of compassion-based interventions in reducing prejudiced attitudes, which merits further scientific exploration (Chang et al., 2023; Kreplin et al., 2018).

Furthermore, as some social groups may be subjected to more extreme measures of discrimination than others (Pew Research Centre, 2019; United Nations, 2018), the effect of compassion on different social groups may not be equally favorable. However, very limited studies had simultaneously explored compassion's effect on different social groups (e.g., Kang et al., 2014). Research exploring compassion induction towards a broader spectrum of social groups may facilitate better understanding of its effectiveness towards outgroups experiencing different presentations and levels of prejudice.

As intergroup interventions were often designed for specific outgroup members, the cost and complexity to implement the interventions might be elevated. Thus, it is worth studying the effects of generic compassion training on intergroup responses. With reference to Goffman's (1963) stigmatization groups, three social groups in

Hong Kong were selected in this study, including ethnic minorities, Mainland immigrants, and people with opposing political views. These groups face discrimination due to visible differences in physical characteristics (Equal Opportunities Commission, 2016; O'Connor, 2018), less obvious but noticeable differences in mother tongue (Chen et al., 2019; Fong et al., 2018), and ideological differences respectively (Kobayashi, 2020; Moore-Berg et al., 2020; Wong, 2018). Moreover, in a fast-paced environment, studying a brief online compassion intervention could be more ecologically valid in real-world settings (Schumer et al., 2018), and could potentially reduce implementation difficulties.

In summary, this study aimed to investigate whether an online brief compassion training could reduce emotional and attitudinal psychological barriers to engage with outgroups, and facilitate more favorable behavioral responses towards multiple outgroups (ethnic minorities, Mainland immigrants, people with opposite political views) in Hong Kong simultaneously. The study hypothesized that participants who receive a brief compassion training would have:

1. more favorable outgroup emotions, attitudes, social distance, and donation behavior; and
2. similar emotional, attitudinal, and behavioral changes towards three outgroups.

The findings of this study may provide practical implications for promoting positive intergroup relations in diverse societies and promoting social harmony.

## Method

### Participants

The study used a parallel-group design in a community sample of adults. Participants were recruited from authors' university websites, mass mail, and social networking platforms. Individuals were eligible to participate in this study if they met the following criteria: (1) could read Chinese and understand Cantonese; (2) were 18 years of age or older; (3) had no vision or hearing impairment; (4) had no technical or Internet connection problem during the experiment; (5) agreed to the informed consent and debriefing provided, and (6) passed the validity check on attentiveness. To eliminate the possibility that the participants belong to the targeted outgroups under investigation, the following exclusion criteria were used: (1) individuals who indicated no political stance; (2) individuals who self-reported as an ethnic minority or a Mainland immigrant (Fig. 1).

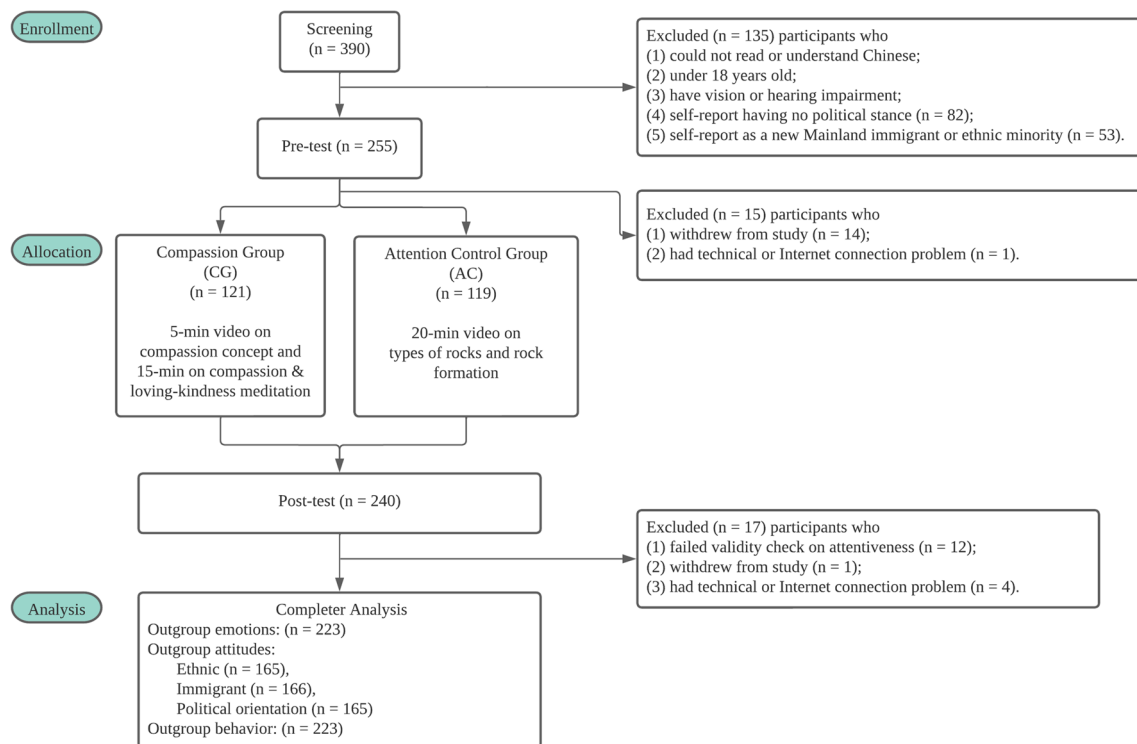


Fig. 1 Participant flow diagram

## Procedure

The experiment received ethics approval from the authors' department at a public university. Informed consent was obtained from all individual participants included in the study. Participants were told this study aimed to investigate the relationship between attention and interpersonal relationships. The actual purpose of the study was concealed at the outset to avoid changing participants' attitudes and behavior which might cause participants' bias. All participants were fully debriefed and explained the actual study purpose at the end of the experiment.

Participants were screened based on the demographic information provided. Eligible participants completed the consent form and pre-experiment questionnaire. To minimize the carry-over effect, the experiment was conducted on an average of 2 weeks after they had completed the pre-experiment questionnaire. The experiment was conducted online under the live video monitoring of an experimenter. Participants first watched the video of the randomly assigned experimental condition. Then they answered the post-experiment questionnaire and questions for validating their level of attentiveness. The experimenter then debriefed the participants, and eligible participants ( $n = 223$ ) were given HK\$50 cash to compensate for the time spent in the experiment. Seventy-nine point eight percent (79.80%) of the participants ( $n = 178$ ) accepted the cash compensation.

In the compassion condition, participants were presented with a 20-min compassion induction. It included a 5-min video introduction on the definition of compassion based on the five dimensions of compassion proposed by Strauss et al. (2016), and short stories about compassion adapted from Covey (2013) and Khema (2012). Then participants listened to a 15-min video on guided compassion practice. The practice adopted compassion meditation based on Buddhist teachings (Hutcherson et al., 2008; Stell & Farsides, 2016), which centers on recognizing the suffering of all people and cultivating compassion towards the self, loved ones, strangers, and difficult persons (refer to Fig. 2 for sample screenshots).

In the active control condition, participants watched a 20-min video about different types of rocks and their formation, which were neutral content and unrelated to compassion. The content was adapted from the Hong Kong geology website (Civil Engineering and Development Department, 2009), and similar content has been used in previous experiments (Yu et al., 2021) (refer to Fig. 3 for sample screenshots). Both scripts had a comparable number of words and duration, and both scripts were recorded by the same person with a similar tone and speed.

Two hundred fifty-five eligible participants who passed the online screening were randomly assigned to the compassion induction condition or the attention control condition in a 1:1 ratio on Qualtrics, an online survey platform. Thirty-two participants' data were excluded due to (1) withdrew

**Fig. 2** Sample screenshots of compassion induction video introducing the components of compassion



**Fig. 3** Sample screenshots of attention control video introducing different types of rocks and rock formation



from the study ( $n = 15$ ), (2) had technical or Internet connection problems ( $n = 5$ ), and (3) failed validity check on attentiveness ( $n = 12$ ). A final sample of 223 participants were included in the data analyses. Due to a technical issue in the Qualtrics survey platform, questions pertaining to outgroup attitudes towards each of the three outgroups in the pre-experiment questionnaire were omitted randomly for 26.50% of the participants, resulting in a reduced sample size of 165 for ethnic minorities, 166 for Mainland immigrants, and 165 for people with opposite political views (Fig. 1).

## Measures

Data on compassion, emotions, attitudes, and social distance were collected in the pre- and post-experiment questionnaires. Donation behavior was only collected after the experiment. The display sequences of measures and outgroups were randomized to eliminate order bias. All measures were presented in Chinese. As the Chinese version for the measures of compassion, outgroup emotions, outgroup

attitudes, and social distance were not readily available, the research team translated them using the backward translation approach. The translated measures underwent content validity evaluation by a clinical psychologist. Then a pilot test of the experiment was conducted with a convenient sample of 30 participants. Based on the feedback received from the expert reviewer and participants, minor adjustments in wording were made prior to actual data collection.

**Demographics and Experience with Outgroups** Participants' age, gender, education level, employment status, marital status, and religion were collected. Their self-report citizenship, ethnicity, and basic political orientation (pro-democracy, pro-establishment, no political stance) (adapted from Cheung et al., 2019; Kobayashi, 2020) were also collected. The experience with outgroups was adapted from Neubaum et al. (2020), as measured via self-reported level of knowledge of outgroups (0 = *no knowledge*, 4 = *very extensive knowledge*), and self-reported level of contact with outgroups (0 = *no contact*, 4 = *daily contact*).



**Compassion** The Sussex-Oxford Compassion for Others Scale (SOCS-O) is a 20-item self-report scale (SOCS-O; Gu et al., 2020) that measures compassion towards other people. It is rated on a 5-point Likert scale (1 = *not at all true*, 5 = *always true*), and higher scores represented more compassion for others. The scale measured compassion in five dimensions: recognizing the suffering of others (e.g., “I recognize when other people are feeling distressed without them having to tell me”), understanding the universality of suffering (e.g., “I understand that everyone experiences suffering at some point in their lives.”), feeling for the person suffering (e.g., “When someone is going through a difficult time, I feel kindly towards them.”), tolerating uncomfortable feelings (e.g., “When someone else is upset, I try to stay open to their feelings rather than avoid them.”), and acting or being motivated to alleviate suffering (e.g., “When others are struggling, I try to do things that would be helpful.”). The original scale had Cronbach’s alpha ranging from 0.74 to 0.94, and McDonald’s Omega ranging from 0.76 to 0.97 for total scale and subscale items. In this study, the total scale showed good internal reliability at pre- and post-experiment (pre-experiment: Cronbach’s alpha = 0.93, McDonald’s omega = 0.91; post-experiment: Cronbach’s alpha = 0.91, McDonald’s omega = 0.91). The subscale items’ Cronbach’s alpha were in the marginally acceptable to good range (pre-experiment: Cronbach’s alpha from 0.73 to 0.87, McDonald’s omega from 0.73 to 0.85; post-experiment: Cronbach’s alpha from 0.69 to 0.88, McDonald’s omega from 0.69 to 0.89).

**Outgroup Emotions** The 8-item Negative Emotions Scale from Mackie et al. (2000) was shortened to 3 items to assess negative emotions (anger, fear, and disgust) towards the three outgroups respectively. It is rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*), with higher scores indicating more negative emotions towards the target outgroup. In this study, the scale’s internal reliability across three outgroups was in the marginally acceptable to good range (pre-experiment: Cronbach’s alpha from 0.68 to 0.82, McDonald’s omega from 0.74 to 0.84; post-experiment: Cronbach’s alpha from 0.73 to 0.83, McDonald’s omega from 0.80 to 0.86).

**Outgroup Attitudes** The Negative Outgroup Attitudes scale was adapted from Stephan et al. (2002) and shortened to a 4-item scale. Participants indicated their attitudes towards three outgroups respectively, including approval, acceptance, dislike, and rejection. Positive attitude items were reverse scored. It has a 10-point Likert scale ranging from 0 (*no at all*) to 9 (*extreme*), and higher scores represented more negative attitudes towards the target outgroup. In this study, the scale’s internal reliability across three outgroups fell in the acceptable to good range (pre-experiment: Cronbach’s

alpha from 0.85 to 0.86, McDonald’s omega from 0.85 to 0.86; post-experiment: Cronbach’s alpha from 0.75 to 0.83, McDonald’s omega from 0.70 to 0.82).

**Social Distance** The Social Distancing Scale was adapted from Link et al. (1987), which originally measures behavioral intentions towards individuals with mental illness. The scale was shortened to three items in this study. Participants were asked to indicate their willingness to accept a person from the outgroup in three different situations: renting a room, introducing a friend, and recommending a job to the target outgroup member. Participants indicated their intention on a 5-point scale ranging from 0 (*definitely willing*) to 4 (*definitely unwilling*), with lower scores representing less social distance and higher behavioral intention to intergroup contact. In this study, the scale showed good internal reliability across three outgroups (pre-experiment: Cronbach’s alpha from 0.80 to 0.83, McDonald’s omega from 0.88 to 0.90; post-experiment: Cronbach’s alpha from 0.79 to 0.81, McDonald’s omega from 0.86 to 0.88).

**Donation to Outgroups** The donation behavior was adapted from Brienza et al. (2021). In this experiment, participants were rewarded with HKD50 as compensation upon completing the study. However, deception was used to assess their charitable behavior towards outgroups. They were told that they can use their compensation to anonymously donate to any of the non-profit organization that support the target outgroups (The Hong Kong Unison for ethnic minorities (Hong Kong Unison, 2023), the Society for Community Organization for Mainland immigrants (SoCO, 2018), and an undisclosed organization for people with opposite political views). Participants were invited to choose one of the two responses (“Yes, I will donate,” “No, thanks.”), which were randomized in presentation order. Response to donate or not to donate was coded as 1 and 0 respectively, with donation representing a favorable outgroup behavior. All participants were fully debriefed about the research purpose after completing the questionnaires and were rewarded with HKD50 regardless of their donation options, if they wished to receive it.

**Attentiveness Validation** To ensure the validity of data collection, factual data check questions (Kane & Barabas, 2018) were asked to identify individuals’ attentiveness while not affecting manipulation effects. Compassion condition participants were asked to briefly describe the things learned after watching the compassion induction. Control condition participants were asked to copy a string of numbers in a textbox and answer two simple questions related to types of rocks. Participants who provided irrelevant points or wrong answers were excluded.

## Data Analyses

Sample size estimation was estimated based on a small effect size ( $f^2 = 0.05$ ), 0.05  $\alpha$ -level, 80% desired power, and 3 predictors (experimental conditions, timepoint of the measurement, condition  $\times$  timepoint interaction). The recommended sample size was 222. The actual sample size for the study was 223, indicating adequate power to detect the expected effect size. Baseline differences between the two experimental conditions were measured using independent samples  $t$ -tests and chi-square tests with no significant difference. Outcome differences between the groups were tested using the general linear mixed effects model (GLMM). The dependent variables included the manipulation check (compassion induction) and the experimental outcome measures (negative outgroup emotions, negative outgroup attitudes, social distance, and donation behavior) towards three outgroups (ethnic minority, Mainland immigrants, people with opposite political views). The independent variables were the experimental conditions (compassion, active control), timepoint of the measurement (pre-experiment, post-experiment), and the interaction between these variables. Independent variables were entered as fixed factors with random intercepts of subjects. The main effect of interest in the study was the interaction effect of the timepoint and experimental conditions. With significant fixed effects, post hoc univariate analyses of variance were used. Analyses were conducted using SPSS v.27.0.1. MIXED and GENLIN procedures within the SPSS were used for scale and binary variables, respectively.

## Results

### Baseline Comparisons

Demographic characteristics between experimental conditions were compared using independent sample  $t$ -tests and chi-square tests. No significant difference was found across demographic variables, including age, gender, education, occupation, marital status, religion, political orientation, outgroup contact experience, and knowledge of outgroups (Table 1). A majority of the participants (60.50%) declared pro-democracy political orientation, 34.50% chose not to disclose, and 4.90% declared pro-establishment political orientation. Baseline primary outcomes (negative outgroup emotions, negative outgroup attitudes, social distance) between experimental conditions were compared using independent sample  $t$ -tests and chi-square tests, and no significant difference was found.

The baseline intergroup responses towards specific outgroups varied. The negative emotions, negative attitudes, and social distance were consistently highest towards

political partisans, and lowest towards ethnic minorities, with Mainland immigrants falling in between the other two outgroups. The total sample's average scores towards ethnic minorities were on the low end for negative emotions ( $M = 2.20$  (pre) and  $M = 2.03$  (post) out of 7), negative attitudes ( $M = 2.72$  (pre) and  $M = 2.70$  (post) out of 9), and social distance ( $M = 1.47$  (pre) and  $M = 1.35$  (post) out of 4), indicating a generally low level of prejudice towards ethnic minorities.

### Manipulation Check

The manipulation effect of the compassion induction was analyzed using GLMM (Table 2). The effect sizes of scaled variables were analyzed (Morris, 2008). A significant experimental conditions  $\times$  timepoint interaction on the total compassion score ( $F(1,223) = 6.24$ ,  $p = 0.01$ ,  $d = 0.26$ ) was found. Post hoc analysis showed a significant increase in the compassion condition (Mean Difference = 0.57,  $p = 0.004$ ) but not in the control condition.

The GLMM was used to explore possible changes in cognitive appraisals after the compassion induction. The main effect was measured using experimental conditions  $\times$  timepoint interaction. A small increase in participants' awareness to recognize the suffering of others was found ( $F(1,223) = 4.33$ ,  $p = 0.04$ ,  $d = 0.22$ ), with post-hoc analysis only significant in the compassion condition (mean difference = 0.13,  $p = 0.02$ ). A significant increase in participants' feelings for others who are suffering was found, but the post hoc analysis showed that the changes were not significant in both experimental conditions. No significant result was found for other compassion components, including understanding the universality of suffering, tolerating uncomfortable feelings related to suffering, and being motivated to alleviate others' suffering.

### Effects of Compassion Induction on Outgroup Emotions, Attitudes, and Behaviors

The effects of compassion induction on intergroup responses were examined using the GLMM analysis (Table 3).  $F$ -tests and Wald chi-square tests were used to compute scale and binary variables respectively. The global effects were measured using the mean outgroup outcomes per participant. A significant experimental conditions  $\times$  timepoint interaction was found for negative outgroup emotions ( $F(1,223) = 4.32$ ,  $p = 0.039$ ,  $d = 0.22$ ), negative outgroup attitudes ( $F(1,222) = 4.92$ ,  $p = 0.03$ ,  $d = 0.24$ ), social distance ( $F(1,223) = 4.38$ ,  $p = 0.04$ ,  $d = 0.21$ ), but not for donation behavior ( $\chi^2(1) = 1.13$ ,  $p = 0.29$ ).

The experimental effect of compassion induction differed in responses towards specific outgroups. For ethnic minorities, no significant experimental conditions  $\times$  timepoint

**Table 1** Demographic information of participants in the compassion and control conditions

Baseline characteristic	Compassion condition ( <i>n</i> = 114)	Control condition ( <i>n</i> = 109)	Test statistic of between condition difference	<i>p</i>
Age (years), <i>M</i> ( <i>SD</i> )	28.62 (11.91)	27.94 (9.93)	<i>t</i> (221) = −0.24	0.81
Gender: <i>n</i> (%)				
Women	65 (57.00)	62 (56.90)	$\chi^2$ (2) = 0.97	0.62
Men	48 (42.10)	47 (43.10)		
Others	1 (0.90)	0 (0.00)		
Education: <i>n</i> (%)				
Senior high school	8 (7.00)	5 (4.60)	$\chi^2$ (4) = 1.11	0.90
Diploma degree	6 (5.30)	4 (3.70)		
Bachelor's degree	78 (68.40)	80 (73.40)		
Master's degree	21 (18.40)	19 (17.40)		
Doctoral degree	1 (0.90)	1 (0.90)		
Occupation: <i>n</i> (%)				
Students	69 (60.50)	66 (60.60)	$\chi^2$ (4) = 3.48	0.48
Employed	41 (36.00)	36 (33.00)		
Retired	3 (2.60)	2 (1.80)		
Housekeepers	1 (0.90)	3 (2.80)		
Unemployed	0 (0.00)	2 (1.80)		
Marital status: <i>n</i> (%)				
Single	100 (87.70)	93 (85.30)	$\chi^2$ (3) = 3.48	0.32
Married	12 (10.50)	15 (13.80)		
Divorced	2 (1.80)	0 (0.00)		
Others	0 (0.00)	1 (0.90)		
Religion: <i>n</i> (%)				
Atheist	77 (67.50)	79 (72.50)	$\chi^2$ (2) = 0.99	0.61
Christian	33 (28.90)	28 (25.70)		
Buddhist	4 (3.50)	2 (1.80)		
Political orientation: <i>n</i> (%)				
Pro-democracy	69 (60.50)	66 (60.60)	$\chi^2$ (2) = 2.35	0.31
Not disclose	37 (32.50)	40 (36.70)		
Pro-establishment	8 (7.00)	3 (2.80)		
Outgroup contact: <i>M</i> ( <i>SD</i> )				
Ethnic minorities	1.05 (0.58)	1.04 (0.53)	<i>t</i> (221) = −0.10	0.92
New immigrants	1.17 (0.58)	1.17 (0.59)	<i>t</i> (221) = 0.32	0.75
Opposite political views	1.54 (0.73)	1.50 (0.72)	<i>t</i> (221) = −0.14	0.89
Outgroup knowledge: <i>M</i> ( <i>SD</i> )				
Ethnic minorities	0.61 (0.57)	0.77 (0.69)	<i>t</i> (221) = 1.90	0.06
New immigrants	0.87 (0.62)	0.95 (0.73)	<i>t</i> (221) = 1.77	0.24
Opposite political views	1.45 (0.88)	1.50 (0.79)	<i>t</i> (221) = 0.04	0.97

interaction was found for any intergroup response outcomes. For people with opposite political views, a significant experimental conditions  $\times$  timepoint interaction was found for outgroup emotions ( $F(1,223) = 4.63$ ,  $p = 0.03$ ,  $d = 0.26$ ), but the results of other outgroup responses were not significant. Post hoc analysis showed a significant reduction in negative outgroup emotions in the compassion condition (mean difference =  $-0.32$ ,  $p = 0.003$ ) but not in the control condition. To further analyze the effect of compassion on emotional attributes towards political partisans, repeated

measures ANOVA was used. Results showed that only reduction in fear ( $F(1,113) = 5.61$ ,  $p = 0.02$ ) and disgust ( $F(1,113) = 5.15$ ,  $p = 0.03$ ), but not anger ( $F(1,113) = 3.84$ ,  $p = 0.052$ ), were significant.

For Mainland immigrants, a significant experimental conditions  $\times$  timepoint interaction was found for negative outgroup emotions ( $F(1,223) = 6.20$ ,  $p = 0.01$ ,  $d = 0.26$ ), negative outgroup attitudes ( $F(1,173) = 12.60$ ,  $p < 0.001$ ,  $d = 0.40$ ), and social distance ( $F(1,223) = 7.07$ ,  $p = 0.01$ ,  $d = 0.28$ ). Post-hoc analysis of the compassion condition

**Table 2** Means, standard deviations, and GLMM effects of the manipulation check (compassion induction)

Outcomes	Compassion condition ( <i>n</i> = 114)		Control condition ( <i>n</i> = 109)		Condition × timepoint effect		
	Pre	Post	Pre	Post	<i>F</i>	<i>p</i>	Effect size <i>d</i>
	<i>M</i> ( <i>SD</i> )				(1, 223)		[CI]
Total Compassion Score	18.62 (2.70)	19.19 (2.03)	18.22 (2.70)	18.08 (2.46)	6.24	0.01*	0.26 [0.15, 1.26]
Recognize	3.34 (0.71)	3.47 (0.65)	3.21 (0.75)	3.18 (0.79)	4.34	0.04*	0.22 [0.01, 0.31]
Universality	4.29 (0.69)	4.48 (0.48)	4.18 (0.65)	4.26 (0.56)	2.41	0.12	0.17 [−.03, .26]
Feel	3.70 (0.64)	3.77 (0.54)	3.70 (0.63)	3.60 (0.58)	4.94	0.03*	0.25 [0.18, 0.30]
Tolerate	3.59 (0.65)	3.67 (0.54)	3.51 (0.64)	3.47 (0.62)	1.84	0.18	0.17 [−.05, .27]
Take action	3.70 (0.71)	3.81 (0.64)	3.62 (0.64)	3.57 (0.63)	3.64	0.06	0.24 [−.01, .33]

The five compassion components defined by Strauss et al. (2016) are (a) recognizing others' suffering, (b) understanding the universality of suffering, (c) feeling for others' suffering, (d) tolerating uncomfortable feelings related to suffering, and (e) acting or being motivated to alleviate suffering. The values in square brackets indicate the 95% confidence interval for each mean difference

\* $p < 0.05$

showed a significant reduction of negative outgroup emotions (mean difference =  $-0.22$ ,  $p = 0.02$ ), negative outgroup attitudes (mean difference =  $-0.29$ ,  $p = 0.03$ ), and social distance (mean difference =  $-0.30$ ,  $p < .001$ ) towards immigrants, but the change in donation behavior was non-significant. Post hoc analysis of the control condition showed an increase in negative outgroup attitudes (mean difference =  $0.38$ ,  $p = 0.004$ ) towards immigrants. This result could contribute to a relatively larger effect size of the attitudinal outcome when compared with the emotional and behavioral outcomes.

## Discussion

Based on the global outcomes, the present experimental study demonstrated that brief online compassion induction could reduce negative emotions, attitudes, and social distance, but not donation behavior towards outgroups. The results of intergroup responses towards specific outgroups were inconsistent. Small reductions in negative emotions, attitudes, and behavioral intentions towards immigrants were found. A small reduction in negative emotions towards people holding opposite political views was observed. No effect was found in intergroup responses towards ethnic minorities. The 20-min online compassion induction was found to be effective in increasing participants' level of compassion, with a significant increase in the total compassion score. Significant change was found in participants' cognitions, with increased awareness in recognizing the suffering of others. This study could not empirically measure how cognitive appraisals influence intergroup emotions, as we did not assess participants' cognitive appraisals of specific outgroups. However, it is possible that the compassion induction changed participants' general cognitive appraisals

towards other people, facilitating the reduction of negative perceptions and feelings towards outgroups in this study (Smith & Mackie, 2016).

Compared to previous research on compassion in intergroup contexts, this study measured multiple outcomes from emotional, attitudinal, and behavioral perspectives to examine the effect of compassion. The present study found significant global effects across self-report measures of outgroup emotions, outgroup attitudes, and social distance. These findings provided converging evidence that a brief compassion induction could effectively promote prosocial emotions and behavioral intentions towards outgroups. However, the discrepancy between significant behavioral intentions and non-significant actual donation behavior could reflect the behavior-intention gap. As people do not always act the way they intended to, behavioral intentions could only explain partial variance of actual behaviors (Sheeran, 2005). Despite the fact that the brief compassion induction in this study did not influence actual behavior, results demonstrated that compassion could reduce emotional and attitudinal intergroup psychological barriers, a major obstacle in the development of intergroup interventions.

The findings were inconsistent on the extent to which compassion could influence responses towards outgroups with different presentations and levels of prejudice, including ethnic minorities, Mainland immigrants, and people with opposite political views. Brief compassion induction was ineffective in changing any outcome measures towards ethnic groups. The non-significant effect observed might be attributed to the participants' generally lower prejudice towards ethnic minorities. This was indicated by ethnic minorities having the lowest baseline scores in outgroup emotions, attitudes, and social distance among the three outgroups in this study. The findings suggested a possible floor effect with the current measurements, which makes it



**Table 3** Means, standard deviations, and GLMM effects of outcomes

Outcomes	Compassion condition		Control condition		Condition $\times$ timepoint effect		
	Pre	Post	Pre	Post	$F$	$p$	Effect Size $d$
	$M$ ( $SD$ )				$(df_1, df_2)$		[CI]
<i>Outgroup average<sup>a</sup></i>							
Emotions <sup>b</sup>	2.96 (0.99)	2.73 (1.05)	3.03 (0.89)	3.01 (0.92)	4.32 (1,223)	0.04*	0.22 [−1.24, −.033]
Attitudes <sup>b</sup>	4.23 (1.39)	4.17 (1.32)	4.31 (1.26)	4.57 (1.05)	4.92 (1, 222)	0.03*	0.24 [−0.59, −0.03]
Social distance <sup>b</sup>	2.10 (0.83)	1.89 (0.74)	2.21 (0.63)	2.16 (0.59)	4.38 (1,223)	0.04*	0.21 [−0.30, −0.01]
Donation <sup>c</sup>	--	0.12 (0.26)	--	0.09 (0.22)	$\chi^2(1) = 1.13$	0.29	-- [0.46, 1.26]
<i>Ethnic minorities</i>							
Emotions <sup>b</sup>	2.13 (1.06)	1.96 (1.03)	2.27 (1.05)	2.09 (0.92)	0.00 (1, 223)	0.97	.01 [−0.23, 0.24]
Attitudes <sup>b,e</sup>	2.75 (1.51)	2.63 (1.49)	2.69 (1.64)	2.65 (1.36)	0.45 (1, 180)	0.50	0.13 [−0.53, 0.26]
Social distance <sup>b</sup>	1.59 (0.98)	1.43 (0.89)	1.68 (0.82)	1.67 (0.75)	2.60 (1, 223)	0.11	0.16 [−0.32, 0.03]
Donation: $n$ (%) <sup>c,d</sup>	--	22 (19.30)	--	17 (15.60)	$\chi^2(1) = 1.06$	0.30	-- [0.79, 2.12]
<i>Mainland immigrants</i>							
Emotions <sup>b</sup>	2.95 (1.36)	2.74 (1.35)	2.91 (1.17)	3.03 (1.23)	6.20 (1, 223)	0.01*	0.26 [−0.58, −0.07]
Attitudes <sup>b,f</sup>	4.47 (1.86)	4.17 (1.91)	4.32 (1.53)	4.70 (1.63)	12.60 (1,173)	<0.001***	0.39 [−1.04, −.30]
Social distance <sup>b</sup>	2.11 (1.04)	1.82 (0.91)	2.11 (0.83)	2.08 (0.77)	7.07 (1, 223)	0.01**	0.28[−.46, −.07]
Donation <sup>c,d</sup> $n$ (%)	--	13 (11.40)	--	11 (10.10)	$\chi^2(1) = 0.20$	0.66	-- [0.63, 2.01]
<i>People with opposite political views</i>							
Emotions <sup>b</sup>	3.80 (1.41)	3.49 (1.41)	3.90 (1.20)	3.90 (1.25)	4.63 (1, 223)	0.03*	0.26 [−0.61, −0.03]
Attitudes <sup>b,g</sup>	5.57 (2.02)	5.72 (1.90)	5.88 (1.68)	6.23 (1.61)	1.43 (1, 175)	0.23	0.11 [−0.65, 0.16]
Social distance <sup>b</sup>	2.54 (1.12)	2.29 (0.97)	2.75 (0.90)	2.62 (0.95)	0.39 (1, 223)	0.53	0.06 [−0.24, 0.13]
Donation $n$ (%) <sup>c,d</sup>	--	5 (4.40)	--	2 (1.80)	$\chi^2(1) = 2.24$	0.13	-- [0.76, 7.95]

*n* = 114 for compassion condition, *n* = 109 for attention control, except for the attitudinal measures of the three outgroups

<sup>a</sup>Outgroup average scores were obtained from mean outgroup outcomes per participant

<sup>b</sup>Negative change score implies improvement in outcome

<sup>c</sup>Positive change score implies improvement in outcome

<sup>d</sup>Percentage represents ratio of sample that exhibited donation behavior

<sup>e</sup>*n* = 87 for compassion condition, *n* = 78 for attention control in pre-experiment condition

<sup>f</sup>*n* = 79 for compassion condition, *n* = 87 for attention control in pre-experiment condition

<sup>g</sup>*n* = 85 for compassion condition, *n* = 80 for attention control in pre-experiment condition

\**p* < 0.05; \*\**p* < 0.01; \*\*\**p* < 0.001

difficult to distinguish differences in participants' responses towards ethnic minorities. Theoretically, a norm perception that ethnic minorities have lower socioeconomic status in Hong Kong might predispose them to a higher perceived deservingness to help, rendering lower negative intergroup emotions and attitudes towards them (Goetz et al., 2010; Research Office of Legislative Council Secretariat, 2017). Future studies could consider measuring deservingness to help in outgroup perceptions, so as to gain a better understanding of whether this factor influences the baseline prejudice and the effect of compassion towards outgroups.

For intergroup responses towards people holding opposite political views, brief compassion induction was found to be

effective in reducing negative outgroup emotions. However, it was ineffective in improving outgroup attitudes, social distance, or donation behavior. As the induction was only effective in reducing negative outgroup emotions, we further analyzed the emotional attributes. Results revealed that the reductions in fear and disgust towards political partisans were significant, whereas anger was not. Anger is a basic emotion that is typically evoked when a person perceives an event as unjust or illegitimate. It is possible that political conflicts and unrest in recent years in Hong Kong have heightened and perpetuated anger towards those with different political views (DeLisle, 2019; Lazarus, 1991). Given that anger rooted in ideological disagreements was found to

be a central emotion in the context of intractable conflicts, the effectiveness of a brief compassion induction might be attenuated (Bar-Tal et al., 2007; Halperin et al., 2011a). Previous research has shown that interventions using mindfulness and contradictory information about outgroup could reduce intergroup anger and hatred respectively (Halperin et al., 2011b, 2013). Future research should explore if incorporating these interventions might further reduce negative emotions towards outgroups with ideological disagreements.

The effect of compassion on intergroup responses towards Mainland immigrants was most extensive among the three outgroups. Small improvements in outgroup emotions, attitudes, and social distance were observed, but not for donation behavior. In this study, brief compassion induction was found to be more effective towards social groups with moderate levels of prejudice (e.g., Mainland immigrants), mildly effective towards outgroups with higher levels of prejudice and ideological disagreements (e.g., political partisans), and ineffective towards social groups with lower levels of prejudice (e.g., ethnic minorities). Although the experimental effects varied among outgroups, positive outcomes were indicated in two out of three outgroups in this study. The findings suggested that a generic and brief compassion induction could reduce prejudice towards multiple outgroups with different characteristics and levels of prejudice. Moreover, as online training could be delivered to a wider audience than in-person training, the current results supported the feasibility of delivering brief compassion induction in an online setting. Overall, the present study demonstrated the potential of brief online compassion induction as an economical and convenient tool in intergroup interventions.

## Limitations and Future Research

Several limitations were identified in this experimental study. While the brief compassion induction resulted in a significant improvement in the total compassion score, only one of the five compassion components showed a significant increase. Notably, the compassion induction video in this study employed a metaphorical story to teach the concept of awareness of suffering. Other compassion components were presented in a more theoretical manner. It is possible that the use of metaphor facilitated the comprehension and acceptance of the concepts presented, which enhanced participants' awareness of others' suffering (Varra et al., 2009). Future research could investigate whether incorporating metaphorical elements in the intervention might enhance its effectiveness. Nevertheless, the use of a Caucasian character in the attention control condition video may have unintentionally elicited negative implicit bias towards ethnic minorities (FitzGerald & Hurst, 2017). As such, it is important that future studies attempt to minimize the potential implicit biases in research design.

Another limitation was that this study was conducted online with an experimenter monitoring participants' attention. It is unclear whether individuals could realistically sustain attention for a 20-min brief compassion practice. Future research should investigate the effect of the compassion practice in reducing outgroup prejudice in naturalistic settings. In addition, although the present study found no significant differences in donation behavior, as behavioral expressions of compassion were often context-dependent (Berry et al., 2022), future research is suggested to investigate intergroup behavioral responses in other contexts, e.g., helping behavior. Furthermore, although participants were asked to attend the experiment in a quiet location, and their attention was monitored, some participants' attention might still be interfered with the background noise or presence of other people. As emerging research has shown that individuals' felt sense of security through multiple sensory domains is important during compassion training (Condon & Makransky, 2020; Porges, 2017), future studies should consider reducing environmental distraction by asking participants to wear headphones during the experiment.

Finally, more than half of the participants in this study indicated a pro-democracy political orientation. It is possible that participants holding different political ideologies may have predisposing traits that moderate the effects of compassion. Overall, this study contributed to our understanding of intergroup interventions. The findings demonstrated that an online brief compassion exercise could facilitate more favorable responses towards outgroups, reducing psychological barriers to intergroup interventions. Compassion induction could potentially serve as a convenient tool for intergroup interventions towards social groups with varying characteristics and levels of prejudice.

**Acknowledgements** The authors thank all participants and the experimenters who made this study possible.

**Author Contribution** Winnie W. S. Mak: conceptualization, methodology, supervision, writing--reviewing and editing Larry Auyeung: data analysis, writing--reviewing and editing.

**Funding** Partial financial support was received from the Department of Psychology of the Chinese University of Hong Kong.

**Data Availability** The data that support the findings of this study are available from the corresponding author, WWSM, upon reasonable request.

## Declarations

**Ethics Approval** This study was approved by the Department Research Ethics, Department of Psychology of the Chinese University of Hong Kong (reference no. DRE-20064).

**Informed Consent** All participants gave their informed consent prior to their participation in the study and were fully debriefed after their participation in the study.

**Conflict of Interest** The authors declare no competing interests.

**Use of Artificial Intelligence** AI was used for editing the manuscript to improve English language.

## References

- Bar-Tal, D. (2013). *Intractable conflicts: Socio-psychological foundations and dynamics*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139025195>
- Bar-Tal, D., Halperin, E., & De Rivera, J. (2007). Collective emotions in conflict situations: Societal implications. *Journal of Social Issues*, 63(2), 441–460. <https://doi.org/10.1111/j.1540-4560.2007.00518.x>
- Batson, C. D., Fultz, J., & Schoenrade, P. A. (1987). Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. *Journal of Personality*, 55(1), 19–39. <https://doi.org/10.1111/j.1467-6494.1987.tb00426.x>
- Berry, D. R., Rodriguez, K., Tasulis, G., et al. (2022). Mindful attention as a skillful means toward intergroup prosociality. *Mindfulness*. <https://doi.org/10.1007/s12671-022-01926-3>
- Brienza, J. P., Kung, F. Y. H., & Chao, M. M. (2021). Wise reasoning, intergroup positivity, and attitude polarization across contexts. *Nature Communications*, 12(1), 3313. <https://doi.org/10.1038/s41467-021-23432-1>
- Chang, D. F., Donald, J., Whitney, J., Miao, I. Y., & Sahdra, B. (2023). Does mindfulness improve intergroup bias, internalized bias, and anti-bias outcomes?: A meta-analysis of the evidence and agenda for future research. *Personality & Social Psychology Bulletin*, 1461672231178518. Advance online publication. <https://doi.org/10.1177/01461672231178518>
- Chen, J., Li, Z., Xu, D., & Wu, X. (2019). Effects of neighborhood discrimination towards Mainland immigrants on mental health in Hong Kong. *International Journal of Environmental Research and Public Health*, 16(6), 1025. <https://doi.org/10.3390/ijerph16061025>
- Cheung, L. T., Ma, A. T., Lee, K. M., Lee, J. C., & Lo, Y. L. (2019). How does political orientation influence one's environmental attitude and behaviour? Debate over country park conservation in Hong Kong. *Environmental Science & Policy*, 99, 115–122. <https://doi.org/10.1016/j.envsci.2019.05.026>
- Cikara, M., Bruneau, E., Van Bavel, J., & Saxe, R. (2014). Their pain gives us pleasure: How intergroup dynamics shape empathic failures and counter-empathic responses. *Journal of Experimental Social Psychology*, 55, 110–125. <https://doi.org/10.1016/j.jesp.2014.06.007>
- Civil Engineering and Development Department. (2009). Minerals and rocks - Geological building blocks. Minerals and Rocks – Geological Building Blocks. Home of Hong Kong Geology - A 400-million year journey. Retrieved April 19, 2021, from <https://hkss.cedd.gov.hk/hkss/eng/education/GS/eng/hkg/chapter1.htm>
- Condon, P., & Makransky, J. (2020). Recovering the relational starting point of compassion training: A foundation for sustainable and inclusive care. *Perspectives on Psychological Science*, 15(6), 1346–1362. <https://doi.org/10.1177/1745691620922200>
- Covey, S. R. (2013). *The 7 habits of highly effective people: Powerful lessons in personal change*. Simon & Schuster.
- DeLisle, J. (2019). Hong Kong's summer of discontent: Another battle in the long war over autonomy, democracy, and the rule of law. *FPRI: Foreign Policy Research Institute*, 63(4), 473–504. <https://doi.org/10.1016/j.orbis.2019.08.009>
- Equal Opportunities Commission. (2016). Study on discrimination against ethnic minorities in the provision of goods, services and facilities, and disposal and management of premises. Retrieved February 12, 2020, from [https://www.eoc.org.hk/EOC/Upload/UserFiles/File/ResearchReport/201609/EM-GSF\\_Report\(Eng\)V8\\_2\\_final.pdf](https://www.eoc.org.hk/EOC/Upload/UserFiles/File/ResearchReport/201609/EM-GSF_Report(Eng)V8_2_final.pdf)
- Fehr, B. (2013). The social psychology of love. In I. J. A. Simpson & L. Campbell (Eds.), *The Oxford handbook of close relationships* (pp. 201–233). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195398694.001.0001>
- Fehr, B., Sprecher, S., & Underwood, L. G. (2009). Compassionate love: Conceptual, measurement, and relational issues. In *The science of compassionate love: Theory, research, and applications* (pp. 27–53). John Wiley & Sons. <https://doi.org/10.1002/9781444303070.ch2>
- FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: A systematic review. *BMC Medical Ethics*, 18, 19. <https://doi.org/10.1186/s12910-017-0179-8>
- Fong, E., Li, J. X., & Chan, C. C. (2018). *Mainland migrants in Hong Kong* (Vol. 275–289). Routledge Handbook of Contemporary Hong Kong. <https://doi.org/10.4324/9781315660530-17>
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An evolutionary analysis and empirical review. *Psychological Bulletin*, 136(3), 351–374. <https://doi.org/10.1037/a0018807>
- Goffman, E. (1963). *Stigma: Notes of management of spoiled identity*. Simon and Schuster.
- Goldfried, J., & Miner, M. (2002). Quest religion and the problem of limited compassion. *Journal for the Scientific Study of Religion*, 41(4), 685–695. <https://doi.org/10.1111/1468-5906.00154>
- Gu, J., Baer, R., Cavanagh, K., Kuyken, W., & Strauss, C. (2020). Development and psychometric properties of the Sussex-Oxford compassion scales (SOCS). *Assessment*, 27(1), 3–20. <https://doi.org/10.1177/1073191119860911>
- Halperin, E., Porat, R., Tamir, M., & Gross, J. J. (2013). Can emotion regulation change political attitudes in intractable conflicts? From the laboratory to the field. *Psychological Science*, 24(1), 106–111. <https://doi.org/10.1177/0956797612452572>
- Halperin, E., Russell, A. G., Trzesniewski, K. H., Gross, J. J., & Dweck, C. S. (2011b). Promoting the Middle East peace process by changing beliefs about group malleability. *Science*, 333(6050), 1767–1769. <https://doi.org/10.1126/science.1202925>
- Halperin, E., Sharvit, K., & Gross, J. J. (2011a). Emotions and emotion regulation in conflicts. In D. Bar-Tal (Ed.), *Intergroup conflicts and their resolution: A social psychological perspective*. Psychology Press. <https://doi.org/10.4324/9780203834091>
- Hong Kong Unison. (2023). Hong Kong Unison. <https://unison.org.hk/en>
- Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, 8(5), 720–724. <https://doi.org/10.1037/a0013237>
- Kane, J. V., & Barabas, J. (2018). No harm in checking: Using factual manipulation checks to assess attentiveness in experiments. *American Journal of Political Science*, 63(1), 234–249. <https://doi.org/10.1111/ajps.12396>
- Kang, Y., Gray, J. R., & Dovidio, J. F. (2014). The nondiscriminating heart: Lovingkindness meditation training decreases implicit intergroup bias. *Journal of Experimental Psychology: General*, 143(3), 1306–1313. <https://doi.org/10.1037/a0034150>
- Khema, A. (2012). Metta by Ayya Khema. *Leigh Brasington's Web Site*. Retrieved January 10, 2020, from <https://www.leighb.com/ayyametta.htm>
- Kobayashi, T. (2020). Depolarization through social media use: Evidence from dual identifiers in Hong Kong. *New Media & Society*, 22(8), 1339–1358. <https://doi.org/10.1177/1461444820910124>
- Kreplin, U., Farias, M., & Brazil, I. A. (2018). The limited prosocial effects of meditation: A systematic review and meta-analysis. *Scientific Reports*, 8(1). <https://doi.org/10.1038/s41598-018-20299-z>
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.

- Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PLoS ONE*, 6(3), e17798. <https://doi.org/10.1371/journal.pone.0017798>
- Link, B. G., Cullen, F. T., Frank, J., & Wozniak, J. F. (1987). The social rejection of former mental patients: Understanding why labels matter. *American Journal of Sociology*, 92(6), 1461–1500. <https://doi.org/10.1086/228672>
- Mackie, D. M., Devos, T., & Smith, E. R. (2000). Intergroup emotions: Explaining offensive action tendencies in an intergroup context. *Journal of Personality and Social Psychology*, 79(4), 602–616. <https://doi.org/10.1037/0022-3514.79.4.602>
- Moore-Berg, S. L., Hameiri, B., & Bruneau, E. (2020). The prime psychological suspects of toxic political polarization. *Current Opinion in Behavioral Sciences*, 34, 199–204. <https://doi.org/10.1016/j.cobeha.2020.05.001>
- Morris, S. B. (2008). Estimating effect sizes from pretest-posttest-Control group designs. *Organizational Research Methods*, 11(2), 364–386. <https://doi.org/10.1177/1094428106291059>
- Nelson Mandela Foundation. (2000). Speeches by Nelson Mandela. Retrieved April 19, 2023, from [https://www.mandela.gov.za/mandela\\_speeches/2000/001206\\_healing.htm](https://www.mandela.gov.za/mandela_speeches/2000/001206_healing.htm)
- Neubaum, G., Sobieraj, S., Raasch, J., & Riese, J. (2020). Digital destigmatization: How exposure to networking profiles can reduce social stereotypes. *Computers in Human Behavior*, 112, 106461. <https://doi.org/10.1016/j.chb.2020.106461>
- O'Connor, P. (2018). *Ethnic minorities and ethnicity in Hong Kong* (Vol. 259-274). Routledge Handbook of Contemporary Hong Kong. <https://doi.org/10.4324/9781315660530-16>
- Omoto, A. M., Malsch, M., & Barraza, J. A. (2009). Compassionate acts: Motivations for and correlates of volunteerism among older adults. In B. Fehr, S. Sprecher, & L. G. Underwood (Eds.), *The science of compassionate love: Theory, research, and applications*. John Wiley & Sons. <https://doi.org/10.1002/9781444303070.ch9>
- Paolini, S., Harris, N. C., & Griffin, A. S. (2015). Learning anxiety in interactions with the outgroup: Towards a learning model of anxiety and stress in intergroup contact. *Group Processes & Intergroup Relations*, 19(3), 275–313. <https://doi.org/10.1177/1368430215572265>
- Paolini, S., Harwood, J., Hewstone, M., & Neumann, D. L. (2018). Seeking and avoiding intergroup contact: Future frontiers of research on building social integration. *Social and Personality Psychology*, 12(12). <https://doi.org/10.1111/spc3.12422>
- Parks, S., Birtel, M. D., & Crisp, R. J. (2014). Evidence that a brief meditation exercise can reduce prejudice toward homeless people. *Social Psychology*, 45(6), 458–465. <https://doi.org/10.1027/1864-9335/a000212>
- Pew Research Center. (2019). Race in America 2019. Retrieved May 06, 2021, from <https://www.pewresearch.org/social-trends/2019/04/09/race-in-america-2019/>
- Porges, S. W. (2017). Vagal Pathways: Portals to Compassion. In E. M. Seppälä, E. Simon-Thomas, S. L. Brown, M. C. Worline, C. D. Cameron, & J. R. Doty (Eds.), *The Oxford handbook of compassion science*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190464684.001.0001>
- Research Office of Legislative Council Secretariat. (2017). *Fact Sheet - Poverty of ethnic minorities in Hong Kong (FS08/16-17)*. Legislative Council Secretariat <https://www.legco.gov.hk/research-publications/english/1617fs08-poverty-of-ethnic-minorities-in-hong-kong-20170608-e.pdf>
- Schumer, M. C., Lindsay, E. K., & Creswell, J. D. (2018). Brief mindfulness training for negative affectivity: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 86(7), 569–583. <https://doi.org/10.1037/ccp0000324>
- Sheeran, P. (2005). Intention-behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, 12. <https://doi.org/10.1002/0470013478.ch1>
- Simonsson, O., Narayanan, J., & Marks, J. (2022). Love thy (partisan) neighbor: Brief befriending meditation reduces affective polarization. *Group Processes & Intergroup Relations*, 25(6), 1577–1593. <https://doi.org/10.1177/13684302211020108>
- Sinclair, L., Fehr, B., Wang, W., & Regehr, E. (2015). The relation between compassionate love and prejudice. *Social Psychological and Personality Science*, 7(2), 176–183. <https://doi.org/10.1177/1948550615609736>
- Smith, E. R., & Mackie, D. M. (2016). Group-level emotions. *Current Opinion in Psychology*, 11, 15–19. <https://doi.org/10.1016/j.copsyc.2016.04.005>
- SoCO. (2018). Society for Community Organization. <https://soco.org.hk/en/>
- Stell, A. J., & Farsides, T. (2016). Brief loving-kindness meditation reduces racial bias, mediated by positive other-regarding emotions. *Motivation and Emotion*, 40, 140–147. <https://doi.org/10.1007/s11031-015-9514-x>
- Stephan, W. G., Boniecki, K. A., Ybarra, O., Bettencourt, A., Ervin, K. S., Jackson, L. A., McNatt, P. S., & Renfro, C. L. (2002). The role of threats in the racial attitudes of blacks and whites. *Personality and Social Psychology Bulletin*, 28(9), 1242–1254. <https://doi.org/10.1177/01461672022812009>
- Strauss, C., Lever Taylor, B., Gu, J., Kuyken, W., Baer, R., Jones, F., & Cavanagh, K. (2016). What is compassion and how can we measure it? A review of definitions and measures. *Clinical Psychology Review*, 47, 15–27. <https://doi.org/10.1016/j.cpr.2016.05.004>
- Underwood, L. G. (2009). Compassionate love: A framework for research. In B. Fehr, S. Sprecher, & L. G. Underwood (Eds.), *The science of compassionate love: Theory, research, and applications* (pp. 3–25). John Wiley & Sons. <https://doi.org/10.1002/9781444303070.ch1>
- United Nations. (2018). Prejudice and discrimination: Barriers to social inclusion (Social Development Brief #4). [https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/02/RWSS-Policy-Brief-Option-4\\_6Feb.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/02/RWSS-Policy-Brief-Option-4_6Feb.pdf)
- Varra, A. A., Drossel, C., & Hayes, S. C. (2009). The use of metaphor to establish acceptance and mindfulness. In F. Didonna (Ed.), *Clinical Handbook of Mindfulness* (pp. 111–123). Springer. [https://doi.org/10.1007/978-0-387-09593-6\\_8](https://doi.org/10.1007/978-0-387-09593-6_8)
- Weng, H. Y., Fox, A. S., Shackman, A. J., Stodola, D. E., Caldwell, J. Z., Olson, M. C., Rogers, G. M., & Davidson, R. J. (2013). Compassion training alters altruism and neural responses to suffering. *Psychological Science*, 24(7), 1171–1180. <https://doi.org/10.1177/0956797612469537>
- Wong, K. C. (2018). *Public order policing in Hong Kong: The Mongkok riot*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-98672-2>
- Yu, B. C., Mak, W. W., Leung, I. W., & Chio, F. H. (2021). Reducing stigma through interconnectedness and compassion: A Buddhism-based approach to reduce stigma toward people with mental illness. *Mindfulness*, 12(7), 1779–1790. <https://doi.org/10.1007/s12671-021-01640-6>
- Zhang, J. W., Chen, S., & Tomova Shakur, T. K. (2019). From me to you: Self-compassion predicts acceptance of own and others' imperfections. *Personality and Social Psychology Bulletin*, 46(2), 228–242. <https://doi.org/10.1177/0146167219853846>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.