

Meditative Practices  
Correlates and Consequences for Political Attitudes



Otto Simonsson  
Trinity College

Submitted as part of the DPhil Sociology Degree at the  
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## Abstract

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While meditative practices have become increasingly common in both science and society, many questions remain about their correlates and consequences for political attitudes. This is what will be examined in this thesis.

Part One of this thesis uses survey data from the United States and Britain to investigate awareness and experience of mindfulness, both overall and across groups. The results from the first empirical chapter suggest that five per cent of adults in the United States in 2017 had used mindfulness during the 12 months prior to the survey interview and mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain. The results from the second empirical chapter suggest that fifteen per cent of adults in Britain in 2018 had learnt to practise mindfulness and awareness of mindfulness was more likely among women, unmarried adults, adults from middle and high-income households, and adults who voted Remain in the 2016 Brexit Referendum; and higher levels of engagement with mindfulness was more likely among young and middle-aged adults, but otherwise not concentrated in any particular groups.

Part Two of this thesis uses data from randomized controlled trials conducted in the United States and Britain to investigate the causal effects of mindfulness-based and kindness-based interventions on political attitudes. The results show that: (1) participation in an eight-week compassion-based program increased liberal political attitudes; and (2) a brief befriending meditation reduced affective polarization between Democrats and Republicans. Taken together, the findings suggest that kindness-based practices and programs increase tolerant and other-regarding attitudes more generally.

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## Chapter 1: Introduction

The popularity of meditation has increased considerably in recent years. For example, in the United States alone, the percentage of meditation users rose between 2012 and 2017, from 0.6 to 5.4 per cent for children and 4.1 to 14.2 per cent for adults (Black et al., 2018; Clarke et al., 2018). The rapid increase in the number of meditation users has been facilitated by the development of secular meditation practices and programs, many of which have become introduced into the education system, the healthcare system, the criminal justice system, the workplace, the military (Creswell, 2017), and the government (Bristow, 2019). It is a trend that has been thoroughly documented (Kucinskas, 2018; McMahan, 2008; Wilson, 2014) and strongly criticized (Purser, 2019), but relatively little is still known about the prevalence of meditation across sociodemographic groups and its potential to bring about broader cultural and political change in society (Ferguson, 2016). This is what will be examined in this thesis.

In the past four decades, the scientific study of meditation has revolved around therapeutic and medical outcomes (Wilson, 2014), but the focus has increasingly shifted from individual to societal perspectives. There has recently been scholarly work on how to promote more equal access to meditation across sociodemographic groups (Blum, 2014); discussions have emerged around the role of secular meditation practices and programs in social justice (Magee, 2016) and politics (Bristow, 2019; Chari, 2016; Cook, 2016; Mathiowetz, 2016; Rowe, 2016); and research studies have started to investigate the effects of meditation interventions on prejudice (Stell & Farsides, 2016), intergroup relations (Alkoby et al., 2017), and political attitudes (Hirsh, Walberg & Peterson, 2013; Petersen & Mitkidis, 2019). It is an important shift with potential implications for both research and policy, but more sociological and political work is needed to better understand the spread of meditation and its broader effects on society.

While the term meditation can refer to a variety of mental exercises with different mechanisms and effects (Dahl, Lutz & Davidson, 2015; Goleman & Davidson, 2017; Singer & Engert, 2019), the shift towards more societal perspectives has mostly revolved around two specific

types of secular meditation interventions: mindfulness-based and kindness-based practices and programs. Hence, this thesis will focus solely on mindfulness-based and kindness-based interventions and aims to contribute to the research literature by broadly answering the following two research questions:

1. *What is the prevalence of mindfulness users across groups in the United States and Britain?*
2. *What are the causal effects of mindfulness-based and kindness-based interventions on political attitudes?*

The following paragraphs will give a brief introduction to mindfulness-based and kindness-based practices and programs, outline the weaknesses and gaps in the research literature, and describe the rationale behind the research questions.

### Mindfulness-Based Practices and Programs

There is no single universally accepted definition of mindfulness (Van Dam et al., 2018), but it is commonly referred to as the awareness that emerges from purposefully paying attention to the present moment experience with an attitude of openness, curiosity, and acceptance (Kabat-Zinn, 1994). The disposition to be mindful in daily life can be strengthened through a wide variety of mindfulness-based practices and programs, many of which have been studied rigorously and have shown considerable promise as treatments for patients in psychiatry and medicine (Creswell, 2017). The research on mindfulness has recently started to examine which groups in society use mindfulness the most and how mindfulness-based practices and programs might affect political attitudes, but there are still significant weaknesses in the research literature that need to be addressed.

First, the population studies to date on mindfulness use have only analyzed data from the National Health Interview Survey (NHIS) in the United States and have mostly relied on NHIS data collected in 2012 (Burke et al., 2017; Macinko & Upchurch, 2019; Morone, Moore & Greco, 2017; Wang, Li & Gaylord, 2019). The NHIS dataset provides reliable estimates for the

U.S. population, but it is important to have a more nuanced analysis of mindfulness as a social phenomenon, which could be achieved with more recent survey data across countries and with additional dependent variables, including awareness of mindfulness and level of engagement with mindfulness.

Second, Moore (2016) proposes that mindfulness training, in its secular form, is likely to be politically neutral. The evidence to date suggests that there is no significant association between liberal-conservative attitudes and trait mindfulness (Kashdan et al., 2011; Niemiec et al., 2010), but no study has investigated the causal effects of mindfulness-based interventions on liberal-conservative attitudes, which would contribute to the ongoing debate around secular mindfulness training as a tool for social change or social control (Purser, 2019).

Third, Ryan (2012) proposes that mindfulness training might improve the relationship between political adversaries and bring about civil political conversations between individuals who strongly disagree with each other. There have been experimental studies on the causal effects of mindfulness-based practices and programs on political tolerance and political compromise (Alkoby et al., 2017; Petersen & Mitkidis, 2019), but no study has investigated the causal effects of mindfulness-based interventions on affective polarization, which would complement the anecdotal reports about how mindfulness training has benefitted politicians (Bristow, 2019).

### Kindness-Based Practices and Programs

While mindfulness has received considerable scientific attention in the past decades, there has recently been a growing interest in the effects of kindness-based interventions (Galante et al., 2014), which refers to a range of practices and programs designed to cultivate kindness towards oneself and others (Mascaro et al., 2015). The evidence to date suggests that kindness-based practices and programs can have a range of positive effects, including increased self-compassion and compassion for others (Kirby, Tellegen & Steindl, 2017).<sup>1</sup> There has recently,

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<sup>1</sup> There have been no population studies to examine which groups in society use kindness-based practices and programs the most. The number of users might be too low at present to detect significant differences, unless the sample is very large.

in turn, been research on the association between political attitudes and compassion, but there are still significant weaknesses in the research literature that need to be addressed.

First, the association between compassion and liberal-conservative attitudes has mostly been investigated in correlational studies (Hirsh et al., 2010; Osborne, Wootton & Sibley, 2013).

While there have been experimental studies on the causal effects of compassion on support for environmental policies associated with political liberalism (Lu & Schuldt, 2016; Pfattheicher, Sassenrath & Schindler, 2015), no study has investigated the causal effects of kindness-based interventions on liberal-conservative attitudes more broadly, which could elucidate the role of compassion in the formation of liberal-conservative attitudes.

Second, Klimecki (2019) suggests that kindness-based practices and programs could be used to reduce ingroup favoritism bias and promote positive intergroup attitudes through a variety of mechanisms. However, no study has investigated the causal effects of kindness-based interventions on affective polarization, which could inform research and policy on the viability of a scalable intervention to ease tensions between political groups in society.

### Core Hypotheses and Thesis Outline

This thesis seeks to address the weaknesses and gaps in the research literature that have been discussed, which will be achieved by using cross-sectional and experimental data primarily from the United States and Britain – two of the countries with the most prominent research and teachings on mindfulness-based and kindness-based practices and programs. More specifically, the thesis will

1. analyze cross-sectional data from the United States and Britain to investigate mindfulness use, awareness of mindfulness, and level of engagement with mindfulness across groups.

*Hypothesis 1a: Mindfulness use will be less likely among married adults and more likely among young or middle-aged adults, women, sexual minorities, white adults, adults without minor children, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain.*

*Hypothesis 1b: Awareness of mindfulness and higher levels of engagement with mindfulness will be more likely among women, young and middle-aged adults, residents in London, unmarried adults, adults without children under 18, employed adults, adults with a university degree, adults from middle and high-income households, voters for the Labour Party and the Liberal Democrats in the 2017 General Election, and Remain voters in the 2016 United Kingdom European Union Membership (Brexit) Referendum.*

2. analyze experimental data from two randomized controlled trials in the United States and Britain to investigate the causal effects of eight-week mindfulness-based and compassion-based programs on liberal-conservative attitudes in university students.

*Hypothesis 2a: Participants in the mindfulness condition will have a greater increase in liberal political attitudes than participants in the waitlist control condition.*

*Hypothesis 2b: Participants in the compassion condition will have a greater increase in liberal political attitudes than participants in the waitlist control condition.*

3. analyze experimental data from two online randomized controlled trials in the United States to investigate the causal effects of brief mindfulness and befriending interventions on affective polarization in American adults.

*Hypothesis 3: Participants in the befriending condition will have a greater reduction in affective polarization than participants in the mindfulness and control conditions.*

The thesis is structured in a hybrid format. It contains two theoretical (literature review) chapters written for this thesis only; one empirical chapter with lessons from pilot studies and cancelled studies; and four empirical chapters that are co-authored and designed to be published as journal articles. The empirical chapters are structured based on the specific journal to which they have been submitted and the details of co-author contributions are listed within each chapter. The vast majority of the work in each chapter has been done by the author of this thesis.

The first part of the thesis investigates (use of; awareness of; engagement with) mindfulness in society and its distribution across sociodemographic and political groups, while the second part of the thesis investigates the effects of mindfulness-based and kindness-based interventions on liberal-conservative attitudes and affective polarization. The chapters (listed below) are all tied to the central themes of the thesis, but each of them can also be read as a standalone article.

## Part One

### *Chapter 2: Literature Review – Correlates*

This chapter reviews the research literature on the correlates of mindfulness use. In sum, previous research suggests that mindfulness use should be less likely among older adults and more likely among women, sexual minorities, university graduates, white adults, adults from the West of the United States, adults with barriers to healthcare, and adults with health problems. The literature review broadly shows that there are significant weaknesses in the research to date, which justifies chapter three and four and each of their research questions.

### *Chapter 3: Sociodemographic Characteristics and Health Status of Mindfulness Users in the United States*

This chapter uses publicly available data from the 2017 National Health Interview Survey (N = 26,742), with the sample weighted to be representative of the adult population in the United States. The research question seeks to estimate the percentage of mindfulness users in the United States and to identify the sociodemographic characteristics associated with mindfulness use. Taken together, the results suggest that five per cent of adults in the United States had used mindfulness during the 12 months prior to the survey interview, but mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain.

#### *Chapter 4: Awareness and Experience of Mindfulness in Britain*

This chapter uses data from an online survey from November 2018 (N = 1,013), with the sample weighted to be representative of the adult population in Britain. The research question seeks to estimate the percentage of mindfulness users in Britain and to identify the sociodemographic and political characteristics associated with awareness of mindfulness and level of engagement with mindfulness. The results suggest that fifteen per cent of adults in Britain had learnt to practise mindfulness, but awareness of mindfulness and level of engagement with mindfulness was unequally distributed across sociodemographic and political groups. Most notably, awareness of mindfulness was more likely among women, unmarried adults, adults from middle and high-income households, and those who voted Remain in the 2016 EU Referendum; and higher levels of engagement with mindfulness, beyond awareness, was more likely among young and middle-aged adults.

### Part Two

#### *Chapter 5: Literature Review – Consequences*

This chapter reviews the research literature to better understand the main causes and correlates of political attitudes and the key theoretical explanations for why meditative practices may (or

may not) affect liberal-conservative attitudes and affective polarization. In sum, previous research on the relationship between meditative practices and political attitudes remains limited, but it is plausible that mindfulness-based and kindness-based practices and programs should have slightly different effects on liberal-conservative attitudes and affective polarization. The literature review broadly shows that there are significant gaps in the research to date, which justifies chapter seven and eight and each of their research questions.

#### *Chapter 6: Lessons from Pilot Studies and Cancelled Studies*

This chapter outlines results and lessons from two pilot studies and two randomized controlled trials that were never completed due to unforeseen circumstances. First, the results from the pilot studies suggest that mindfulness-based programs can significantly increase self-compassion, even with small sample sizes (due to considerable effect sizes). It indicates that self-compassion could be a reasonable manipulation check, which justifies its inclusion in the following two empirical chapters. Second, the findings from the pilot studies did not offer substantial evidence that mindfulness-based programs can significantly affect liberal-conservative attitudes. However, there were results worthy of further investigation on lifestyle liberty, political party support for the Liberal Democrats, and speciesism. Third, the outcomes of the failed studies suggest that it is important that: (1) there is a reserve teacher ready to teach in case the primary teacher cannot make it; (2) the registered participants are really motivated to attend the course; and (3) the recruitment does not depend solely on one single recruitment platform.

#### *Chapter 7: The Politics of Meditation: Effects of Mindfulness-Based and Compassion-Based Programs on Liberal-Conservative Attitudes*

This chapter uses data from two randomized controlled trials to investigate the causal effects of eight-week mindfulness-based and compassion-based programs on liberal-conservative attitudes in university students. The first study took place in Oxford from September 2018 until December 2019 (N = 101), with the participants allocated to one of two conditions

(mindfulness, control). The research question seeks to investigate how liberal-conservative attitudes are affected by the Finding Peace curriculum, which is an eight-week mindfulness-based program. The second study took place in New York from September 2019 until December 2019 (N = 45), with the participants allocated to one of two conditions (compassion, control). The research question seeks to investigate how liberal-conservative attitudes are affected by Compassion Cultivation Training, which is an eight-week compassion-based program. Taken together, the results suggest that participation in an eight-week compassion-based program induces a shift towards more liberal political attitudes, but there were also null findings on several exploratory variables.

*Chapter 8: Love Thy (Partisan) Neighbor: Brief Befriending Meditation Reduces Affective Polarization*

This chapter uses data from two online (Prolific Academic) randomized controlled trials (Study 1: N = 353; Study 2: N = 246). The research question seeks to investigate the causal effects of brief mindfulness and befriending interventions on affective polarization in American adults. Taken together, the results suggest that a brief befriending meditation reduces affective polarization between Democrats and Republicans by increasing positive feelings relatively more for the political outgroup than the political ingroup.

*Chapter 9: Conclusion*

This chapter revisits the studies and findings in this thesis and discusses limitations, future research directions, and policy implications. Taken together, the findings represent a significant and substantial contribution to the research literature and opens the possibility of new subfields, which can inspire more sociological and political work on mindfulness-based and kindness-based practices and programs.

## References

- Alkoby, A., Halperin, E., Tarrasch, R., & Levit-Binnun, N. (2017). Increased support for political compromise in the Israeli-Palestinian conflict following an 8-week mindfulness workshop. *Mindfulness*, 8(5), 1345-1353. doi: 10.1007/s12671-017-0710-5
- Black, L. I., Barnes, P. M., Clarke, T. C., Stussman, B. J., & Nahin, R. L. (2018). *Use of yoga, meditation, and chiropractors among US children aged 4-17 years*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Blum, H. A. (2014). Mindfulness equity and Western Buddhism: reaching people of low socioeconomic status and people of color. *International Journal of Dharma Studies*, 2(1), 10. doi: 10.1186/s40613-014-0010-0
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: 10.1016/j.copsyc.2018.11.003
- Burke, A., Lam, C. N., Stussman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC Complementary and Alternative Medicine*, 17(1), 316. doi: 10.1186/s12906-017-1827-8
- Chari, A. (2016). The political potential of mindful embodiment. *New Political Science*, 38(2), 226-240. doi: 10.1080/07393148.2016.1153192
- Clarke, T. C., Barnes, P. M., Black, L. I., Stussman, B. J., & Nahin, R. L. (2018). *Use of yoga, meditation, and chiropractors among US adults aged 18 and over*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Cook, J. (2016). Mindful in Westminster: the politics of meditation and the limits of neoliberal critique. *Journal of Ethnographic Theory*, 6(1), 141-161. doi: 10.14318/hau6.1.011

- Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, 68, 491-516.  
doi: 10.1146/annurev-psych-042716-051139
- Dahl, C. J., Lutz, A., & Davidson, R. J. (2015). Reconstructing and deconstructing the self: cognitive mechanisms in meditation practice. *Trends in Cognitive Sciences*, 19(9), 515-523. doi: 10.1016/j.tics.2015.07.001
- Ferguson, M. L. (2016). Symposium: mindfulness and politics: introduction. *New Political Science*, 38(2), 201-205. doi: 10.1080/07393148.2016.1153190
- Galante, J., Galante, I., Bekkers, M. J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(6), 1101. doi: 10.1037/a0037249
- Goleman, D., & Davidson, R. (2017). *The science of meditation: How to change your brain, mind and body*. Penguin UK.
- Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite conservatives: Associations of agreeableness with political ideology and moral values. *Personality and Social Psychology Bulletin*, 36(5), 655-664. doi: 10.1177/0146167210366854
- Hirsh, J. B., Walberg, M. D., & Peterson, J. B. (2013). Spiritual liberals and religious conservatives. *Social Psychological and Personality Science*, 4(1), 14-20. doi: 10.1177/1948550612444138
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion.
- Kashdan, T. B., Afram, A., Brown, K. W., Birnbeck, M., and Drvoshanov, M. (2011). Curiosity enhances the role of mindfulness in reducing defensive responses to existential threat. *Personality and Individual Differences*, 50(8), 1227-1232. doi: 10.1016/j.paid.2011.02.015

- Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy*, 48(6), 778-792. doi: 10.1016/j.beth.2017.06.003
- Klimecki, O. M. (2019). The role of empathy and compassion in conflict resolution. *Emotion Review*, 11(4), 310-325. doi: 10.1177/1754073919838609
- Kucinkas, J. (2018). *The mindful elite: Mobilizing from the inside out*. Oxford University Press.
- Lu, H., & Schuldt, J. P. (2016). Compassion for climate change victims and support for mitigation policy. *Journal of Environmental Psychology*, 45, 192–200. doi: 10.1016/j.jenvp.2016.01.007
- Macinko, J. & Upchurch, D. M. (2019). Factors associated with the use of meditation, U.S. Adults 2017. *Journal of Alternative and Complementary Medicine*, 25(9), 920-927. doi: 10.1089/acm.2019.0206
- Magee, R. V. (2016). Community-engaged mindfulness and social justice: An inquiry and call to action. In *Handbook of Mindfulness* (pp. 425-439). Springer.
- Mascaro, J. S., Darcher, A., Negi, L. T., & Raison, C. L. (2015). The neural mediators of kindness-based meditation: a theoretical model. *Frontiers in Psychology*, 6, 109. doi: 10.3389/fpsyg.2015.00109
- Mathiowetz, D. (2016). “Meditation is Good for Nothing:” Leisure as a Democratic Practice. *New Political Science*, 38(2), 241-255. doi: 10.1080/07393148.2016.1153193
- McMahan, D. L. (2008). *The making of Buddhist modernism*. Oxford University Press.
- Moore, M. J. (2016). Buddhism, mindfulness, and transformative politics. *New Political Science*, 38(2), 272-282. doi: 10.1080/07393148.2016.1153195

- Morone, N. E., Moore, C. G., & Greco, C. M. (2017). Characteristics of adults who used mindfulness meditation: United States, 2012. *Journal of Alternative and Complementary Medicine*, 23(7), 545–550. doi: 10.1089/acm.2016.0099
- Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *Journal of Personality and Social Psychology*, 99(2), 344-365. doi: 10.1037/a0019388
- Osborne, D., Wootton, L. W., & Sibley, C. G. (2013). Are liberals agreeable or not? Politeness and Compassion Differentially Predict Political Conservatism Via Distinct Ideologies. *Social Psychology*, 44, 354-360. doi: 10.1027/1864-9335/a000132
- Petersen, M. B., & Mitkidis, P. (2019). A sober second thought? A pre-registered experiment on the effects of mindfulness meditation on political tolerance.
- Pfattheicher, S., Sassenrath, C., & Schindler, S. (2015). Feelings for the suffering of others and the environment. *Environment and Behavior*, 48(7), 929–945. doi: 10.1177/0013916515574549
- Purser, R. (2019). *McMindfulness: How mindfulness became the new capitalist spirituality*. Watkins Media Limited.
- Rowe, J. K. (2016). Micropolitics and collective liberation: mind/body practice and left social movements. *New Political Science*, 38(2), 206-225. doi: 10.1080/07393148.2016.1153191
- Ryan, T. (2012). *A mindful nation: How a simple practice can help us reduce stress, improve performance, and recapture the American spirit*. Hay House.
- Singer, T., & Engert, V. (2019). It matters what you practice: Differential training effects on subjective experience, behavior, brain and body in the ReSource Project. *Current Opinion in Psychology*, 28, 151-158. doi: 10.1016/j.copsyc.2018.12.005

- Stell, A. J., & Farsides, T. (2016). Brief loving-kindness meditation reduces racial bias, mediated by positive other-regarding emotions. *Motivation and Emotion*, 40(1), 140-147. doi: 10.1007/s11031-015-9514-x
- Van Dam, N. T., van Vugt, M. K., Vago, D. R., Schmalzl, L., Saron, C. D., Olendzki, A., Meissner, T., Lazar, S. W., Kerr, C. E., Gorchov, J., Fox, K. C. R., Field, B. A., Britton, W. B., Brefczynski-Lewis, J. A., & Meyer, D. E. (2018). Mind the hype: A critical evaluation and prescriptive agenda for research on mindfulness and meditation. *Perspectives on Psychological Science*, 13(1), 36-61. doi: 10.1177/1745691617709589
- Wang, C., Li, K., & Gaylord, S. (2019). Prevalence, patterns, and predictors of meditation use among US children: Results from the National Health Interview Survey. *Complementary Therapies in Medicine*, 43, 271-276. doi: 10.1016/j.ctim.2019.02.004
- Wilson, J. (2014). *Mindful America: Meditation and the mutual transformation of Buddhism and American culture*. Oxford University Press.

# Part One

## Chapter 2: Literature Review – Correlates

The spread of mindfulness-based practices and programs in society merits more scientific inquiry. The research on mindfulness has increased considerably in recent decades, but relatively little is known about the prevalence of mindfulness use, both overall and across groups. This literature review therefore seeks to outline the evidence to date on the correlates of mindfulness use and describe several theories that might be useful to predict and explain mindfulness use across groups. This chapter can, in so doing, suggest the likely distribution of mindfulness use in society, which the following two empirical chapters will test empirically.

The population studies to date on mindfulness use have relied on the National Health Interview Survey (NHIS), which is designed to provide nationally representative estimates on a range of health topics among the noninstitutional civilian (both citizens and non-citizens) population of the United States. The findings from the 2012 NHIS survey suggest that 2.5 per cent of adults in the United States had used mindfulness in their lifetime and 1.9 per cent of adults in the United States had used mindfulness during the 12 months prior to the survey interview (Burke et al., 2017). There have been no population estimates since then on the overall prevalence of mindfulness use, but the 2012 and 2017 NHIS surveys have been analyzed to estimate mindfulness use across groups. Taken together, the evidence from the 2012 and 2017 NHIS surveys suggest that mindfulness use is less likely among older adults and more likely among women, sexual minorities, university graduates, white adults, residents in the West of the country, adults with barriers to healthcare, and adults with health problems (Burke et al., 2017; Macinko & Upchurch, 2019; Morone, Moore & Greco, 2017).

The cross-sectional studies thus far on mindfulness use have only used datasets on the U.S. population, which limits the international generalizability of the findings due to variation in social structures and processes across countries. For example, the United States does not have universal healthcare coverage and the costs associated with healthcare are high compared with several European nations. The association between mindfulness use and barriers to healthcare

might be expected in the United States, but the same association is less likely in wealthy nations with universal healthcare coverage such as Britain. It is therefore important to always take the national context into account when using theories to predict and explain mindfulness use.

The research on mindfulness use has used relatively little theoretical work to predict and explain mindfulness use, but Macinko and Upchurch (2019) investigated mindfulness use in the United States and applied a modified version of the Andersen (1995) Healthcare Utilization Model, which identifies three main determinants of healthcare utilization: 1) predisposing factors – the predisposition to use health services; 2) enabling factors – the means available to pay for and access health services; and 3) health needs – the need for healthcare. The model has been successfully used in various forms to predict and explain both healthcare utilization and complementary and alternative medicine utilization (Fouladbakhsh & Stommel, 2007). Hence, the Andersen (1995) Healthcare Utilization Model might be a useful framework to predict and explain mindfulness use, but there are strengths and weaknesses in the model that should be considered first.

First, the health needs condition of the Andersen (1995) Healthcare Utilization Model assumes that individuals with a need for healthcare should be more likely to utilize healthcare. While mindfulness use does differ from conventional healthcare utilization, Burke et al. (2017) find that approximately one-third of mindfulness users report using mindfulness-based practices and programs to treat a specific health issue. There is, after all, robust evidence to suggest that mindfulness-based interventions can be helpful for individuals suffering from health problems (Goldberg et al., 2018; Hilton et al., 2017), which indicates that the health needs condition of the model might be useful to predict and explain mindfulness use.

Second, the enabling factors condition of the Andersen (1995) Healthcare Utilization Model assumes that individuals with the means available to pay for and access health services should be more likely to utilize healthcare. While the enabling factors condition might be useful to predict and explain mindfulness use in countries without universal healthcare coverage,

mindfulness use can also be a lifestyle choice that might be better explained by other theories than the Andersen (1995) Healthcare Utilization Model. For instance, Bourdieu (1994) viewed the class order as inseparable from cultural taste and consumption, which suggests that mindfulness use might vary as a function of social class. The relationship between mindfulness use and social class has been observed in samples of both the leading advocates of mindfulness use (Kucinkas, 2018) and experienced mindfulness meditators (Jacob, Jovic & Brinkerhoff, 2009). In fact, Carlson (2018) highlights that many people with lower household incomes work long hours and simply do not have the time to learn to practise mindfulness.

Third, the predisposing factors condition of the Andersen (1995) Healthcare Utilization Model assumes that some groups are more predisposed to utilize healthcare than others. While it is plausible that predispositions should influence healthcare utilization, the model does not offer much description on which groups might be the most inclined to utilize healthcare and for what reasons. Hence, the different predispositions across groups might be better explained by other theories than the Andersen (1995) Healthcare Utilization Model.

#### Age

The lower use of mindfulness among older adults might reflect intergenerational changes in value orientation. Inglehart (1977, 1990, 1997) argues that existential security during the formative years reduces individual concerns with material needs and gradually leads advanced industrial societies to embrace postmaterialist values through intergenerational replacement. The shift in priority from materialist values of physical and economic security to postmaterialist values of self-expression and quality of life might therefore cause younger generations to seek out and self-select into mindfulness use to a greater extent than older generations.

#### Gender

The higher use of mindfulness among women might reflect gendered patterns of health behavior, but it is also possible that women are simply more attracted to mindfulness-based practices than men as therapeutic and spiritual practices hold values associated with prevalent

cultures of femininity and still offer a means for women to negotiate the dilemma between self-care and care for others in modern contexts (Sointu, 2012; Sointu & Woodhead, 2008; Swan, 2019). In fact, Carlson (2018) notes that most mindfulness teachers are women and most of the leading male advocates of mindfulness use display a gentle and less traditional form of masculinity.

### Sexual Orientation

The higher use of mindfulness among sexual minorities might reflect a dissatisfaction with conventional healthcare. The evidence to date suggests that sexual minorities in the United States and Britain have poor healthcare experiences (Elliot et al., 2015; Martos, Wilson & Meyer, 2017), which represent a healthcare barrier that increases the attractiveness of alternatives to conventional healthcare, including mindfulness-based practices and programs. Upchurch, Krueger, and Wight (2016) suggest that alternatives to conventional medical care can help sexual minorities meet their health needs and avoid stigma or discrimination.

### Education

The higher use of mindfulness among university graduates might reflect an information advantage. There is an association between higher educational attainment and higher levels of health literacy (Martin et al., 2009), which suggests that university graduates should be more likely to obtain and understand basic health information related to mindfulness-based practices and programs.

### Race

Carlson (2018) suggests that household income might confound the relationship between race and mindfulness use, but there is reason to believe that just being a white adult increases the likelihood of self-selection into mindfulness use, at least in the United States. The leading advocates of mindfulness use in the United States have predominantly been white adults and their initial strategy has been to normalize mindfulness-based practices and programs in elite

institutions, many of which have generally been comprised of white adults (Kucinskias, 2018). The teachers and participants in mindfulness-based interventions have also commonly been white adults, which might create a psychological barrier for many racial and ethnic minorities. For example, Woods-Giscombé and Gaylord (2014) conducted interviews with African American adults with experience of mindfulness training and were told by one of the interview subjects that:

African Americans need to see people who look like them. The group has to incorporate, I think, people who have had mindfulness experience already, who look like the people you want to bring together (Woods-Giscombé & Gaylord, 2014, p. 156).

While racial and ethnic minorities in the United States might be less likely to self-select into mindfulness use, the association between race and mindfulness use likely depends on the historical and social context in each country.

#### Region of Residence

The relationship between region of residence and mindfulness use likely depends on cultural and political context. For example, the West of the United States is one of the most politically liberal regions in the country (Erikson & Tedin, 2015). There is a positive association between liberal political attitudes and openness to experience (Sibley, Osborne & Duckitt, 2012), which, in turn, predicts use of complementary and alternative medicine (Galbraith et al., 2018). It is therefore reasonable to suggest that mindfulness use might be more common in regions and groups with greater leanings towards political liberalism.

#### Conclusion

This literature review outlined the evidence on the correlates of mindfulness use and described several theories that can be useful to predict and explain mindfulness use across groups. Taken together, the evidence to date suggests an unequal distribution of mindfulness use, but the research literature on mindfulness use suffers from a lack of cross-country research, which limits the international generalizability of the findings. The research could do more to

investigate mindfulness use as a social phenomenon and would benefit from the inclusion of more (independent and dependent) variables. Hence, the following two empirical chapters seek to: (1) replicate the main findings on mindfulness use with more recent datasets in the United States and Britain; (2) include independent variables that have not yet been investigated in relation to mindfulness use; and (3) also investigate awareness of mindfulness and level of engagement with mindfulness as dependent variables.

## References

- Andersen, R. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior*, 36 (1), 1–10. doi: 10.2307/2137284
- Burke, A., Lam, C. N., Stuffman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC Complementary and Alternative Medicine*, 17(1), 316. doi: 10.1186/s12906-017-1827-8
- Carlson, L. E. (2018). Uptake of mindfulness-based interventions: A phenomenon of wealthy white western women?. *Clinical Psychology: Science and Practice*, 25(3), e12258. doi: 10.1111/cpsp.12258
- Elliott, M. N., Kanouse, D. E., Burkhart, Q., Abel, G. A., Lyratzopoulos, G., Beckett, M. K., Schuster, M. A. & Roland, M. (2015). Sexual minorities in England have poorer health and worse health care experiences: a national survey. *Journal of General Internal Medicine*, 30(1), 9-16. doi: 10.1007/s11606-014-2905-y
- Erikson, R. S., & Tedin, K. L. (2015). *American public opinion: Its origins, content and impact*. Routledge.
- Fouladbakhsh, J. M., & Stommel, M. (2007). Using the behavioral model for complementary and alternative medicine: The CAM healthcare model. *Journal of Complementary and Integrative Medicine*, 4(1). doi: 10.2202/1553-3840.1035
- Galbraith, N., Moss, T., Galbraith, V., & Purewal, S. (2018). A systematic review of the traits and cognitions associated with use of and belief in complementary and alternative medicine (CAM). *Psychology, Health & Medicine*, 23(7), 854-869. doi: 10.1080/13548506.2018.1442010
- Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A

- systematic review and meta-analysis. *Clinical Psychology Review*, 59, 52-60. doi: 10.1016/j.cpr.2017.10.011
- Hilton, L., Hempel, S., Ewing, B. A., Apaydin, E., Xenakis, L., Newberry, S., Colaiaco, B., Ruelaz Maher, A., Shanman, R. M., Sorbero, M. E. & Maglione, M. A. (2017). Mindfulness meditation for chronic pain: systematic review and meta-analysis. *Annals of Behavioral Medicine*, 51(2), 199-213. doi: 10.1007/s12160-016-9844-2
- Inglehart, R. (1977). *The silent revolution: Changing values and political styles among Western publics*. Princeton University Press.
- Inglehart, R. (1990). *Culture shift in advanced industrial society*. Princeton: Princeton University Press.
- Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies*. Princeton University Press.
- Jacob, J., Jovic, E., & Brinkerhoff, M. B. (2009). Personal and planetary well-being: Mindfulness meditation, pro-environmental behavior and personal quality of life in a survey from the social justice and ecological sustainability movement. *Social Indicators Research*, 93(2), 275-294. doi: 10.1007/s11205-008-9308-6
- Kucinkas, J. (2018). *The mindful elite: Mobilizing from the inside out*. Oxford University Press.
- Macinko, J. & Upchurch, D. M. (2019). Factors associated with the use of meditation, U.S. Adults 2017. *Journal of Alternative and Complementary Medicine*, 25(9), 920-927. doi: 10.1089/acm.2019.0206
- Martin, L. T., Ruder, T., Escarce, J. J., Ghosh-Dastidar, B., Sherman, D., Elliott, M., Bird, C. E., Fremont, A., Gasper, C., Culberg, A., & Lurie, N. (2009). Developing predictive models of health literacy. *Journal of General Internal Medicine*, 24(11), 1211. doi: 10.1007/s11606-009-1105-7

- Martos, A. J., Wilson, P. A., & Meyer, I. H. (2017). Lesbian, gay, bisexual, and transgender (LGBT) health services in the United States: origins, evolution, and contemporary landscape. *PloS one*, 12(7). doi: 10.1371/journal.pone.0180544
- Morone, N. E., Moore, C. G., & Greco, C. M. (2017). Characteristics of adults who used mindfulness meditation: United States, 2012. *Journal of Alternative and Complementary Medicine*, 23(7), 545–550. doi: 10.1089/acm.2016.0099
- Sibley, C. G., Osborne, D., & Duckitt, J. (2012). Personality and political orientation: Meta-analysis and test of a Threat-Constraint Model. *Journal of Research in Personality*, 46(6), 664-677. doi: 10.1016/J.JRP.2012.08.002
- Sointu, E. (2012). *Theorizing complementary and alternative medicines: Wellbeing, self, gender, class*. Springer.
- Sointu, E., & Woodhead, L. (2008). Spirituality, gender, and expressive selfhood. *Journal for the Scientific Study of Religion*, 47(2), 259-276. doi: 10.1111/j.1468-5906.2008.00406.x
- Swan, E. (2019). Life of Psy. In Salmenniemi, S., Nurmi, J., Perheentupa, I., & Bergroth, H. (Ed.). *Assembling therapeutics: Cultures, politics and materiality* (pp. 206-2019). Routledge.
- Upchurch, D. M., Krueger, E. A., & Wight, R. G. (2016). Sexual orientation differences in complementary health approaches among young adults in the United States. *Journal of Adolescent Health*, 59(5), 562-569. doi: 10.1016/j.jadohealth.2016.07.001
- Woods-Giscombé, C. L., & Gaylord, S. A. (2014). The cultural relevance of mindfulness meditation as a health intervention for African Americans: Implications for reducing stress-related health disparities. *Journal of Holistic Nursing*, 32(3), 147-160. doi: 10.1177/0898010113519010

## Chapter 3: Sociodemographic Characteristics and Health Status of Mindfulness Users in the United States

Authors:<sup>2</sup> Otto Simonsson<sup>1</sup>, Maryanne Martin<sup>2</sup>, and Stephen Fisher<sup>1</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>University of Oxford, Department of Experimental Psychology

### **Abstract**

**Objectives:** The aims of the present study are to provide population estimates for the prevalence of mindfulness use in the United States and to identify which groups are more likely to self-report mindfulness use.

**Methods:** Using data from the 2017 National Health Interview Survey (NHIS), the current study analyzed 26,742 responses from adults in the United States and estimated patterns in the likelihood of self-reported mindfulness use across groups using logistic regression models.

**Results:** The results suggest that five percent of adults in the United States in 2017 had used mindfulness over the prior year, which is significantly more than the finding that two percent of adults in the United States had used mindfulness during the 12 months prior to the 2012 NHIS survey interview. The logistic regression models show self-reported mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain. Most notably, mindfulness use was reported by substantial numbers of respondents with access

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<sup>2</sup> Author Contribution: All authors contributed to the study conception and design. OS analyzed the data and wrote the first draft of the manuscript. SF and MM supervised and commented on the manuscript drafts. All authors read and approved the final manuscript.

barriers to healthcare (10%), cost barriers to healthcare (9%), mental illness (15%), or physical pain (7%).

Conclusions: The results of the present study suggest an unequal distribution of mindfulness use across groups in the United States.

Keywords: Mindfulness; Sociodemographic; Health; United States; NHIS

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In recent decades, there has been a surge of scientific interest in mindfulness – the quality of awareness that emerges from purposefully and nonjudgmentally paying attention to the present moment with an attitude of openness, acceptance, and curiosity (Kabat-Zinn, 2003). The research in the field has generally been limited by poor research methodologies and small sample sizes (Goleman & Davidson, 2017), but the evidence to date suggests that mindfulness-based practices and programs can be effective for chronic pain (Hilton et al., 2017), anxiety (de Abreu Costa et al., 2019), and depression (Goldberg et al., 2019).

The proliferation of research on mindfulness-based interventions has coincided with efforts to integrate mindfulness-based practices and programs into a range of institutional settings, including the workplace, the military, the criminal justice system (Creswell, 2017), and the government (Bristow, 2019). There have not been many studies on the overall prevalence of mindfulness use in society, but Burke et al. (2017) analyzed the 2012 National Health Interview Survey (NHIS) and found that an estimated two percent of adults in the United States had used mindfulness during the 12 months prior to the survey interview. The evidence to date suggests that mindfulness use in the United States varies widely depending on age, region, race, gender, sexual orientation, cost barriers to healthcare, access barriers to healthcare, mental illness, and physical pain (Burke et al., 2017; Macinko & Upchurch 2019; Morone, Moore & Greco 2017; Wang, Li & Gaylord, 2019).

While several theoretical models have been developed to explain the variance across groups in healthcare utilization (Mechanic, 1962; Parsons, 1951; Suchman, 1965), the Andersen (1995) Healthcare Utilization Model has also been used to predict mindfulness use in the United States (Macinko & Upchurch, 2019). The model involves three main predictors of healthcare utilization: (1) predisposing factors – characteristics that predispose individuals to use health services, which can include age, race, and gender; (2) enabling factors – characteristics that enable individuals to access health services, which can include a general inability to afford health services; (3) health needs – characteristics that create a need for individuals to utilize health services, which can include mental illness and physical pain. Using the Andersen (1995)

Healthcare Utilization Model and publicly available data from the 2017 NHIS dataset, the aims of the present study are to provide population estimates for the prevalence of mindfulness use in the United States and to identify which groups are more likely to self-report mindfulness use.

## **Methods**

### *Participants*

The present study provides a secondary analysis of data from the 2017 NHIS dataset. The NHIS is a nationally representative survey of the US population with information on sociodemographic characteristics and health status. The publicly available data files were weighted to reflect the civilian noninstitutionalized population and contained responses from 26,742 adults aged 18 years or above, which was 80.7 percent of the total sample of eligible adults (33,143).

### *Measures*

The dependent variable for the present study was self-reported mindfulness use during the 12 months prior to the survey interview. The current study used twelve independent variables that were relevant to the Andersen (1995) Healthcare Utilization Model: age, region, race, gender, sexual orientation, marital status, family composition, and employment status were analyzed as predisposing factors; access barriers to healthcare and cost barriers to healthcare were analyzed as enabling factors; mental illness and physical pain were analyzed as health needs. The exact wording and recoding of all the questions and answers can be found in Appendix 1 in the Supplementary Materials.

‘Refused’, ‘Not Ascertained’, and ‘Don’t Know’ (3.2 percent of the responses for the dependent variable; see Table A1 in Supplementary Materials Appendix 2) were coded as ‘Use Not Reported’ for the dependent variable, which ensures that the weighted sample reflects national estimates. While respondents using techniques similar to mindfulness-based practices are unlikely to self-report mindfulness use, it is assumed that mindfulness users generally know that

they are using mindfulness-based practices and would therefore be able to report it. It is also important to note that the overall findings are broadly the same when ‘Refused’, ‘Not Ascertained’, and ‘Don’t Know’ are coded as missing values for the dependent variable (see Table A2-3 in Appendix 3 in the Supplementary Materials). The response in the 2017 NHIS dataset can appear as ‘Not Ascertained’ in several situations, including when the field was left blank or the respondent discontinued the interviews at some point after completing the first three sections (NHIS, 2017).

### *Data Analyses*

The present study used descriptive statistics to present an overview of self-reported mindfulness use (Table 1 and 2). The likelihood of self-reported mindfulness use across groups was calculated with three multiple logistic regressions to calculate adjusted odds ratios with 95 percent confidence intervals (Table 3). The adjusted odds ratios with a greater value than 1 suggest that individuals in the group were more likely to have self-reported mindfulness use during the 12 months prior to the survey interview. Conversely, the adjusted odds ratios with a value less than 1 suggest that the individuals in that group were less likely to have self-reported mindfulness use during the 12 months prior to the survey interview. The data analyses make use of sampling weights to produce representative estimates.

### **Results**

Table 1 displays the percentage of self-reported mindfulness use. The results show that five percent of the respondents reported mindfulness use during the 12 months prior to the survey interview, which suggests that thirteen million adults in the United States had used mindfulness in the analyzed time period, based on the population estimates from NHIS.

Table 1: Percentage of Self-Reported Mindfulness Use in the United States

Responses	% [95% CI]	Observations	Population Estimates
<i>Use Reported</i>	5.3 [4.9, 5.7]	1,525	13,072,835
<i>Use Not Reported</i>	94.7 [94.3, 95.1]	25,217	233,584,436
<b>Total</b>	100	26,742	246,657,271

Note: Estimates calculated using weights for national representativeness provided by the NHIS. ‘Refused’, ‘Not Ascertained’, and ‘Don’t Know’ are coded as ‘Use Not Reported’ for the dependent variable. See Supplementary Materials Appendix 1 for the exact wording and recoding of the responses.

Table 2 displays the percentage of self-reported mindfulness use across groups. Most notably, mindfulness use was self-reported by substantial numbers of respondents with access barriers to healthcare (10%), cost barriers to healthcare (9%), mental illness (15%), or physical pain (7%).

Table 2. Percentage of Self-Reported Mindfulness Use in the United States Across Groups

Variables	Mindfulness Use Reported	
	(%)	(N)
<i>Age</i>		
70+ years	2.1	104
18-29 years	6.6	348
30-39 years	6.6	315
40-49 years	5.3	221
50-59 years	5.2	291
60-69 years	4.8	246
<i>Region</i>		
West	7.8	527
Northeast	5.7	294
South	3.3	362
Midwest	5.4	342
<i>Race</i>		
White	6.3	1220
Black/African American	3.1	78
AIAN	2.5	8
Asian	4.5	73
Hispanic	2.5	100
Other	9.6	46
<i>Gender</i>		
Men	4.2	566
Women	6.3	959
<i>Sexual Orientation</i>		
Heterosexual	5.0	1325
Sexual Minority	9.5	200
<i>Marital Status</i>		
Not Married	6.2	987
Married	4.5	538
<i>Family Composition</i>		
No Children	5.9	1222
Children	4.1	303
<i>Employment Status</i>		
Not Working	3.9	459
Employed	6.1	1066
<i>Access Barriers to Healthcare</i>		
Not Reported	4.6	1163
Reported	10.1	362
<i>Cost Barriers to Healthcare</i>		
Not Reported	4.6	1109
Reported	8.7	416

		<i>Mental Illness</i>	
Not Reported		5.0	1414
Reported		14.7	111
		<i>Physical Pain</i>	
Not Reported		4.1	702
Reported		7.0	823

Note: The number of observations was 26,742. Estimates calculated using weights for national representativeness provided by the NHIS. 'Refused', 'Not Ascertained', and 'Don't Know' are coded as 'Use Not Reported' for the dependent variable. (N) refers to the unweighted counts of self-reported mindfulness users on each row. AIAN refers to American Indian and Alaska Native. See Supplementary Materials Appendix 1 for the exact wording and recoding of the responses.

Table 3 displays estimates from three logistic regression models based on variables that might reasonably be expected to be casually prior to mindfulness use during the 12 months prior to the survey interview: (Model 1) Predisposing Factors, (Model 2) Predisposing Factors and Enabling Factors, and (Model 3) Predisposing Factors, Enabling Factors, and Health Needs. Taken together, self-reported mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain.

Variables	Model 1		Model 2		Model 3	
	aOR	(95% CI)	aOR	(95% CI)	aOR	(95% CI)
<b>Predisposing Factors</b>						
<i>Age</i>						
70+ years (Reference)						
18-29 years	3.66***	(2.72, 4.93)	3.29***	(2.45, 4.43)	3.18***	(2.35, 4.29)
30-39 years	4.51***	(3.27, 6.21)	3.97***	(2.89, 5.44)	3.73***	(2.71, 5.13)
40-49 years	3.51***	(2.52, 4.90)	3.08***	(2.21, 4.29)	2.82***	(2.02, 3.93)
50-59 years	2.80***	(2.03, 3.87)	2.39***	(1.74, 3.29)	2.24***	(1.63, 3.09)
60-69 years	2.42***	(1.80, 3.26)	2.20***	(1.64, 2.96)	2.12***	(1.58, 2.86)
<i>Region</i>						
West (Reference)						
Northeast	0.64***	(0.51, 0.81)	0.68***	(0.54, 0.85)	0.68***	(0.54, 0.86)
South	0.39***	(0.31, 0.48)	0.40***	(0.32, 0.49)	0.40***	(0.32, 0.50)
Midwest	0.55***	(0.44, 0.69)	0.55***	(0.44, 0.69)	0.55***	(0.44, 0.69)
<i>Race</i>						
White (Reference)						
Black/African American	0.50***	(0.35, 0.69)	0.50***	(0.35, 0.70)	0.52***	(0.37, 0.73)
AIAN	0.31*	(0.11, 0.85)	0.29*	(0.10, 0.82)	0.30*	(0.11, 0.84)
Asian	0.57***	(0.43, 0.76)	0.60***	(0.45, 0.80)	0.64**	(0.48, 0.86)
Hispanic	0.31***	(0.24, 0.41)	0.30***	(0.23, 0.39)	0.31***	(0.24, 0.41)
Other	1.16	(0.73, 1.83)	1.08	(0.69, 1.70)	1.08	(0.69, 1.69)

	<i>Gender</i>					
Men (Reference)						
Women	1.70***	(1.49, 1.94)	1.59***	(1.39, 1.82)	1.54***	(1.35, 1.76)
	<i>Sexual Orientation</i>					
Heterosexual (Reference)						
Sexual Minority	1.72***	(1.42, 2.09)	1.65***	(1.35, 2.01)	1.59***	(1.30, 1.95)
	<i>Marital Status</i>					
Not Married (Reference)						
Married	0.80**	(0.69, 0.93)	0.85*	(0.74, 0.98)	0.86*	(0.74, 0.99)
	<i>Family Composition</i>					
No Children (Reference)						
Children	0.58***	(0.49, 0.69)	0.61***	(0.51, 0.72)	0.60***	(0.51, 0.72)
	<i>Employment Status</i>					
Not Working (Reference)						
Employed	1.28**	(1.09, 1.50)	1.38***	(1.18, 1.62)	1.49***	(1.27, 1.75)
	<b>Enabling Factors</b>					
	<i>Access Barriers to Healthcare</i>					
Not Reported (Reference)						
Reported	.....	.....	1.88***	(1.59, 2.22)	1.74***	(1.46, 2.07)
	<i>Cost Barriers to Healthcare</i>					
Not Reported (Reference)						
Reported	.....	.....	1.62***	(1.38, 1.90)	1.47***	(1.24, 1.72)
	<b>Health Needs</b>					
	<i>Mental Illness</i>					
Not Reported (Reference)						
Reported	.....	.....	.....	.....	1.93***	(1.44, 2.59)
	<i>Physical Pain</i>					
Not Reported (Reference)						
Reported	.....	.....	.....	.....	1.42***	(1.24, 1.62)
Observations	26,742		26,742		26,742	

Robust standard errors in parentheses; \*\*\*  $p \leq 0.001$  \*\*  $p \leq 0.01$ , \*  $p \leq 0.05$

Note: Estimates calculated using weights for national representativeness provided by the NHIS. aOR = adjusted (or conditional) Odds Ratio. 'Refused', 'Not Ascertained', and 'Don't Know' are coded as 'Use Not Reported' for the dependent variable. AIAN refers to American Indian and Alaska Native. See Supplementary Materials Appendix 1 for the exact wording and recoding of the responses.

## Discussion

The present study analyzed the 2017 NHIS dataset to provide population estimates for the prevalence of mindfulness use in the United States and to identify which groups are more likely to self-report mindfulness use. The findings show that five percent of respondents used mindfulness during the 12 months prior to the survey interview, which suggests that thirteen million adults in the United States had used mindfulness in the analyzed time period. Taken

together, self-reported mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain. Most notably, mindfulness use was self-reported by substantial numbers of respondents with access barriers to healthcare (10%), cost barriers to healthcare (9%), mental illness (15%), or physical pain (7%).

The findings in the current study suggest a significantly higher prevalence of mindfulness use among adults in the United States in 2017 than in 2012, which mirrors the overall increase in meditation use between 2012 and 2017 (Clarke et al., 2018). The results broadly confirm earlier analyses of the sociodemographic characteristics and health status of mindfulness users (Burke et al., 2017; Macinko & Upchurch 2019; Morone, Moore & Greco 2017; Wang, Li & Gaylord, 2019), but the present study also finds self-reported mindfulness use to be significantly associated with marital status, family composition, and employment status.

The results on health needs are consistent with the Andersen (1995) Healthcare Utilization Model, but the model might only be suitable for understanding part of the process by which people come to use or not use mindfulness. For example, mindfulness use can be a lifestyle choice or hobby for many and does not have to be a healthcare treatment for physical pain or mental illness. It might therefore be sensible to complement the Andersen (1995) Healthcare Utilization Model with other theories to better understand mindfulness use across groups.

### **Limitations and Future Research Directions**

The present study has several limitations worthy of consideration. First, the sample has been weighted to be representative of the adult population in the United States, which increases the reliability and accuracy of the population estimates. The analysis was, however, conducted with data collected in 2017 and might not reflect current trends and characteristics of mindfulness users. Second, the cross-sectional design of the study prevents causal inference about the mental

and physical health status of the respondents. The causal effects of the mindfulness use cannot be established, even if the research thus far broadly suggests a positive effect on mental and physical health from mindfulness-based interventions. Future research should explore barriers to mindfulness use and ways to promote a more equally distributed use of mindfulness-based practices and programs.

**Ethical Approval:** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The current study was exempt from review by the Research Ethics Committee of the Department of Sociology (DREC) at the University of Oxford.

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## References

- Andersen, R. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior*, 36(1), 1–10. doi: 10.2307/2137284
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: 10.1016/j.copsyc.2018.11.003
- Burke, A., Lam, C. N., Stuffman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC Complementary and Alternative Medicine*, 17(1), 316. doi: 10.1186/s12906-017-1827-8
- Clarke, T. C., Barnes, P. M., Black, L. I., Stussman, B. J., & Nahin, R. L. (2018). *Use of yoga, meditation, and chiropractors among US adults aged 18 and over*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics: <https://www.cdc.gov/nchs/data/databriefs/db325-h.pdf>
- Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, 68, 491-516. doi: 10.1146/annurev-psych-042716-051139
- de Abreu Costa, M., de Oliveira, G. S. D. A., Tatton-Ramos, T., Manfro, G. G., & Salum, G. A. (2019). Anxiety and stress-related disorders and mindfulness-based interventions: a systematic review and multilevel meta-analysis and meta-regression of multiple outcomes. *Mindfulness*, 10(6), 996-1005. doi: 10.1007/s12671-018-1058-1
- Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Kearney, D. J., & Simpson, T. L. (2019). Mindfulness-based cognitive therapy for the treatment of current depressive symptoms: a meta-analysis. *Cognitive Behaviour Therapy*, 48(6), 445-462. doi: 10.1080/16506073.2018.1556330
- Goleman, D., & Davidson, R. (2017). *The science of meditation: how to change your brain, mind and body*. Penguin UK.

- Hilton, L., Hempel, S., Ewing, B. A., Apaydin, E., Xenakis, L., Newberry, S., Colaiaco, B., Ruelaz Maher, A., Shanman, R. M., Sorbero, M. E. & Maglione, M. A. (2017). Mindfulness meditation for chronic pain: systematic review and meta-analysis. *Annals of Behavioral Medicine*, 51(2), 199-213. doi: 10.1007/s12160-016-9844-2
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. doi: 10.1093/clipsy.bpg016
- Macinko, J. & Upchurch, D. M. (2019). Factors associated with the use of meditation, U.S. Adults 2017. *Journal of Alternative and Complementary Medicine*, 25(9), 920-927. doi: 10.1089/acm.2019.0206
- Mechanic, D. (1962). The concept of illness behaviour. *Journal of Chronic Diseases*, 15(2), 189-194. doi: 10.1017/S0033291700002476
- Morone, N. E., Moore, C. G., & Greco, C. M. (2017). Characteristics of adults who used mindfulness meditation: United States, 2012. *Journal of Alternative and Complementary Medicine*, 23(7), 545–550. doi: 10.1089/acm.2016.0099
- NHIS (2017). *Survey description*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics: [https://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Dataset\\_Documentation/NHIS/2017/srvydesc.pdf](https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2017/srvydesc.pdf)
- Parsons, T. (1951). *The social system*. The Free Press.
- Suchman, E. (1965). Stages of illness and medical care. *Journal of Health and Human Behavior*, 6(3), 114-128. doi: 10.2307/2948694
- Wang, C., Li, K., & Gaylord, S. (2019). Prevalence, patterns, and predictors of meditation use among US children: results from the National Health Interview Survey. *Complementary Therapies in Medicine*, 43, 271-276. doi: 10.1016/j.ctim.2019.02.004

**Supplementary Materials for “Sociodemographic Characteristics and Health Status of Mindfulness Users in the United States”**

**Appendix 1 – Full question wording and coding**

**Dependent Variable**

Question asked to sample adults aged 18+ years: *During the past 12 months, did you use Mindfulness meditation, including Vipassana (vih-PAS-sah-nah), Zen Buddhist meditation, Mindfulness-based Stress Reduction, and Mindfulness-based Cognitive Therapy?*

The responses were displayed as follows in the publicly available data file: (1) *Yes*; (2) *No*; (3) *Refused*; (4) *Not ascertained*; (5) *Don't know*. The answers were coded into two subcategories: 1 was coded as 1 ('Use Reported'); 2-5 were coded as 0 ('Use Not Reported').

**Independent Variables**

**Age**

Sample adults aged 18+ years were asked to report: *Age*

The respondents gave a numerical response. The answers were coded into six subcategories: 70+ were coded as 1; 18-29 years were coded as 2; 30-39 years were coded as 3; 40-49 years were coded as 4; 50-59 years were coded as 5; 60-69 years were coded as 6.

**Region**

Sample adults aged 18+ years were asked to report: *Region*

The responses were displayed as follows in the publicly available data file: (1) 'Northeast'; (2) 'Midwest'; (3) 'South'; (4) 'West'. The answers were coded into four subcategories: 4 was coded as 1 ('West'); 1 was coded as 2 ('Northeast'); 3 was coded as 3 ('South'); 2 was coded as 4 ('Midwest').

**Race**

Sample adults aged 18+ years were asked to report: *Race*

The responses were displayed as follows in the publicly available data file: (1a) ‘White only’; (2a) ‘Black/African American only’; (3a) ‘AIAN only’ (AIAN = American Indian and Alaska Native); (4a) ‘Asian only’; (5a) ‘Race group not releasable\*’; (6a) ‘Multiple race’. **\*Data not releasable due to respondent confidentiality or for other reasons.**

Statement presented to sample adults aged 18+ years: *Please give me the number of the group that represents [your/ person's] Hispanic origin or ancestry.*

The responses were displayed as follows in the publicly available data file: (1b) ‘Multiple Hispanic’; (2b) ‘Puerto Rico’; (3b) ‘Mexican’; (4b) ‘Mexican-American’; (5b) ‘Cuban/Cuban American’; (6b) ‘Dominican (Republic)’; (7b) ‘Central or South American’; (8b) ‘Other Latin American, type not specified’; (9b) ‘Other Spanish’; (10b) ‘Hispanic/Latino/Spanish, non-specific type’; (11b) ‘Hispanic/Latino/Spanish, type refused’; (12b) ‘Hispanic/Latino/Spanish, type not ascertained’; (13b) ‘Not Hispanic/Spanish origin’.

The answers from the two sections were coded into six subcategories: 1a was coded as 1 (‘White’); 2a was coded as 2 (‘Black/African American’); 3a was coded as 3 (‘AIAN’); 4a was coded as 4 (‘Asian’); 1b-12b were coded as 5 (‘Hispanic’); 5a and 6a were coded as 6 (‘Other’).

### **Gender**

Question asked to sample adults aged 18+ years: *[Are/Is] [you/person] male or female?*

The responses were displayed as follows in the publicly available data file: (1) ‘Male’; (2) ‘Female’. The answers were coded into two subcategories: 1 was coded as 0 (‘Men’); 2 was coded as 1 (‘Women’). There was no third option for non-binary gender identities.

### **Sexual Orientation**

Question asked to male sample adults aged 18+ years: *Which of the following best represents how you think of yourself?*

The responses were displayed as follows in the publicly available data file: (1a) ‘Gay’; (2a) ‘Straight, that is, not gay’; (3a) ‘Bisexual’; ‘Something else’; (4a) ‘I don’t know the answer’; (5a) ‘Refused’; (6a) ‘Not ascertained’.

Question asked to female sample adults aged 18+ years: *Which of the following best represents how you think of yourself?*

The responses were displayed as follows in the publicly available data file: (1b) ‘Lesbian or gay’; (2b) ‘Straight, that is, not lesbian or gay’; (3b) ‘Bisexual’; ‘Something else’; (4b) ‘I don’t know the answer’; (5b) ‘Refused’; (6b) ‘Not ascertained’.

The answers from the two sections were coded into two subcategories: 2a and 2b were coded as 0 (‘Heterosexual’); 1a-b, 3a-b, 4a-b, 5a-b, and 6a-b were coded as 1 (‘Sexual Minority’).

### **Marital Status**

Question asked to all persons aged 14 or older: *[Are/Is][you/person] now married, widowed, divorced, separated, never married, or living with a partner?*

The responses were displayed as follows in the publicly available data file: (0) ‘Under 14 years’; (1) ‘Married – spouse in household’; (2) ‘Married – spouse not in household’; (3) ‘Married – spouse in household unknown’; (4) ‘Widowed’; (5) ‘Divorced’; (6) ‘Separated’; (7) ‘Never married’; (8) ‘Living with partner’; (9) ‘Unknown marital status’.

The answers were coded into two subcategories: 1-3 were coded as 1 (‘Married’) and 4-9 were coded as 0 (‘Not Married’).

### **Family Composition**

Statement presented to sample adults aged 18+ years: *Sample adult is parent to 1+ minor child(ren) in the family.*

The responses were displayed as follows in the publicly available data file: (1) ‘Yes, the Sample Adult is a parent of a child residing in the family’; (2) ‘There are minor children residing in the

family but the Sample Adult is not their parent’; (3) ‘There are no minor children residing in the family’; (4) ‘Unknown’. The answers were coded into two subcategories: 1 and 2 were coded as 1 (‘Children’); 3 and 4 were coded as 0 (‘No Children’).

### **Employment Status**

Question asked to sample adults aged 18+ years: *Did you have a job or business at any time in the PAST 12 MONTHS?*

The responses were displayed as follows in the publicly available data file: (1) ‘Had job last week’; (2) ‘No job last week, had job past 12 months’; (3) ‘No job last week, no job past 12 months’; (4) ‘Never worked’; (5) ‘Refused’; (6) ‘Not ascertained’; (7) ‘Don’t know’. The answers were coded into two subcategories: 1 was coded as 1 (‘Employed’); 2-7 were coded as 0 (‘Not Working’).

### **Access Barriers**

Question asked to sample adults aged 18+ years: *There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS?*

*You couldn't get through on the telephone.*

The responses were displayed as follows in the publicly available data file: (1a) ‘Yes’; (2a) ‘No’; (3a) ‘Refused’; (4a) ‘Not ascertained’; (5a) ‘Don’t know’.

*You couldn't get an appointment soon enough.*

The responses were displayed as follows in the publicly available data file: (1b) ‘Yes’; (2b) ‘No’; (3b) ‘Refused’; (4b) ‘Not ascertained’; (5b) ‘Don’t know’.

*Once you get there, you have to wait too long to see the doctor.*

The responses were displayed as follows in the publicly available data file: (1c) ‘Yes’; (2c) ‘No’; (3c) ‘Refused’; (4c) ‘Not ascertained’; (5c) ‘Don’t know’.

*The clinic/doctor's office wasn't open when you could get there.*

The responses were displayed as follows in the publicly available data file: (1d) 'Yes'; (2d) 'No'; (3d) 'Refused'; (4d) 'Not ascertained'; (5d) 'Don't know'.

*You didn't have transportation.*

The responses were displayed as follows in the publicly available data file: (1e) 'Yes'; (2e) 'No'; (3e) 'Refused'; (4e) 'Not ascertained'; (5e) 'Don't know'.

The answers were coded into two subcategories: 1a-e were coded as 1 ('Reported'); 2a-e, 3a-e, 4a-e, 5a-e and all missing values were coded as 0 ('Not Reported').

### **Cost Barriers**

Question asked to sample adults aged 18+ years: *DURING THE PAST 12 MONTHS, was there any time when you needed any of the following, but didn't get it because you couldn't afford it?*

*Prescription medicines*

The responses were displayed as follows in the publicly available data file: (1a) 'Yes'; (2a) 'No'; (3a) 'Refused'; (4a) 'Not ascertained'; (5a) 'Don't know'.

*Mental health care or counseling*

The responses were displayed as follows in the publicly available data file: (1b) 'Yes'; (2b) 'No'; (3b) 'Refused'; (4b) 'Not ascertained'; (5b) 'Don't know'.

*Dental care (including check-ups)*

The responses were displayed as follows in the publicly available data file: (1c) 'Yes'; (2c) 'No'; (3c) 'Refused'; (4c) 'Not ascertained'; (5c) 'Don't know'.

*Eyeglasses*

The responses were displayed as follows in the publicly available data file: (1d) 'Yes'; (2d) 'No'; (3d) 'Refused'; (4d) 'Not ascertained'; (5d) 'Don't know'.

### *To see a specialist*

The responses were displayed as follows in the publicly available data file: (1e) 'Yes'; (2e) 'No'; (3e) 'Refused'; (4e) 'Not ascertained'; (5e) 'Don't know'.

### *Follow-up care*

The responses were displayed as follows in the publicly available data file: (1f) 'Yes'; (2f) 'No'; (3f) 'Refused'; (4f) 'Not ascertained'; (5f) 'Don't know'.

The answers were coded into two subcategories: 1a-f were coded as 1 ('Reported'); 2a-f, 3a-f, 4a-f, 5a-f and all missing values were coded as 0 ('Not Reported').

## **Mental Illness**

Question asked to sample adults aged 18+ years with difficulty due to depression/anxiety/emotional problem: *How long have you had depression, anxiety, or an emotional problem?*

The responses were displayed as follows in the publicly available data file: (1) 'Less than 3 months'; (2) '3-5 months'; (3) '6-12 months'; (4) 'More than 1 year'; (7) 'Refused'; (8) 'Not ascertained'; (9) 'Don't know'. The answers were coded into two subcategories: 1-4 were coded as 1 ('Reported'); 7-9 and missing values were coded as 0 ('Not Reported').

## **Physical Pain**

Question asked to sample adults aged 18+ years: *The following questions are about pain you may have experienced in the PAST THREE MONTHS. Please refer to pain that LASTED A WHOLE DAY OR MORE. Do not report aches and pains that are fleeting or minor.*

*During the PAST THREE MONTHS, did you have ...Neck pain?*

The responses were displayed as follows in the publicly available data file: (1a) 'Yes'; (2a) 'No'; (3a) 'Refused'; (4a) 'Not ascertained'; (5a) 'Don't know'.

*During the PAST THREE MONTHS, did you have ...Low back pain?*

The responses were displayed as follows in the publicly available data file: (1b) ‘Yes’; (2b) ‘No’; (3b) ‘Refused’; (4b) ‘Not ascertained’; (5b) ‘Don’t know’.

*During the PAST THREE MONTHS, did you have ... Facial ache or pain in the jaw muscles or the joint in front of the ear?*

The responses were displayed as follows in the publicly available data file: (1c) ‘Yes’; (2c) ‘No’; (3c) ‘Refused’; (4c) ‘Not ascertained’; (5c) ‘Don’t know’.

*During the PAST THREE MONTHS, did you have ... Severe headache or migraine?*

The responses were displayed as follows in the publicly available data file: (1d) ‘Yes’; (2d) ‘No’; (3d) ‘Refused’; (4d) ‘Not ascertained’; (5d) ‘Don’t know’.

The answers were coded into two subcategories: 1a-d were coded as 1 (‘Reported’); 2a-d, 3a-d, 4a-d, 5a-d and all missing values were coded as 0 (‘Not Reported’).

## Appendix 2 – Original Survey Responses for the Dependent Variable

Table A1: Percentage of Self-Reported Mindfulness Use in the United States

Responses	% [95% CI]	Observations	Population Estimates
<i>Yes</i>	5.3 [4.9, 5.7]	1,525	13,072,835
<i>No</i>	91.5 [91.0, 92.0]	24,366	225,691,403
<i>Refused</i>	0.1 [0.1, 0.2]	41	246,658
<i>Not Ascertained</i>	3.0 [2.7, 3.4]	786	7,399,718
<i>Don’t Know</i>	0.1 [0.0, 0.1]	24	246,657
Total	100	26,742	246,657,271

Note: Estimates calculated using weights for national representativeness provided by the NHIS. The responses from the original survey are not recoded.

## Appendix 3 – ‘Refused’, ‘Not Ascertained’, and ‘Don’t Know’ Coded as Missing Values for the Dependent Variable instead of “Use Not Reported”

Table A2. Percentage of Self-Reported Mindfulness Use in the United States Across Groups

Variables	Mindfulness Use Reported (%)	(N)
<i>Age</i>		
70+ years	2.2	104
18-29 years	6.7	348
30-39 years	6.8	315
40-49 years	5.5	221
50-59 years	5.4	291
60-69 years	4.9	246

*Region*

West	8.0	527
Northeast	6.0	294
South	3.4	362
Midwest	5.5	342
<i>Race</i>		
White	6.5	1220
Black/African American	3.2	78
AIAN	2.6	8
Asian	4.7	73
Hispanic	2.6	100
Other	9.9	46
<i>Gender</i>		
Men	4.3	566
Women	6.5	959
<i>Sexual Orientation</i>		
Heterosexual	5.0	1325
Sexual Minority	14.4	200
<i>Marital Status</i>		
Not Married	6.4	987
Married	4.6	538
<i>Family Composition</i>		
No Children	6.1	1222
Children	4.2	303
<i>Employment Status</i>		
Not Working	4.0	459
Employed	6.3	1066
<i>Access Barriers to Healthcare</i>		
Not Reported	4.7	1163
Reported	10.4	362
<i>Cost Barriers to Healthcare</i>		
Not Reported	4.8	1109
Reported	8.9	416
<i>Mental Illness</i>		
Not Reported	5.2	1414
Reported	15.2	111
<i>Physical Pain</i>		
Not Reported	4.3	702
Reported	7.2	823

Note: The number of observations was 25,891. Estimates calculated using weights for national representativeness provided by the NHIS. 'Refused', 'Not Ascertained', and 'Don't Know' are coded as missing values for the dependent variable. (N) refers to the unweighted counts of self-reported mindfulness users on each row. AIAN refers to American Indian and Alaska Native.

Table A3. Variables Associated with Self-Reported Mindfulness Use in the United States

Variables	Model 1		Model 2		Model 3	
	aOR	(95% CI)	aOR	(95% CI)	aOR	(95% CI)
<b>Predisposing Factors</b>						
<i>Age</i>						
70+ years (Reference)						
18-29 years	3.44***	(2.55, 4.65)	3.11***	(2.31, 4.18)	2.99***	(2.21, 4.05)

30-39 years	4.29***	(3.11, 5.93)	3.79***	(2.75, 5.21)	3.56***	(2.58, 4.91)
40-49 years	3.44***	(2.46, 4.82)	3.03***	(2.17, 4.23)	2.79***	(2.00, 3.89)
50-59 years	2.74***	(1.99, 3.79)	2.35***	(1.71, 3.23)	2.21***	(1.60, 3.04)
60-69 years	2.37***	(1.76, 3.20)	2.16***	(1.60, 2.90)	2.09***	(1.55, 2.81)

*Region*

West (Reference)						
Northeast	0.65***	(0.52, 0.82)	0.69***	(0.55, 0.86)	0.69***	(0.55, 0.87)
South	0.40***	(0.32, 0.49)	0.40***	(0.33, 0.50)	0.40***	(0.33, 0.50)
Midwest	0.55***	(0.44, 0.69)	0.55***	(0.45, 0.69)	0.56***	(0.44, 0.69)

*Race*

White (Reference)						
Black/African American	0.50***	(0.36, 0.71)	0.50***	(0.36, 0.71)	0.53***	(0.37, 0.74)
AIAN	0.30*	(0.11, 0.85)	0.30*	(0.10, 0.84)	0.31*	(0.11, 0.87)
Asian	0.58***	(0.44, 0.78)	0.61***	(0.46, 0.82)	0.66**	(0.49, 0.88)
Hispanic	0.31***	(0.24, 0.41)	0.30***	(0.23, 0.39)	0.31***	(0.24, 0.41)
Other	1.14	(0.71, 1.84)	1.07	(0.67, 1.72)	1.07	(0.67, 1.70)

*Gender*

Men (Reference)						
Women	1.70***	(1.48, 1.94)	1.58***	(1.39, 1.81)	1.54***	(1.34, 1.76)

*Sexual Orientation*

Heterosexual (Reference)						
Sexual Minority	2.50***	(2.03, 3.07)	2.35***	(1.90, 2.90)	2.26***	(1.82, 2.81)

*Marital Status*

Not Married (Reference)						
Married	0.81**	(0.70, 0.94)	0.85*	(0.74, 0.99)	0.86*	(0.74, 1.00)

*Family Composition*

No Children (Reference)						
Children	0.59***	(0.50, 0.71)	0.62***	(0.52, 0.74)	0.62***	(0.52, 0.74)

*Employment Status*

Not Working (Reference)						
Employed	1.28**	(1.10, 1.50)	1.38***	(1.18, 1.62)	1.48***	(1.26, 1.74)

**Enabling Factors**

*Access Barriers to Healthcare*

Not Reported (Reference)						
Reported	.....	.....	1.86***	(1.57, 2.20)	1.72***	(1.45, 2.05)

*Cost Barriers to Healthcare*

Not Reported (Reference)						
Reported	.....	.....	1.59***	(1.36, 1.86)	1.43***	(1.21, 1.69)

**Health Needs**

*Mental Illness*

Not Reported (Reference)						
Reported	.....	.....	.....	.....	1.88***	(1.39, 2.53)

*Physical Pain*

Not Reported (Reference)						
Reported	.....	.....	.....	.....	1.42***	(1.25, 1.63)

Observations	25,891	25,891	25,891
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Robust standard errors in parentheses; \*\*\* p<0.001 \*\* p<0.01, \* p<0.05

Note: Estimates calculated using weights for national representativeness provided by the NHIS. aOR = adjusted (or conditional) Odds Ratio. 'Refused', 'Not Ascertained', and 'Don't Know' are coded as missing values for the dependent variable. AIAN refers to American Indian and Alaska Native.

## Chapter 4: Awareness and Experience of Mindfulness in Britain

Authors:<sup>3</sup> Otto Simonsson<sup>1</sup>, Stephen Fisher<sup>1</sup>, and Maryanne Martin<sup>2</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>University of Oxford, Department of Experimental Psychology

### Abstract

In recent years, the practice of mindfulness has become increasingly popular, but there is very little evidence on how many and what kind of people have heard of and learnt to practise mindfulness. Using data from an online survey on a sample of 1,013 adults in Britain in November 2018, the present study aims to estimate the prevalence of mindfulness use among adults in Britain and to identify the sociodemographic and political characteristics associated with awareness and experience of mindfulness. The findings suggest that 15 per cent of adults in Britain had learnt to practise mindfulness, which is significantly more than the finding that 2.5 per cent of adults in the United States in 2012 had practised mindfulness in their lifetime. Although widespread, awareness of mindfulness was more likely among women, unmarried adults, adults from middle and high-income households, and those who voted Remain in the 2016 Brexit Referendum. Higher levels of engagement with mindfulness, beyond awareness, was more likely among young and middle-aged adults, but otherwise not concentrated in any particular groups.

Keywords: Mindfulness; Sociodemographic; Political; Britain; Survey

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Mindfulness refers to the quality of awareness that emerges from purposefully and nonjudgmentally paying attention to the present moment with an attitude of openness, acceptance, and curiosity (Kabat-Zinn, 2003). It is an inherent human quality that can be cultivated through mindfulness-based practices and programs, many of which have been introduced into the education system, the healthcare system, the criminal justice system, the workplace, and the military (Creswell, 2017). The practice of mindfulness has become increasingly popular in society and has even been taught to British politicians in the UK Parliament, where the policy applications of mindfulness-based interventions have also been considered (Bristow, 2019).

While the effects of mindfulness-based interventions on mental health have been systematically examined (Goldberg et al., 2018; Hofmann et al., 2010; Kuyken et al., 2016), there is a lack of research on the prevalence, patterns, and predictors of mindfulness use across sociodemographic and political groups in the general population. The survey research to date has mostly focused on the prevalence of mind-body practices (yoga, tai chi, qigong, and meditation) and has generally been based on nationally representative samples in Australia (Penman et al., 2012; Sibbritt et al., 2011; Steel et al., 2018; Vergeer et al., 2017, 2018) and the United States (Birdee et al., 2008, 2009; Burke et al., 2017; Cramer et al., 2016a, 2016b; Kachan et al., 2017; Lauche et al., 2016; Olano et al., 2015; Park et al., 2015; Upchurch & Johnson, 2019; Wolsko et al., 2004), where statistically significant differences have been observed based on age, gender, marital status, education, and household income.

There are specific questions about mindfulness training in the National Health Interview Survey (NHIS), which Burke et al. (2017) analysed to estimate the prevalence of mindfulness use among adults in the United States in 2012. The findings suggest that 2.5 per cent had practised mindfulness in their lifetime and 1.9 per cent had practised mindfulness during the 12 months prior to the survey interview. Taken together, the data from the NHIS suggest that mindfulness use is less likely among older adults and more likely among women, unmarried adults, adults without minor children in the family, employed adults, university graduates, and residents in the

West of the country (Burke et al., 2017; Macinko & Upchurch, 2019; Morone et al., 2017; Wang et al., 2019).

There are several theoretical models designed to explain and predict healthcare utilization behaviour (Parsons, 1951; Mechanic, 1962; Suchman, 1965), but one of the most widely used frameworks is the Andersen (1995) Healthcare Utilization Model. The model identifies three main determinants of healthcare utilization: 1) predisposing factors – an individual's characteristics and predispositions to use health services; 2) enabling factors – the means an individual has available to access and pay for health services; and 3) health needs – the need an individual has for healthcare. The determinants in the model have been used to interpret findings on mindfulness use in the United States (Macinko & Upchurch, 2019), but the current study intends to apply the same theoretical framework to predict awareness of mindfulness and level of engagement with mindfulness in Britain.

Using data from an online survey carried out on a sample weighted to be representative of the adult population of Britain, the present study expands on earlier descriptive studies on the prevalence of mindfulness use in the general population and applies the Andersen (1995) Healthcare Utilization Model to better understand what kind of people have heard of and have learnt to practise mindfulness. Based on findings from previous studies (Burke et al., 2017; Macinko & Upchurch, 2019; Morone et al., 2017; Wang et al., 2019) and the Andersen (1995) Healthcare Utilization Model, it is hypothesized that awareness of mindfulness and higher levels of engagement with mindfulness is less likely among older adults and more likely among women, unmarried adults, adults without children under 18, employed adults, university graduates, adults from middle and high-income households, residents in London, voters for the Labour Party and the Liberal Democrats in the 2017 General Election, and Remain voters in the 2016 United Kingdom European Union Membership (Brexit) Referendum.

## **Data and Methodology**

An online survey was carried out on 26th and 27th November 2018 in conjunction with Deltapoll, a British polling company and a member of the British Polling Council, from their online panel on a sample of 1,013 adults in Britain aged 18 and above. The sample size was relatively small compared with many other surveys, but a sample size of 1000+ is standard for opinion polls and still adequate for getting initial estimates with reasonable precision using questions that have not previously been posed (Leonard, 2016). The data was also weighted to be representative of the adult population of Britain. The data can be accessed through the Open Science Framework (OSF) at <https://osf.io/d4s6t/>.

In the present article, cross-tabulations and percentages are used to display an overview of the awareness and experience of mindfulness in Britain in November 2018. The cross-tabulations and percentages are followed by bivariate and multiple regressions to calculate coefficients with 95 per cent confidence intervals and identify the groups that are most likely to have awareness of mindfulness and higher levels of engagement with mindfulness. A coefficient with a greater score than 0 implies that individuals in that group were more likely to have the measured characteristic than the comparison group. Conversely, a coefficient with a score of less than 0 implies that the individuals in that group were less likely to have the measured characteristic than the comparison group (Pollock & Edwards, 2018).

### ***Measurement of Dependent Variables***

The dependent variables on awareness and experience of mindfulness are derived from the following survey questions:

- 1. Some people practise a form of meditation known as 'mindfulness'. Many have never heard of this. How about you? Please indicate which of the following comes closest to your experience?*

The respondents had the following options: (a) I have learnt how to practise mindfulness from a course, book, app, or other source; (b) I have heard of mindfulness meditation, have not practised it, but I am interested in it; (c) I have heard of mindfulness meditation, have not

practised it, and I am not interested in it; (d) I have never heard of mindfulness meditation; (e) Don't know.

If respondents reported that they had learnt how to practise mindfulness, the following two questions were prompted:

2. *Generally speaking, which of the following best describes how often you practise mindfulness?*

The respondents had the following options: (a) Hardly at all since first learning about it; (b) I practised fairly regularly for a while then I stopped; (c) I practise from time to time; (d) I practise most days for just a few minutes each time; (e) I practise for several hours a week.

3. *How did you learn to practise mindfulness? Please tick all that apply.*

The respondents had the following options: (a) Attending a course; (b) Reading a book; (c) Watching a video or DVD; (d) Visiting a website; (e) Using an app; (f) Some other way; (g) Don't know. The order of the options was randomized, except for option f and g which were fixed.

The first and second questions were coded into two dependent variables: (1) having heard of mindfulness and (2) level of engagement with mindfulness. For the first dependent variable, the options that indicated the respondents had heard of mindfulness (1a, 1b, and 1c) were coded as 1 and the options that indicated the respondents had never heard of mindfulness (1d and 1e) were coded as 0 – a binary variable. For the second dependent variable, the respondents who selected 1c were coded as 0, the respondents who selected 1b were coded as 1, and the respondents who selected 1a were coded as 2 if they had learnt to practise mindfulness and had stopped to practise (2a and 2b) or 3 if they had learnt to practise mindfulness and still practised (2c, 2d, and 2e) – an ordinal variable. Note that 1d and 1e are missing from the second dependent variable.

### *Measurement of Independent Variables*

The dataset also contained information on sociodemographic and political characteristics: age, gender, region of residence, education, marital status, family composition, employment status, household income, as well as voting behaviour in the General Election on the 8<sup>th</sup> June 2017 and the Brexit Referendum on the 23<sup>rd</sup> June 2016. The independent variables were derived from the original survey questions and were coded to suit the analyses. The exact wording and recoding of all the questions and answers can be found in Appendix 1.

## Results

### *Frequency Distributions*

In the present section, frequency distributions were used to display an overview of the awareness and experience of mindfulness in Britain in November 2018. The overall percentages are presented below in Table 1-3, but a more detailed list of the percentages for each sociodemographic and political group can be found in Table A1-A3 in Appendix 2, which should be interpreted in light of the number of observations for each variable before weighting.

Table 1 presents the descriptive statistics on awareness and experience of mindfulness in Britain. 23 per cent of the sample reported that they had never heard of mindfulness, whereas 15 per cent of the sample reported that they had learnt to practise mindfulness. Hence, it can be estimated that just below 8 million adults in Britain had learnt to practise mindfulness and around 12 million adults in Britain had never heard of mindfulness, based on the latest mid-year estimate of the UK adult population above 18 years of age (52,078,496) from the Office for National Statistics (ONS, 2018).

Table 1: Awareness and Experience of Mindfulness in Britain

<i>Some people practise a form of meditation known as 'mindfulness'. Many have never heard of this. How about you? Please indicate which of the following comes closest to your experience?</i>	
Responses	% [95% CI]
<i>I have learnt how to practise mindfulness from a course, book, app, or other source</i>	15 [12, 18]
<i>I have heard of mindfulness meditation, have not practised it, but I am interested in it</i>	31 [28, 35]
<i>I have heard of mindfulness meditation, have not practised it, and I am not interested in it</i>	25 [21, 29]
<i>I have never heard of mindfulness meditation</i>	23 [19, 26]
<i>Don't know</i>	6 [5, 8]
Total	100

Note: The number of observations was 1,013. The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer.

Table 2 presents the descriptive statistics on frequency of mindfulness practice in Britain. 43 per cent had stopped since learning to practise mindfulness, 32 per cent practised from time to time, and 25 per cent maintained a regular practise that ranged from just a few minutes on most days to several hours a week.

Table 2: Frequency of Mindfulness Practice in Britain

<i>Generally speaking, which of the following best describes how often you practise mindfulness? [Asked respondents who have learnt to practise mindfulness]</i>	
Responses	% [95% CI]
<i>Hardly at all since first learning about it</i>	15 [9, 24]
<i>I practised fairly regularly for a while then I stopped</i>	28 [18, 40]
<i>I practise from time to time</i>	32 [23, 41]
<i>I practise most days for just a few minutes each time</i>	21 [13, 34]
<i>I practise for several hours a week</i>	4 [2, 9]
Total	100

Note: The number of observations was 153. The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer.

Table 3 presents the descriptive statistics on pathways to learning to practise mindfulness in Britain. The most common ways of learning to practise mindfulness were ranked in the following order: (1) using an app, (2) reading a book, (3) attending a course, (4) watching a video or DVD, (5) visiting a website, and (6) some other way.

Table 3: Pathways to Learning to Practise Mindfulness in Britain

<i>How did you learn to practise mindfulness? Please tick all that apply [multiple choice question asked to respondents who have learnt to practise mindfulness.]</i>	
Responses	% [95% CI]
<i>Attending a course</i>	24 [16, 34]
<i>Reading a book</i>	34 [24, 47]
<i>Watching a video or DVD</i>	17 [10, 27]
<i>Visiting a website</i>	15 [10, 22]
<i>Using an app</i>	35 [25, 47]
<i>Some other way</i>	13 [7, 22]
<i>Don't know</i>	0
Total	138

Note: The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer. The total amounts to more than 100 percent, as the respondents could tick more than one option.

### ***Logistic Regressions***

Logistic regressions, each with just a single predictor, are listed under a single “Bivariate” column in Tables 4 and 5, even though the coefficients for each variable (counting categorical variables with multiple coefficients as single variables) are taken from different models. The

logistic regressions shown under “Model 1” and “Model 2” in Tables 4 and 5 are constructed so that Model 1 only includes sociodemographic variables, whereas Model 2 includes both sociodemographic and political variables.

### *Awareness of Mindfulness in Britain*

Table 4 presents the results from the regressions on awareness of mindfulness in Britain. While awareness of mindfulness in Britain was not associated with region of residence, family composition, or employment status, there were still statistically significant associations for several sociodemographic and political characteristics. Most notably, awareness of mindfulness was more likely among women, adults from middle and high-income households, unmarried adults, and those who voted Remain, even when sociodemographic and political covariates were controlled for.

Table 4: Logistic Regression Models – Awareness of Mindfulness in Britain

VARIABLES	Bivariate		Model 1		Model 2	
	Coef	Se	Coef	Se	Coef	Se
Gender (Male)						
Female	0.53**	(0.19)	0.76***	(0.20)	0.79***	(0.20)
Age (55 or more)						
18-34	0.71**	(0.23)	0.41	(0.32)	0.48	(0.34)
35-55	0.36	(0.22)	0.40	(0.29)	0.41	(0.29)
Region (Midlands)						
Scotland	0.55	(0.43)	0.58	(0.44)	0.54	(0.46)
Wales	-0.27	(0.42)	-0.30	(0.45)	-0.25	(0.47)
London	-0.07	(0.36)	-0.26	(0.39)	-0.25	(0.39)
North	0.10	(0.29)	0.09	(0.31)	0.01	(0.32)
South	0.04	(0.27)	0.05	(0.29)	0.05	(0.30)
Education (Degree)						
No Degree	-0.49**	(0.19)	-0.26	(0.21)	-0.16	(0.21)
Marital Status (Married)						
Not Married	0.47*	(0.19)	0.49*	(0.23)	0.54*	(0.24)
Family Composition (Children under 18)						
No Children under 18	0.04	(0.21)	0.20	(0.26)	0.19	(0.26)
Employment Status (Working)						
Unemployed	-0.01	(0.35)	0.00	(0.36)	0.10	(0.37)
Retired	-0.61**	(0.23)	-0.24	(0.29)	-0.24	(0.30)
Student	0.22	(0.48)	-0.09	(0.53)	-0.22	(0.51)
Stay-at-home parent/housekeeper	-0.58	(0.33)	-0.64	(0.39)	-0.60	(0.38)
Household Income (£28,000 or less)						
£28,001-£55,000	0.51*	(0.20)	0.68**	(0.23)	0.67**	(0.24)

£55,001 or more	0.64*	(0.30)	0.85*	(0.34)	0.73*	(0.35)
2017 General Election (Conservative)						
Labour	0.45	(0.24)	.....	.....	0.04	(0.28)
Liberal Democrats	1.45**	(0.47)	.....	.....	0.77	(0.51)
Other	0.09	(0.34)	.....	.....	-0.29	(0.35)
Did not vote	-0.42	(0.23)	.....	.....	-1.02**	(0.38)
2016 Brexit Referendum (Leave)						
Remain	0.95***	(0.21)	.....	.....	0.61**	(0.23)
Did not vote	0.18	(0.26)	.....	.....	0.36	(0.41)
Observations	1,013		1,013		1,013	
Pseudo R2	.....		0.0674		0.1017	

Robust standard errors in parentheses; \*\*\* p≤0.001, \*\* p≤0.01, \* p≤0.05

Note: The bivariate analyses regress the dependent variable on a single predictor (including categorical predictor variables). Although the coefficients from these models are shown in one column, they come from separate regressions.

### *Level of Engagement with Mindfulness in Britain*

Table 5 presents the results from the regressions on level of engagement with mindfulness in Britain. While the level of engagement with mindfulness was not associated with gender, region of residence, education level, marital status, family composition, or household income, there were still statistically significant associations for several sociodemographic and political characteristics. Most notably, higher levels of engagement with mindfulness was more likely for young and middle-aged adults, even when sociodemographic and political covariates were controlled for.

Table 5: Ordered-Logit Regression Models – Level of Engagement with Mindfulness in Britain

VARIABLES	Model 1		Model 2		Model 3	
	Coef	Se	Coef	Se	Coef	Se
Gender (Male)						
Female	0.13	(0.20)	0.33	(0.21)	0.33	(0.22)
Age (55 or more)						
18-34	1.20***	(0.23)	1.00***	(0.31)	0.92**	(0.30)
35-55	1.06***	(0.24)	1.03***	(0.32)	0.95**	(0.31)
Region (Midlands)						
Scotland	-0.20	(0.41)	-0.04	(0.42)	0.01	(0.43)
Wales	-0.49	(0.42)	-0.47	(0.41)	-0.51	(0.41)
London	0.32	(0.39)	0.17	(0.39)	0.18	(0.37)
North	-0.53	(0.29)	-0.51	(0.29)	-0.47	(0.28)
South	-0.48	(0.28)	-0.38	(0.28)	-0.35	(0.28)
Education (Degree)						
No Degree	-0.10	(0.18)	0.04	(0.20)	-0.01	(0.20)
Marital Status (Married)						
Not Married	0.30	(0.19)	0.03	(0.23)	0.00	(0.23)

Family (Children under 18)						
No Children under 18	-0.31	(0.20)	-0.06	(0.26)	-0.07	(0.25)
Employment Status (Working)						
Unemployed	-0.13	(0.28)	-0.26	(0.32)	-0.27	(0.33)
Retired	-0.89***	(0.26)	-0.18	(0.31)	-0.21	(0.31)
Student	0.59	(0.31)	0.38	(0.30)	0.54	(0.34)
Stay-at-home parent/housekeeper	-0.43	(0.39)	-0.70	(0.44)	-0.71	(0.46)
Household Income (£28,000 or less)						
£28,001-£55,000	-0.05	(0.20)	-0.05	(0.21)	-0.02	(0.21)
£55,001 or more	0.25	(0.33)	0.07	(0.33)	0.14	(0.35)
2017 General Election (Conservative)						
Labour	0.59**	(0.22)	.....	.....	0.39	(0.27)
Liberal Democrats	0.46	(0.30)	.....	.....	0.15	(0.35)
Other	0.76	(0.43)	.....	.....	0.46	(0.46)
Did not vote	0.75*	(0.30)	.....	.....	0.47	(0.43)
2016 Brexit Referendum (Leave)						
Remain	-0.14	(0.20)	.....	.....	-0.48*	(0.23)
Did not vote	0.16	(0.34)	.....	.....	-0.37	(0.42)
Observations	716		716		716	
Pseudo R2	.....		0.0465		0.0536	

Robust standard errors in parentheses; \*\*\*  $p \leq 0.001$ , \*\*  $p \leq 0.01$ , \*  $p \leq 0.05$

Note: The bivariate analyses regress the dependent variable on a single predictor (including categorical predictor variables). Although the coefficients from these models are shown in one column, they come from separate regressions.

### ***Robustness Checks***

The proportional odds assumption of the multiple ordered-logit regression model with political variables has been checked for robustness in statistically significant variables. The robustness check started with the construction of binary logistic models for each possible transition. There are three possible transitions: from level 0 to level 1 and above; from level 1 and below to level 2 and above; and from level 2 and below to level 3. A binary logistic model is fitted for each of these. For the first transition, 1c was coded as 0 and the rest (1b, 2a, 2b, 2c, 2d, and 2e) were coded as 1. For the second transition, 1c and 1b were coded as 0 and the rest (2a, 2b, 2c, 2d, and 2e) were coded as 1. For the third transition, 1c, 1b, 2a, and 2b were coded as 0 and the rest (2c, 2d, and 2e) were coded as 1. If the proportional odds assumption holds, the coefficients should be the same in all three of these models. While they were of course not all the same, they were all in the same direction and of a similar magnitude. Overall, the proportional odds assumption is upheld, which means the use of the multiple ordered-logit regression model is justified.

‘Prefer not to say’ was coded into the subcategory with the largest sample within each independent variable, but it is important to note that the overall findings were broadly the same when ‘Prefer not to say’ was coded as a missing variable.

## **Discussion**

The present study was an online survey carried out on a sample weighted to be representative of the adult population of Britain. The findings suggest that 15 per cent of adults in Britain had learnt to practise mindfulness and most of them had learnt to practise by using an app, reading a book, or attending a course, but not many of them maintained a regular practice of mindfulness. Although widespread, awareness of mindfulness was more likely among women, unmarried adults, adults from middle and high-income households, and those who voted Remain in the 2016 Brexit Referendum. Higher levels of engagement with mindfulness, beyond awareness, was more likely among young and middle-aged adults, but otherwise not concentrated in any particular groups.

While 15 per cent of adults in Britain in 2018 had learnt to practise mindfulness, the corresponding number for adults in the United States in 2012 was 2.5 per cent (Burke et al., 2017). The surveys are separated by six years and different national contexts, which limits the comparisons that can be made. Michalak and Heidenreich (2018) suggest that historical, social, and psychological factors have driven the dissemination of mindfulness-based interventions, but the findings in the present study suggest that the spread has been unevenly distributed across groups in society.

First, women were more likely to have awareness of mindfulness and 16 per cent of women versus 14 per cent men had learnt to practise mindfulness, which corresponds with previous findings on the link between mindfulness use and gender (Burke et al., 2017; Macinko & Upchurch, 2019; Wang et al., 2019). The association might reflect gendered patterns of health behavior, but it is equally plausible that women are more open to mindfulness-based practices as therapeutic and spiritual practices hold values associated with prevalent cultures of

femininity and still offer a means for women to negotiate the dilemma between self-care and care for others (Sointu, 2012; Sointu & Woodhead, 2008; Swan, 2019).

Second, unmarried adults were more likely to have awareness of mindfulness and 18 per cent of unmarried adults versus 11 per cent of married adults had learnt to practise mindfulness. Burke et al. (2017) did not find a significant association between marital status and mindfulness use, but it is possible that fewer family responsibilities make unmarried adults more able to set aside time for self-care and learn to practise mindfulness. The findings in the present study warrant more research into the relationship between mindfulness use and marital status, which could shed light on barriers to mindfulness use in the context of marriage.

Third, adults from middle and high-income households were more likely to have awareness of mindfulness and a much higher percentage of adults from high-income (than low and middle-income) households had learnt to practise mindfulness. Burke et al. (2017) did not find a significant association between household income and mindfulness use, but Bourdieu (1994) viewed cultural taste and consumption as inseparable from class position, which suggests that mindfulness use might vary as a function of social class. In fact, the most prominent advocates of mindfulness use have broadly been described by Kucinkas (2018) as elites with financial resources well above the average household. The option to set aside time for self-care and learn to practise mindfulness can, after all, be dependent on financial resources, at least in the modern context (Carlson, 2018).

Fourth, young and middle-aged adults were more likely to have higher levels of engagement with mindfulness and a much lower percentage of older adults (than young and middle-aged adults) had learnt to practise mindfulness, which corresponds with previous findings on the link between mindfulness use and age (Burke et al., 2017). Inglehart (1977, 1990, 1997) argues that rising existential security has led to an intergenerational shift towards postmaterialist values, including self-expression, autonomy, and quality of life. It is therefore plausible that young and middle-aged adults are more likely to seek out and engage with mindfulness-based practices to

improve mental and physical wellbeing, although future research could do more to better understand the relationship between mindfulness use and age.

The independent variables that were associated with awareness of mindfulness were generally not associated with level of engagement with mindfulness – and vice versa. For instance, those who voted Remain were more likely than those who voted Leave to have heard of mindfulness, but (out of the respondents who had heard of mindfulness) those who voted Remain were less likely than those who voted Leave to have higher levels of engagement with mindfulness. These findings are in line with research on personality traits and voting behaviour, which suggest that those who voted Remain score higher on openness to experience and those who voted Leave score higher on conscientiousness (Sumner et al., 2019). The higher scores on openness to experience should, in theory, make those who voted Remain more likely to seek out and hear about novel interventions, while the higher scores on conscientiousness should make those who voted Leave more likely to maintain a regular mindfulness practice. Both assumptions find support in the present study. In fact, 63 per cent of Leave voters versus 82 per cent of Remain voters had heard of mindfulness, whereas (out of the respondents who had learnt to practise mindfulness) 33 per cent of Leave voters versus 26 per cent of Remain voters maintained a regular mindfulness practice. Future research should investigate which psychological mechanisms predict awareness of mindfulness versus level of engagement with mindfulness.

While voting behaviour has not been linked before to awareness of mindfulness or level of engagement with mindfulness, the association between mindfulness use and the political left has been documented and discussed (Kucinkas, 2018; MacMahan, 2008; Rowe, 2016; Wilson, 2014). The leading advocates of mindfulness use have been individuals with politically liberal worldviews (Kucinkas, 2018) and mindfulness use has been popular in groups associated with political left, including Occupy Wall Street (Rowe, 2016). Bristow (2019) reports that British politicians from across the political spectrum have received training in mindfulness, but most of the members of the All-Party Parliamentary Group on Mindfulness in the UK Parliament are affiliated with the Labour Party (Parliament, 2017). Hence, the differences in mindfulness use

across political groups mirrors the findings in the present study that 17 per cent of Labour Party voters versus 10 per cent of Conservative Party voters had learnt to practise mindfulness. While self-selection likely explains the association between mindfulness use and the political left, future research could investigate whether mindfulness training affects voting behaviour (Ferguson, 2016).

### **Strengths and Limitations**

There are several strengths and limitations with the present study that need serious consideration before the results are interpreted. First, the sample has been weighted to be representative of the adult population of Britain, which allows for reliable population estimates. The sample might have been too small, however, to detect statistically significant differences on several sociodemographic and political variables. Second, a large-scale, high-quality probability survey would likely have produced more precise results, but the present study used weighting to reduce bias and the risk of common survey errors (Cornesse et al., 2020). Third, the cross-sectional design of the study only allows for analysis at a single time point. It is therefore not possible to observe the causal effects of changes in many of the independent variables, including age, employment status, and household income.

### **Conclusion**

The present study has provided an overview of how many and what kind of people have awareness and experience of mindfulness in Britain. The findings suggest that mindfulness use has become sufficiently widespread to be worthy of investigation in sociology, especially given that awareness of mindfulness and level of engagement with mindfulness varies substantially between sociodemographic and political groups. While both the concept of mindfulness and the practice of mindfulness have been used as tools of investigation in sociology (Lee, 2015), there has been a lack of sociological inquiry into how mindfulness-based practices are perceived and used across different groups in society. Future research on mindfulness-based practices should therefore supplement quantitative data with qualitative data, including in-depth interviews with

various sociodemographic and political groups to better understand why mindfulness-based practices are more common in some groups than others.

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**Ethical Approval** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The current study was a secondary analysis of fully anonymized data and did therefore not require review by the Research Ethics Committee of the Department of Sociology (DREC) at the University of Oxford.

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## References

- Andersen, R. (1995). Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior*, 36 (1), 1–10. doi: 10.2307/2137284
- Birdee, G. S., Legedza, A. T., Saper, R. B., Bertisch, S. M., Eisenberg, D. M., & Phillips, R. S. (2008). Characteristics of yoga users: Results of a national survey. *Journal of General Internal Medicine*, 23(10), 1653–1658. doi: 10.1007/s11606-008-0735-5
- Birdee, G. S., Wayne, P. M., Davis, R. B., Phillips, R. S., & Yeh, G. Y. (2009). T'ai chi and qigong for health: patterns of use in the United States. *Journal of Alternative and Complementary Medicine*, 15(9), 969-73. doi: 10.1089/acm.2009.0174
- Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste*. Routledge & Kegan Paul.
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: 10.1016/j.copsyc.2018.11.003
- Burke, A., Lam, C. N., Stuffman, B., & Yang, H. (2017). Prevalence and patterns of use of mantra, mindfulness and spiritual meditation among adults in the United States. *BMC Complementary and Alternative Medicine*, 17(1), 316. doi: 10.1186/s12906-017-1827-8
- Carlson, L. E. (2018). Uptake of mindfulness-based interventions: A phenomenon of wealthy white western women?. *Clinical Psychology: Science and Practice*, 25(3), e12258. doi: 10.1111/cpsp.12258
- Cornesse, C., Blom, A. G., Dutwin, D., Krosnick, J. A., De Leeuw, E. D., Legleye, S., Pasek, J., Pennay, D., Phillips, B., Sakshaug, J. W., Struminskaya, B. & Wenz, A. (2020). A review of conceptual approaches and empirical evidence on probability and nonprobability sample survey research. *Journal of Survey Statistics and Methodology*, 8(1), 4-36. doi: 10.1093/jssam/smz041

- Cramer, H., Hall, H., Leach, M., Frawley, J., Zhang, Y., Leung, B., Adams, J., & Lauche, R. (2016a). Prevalence, patterns, and predictors of meditation use among US adults: A nationally representative survey. *Scientific Reports*, 6(36760). doi: 10.1038/srep36760
- Cramer, H., Ward, L., Steel, A., Lauche, R., Dobos, G., & Zhang, Y. (2016b). Prevalence, patterns, and predictors of yoga use. *American Journal of Preventive Medicine*, 50(2), 230–235. doi: 10.1016/j.amepre.2015.07.037
- Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, 68, 491-516. doi: 10.1146/annurev-psych-042716-051139
- Ferguson, M. L. (2016). Symposium: mindfulness and politics: introduction. *New Political Science*, 38(2), 201-205. doi: 10.1080/07393148.2016.1153190
- Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review*, 59, 52-60. doi: 10.1016/j.cpr.2017.10.011
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169-183. doi: 10.1037/a0018555
- Inglehart, R. (1977). *The silent revolution: Changing values and political styles among Western publics*. Princeton University Press.
- Inglehart, R. (1990). *Culture shift in advanced industrial society*. Princeton University Press.
- Inglehart, R. (1997). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies*. Princeton University Press.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. doi: 10.1093/clipsy.bpg016

- Kachan, D., Olano, H., Tannenbaum, S. L., Annane, D. W., Mehta, A., Arheart, K. L., Fleming, L. E., Yang, X., McClure, L. A., & Lee, D. J. (2017). Prevalence of mindfulness practices in the US workforce: National Health Interview Survey. *Preventing Chronic Disease*, 14(1). doi: 10.5888/pcd14.160034
- Kucinkas, J. (2018). *The mindful elite: Mobilizing from the inside out*. Oxford University Press.
- Kuyken, W., Warren, F. C., Taylor, R. S., Whalley, B., Crane, C., Bondolfi, G., Hayes, R., Huijbers, M., Ma, H., Schweizer, S., Segal, Z., Speckens, A., Teasdale, J. D., Van Heeringen, K., Williams, M., Byford, S., Byng, R., & Dalgliesh, T. (2016). Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: An individual patient data meta-analysis from randomized trials. *JAMA Psychiatry*, 73(6), 565-574. doi: 10.1001/jamapsychiatry.2016.0076
- Lauche, R., Wayne, P. M., Dobos, G., & Cramer, H. (2016). Prevalence, patterns, and predictors of tai chi and qigong use in the United States: Results of a nationally representative survey. *Journal of Alternative and Complementary Medicine*, 22(4), 336-42. doi: 10.1089/acm.2015.0356
- Lee, M. T. (2015). North Central Sociological Association presidential address. The mindful society: Contemplative sociology, meta-mindfulness, and human flourishing. *Sociological Focus*, 48(4), 271-299. doi: 10.1080/00380237.2015.1072450
- Leonard, D. (2016). *Elections in Britain today: a guide for voters and students*. Springer.
- Macinko, J. & Upchurch, D. M. (2019). Factors associated with the use of meditation, U.S. Adults 2017. *Journal of Alternative and Complementary Medicine*, 25(9), 920-927. doi: 10.1089/acm.2019.0206
- McMahan, D. L. (2008). *The making of Buddhist modernism*. Oxford University Press.

- Mechanic, D. (1962). The concept of illness behaviour. *Journal of Chronic Diseases*, 15(2), 189-194. doi: 10.1017/S0033291700002476
- Michalak, J., & Heidenreich, T. (2018). Dissemination before evidence? What are the driving forces behind the dissemination of mindfulness-based interventions?. *Clinical psychology: Science and Practice*, 25(3), e12254. doi: 10.1111/cpsp.12254
- Morone, N. E., Moore, C. G., & Greco, C. M. (2017). Characteristics of adults who used mindfulness meditation: United States, 2012. *Journal of Alternative and Complementary Medicine*, 23(7), 545–550. doi: 10.1089/acm.2016.0099
- Olano, H. A., Kachan, D., Tannenbaum, S. L., Mehta, A., Annane, D., & Lee, D. J. (2015). Engagement in mindfulness practices by U.S. adults: sociodemographic barriers. *Journal of Alternative and Complementary Medicine*, 21(2), 100–102. doi: 10.1089/acm.2014.0269
- ONS (2018). Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2017.
- Park, L. C., Braun, T., & Siegel, T. (2015). Who practices yoga? A systematic review of demographic, health-related, and psychosocial factors associated with yoga practice. *Journal of Behavioral Medicine*, 38(3), 460–471. doi: 10.1007/s10865-015-9618-5
- Parliament (2017). Register Of All-Party Parliamentary Groups [as at 28 September 2017]. [www.parliament.uk](http://www.parliament.uk) [Online]. Available at: <https://publications.parliament.uk/pa/cm/cmhallparty/170928/mindfulness.htm> [Accessed 29<sup>th</sup> of May 2019].
- Parsons, T. (1951). *The social system*. The Free Press.
- Penman, S., Cohen, M., Stevens, P. & Jackson, S. (2012). Yoga in Australia: Results of a national survey. *International Journal of Yoga*, 5(2), 92-101. doi: 10.4103/0973-6131.98217

- Pollock III, P. H., & Edwards, B. C. (2018). *A Stata® companion to political analysis*. CQ Press.
- Rowe, J. K. (2016). Micropolitics and collective liberation: mind/body practice and left social movements. *New Political Science*, 38(2), 206-225. doi: 10.1080/07393148.2016.1153191
- Sibbritt, D., Adams, J., & van der Riet, P. (2011). The prevalence and characteristics of young and mid-age women who use yoga and meditation: Results of a nationally representative survey of 19,209 Australian women. *Complementary Therapies in Medicine*, 19(2), 71–77. doi: 10.1016/j.ctim.2010.12.009
- Sointu, E. (2012). *Theorizing complementary and alternative medicines: wellbeing, self, gender, class*. Springer.
- Sointu, E., & Woodhead, L. (2008). Spirituality, gender, and expressive selfhood. *Journal for the Scientific Study of Religion*, 47(2), 259-276. doi: 10.1111/j.1468-5906.2008.00406.x
- Swan, E. (2019). Life of Psy. In Salmenniemi, S., Nurmi, J., Perheentupa, I., & Bergroth, H. (Ed.). *Assembling Therapeutics: Cultures, Politics and Materiality* (pp. 206-2019). Routledge.
- Steel, A., McIntyre, E., Harnett, J., Foley, H., Adams, J., Sibbritt, D., Wardle, J., & Frawley, J. (2018). Complementary medicine use in the Australian population: Results of a nationally-representative cross-sectional survey. *Scientific Reports*, 8(1), 17325. doi: 10.1038/s41598-018-35508-y
- Suchman, E. (1965). Stages of illness and medical care. *Journal of Health and Human Behavior*, 6(3), 114-128. doi: 10.2307/2948694
- Sumner, C., Scofield, J. E., Buchanan, E. M., Evans, M., & Shearing, M. (2019). The role of personality, authoritarianism and cognition in the United Kingdom's 2016 referendum on European Union membership.

- Upchurch, D. M. & Johnson, P. J. (2019). Gender differences in prevalence, patterns, purposes, and perceived benefits of meditation practices in the United States. *Journal of Women's Health, 28*(2), 135-142. doi: 10.1089/jwh.2018.7178
- Vergeer, I., Bennie, J. A., Charity, M. J., Harvey, J. T., van Uffelen, J. G. Z., Biddle, S. J. H., & Eime, R. M. (2017). Participation trends in holistic movement practices: a 10-year comparison of yoga/Pilates and t'ai chi/qigong use among a national sample of 195,926 Australians. *BMC Complementary and Alternative Medicine, 17*(1), 296. doi: 10.1186/s12906-017-1800-6
- Vergeer, I., Bennie, J. A., Charity, M. J., van Uffelen, J. G. Z., Harvey, J. T., Biddle, S. J. H., & Eime, R. M. (2018). Participant characteristics of users of holistic movement practices in Australia. *Complementary Therapies in Clinical Practice, 31*, 181-187. doi: 10.1016/j.ctcp.2018.02.011
- Wang, C., Li, K., & Gaylord, S. (2019). Prevalence, patterns, and predictors of meditation use among U.S. children: Results from the National Health Interview Survey. *Complementary Therapies in Medicine, 43*, 271-276. doi: 10.1016/j.ctim.2019.02.004
- Wolsko, P. M., Eisenberg, D. M., Davis, R. B., & Phillips, R. S. (2004). Use of mind-body medical therapies. *Journal of General Internal Medicine, 19*(1), 43-50. doi: 10.1111/j.1525-1497.2004.21019.x
- Wilson, J. (2014). *Mindful America: Meditation and the mutual transformation of Buddhism and American culture*. Oxford University Press.

## **Appendix 1**

### **Gender**

*Which of the following best describes how you think of yourself?*

The respondents had the following options: (1) 'Male'; (2) 'Female'; (3) 'Prefer not to say'. The answers were coded into two subcategories: (1) 'Male' and (2 and 3) 'Female'.

### **Age**

*And how old are you?*

The respondents gave a numerical response. The answers were coded into three subcategories: 'Young Adults' (18-34 years), 'Middle-Aged Adults' (35-54 years), and 'Older Adults' (55+ years).

### **Region of Residence**

*Where do you live?*

The respondents had the following options: (1) Scotland; (2) North-West; (3) North-East; (4) Yorkshire & Humberside; (5) Wales; (6) West Midlands; (7) East Midlands; (8) South-West; (9) South-East; (10) Eastern; (11) London. The answers were coded into six subcategories: (1) 'Scotland', (5) 'Wales', (11) 'London', (2, 3, and 4) 'North', (6 and 7) 'Midlands', and (8, 9, and 10) 'South'.

### **Education**

*What is the highest educational level that you have achieved?*

The respondents had the following options: (1) Secondary school; (2) University degree or equivalent professional qualification, NVQ level 4; (3) Higher university degree, doctorate, MBA, NVQ level 5 etc; (4) Still in full time education; (5) No formal education; (6) Don't know/prefer not to answer. The answers were coded into two subcategories: (1, 5, and 6) 'No Degree' and (2, 3, and 4) 'Degree'.

## **Household Income**

*What is the combined annual income of your household, prior to tax being deducted?*

The respondents had the following options: (1) £7,000 or less; (2) £7,001-£14,000; (3) £14,001-£21,000; (4) £21,001-£28,000; (5) £28,001-£34,000; (6) £34,001-£41,000; (7) £41,001-£48,000; (8) £48,001-£55,000; (9) £55,001-£62,000; (10) £62,001-£69,000; (11) £69,001-£76,000; (12) £76,001-£83,000; (13) £83,001 or more; (14) Prefer not to say. The answers were coded into three subcategories: 1-4 and 14) 'Less than £28,000', (5-8) '£28,001-£55,000', and (9-13) 'More than £55,001'.

## **Employment Status**

*Which of the following best describes your working status?*

The respondents had the following options: (1) Working full time – working 30+ hours per week school; (2) Working part time – working between 8-29 hours per week; (3) Not working but seeking work or sick; (4) Not working and not seeking work; (5) Retired on a state pension only; (6) Retired with a private pension; (7) Student; (8) Stay at home parent or housekeeper; (9) Prefer not to answer. The answers were coded into five subcategories: (1, 2, and 9) 'Working', (3 and 4) 'Not Working', (5 and 6) 'Retired', (7) 'Student', and (8) 'Stay at home parent or housekeeper'.

## **Marital Status**

*Which of the following best describes your marital status?*

The respondents had the following options: (1) Prefer not to answer; (2) Single; (3) Married; (4) Civil partnership; (5) Co-habiting; (6) Widowed; (7) Separated; (8) Divorced. The answers were coded into two subcategories: (1-2 and 4-8) 'Not Married' and (3) 'Married'.

## **Family Composition**

*Do you have any children aged 18 or under?*

The respondents had the following options: (1) No children aged 18 or under; (2) Yes – children aged under 5 years old; (3) Yes – children aged 5-10 years old; (4) Yes – children aged 11-15 years old; (6) Yes – children aged 16-18 years old; (7) Prefer not to answer. The answers were coded into two subcategories: (1 and 7) ‘No children aged 18 or under’, (2-6) ‘Children aged 18 or under’.

### 2017 General Election Voting

*Which party did you vote for in the General Election on June 8th 2017?*

The respondents had the following options: (1) Conservative; (2) Labour; (3) Liberal Democrat; (4) Scottish National Party (SNP); (5) Plaid Cymru (PC); (6) UK Independence Party (UKIP); (7) Green; (8) Some other party; (9) Don’t remember; (10) Prefer not to say. The answers were coded into five subcategories: (1) ‘Conservatives’, (2) ‘Labour’, (3) ‘Lib Dems’, (4, 5, 6, 7, 8, 9, and 10) ‘Other’, and (.) ‘Did not vote’.

### 2016 Brexit Referendum Voting

*In the Referendum on the 23rd of June 2016 on whether the UK should remain in or leave the European Union which way did you vote? - or did you not vote? Please select only one answer.*

The respondents had the following options: (1) Voted to Leave the EU; (2) Voted to Remain in the EU; (3) Did not vote; (4) Don’t remember; (5) Prefer not to say. The answers were coded into three subcategories: (1) ‘Leave’, (2) ‘Remain’, and (3, 4, and 5) ‘Did not vote’.

## Appendix 2

Table A1: Percentage Figures for Awareness and Experience of Mindfulness in Britain

VARIABLES	1	2	3	4	5	N
<b>Gender</b>						
Male	14	26	25	29	6	472
Female	16	36	25	17	6	541
<b>Age</b>						
18-34	20	42	17	12	9	309
35-54	21	29	22	22	6	378
55-96	5	27	33	30	5	326
<b>Regions</b>						
Scotland	22	28	30	8	12	82
Wales	9	32	23	31	5	55
London	25	27	17	30	1	98

North	10	34	28	22	6	257
Midlands	18	31	21	26	4	174
South	11	33	27	21	8	347
<b>Education</b>						
No Degree	15	28	25	25	7	510
Degree	16	37	25	17	5	503
<b>Marital Status</b>						
Married	11	29	26	27	7	422
Not Married	18	33	24	19	6	591
<b>Family Composition</b>						
Children Under 18	17	32	21	24	6	291
No Children Under 18	14	31	27	22	6	248
<b>Household Income</b>						
£28,000 or less	15	27	24	26	8	512
£28,001-£55,000	13	37	26	20	4	375
£55,001 or more	21	32	25	18	4	126
<b>Employment Status</b>						
Working	18	32	24	19	7	630
Unemployed	13	39	23	16	9	80
Retired	5	26	31	34	4	172
Student	28	42	9	15	6	42
Stay-at-home parent/housekeeper	9	28	25	31	7	89
<b>General Election 2017</b>						
The Conservative Party	10	27	30	29	4	338
The Labour Party	17	38	22	18	5	298
The Liberal Democrats	16	47	27	8	2	55
Other	21	25	24	24	6	98
Did not vote	18	22	18	24	18	224
<b>Brexit Referendum 2016</b>						
Voted to Leave	16	23	24	31	6	415
Voted to Remain	12	43	27	14	4	423
Did not vote	19	25	23	21	12	175

The number of observations was 1,013. The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer. The Largest Remainder Method was used to make sure the total was 100 per cent.

- 1: I have learnt how to practise mindfulness from a course, book, app, or other source
- 2: I have heard of mindfulness meditation, have not practised it, but I am interested in it
- 3: I have heard of mindfulness meditation, have not practised it, and I am not interested in it
- 4: I have never heard of mindfulness meditation

5: Don't know

N: Observations before weighting.

Table A2: Percentage Figures for Frequency of Mindfulness Practice in Britain

VARIABLES	1	2	3	4	5	N
<b>Gender</b>						
Male	12	29	25	29	5	65
Female	17	27	37	15	4	88
<b>Age</b>						
18-34	13	32	45	6	4	69
35-54	18	18	26	33	5	68
55-96	3	61	19	14	3	16
<b>Regions</b>						
Scotland	7	21	46	26	0	16
Wales	73	9	4	14	0	6
London	14	38	12	27	9	17
North	16	26	45	10	3	37
Midlands	13	21	38	28	0	33

South	13	32	30	17	8	44
<b>Education</b>						
No Degree	15	30	25	27	3	63
Degree	15	25	43	10	7	90
<b>Marital Status</b>						
Married	12	22	32	26	8	50
Not Married	16	31	31	19	3	103
<b>Family Composition</b>						
Children Under 18	20	28	32	14	6	57
No Children Under 18	12	28	31	26	3	96
<b>Household Income</b>						
£28,000 or less	12	33	31	20	4	70
£28,001-£55,000	16	25	32	23	4	54
£55,001 or more	18	22	31	21	8	29
<b>Employment Status</b>						
Working	17	21	34	24	4	113
Unemployed	22	29	49	0	0	11
Retired	0	57	23	15	5	7
Student	11	73	16	0	0	11
Stay-at-home parent/housekeeper	2	14	23	44	17	11
<b>General Election 2017</b>						
The Conservative Party	20	14	20	36	10	38
The Labour Party	12	46	30	7	5	50
The Liberal Democrats	31	29	40	0	0	13
Other	5	10	22	63	0	21
Did not vote	15	21	62	1	1	31
<b>Brexit Referendum 2016</b>						
Voted to Leave	17	28	22	28	5	61
Voted to Remain	12	24	38	19	7	66
Did not vote	13	33	42	12	0	26

Note: The number of observations was 153. The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer. The Largest Remainder Method was used to make sure the total was 100 per cent.

- 1: Hardly at all since first learning about it
  - 2: I practised fairly regularly for a while then I stopped
  - 3: I practise from time to time
  - 4: I practise most days for just a few minutes each time
  - 5: I practise for several hours a week
- N: Observations before weighting.

Table A3: Percentage Figures for Pathways to Learning to Practise Mindfulness in Britain

VARIABLES	1	2	3	4	5	6	7	N
<b>Gender</b>								
Male	32	30	25	18	27	12	0	65
Female	17	36	10	13	42	14	0	88
<b>Age</b>								
18-34	17	41	21	24	50	8	0	69
35-54	27	28	16	11	26	18	0	68
55-96	30	38	6	7	31	7	0	16
<b>Regions</b>								
Scotland	20	42	28	27	29	17	0	16
Wales	14	15	14	23	66	0	0	6
London	22	23	19	8	49	7	0	17
North	31	51	18	27	43	1	0	37
Midlands	16	27	11	12	35	24	0	33
South	31	35	13	9	17	18	0	44
<b>Education</b>								

No Degree	27	34	20	10	35	12	0	63
Degree	19	32	11	25	35	15	0	90
<b>Marital Status</b>								
Married	32	21	14	18	33	15	0	50
Not Married	20	40	18	14	36	13	0	103
<b>Family Composition</b>								
Children Under 18	31	29	11	11	34	15	0	57
No Children Under 18	20	36	20	18	36	12	0	96
<b>Household Income</b>								
£28,000 or less	19	38	14	18	37	12	0	70
£28,001-£55,000	26	24	10	11	34	21	0	54
£55,001 or more	31	39	33	14	33	4	0	29
<b>Employment Status</b>								
Working	24	36	19	18	33	12	0	113
Unemployed	28	46	29	34	52	9	0	11
Retired	16	50	0	0	7	27	0	7
Student	7	9	3	0	79	11	0	11
Stay-at-home parent/housekeeper	55	13	12	3	2	21	0	11
<b>General Election 2017</b>								
The Conservative Party	48	40	17	23	22	10	0	38
The Labour Party	12	31	10	10	49	12	0	50
The Liberal Democrats	3	34	0	6	63	0	0	13
Other	26	26	25	12	13	27	0	21
Did not vote	22	38	31	22	28	15	0	31
<b>Brexit Referendum 2016</b>								
Voted to Leave	23	42	22	13	28	13	0	61
Voted to Remain	28	29	8	17	39	13	0	66
Did not vote	20	24	17	17	43	15	0	26

Note: The number of observations was 153. The percentages were weighted to reflect the sociodemographic profile of the adult population of Britain and were rounded to the closest integer. The total amounts to more than 100 percent for each subcategory, as the respondents could tick more than one option.

- 1: Attending a course
- 2: Reading a book
- 3: Watching a video or DVD
- 4: Visiting a website
- 5: Using an app
- 6: Some other way
- 7: Don't Know
- N: Observations before weighting.

# Part Two

## Chapter 5: Literature Review – Consequences

The spread of meditative practices into real-world political settings merits more academic discussion. There is rich scholarly work on both meditative practices and political attitudes, but relatively little research has investigated the causal effects of meditative practices on political attitudes. This literature review therefore seeks to outline the main causes and correlates of political attitudes and the key theoretical explanations for why meditative practices may (or may not) affect political attitudes. This chapter can, in so doing, provide a preliminary theoretical model for the causal relationship between meditative practices and political attitudes, which the following three empirical chapters will test empirically.

The first section of the literature review revolves around political attitudes and specifically focuses on liberal-conservative attitudes and affective polarization. The second section explores the research on meditative practices, but the focus primarily centers on mindfulness-based and kindness-based practices and programs. The final section summarizes the literature review and proposes how mindfulness-based and kindness-based interventions may (or may not) affect political attitudes.

### Political Attitudes

The discipline of political psychology applies theories from psychology to identify and understand the underlying psychological mechanisms of political behavior and attitudes. Its theories and approaches have been applied in a range of contexts, including policy making, voting attitudes, and intergroup conflict. It is a complex field of research with several subfields, each of which has its own theoretical models to explain specific aspects of political behavior and attitudes (Huddy, Sears & Levy, 2013). While meditative practices might affect many different aspects of political behavior and attitudes, this literature review intends to focus on liberal-conservative attitudes and affective polarization, both of which are important to better understand at a time of rising authoritarianism and growing animosity between political groups in multiple regions around the world.

### *Liberal-Conservative Attitudes*

The liberal-conservative spectrum is a political construct whose meaning must be historically and contextually situated (Caprara, 2020). For instance, liberalism in Europe (but not necessarily in Britain) usually refers to support for individual liberties and a free market economy, whereas liberalism in the United States broadly refers to support for individual liberties and a welfare state. This thesis uses the contemporary American conception of the liberal-conservative continuum, which can be broadly captured by two core dimensions: (1) rejection versus endorsement of hierarchy and inequality; and (2) rejection versus endorsement of the status quo (Jost et al., 2003).

The evidence to date suggests that there are significant differences between individuals on the liberal-conservative continuum (Jost, 2017). For example, conservative political preferences are positively associated with fear sensitivity (Jost et al., 2017), disgust sensitivity (Terrizzi Jr, Shook & McDaniel, 2013), and conscientiousness (Sibley, Osborne, & Duckitt, 2012), whereas liberal political preferences are positively associated with uncertainty tolerance (Jost, Sterling & Stern, 2017), openness to experience (Sibley, Osborne, & Duckitt, 2012), compassion (Hirsh et al., 2010; Osborne, Wootton & Sibley, 2013), and empathy (Iyer et al., 2012; Morris, 2020).

The differences represent underlying motivational needs, each of which tend to make individuals attracted to political issue positions that best serve the needs (Jost et al., 2003). For example, a heightened sense of fear might attract individuals to political issue positions that provide an actual or perceived sense of safety. The feeling of compassion, by contrast, might attract individuals to political issue positions that provide an actual or perceived welfare for others. The attitudes towards specific political issues on the liberal-conservative continuum should therefore change if specific needs are heightened or lessened through real-world events or experimental manipulations.

The research to date has shown causal effects of heightened or lessened needs on liberal-conservative attitudes. For instance, the experience of objectively threatening circumstances has

been shown to lead to increased preference for conservative parties and policies (Jost et al., 2017), but a shift towards more conservative political preferences has also been induced through a range of experimental manipulations (Eidelman et al., 2012; Kettle & Salerno, 2017; Lammers & Proulx, 2013), including induction of mortality salience (Burke, Kosloff, & Landau, 2013) and disgust (Adams, Stewart, & Blanchard, 2014). The studies in political psychology have mostly conducted manipulations that induce a conservative (rather than liberal) shift. It has created an imbalanced evidence base, but recent studies have used manipulations to induce a shift towards political issue positions associated with liberal political attitudes (Lyons & Carhart-Harris, 2018; Napier et al., 2018; Talhelm, 2018; Yilmaz & Saribay, 2017), including inductions of empathy and compassion (Li & Edwards, 2020; Lu & Schuldt, 2016; Pfattheicher, Sassenrath & Schindler, 2015).

### *Affective Polarization*

While polarization has commonly been investigated in terms of the difference between the policy positions, the research on polarization has increasingly looked at the difference in affect towards the political ingroup and outgroup – a phenomenon known as affective polarization. The concept of affective polarization has been applied in different national contexts and builds on the theories of social identity and self-categorization (Wojcieszak & Garrett, 2018). For example, voters in democratic societies typically identify with the various political parties to different degrees. The identification with a specific political party leads to a worldview with a political ingroup and outgroup, which normally creates an ingroup favoritism bias in the form of more positive feelings for the ingroup than for the outgroup. The more salient the political ingroup becomes to the personal identity, the greater the difference in affect towards the political ingroup and outgroup tend to become (Iyengar et al., 2019).

The evidence to date suggests that there are different trends in affective polarization across the world. For instance, affective polarization between the top two parties decreased in Germany from 1975 to 2017, whereas affective polarization between the top two parties increased in the

United States over the same period. The affective polarization between Democrats and Republicans – as measured by the difference in mean in-party feeling and mean out-party feeling on a scale ranging from cold (0) to warm (100) – increased from 27.0 in 1978 to 45.9 points in 2016. The trend was driven by more and more negative feelings towards the political outgroup, which increased the gap in affect towards the political ingroup and outgroup (Boxell, Gentzkow & Shapiro, 2020). It is an issue that has received more attention recently, as the rising partisan animus can have serious consequences for society, both political (Hetherington & Rudolph, 2015) and non-political (McConnell et al., 2018).

There have been several studies on different interventions to reduce affective polarization, especially in the United States. The priming of American national identity has, on the one hand, been shown to decrease affective polarization between Democrats and Republicans (Levendusky, 2018), but priming national identity can, on the other hand, exacerbate affective polarization towards non-nationals (Wojcieszak & Garrett, 2018). The partisan animus between Democrats and Republicans has also been reduced with a mock news story about a warm interaction between leaders of the political ingroup and outgroup (Huddy & Yair, 2019), information about the political outgroup's composition to correct stereotypical misconceptions (Ahler & Sood, 2018), and imagined political intergroup contact (Warner & Villamil, 2017).

### Meditative Practices

The term meditation, on its own, can refer to a variety of mental exercises, just as the term sports includes a range of physical activities (Goleman & Davidson, 2017). The mechanisms and effects differ widely across meditative practices (Dahl, Lutz & Davidson, 2015; Singer & Engert, 2019), which suggests that the potential effects on political attitudes could vary depending on which type of meditation is being used. Hirsh, Walberg & Peterson (2013) found that a 4-minute guided meditation induced a shift towards more liberal political attitudes and lower scores on social dominance orientation (but not right-wing authoritarianism). The manipulation was intended to prime feelings of spirituality and participants were asked to close

their eyes, breathe deeply, imagine themselves in a natural setting, and feel their connection with the environment. The description of the manipulation, however, did not clarify the exact type of meditation that was used.

There are several types of meditation interventions in the scientific literature, ranging from mantra recitation to analytical meditation (Dahl, Lutz & Davidson, 2015). While liberal-conservative attitudes and affective polarization might be affected by several types of meditation, this literature review intends to focus on mindfulness-based and kindness-based interventions, both of which have received considerable scientific attention in recent decades.

### *Mindfulness-Based Interventions*

The construct of mindfulness consists of purposefully paying attention to experience – thoughts, feelings, and physical sensations – in the present moment, but equally important is the quality of the attention, which involves openness, acceptance, and curiosity (Kabat-Zinn, 1994). The experience of mindfulness can be measured as a temporary state or a lasting trait (Goleman & Davidson, 2017), both of which can vary between individuals and across an individual lifespan. It can be strengthened through different exercises and multiple therapeutic programs that specifically aim to improve wellbeing through the cultivation of mindfulness (Creswell, 2017).

The research on mindfulness has generally suffered from small samples and poor methodological quality (Goleman & Davidson, 2017), but there is still robust evidence to suggest significant effects of mindfulness-based interventions on a range of outcomes. For instance, mindfulness-based cognitive therapy has been shown to be effective for the treatment of current depressive symptoms and the prevention of depression relapse (Goldberg et al., 2019; Kuyken et al., 2016). The degree to which participants engage with formal home practice in mindfulness-based cognitive therapy has also been shown to correlate positively with outcomes (Parsons et al., 2017), which suggests that more mindfulness training might lead to greater effect sizes.

The mechanisms underlying the therapeutic effects of mindfulness-based practices and programs have been discussed at great length. Shapiro et al. (2006) suggest that mindfulness-based interventions bring about a different relationship to internal and external experiences and facilitate a shift in perspective, which involves disidentification with thoughts, feelings, and physical sensations. The shift in perspective, in theory, leads to several key mechanisms that contribute to the effects generated by mindfulness-based practices and programs, including self-regulation and self-management, values clarification, and emotional, cognitive, and behavioral flexibility.

The growing evidence on the effects and mechanisms of mindfulness-based interventions has been accompanied by widespread use of mindfulness in society. The practice of mindfulness has increasingly been integrated into the education system, the healthcare system, the criminal justice system, the workplace, and the military (Creswell, 2017), but mindfulness-based practices have also been introduced in the UK Parliament, where politicians from the Houses of Commons and Lords have attended an eight-week mindfulness program adapted from mindfulness-based cognitive therapy. The mindfulness training in Westminster has led to the formation of the All-Party Parliamentary Group on Mindfulness (APPGM) and the first-ever public policy assessment of mindfulness (Bristow, 2019). It has been preceded by and has coincided with several books published on the topic of mindful politics (Kabat-Zinn, 2005; McLeod, 2006; Purser, 2019; Ryan, 2012), but Ferguson (2016) notes in a symposium on mindfulness and politics that the potential effects of mindfulness training on political attitudes have still barely been discussed or investigated in the discipline of political psychology.

The symposium on mindfulness and politics discusses the cultural politics of mindfulness (Godrej, 2016), the role of mindfulness in political activism (Rowe, 2016), and the political potential of mindfulness (Chari, 2016; Mathiowetz, 2016; Moore, 2016). The discussions recognize the association between mindfulness use and liberal political attitudes, but Moore (2016) deliberates on the political implications of secular mindfulness training and suggests that the practice of mindfulness is unlikely to change liberal-conservative attitudes. Kabat-Zinn

(2005) holds a similar view and purports that the effects of mindfulness training are primarily relational and not ideological. The cultivation of mindfulness brings about a different relationship to opinions in the mind and creates an understanding of them as opinions and not facts, which suggests that mindfulness-based practices and programs should not affect liberal-conservative attitudes more broadly.

The overall evidence suggest no significant association between trait mindfulness and liberal-conservative attitudes (Kashdan et al., 2011; Niemiec et al., 2010), social dominance orientation, or right-wing authoritarianism (Nicol & De France, 2018). However, there is some (although mixed) evidence to suggest an association between trait mindfulness and empathy (Brown & Ryan, 2003; Trent et al., 2016), which has been linked to liberal political attitudes (Iyer et al., 2012; Morris, 2020). There is also some (although mixed) evidence to suggest that mindfulness-based interventions might increase empathy (Beddoe & Murphy, 2004; Birnie, Speca & Carlson, 2010; Galantino et al., 2005; Shapiro, Schwartz & Bonner, 1998). Hence, if the practice of mindfulness does increase empathy, it might lead to a shift towards more liberal political attitudes.

Ryan (2012) does not make an explicit claim about the effects of mindfulness-based practices and programs on liberal-conservative attitudes, but he suggests that the practice of mindfulness can facilitate more constructive discussions across political ingroups and outgroups. He proposes that mindfulness training decreases critical judgments towards oneself and others over time, which should lead to improved relationships between political adversaries and bring about civil political conversations between individuals who strongly disagree with each other.

The proposed effects of mindfulness training on political intergroup attitudes finds support in a study with Israeli students that investigated how participation in an eight-week mindfulness-based program affected support for compromise in the Israeli-Palestinian conflict. The results showed that mindfulness training increased support of conciliatory policies by reducing negative affect towards Palestinians (Alkoby et al., 2017). The reduced negative affect towards

the political outgroup after mindfulness training echoes the effects of simply imagining an interaction with the political outgroup from a third-person visual perspective (Warner & Villamil, 2017), which is not dissimilar from the decentered awareness embedded in mindfulness. Petersen & Mitkidis (2019), however, found that political tolerance was neither associated with trait mindfulness nor affected by a brief mindfulness intervention. The difference in results could potentially be explained by the different interventions and measures, but it is equally plausible that sustained mindfulness training might be needed to improve regulation of negative intergroup emotions and reduce ingroup favoritism bias.

### *Kindness-Based Interventions*

The research in contemplative science has primarily focused on mindfulness-based interventions, but there is growing evidence on the positive effects of kindness-based interventions (Galante et al., 2014), including compassion meditation, befriending meditation, and loving-kindness meditation. The term kindness-based practices refers to methods designed to elicit kindness towards oneself and others (Mascaro et al., 2015), most of which involve visualization techniques or the silent repetition of well-wishing phrases (e.g. may you be safe, may you be happy, may you be at peace). The exercises are slightly different to each other, but the cultivation of positive affect is common to all of them. The focus of the attention is typically directed in the following sequence: towards the self, towards a loved one, towards a neutral person, towards a difficult person, and finally towards all living beings. It forms the basis of several therapeutic programs designed to improve wellbeing (Fredrickson et al., 2008; Kirby, 2017).

While mindfulness-based practices are aimed at changing the relationship to experience and not the experience itself, kindness-based practices are, in many ways, aimed at actively and deliberately changing cognitive and affective content. The key mechanisms in most, if not all, kindness-based practices are the generation of positive affect, cognitive reappraisal, and perspective-taking (Dahl, Lutz & Davidson, 2016; Engen & Singer, 2016). The mechanisms, in

theory, should have downstream effects on a range of outcomes, including positive other-regarding emotions and decreased ingroup favoritism bias (Dahl, Lutz & Davidson, 2015).

The success of the APPGM in the UK Parliament has been followed by the formation of an All-Party Parliamentary Group for Compassionate Politics (APPGCP), which seeks to put cooperation, inclusion, and compassion at the heart of politics (Parliament, 2020). While the effects of kindness-based practices and programs in political contexts are largely unknown, there is growing evidence of a relationship between liberal-conservative attitudes and compassion, which is one of the main effects of kindness-based interventions (Galante et al., 2014; Kirby, Tellegen & Steindl, 2017).

The construct of compassion correlates negatively with political conservatism (Hirsh et al., 2010; Osborne, Wootton & Sibley, 2013) and positively with policy attitudes associated with liberal political attitudes (Pfattheicher, Sassenrath & Schindler, 2015; Sinclair & Saklofske, 2019; Sznycer et al., 2017; Yelpaze & Güler, 2018); a brief compassion intervention has been shown to increase support for environmental policies associated with liberal political attitudes (Lu & Schuldt, 2016; Pfattheicher, Sassenrath & Schindler, 2015); and the related construct of empathy correlates negatively with conservative political attitudes (Morris, 2020), social dominance orientation (Sidanius et al., 2013), and right-wing authoritarianism (Nicol & Rounding, 2013). Hence, kindness-based interventions should, in theory, induce a shift towards more liberal political attitudes.

The evidence from a range of correlational and experimental studies show the beneficial effects of empathy and compassion on intergroup attitudes (Gubler, Halperin & Hirschberger, 2015; Malhotra & Liyanage, 2005; Nadler & Liviatan, 2006; Paluck, 2009). Klimecki (2019) suggests that kindness-based interventions could be used to reduce ingroup favoritism bias and promote positive intergroup attitudes through several mechanisms, including an increase in positive other-regarding emotions, cognitive reappraisal, and perspective-taking. The mechanisms might vary as a function of the length and type of intervention, but the effects on intergroup attitudes

should be broadly the same. Hence, kindness-based interventions could potentially reduce tensions between rival political groups and should, theoretically, decrease affective polarization.

### **Conclusion**

This literature review sought to outline the main causes and correlates of political attitudes and the key theoretical explanations for why meditative practices may (or may not) affect political attitudes. The first section focused on liberal-conservative attitudes and affective polarization, while the second section focused on mindfulness-based and kindness-based practices and programs. Taken together, the evidence to date suggests that kindness-based (and possibly also mindfulness-based) interventions should affect liberal-conservative attitudes and affective polarization, which can be tested empirically. Hence, the following three empirical chapters seek to investigate the causal effects of mindfulness-based and kindness-based interventions on liberal-conservative attitudes and affective polarization.

## References

- Adams, T. G., Stewart, P. A., and Blanchar, J. C. (2014). Disgust and the politics of sex: Exposure to a disgust odorant increases politically conservative views on sex and decreases support for gay marriage, *PloS one*, 9(5), 1-6. doi: 10.1371/journal.pone.0095572
- Ahler, D. J., & Sood, G. (2018). The parties in our heads: Misperceptions about party composition and their consequences. *Journal of Politics*, 80(3), 964-981. doi: 10.1086/697253
- Alkoby, A., Halperin, E., Tarrasch, R., & Levit-Binnun, N. (2017). Increased support for political compromise in the Israeli-Palestinian conflict following an 8-week mindfulness workshop. *Mindfulness*, 8(5), 1345-1353. doi: 10.1007/s12671-017-0710-5
- Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *Journal of Nursing Education*, 43, 305–312. doi: 10.3928/01484834-20040701-07
- Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health*, 26, 359–371. doi: 10.1002/smi.1305
- Boxell, L., Gentzkow, M., & Shapiro, J. M. (2020). *Cross-Country Trends in Affective Polarization* (No. w26669). National Bureau of Economic Research. doi: 10.3386/w26669
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: 10.1016/j.copsyc.2018.11.003
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. doi: 10.1037/0022-3514.84.4.822

- Burke, B. L., Kosloff, S., & Landau, M. J. (2013). Death goes to the polls: A meta-analysis of mortality salience effects on political attitudes. *Political Psychology*, 34(2), 183-200. doi: 10.1111/pops. 12005
- Caprara, G. V. (2020). Distinctiveness, functions and psycho-historical foundations of left and right ideology. *Current Opinion in Behavioral Sciences*, 34, 155-159. doi: 10.1016/j.cobeha.2020.03.007
- Chari, A. (2016). The political potential of mindful embodiment. *New Political Science*, 38(2), 226-240. doi: 10.1080/07393148.2016.1153192
- Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology*, 68, 491-516. doi: 10.1146/annurev-psych-042716-051139
- Dahl, C. J., Lutz, A., & Davidson, R. J. (2015). Reconstructing and deconstructing the self: cognitive mechanisms in meditation practice. *Trends in Cognitive Sciences*, 19(9), 515-523. doi: 10.1016/j.tics.2015.07.001
- Dahl, C. J., Lutz, A., & Davidson, R. J. (2016). Cognitive processes are central in compassion meditation. *Trends in Cognitive Sciences*, 20(3), 161-162. doi: 10.1016/j.tics.2015.12.005
- Eidelman, S., Crandall, C. S., Goodman, J. A., & Blanchard, J. C. (2012). Low-effort thought promotes political conservatism. *Personality and Social Psychology Bulletin*, 38(6), 808-820. doi: 10.1177/0146167212439213
- Engen, H. G., & Singer, T. (2016). Affect and motivation are critical in constructive meditation. *Trends in Cognitive Sciences*, 20(3), 159-160. doi: 10.1016/j.tics.2015.11.004
- Ferguson, M. L. (2016). Symposium: mindfulness and politics: introduction. *New Political Science*, 38(2), 201-205. doi: 10.1080/07393148.2016.1153190
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: positive emotions, induced through loving-kindness meditation, build

- consequential personal resources. *Journal of Personality and Social Psychology*, 95(5), 1045. doi: 10.1037/a0013262
- Galantino, M. L., Baime, M., Maguire, M., Szapary, P. O., & Farrar, J. T. (2005). Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: Mindfulness in practice. *Stress and Health*, 21, 255–261. doi: 10.1002/smi.1062
- Galante, J., Galante, I., Bekkers, M. J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(6), 1101. doi: 10.1037/a0037249
- Godrej, F. (2016). Orthodoxy and dissent in Hinduism's meditative traditions: A critical tantric politics?. *New Political Science*, 38(2), 256-271. doi: 10.1080/07393148.2016.1153194
- Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Kearney, D. J., & Simpson, T. L. (2019). Mindfulness-based cognitive therapy for the treatment of current depressive symptoms: a meta-analysis. *Cognitive Behaviour Therapy*, 48(6), 445-462. doi: 10.1080/16506073.2018.1556330
- Goleman, D., & Davidson, R. (2017). *The science of meditation: How to change your brain, mind and body*. Penguin UK.
- Gubler, J. R., Halperin, E., Hirschberger, G. (2015). Humanizing the outgroup in contexts of protracted intergroup conflict. *Journal of Experimental Political Science*, 2, 36–46. doi: 10.1017/xps.2014.20
- Hetherington, M. J., & Rudolph, T. J. (2015). *Why Washington won't work: Polarization, political trust, and the governing crisis*. University of Chicago Press.
- Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite conservatives: Associations of agreeableness with political ideology and moral

- values. *Personality and Social Psychology Bulletin*, 36(5), 655-664. doi:  
10.1177/0146167210366854
- Hirsh, J. B., Walberg, M. D., & Peterson, J. B. (2013). Spiritual liberals and religious conservatives. *Social Psychological and Personality Science*, 4(1), 14-20. doi:  
10.1177/1948550612444138
- Huddy, L., Sears, D. O., & Levy, J. S. (Eds.). (2013). *The Oxford handbook of political psychology*. Oxford University Press.
- Huddy, L., & Yair, O. (2019). Reducing Affective Partisan Polarization: Warm Group Relations or Policy Compromise?.
- Iyengar, S., Lelkes, Y., Levendusky, M., Malhotra, N., & Westwood, S. J. (2019). The origins and consequences of affective polarization in the United States. *Annual Review of Political Science*, 22, 129-146. doi: 10.1146/annurev-polisci-051117-073034
- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PloS one*, 7(8). doi: 10.1371/journal.pone.0042366
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129(3), 339. doi: 10.1037/0033-2909.129.3.339
- Jost, J. T. (2017). Ideological asymmetries and the essence of political psychology. *Political Psychology*, 38(2), 167-208. doi: 10.1111/pops.12407
- Jost, J. T., Sterling, J., & Stern, C. (2017). Getting closure on conservatism, or the politics of epistemic and existential motivation. In *The motivation-cognition interface* (pp. 56-87). Routledge.

- Jost, J. T., Stern, C., Rule, N. O., & Sterling, J. (2017). The politics of fear: Is there an ideological asymmetry in existential motivation?. *Social cognition*, 35(4), 324-353. doi: 10.1521/soco.2017.35
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion.
- Kabat-Zinn, J. (2005). *Coming to our senses: Healing ourselves and the world through mindfulness*. Hachette UK.
- Kashdan, T. B., Afram, A., Brown, K. W., Birnbeck, M., and Drvoshanov, M. (2011). Curiosity enhances the role of mindfulness in reducing defensive responses to existential threat. *Personality and Individual Differences*, 50(8), 1227-1232. doi: doi: 10.1016/j.paid.2011.02.015
- Kettle, K. L., & Salerno, A. (2017). Anger promotes economic conservatism. *Personality and Social Psychology Bulletin*, 43(10), 1440-1454. doi: 10.1177/0146167217718169
- Kirby, J. N. (2017). Compassion interventions: The programmes, the evidence, and implications for research and practice. *Psychology and Psychotherapy: Theory, Research and Practice*, 90(3), 432-455. doi: 10.1111/papt.12104
- Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy*, 48(6), 778-792. doi: 10.1016/j.beth.2017.06.003
- Klimecki, O. M. (2019). The role of empathy and compassion in conflict resolution. *Emotion Review*, 11(4), 310-325. doi: 10.1177/1754073919838609
- Kuyken, W., Warren, F. C., Taylor, R. S., Whalley, B., Crane, C., Bondolfi, G., Hayes, R., Huijbers, M., Ma, H., Schweizer, S., Segal, Z., Speckens, A., Teasdale, J. D., Van Heeringen, K., Williams, M., Byford, S., Byng, R., & Dalgleish, T. (2016). Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: an individual

- patient data meta-analysis from randomized trials. *JAMA Psychiatry*, 73(6), 565-574.  
doi: 10.1001/jamapsychiatry.2016.0076
- Lammers, J., & Proulx, T. (2013). Writing autobiographical narratives increases political conservatism. *Journal of Experimental Social Psychology*, 49(4), 684-691. doi: 10.1016/j.jesp.2013.03.008
- Levendusky, M. S. (2018). Americans, not partisans: Can priming American national identity reduce affective polarization? *Journal of Politics*, 80(1), 59-70. doi: <https://doi.org/10.1086/693987>
- Li, Z., & Edwards, J. A. (2020). The relationship between system justification and perspective-taking and empathy. *Personality and Social Psychology Bulletin*, 0146167220921041.
- Lu, H., & Schuldt, J. P. (2016). Compassion for climate change victims and support for mitigation policy. *Journal of Environmental Psychology*, 45, 192–200. doi: 10.1016/j.jenvp.2016.01.007
- Lyons, T., & Carhart-Harris, R. L. (2018). Increased nature relatedness and decreased authoritarian political views after psilocybin for treatment-resistant depression. *Journal of Psychopharmacology*, 32(7), 811-819. doi: 10.1177/0269881117748902
- Malhotra, D. & Liyanage, S. (2005). Long-term effects of peace workshops in protracted conflicts. *Journal of Conflict Resolution*, 49, 908–924. doi: 10.1177/0022002705281153
- Mascaro, J. S., Darcher, A., Negi, L. T., & Raison, C. L. (2015). The neural mediators of kindness-based meditation: a theoretical model. *Frontiers in Psychology*, 6, 109. doi: 10.3389/fpsyg.2015.00109
- Mathiowetz, D. (2016). “Meditation is Good for Nothing:” Leisure as a Democratic Practice. *New Political Science*, 38(2), 241-255. doi: 10.1080/07393148.2016.1153193

- McConnell, C., Margalit, Y., Malhotra, N., & Levendusky, M. (2018). The economic consequences of partisanship in a polarized era. *American Journal of Political Science*, 62(1), 5-18. doi: 10.1111/ajps.12330
- McLeod, M. (Ed.). (2006). *Mindful politics: a Buddhist guide to making the world a better place*. Simon and Schuster.
- Moore, M. J. (2016). Buddhism, mindfulness, and transformative politics. *New Political Science*, 38(2), 272-282. doi: 10.1080/07393148.2016.1153195
- Morris, S. G. (2020). Empathy and the liberal-conservative political divide in the US. *Journal of Social and Political Psychology*, 8(1), 8-24. doi: 10.5964/jspp.v8i1.1102
- Nadler, A. & Liviatan, I. (2006). Intergroup reconciliation: Effects of adversary's expressions of empathy, responsibility, and recipients' trust. *Personality and Social Psychology Bulletin*, 32, 459-470. doi: 10.1177/0146167205276431
- Napier, J. L., Huang, J., Vonasch, A. J., & Bargh, J. A. (2018). Superheroes for change: Physical safety promotes socially (but not economically) progressive attitudes among conservatives. *European Journal of Social Psychology*, 48(2), 187-195. doi: 10.1002/ejsp.2315
- Nicol, A. A., & De France, K. (2018). Mindfulness: Relations with prejudice, social dominance orientation, and right-wing authoritarianism. *Mindfulness*, 9(6), 1916-1930. doi: 10.1007/s12671-018-0938-8
- Nicol, A. A., & Rounding, K. (2013). Alienation and empathy as mediators of the relation between social dominance orientation, right-wing authoritarianism and expressions of racism and sexism. *Personality and Individual Differences*, 55(3), 294-299. doi: 10.1016/j.paid.2013.03.009
- Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The

- role of trait mindfulness in reducing defensive responses to mortality salience, *Journal of Personality and Social Psychology*, 99(2), 344-365. doi: 10.1037/a0019388
- Osborne, D., Wootton, L. W., & Sibley, C. G. (2013). Are liberals agreeable or not? Politeness and Compassion Differentially Predict Political Conservatism Via Distinct Ideologies. *Social Psychology*, 44, 354-360. doi: 10.1027/1864-9335/a000132
- Paluck, E. L. (2009). Reducing intergroup prejudice and conflict using the media: A field experiment in Rwanda. *Journal of Personality and Social Psychology*, 96, 574–587. doi: 10.1037/a0011989
- Parliament (2020). Register Of All-Party Parliamentary Groups [as at 8 April 2020]: Compassionate Politics. www.parliament.uk [Online]. Available at: <https://publications.parliament.uk/pa/cm/cmllparty/200408/compassionate-politics.htm> [Accessed 2020-04-24].
- Parsons, C. E., Crane, C., Parsons, L. J., Fjorback, L. O., & Kuyken, W. (2017). Home practice in mindfulness-based cognitive therapy and mindfulness-based stress reduction: A systematic review and meta-analysis of participants' mindfulness practice and its association with outcomes. *Behaviour Research and Therapy*, 95, 29-41. doi: 10.1016/j.brat.2017.05.004
- Petersen, M. B., & Mitkidis, P. (2019). A Sober Second Thought? A Pre-Registered Experiment on the Effects of Mindfulness Meditation on Political Tolerance.
- Pfattheicher, S., Sassenrath, C., & Schindler, S. (2015). Feelings for the suffering of others and the environment. *Environment and Behavior*, 48(7), 929–945. doi: 10.1177/0013916515574549
- Purser, R. (2019). *McMindfulness: How mindfulness became the new capitalist spirituality*. Watkins Media Limited.

- Rowe, J. K. (2016). Micropolitics and collective liberation: mind/body practice and left social movements. *New Political Science*, 38(2), 206-225. doi: 10.1080/07393148.2016.1153191
- Ryan, T. (2012). *A mindful nation: How a simple practice can help us reduce stress, improve performance, and recapture the American spirit*. Hay House.
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3), 373-386. doi: 10.1002/jclp.20237
- Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*, 21, 581-599. doi: 10.1023/A:1018700829825
- Sibley, C. G., Osborne, D., & Duckitt, J. (2012). Personality and political orientation: Meta-analysis and test of a Threat-Constraint Model. *Journal of Research in Personality*, 46(6), 664-677. doi: 10.1016/J.JRP.2012.08.002
- Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Ho, A. K., Sibley, C., & Duriez, B. (2013). You're inferior and not worth our concern: The interface between empathy and social dominance orientation. *Journal of Personality*, 81(3), 313-323. doi: 10.1111/jopy.12008
- Sinclair, V. M., & Saklofske, D. H. (2019). Is there a place in politics for compassion? The role of compassion in predicting hierarchy-legitimizing views. *Self and Identity*, 18(4), 425-442. doi: 10.1080/15298868.2018.1468354
- Singer, T., & Engert, V. (2019). It matters what you practice: Differential training effects on subjective experience, behavior, brain and body in the ReSource Project. *Current Opinion in Psychology*, 28, 151-158. doi: 10.1016/j.copsyc.2018.12.005
- Sznycer, D., Seal, M. F. L., Sell, A., Lim, J., Porat, R., Shalvi, S., Halperin, E., Cosmides, L. & Tooby, J. (2017). Support for redistribution is shaped by compassion, envy, and self-

- interest, but not a taste for fairness. *Proceedings of the National Academy of Sciences*, 114(31), 8420-8425. doi: 10.1073/pnas.1703801114
- Talhelm, T. (2018). Hong Kong liberals are WEIRD: Analytic thought increases support for liberal policies. *Personality and Social Psychology Bulletin*, 44(5), 717-728. doi: 10.1177/0146167217746151
- Terrizzi Jr, J. A., Shook, N. J., & McDaniel, M. A. (2013). The behavioral immune system and social conservatism: A meta-analysis. *Evolution and Human Behavior*, 34(2), 99-108. doi: 10.1016/j.evolhumbehav.2012.10.003
- Trent, N. L., Park, C., Bercovitz, K., & Chapman, I. M. (2016). Trait socio-cognitive mindfulness is related to affective and cognitive empathy. *Journal of Adult Development*, 23(1), 62-67. doi: 10.1007/s10804-015-9225-2
- Warner, B. R., & Villamil, A. (2017). A test of imagined contact as a means to improve cross-partisan feelings and reduce attribution of malevolence and acceptance of political violence. *Communication Monographs*, 84(4), 447-465. doi: 10.1080/03637751.2017.1336779
- Wojcieszak, M., & Garrett, R. K. (2018). Social identity, selective exposure, and affective polarization: How priming national identity shapes attitudes toward immigrants via news selection. *Human Communication Research*, 44(3), 247-273. doi: 10.1093/hcr/hqx010
- Yelpaze, İ., & Güler, D. (2018). The relationship between attitudes towards asylum seekers and compassion levels of university students. *International Journal of Assessment Tools in Education*, 5(3), 524-543. doi: 10.21449/ijate.444882
- Yilmaz, O., & Saribay, S. A. (2017). Analytic thought training promotes liberalism on contextualized (but not stable) political opinions. *Social Psychological and Personality Science*, 8(7), 789-795. doi: 10.1177/1948550616687092

## Chapter 6: Lessons from Pilot Studies and Cancelled Studies

The purpose of this chapter is, first and foremost, to be preparatory to the following two empirical chapters by sharing materials and experiences from two pilot studies and two randomized controlled trials that were cancelled due to unforeseen circumstances. While the materials and experiences might not be suitable for journal publication, it can still be useful to document them. The chapter is divided into five sections: the first and second sections describe two non-randomized pilot studies designed to investigate the effects of eight-week and six-week mindfulness-based programs on liberal-conservative attitudes in university students; the third and fourth sections describe two randomized controlled trials designed to investigate the effects of eight-week and four-week compassion-based programs, both of which might have become main chapters had they not been cancelled due to unforeseen circumstances; and the fifth section summarizes the chapters and outlines the main lessons.

## **(Pilot) Study 1**

Authors:<sup>4</sup> Otto Simonsson<sup>1</sup>, Maryanne Martin<sup>2</sup>, and Stephen Fisher<sup>1</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>University of Oxford, Department of Experimental Psychology

### **Methods**

#### *Participants*

Students at the University of Oxford who had signed up for an eight-week mindfulness course to start either in January 2018 (mindfulness condition) or April 2018 (control condition) were invited through email to participate in the study. The recruitment criteria restricted participation to English-speaking adults aged 18-65 with no prior participation in a meditation course and no regular practice of meditation (i.e., no more than five hours in the past month). £20 was offered as remuneration for participation in the study. The interested students were given more details about the study and were invited to give their consent to participate via an online link. If they agreed to participate in the study, they were asked about their age, gender, and citizenship before they took the first survey. A total of 25 students from the University of Oxford completed the pre- and post-intervention surveys (15 women, 1 other; mean age = 25).

#### *Procedure*

Participants completed baseline measures in an online survey before the start of the first mindfulness course. At the termination of the eight-week program, all participants were asked to complete the post-intervention survey (identical to baseline survey). If participants could not

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<sup>4</sup> Author Contribution: All authors contributed to the study conception and design. OS analyzed the data and wrote the first draft of the manuscript. SF and MM supervised and commented on the manuscript drafts. All authors read and approved the final manuscript.

attend a particular session, they were offered the opportunity to attend the same class (but with another group) on a different day for that specific week.

### *Intervention*

The eight-week mindfulness program was based on the Finding Peace curriculum (Williams & Penman, 2011), which is a curriculum that has also been delivered to politicians in the UK Parliament. The course is adapted from mindfulness-based cognitive therapy and has eight weekly classes, each of which lasts for 90 minutes. The classes involve active group discussion, guided group meditation, interactive exercises related to each week's theme, and in-class exercises designed to increase mindfulness skills. The students are assigned one or two chapters to read for homework every week and are encouraged to set aside up to 30 minutes a day, 6 days a week, for mindfulness-based exercises at home (3-15 minutes per exercise). The experiences and insights from their home practice are discussed the following week in class. The mindfulness teacher, who was trained at the University of Oxford's Mindfulness Centre, was blind to the research focus and its hypotheses. He had several years of experience teaching mindfulness, but he was not a certified mindfulness teacher at the time.

### *Measures*

**Self-Compassion.** To assess self-compassion, we asked participants to complete the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011).

**Trait Mindfulness.** To assess trait mindfulness, we asked participants to complete the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003).

**Liberal-Conservative Attitudes.** To assess liberal-conservative attitudes, we asked participants to complete six measures that capture different aspects of liberal-conservative attitudes: Libertarianism-Authoritarianism (Lalljee et al., 2013), Socialist-Laissez Faire (Heath et al., 1994), Economic System Justification (Jost & Thompson, 2000), Social Dominance Orientation (SDO-7; Ho et al., 2015), Right-Wing Authoritarianism (RWA; Zakrisson, 2005),

and the Moral Foundations Questionnaire (Graham et al., 2011), including economic/government liberty and lifestyle liberty (Iyer et al., 2012).

**Political Trade-Offs.** The trade-offs measure included one question on political trade-offs designed to capture priority of the environment over the economy. The question asked: “Many environmental issues involve difficult trade-offs with the economy. Which of the following statements best describes your view?” The responses were rated from 1 (“The highest priority should be given to protecting the environment, even if it hurts the economy”) to 4 (“The highest priority should be given to economic considerations such as jobs even if it hurts the environment”; Curry et al., 2005).

**Political Self-Identification.** Participants were asked to indicate their political orientation (1 = extremely liberal/left to 11 = extremely conservative/right) on three distinct questions. The first question asked: “Where on the following scale of political orientation (from extremely liberal/left to extremely conservative/right) would you place yourself (overall, in general)?” The second question asked: “In terms of social and cultural issues, how liberal or conservative are you?” The third question asked: “In terms of economic issues, how leftist or rightist are you?” A mean score of these three items was created.

**Political Party Support.** To assess political party support, participants were presented with three questions: The first question asked: “Using a scale that runs from 0 to 10, where 0 means strongly dislike and 10 means strongly like, how do you feel about...?” The second question asked: “Using a scale that runs from 0 to 10, where 0 means not at all and 10 means very strongly, how much do you identify with...?” The third question asked: “Using a scale that runs from 0 to 10, where 0 means very unlikely and 10 means very likely, how likely is it that you would ever vote for each of the following parties?” Participants could also select “Don’t Know” or “Prefer not to say”. A mean score of these three items was created. The listed political parties were the following: the Conservative Party, the Labour Party, the Liberal Democrats, UKIP, and the Green Party.

**Trust in Politicians.** To assess trust in politicians, participants were asked a single question: “Using a scale that runs from 0 to 10, where 0 means not at all and 10 means very much, how much do you trust politicians generally?”

**Climate Change Concern.** To assess concern about climate change, participants were asked a single question: “Using a scale that runs from 0 to 10, where 0 means not at all concerned and 10 means extremely concerned, how concerned are you about climate change?”

**Disgust Sensitivity.** To assess disgust sensitivity, participants were asked to complete the Disgust Scale-Revised (DS-R; Olatunji et al., 2007).

### *Analysis Plan*

The hypotheses were tested using analysis of covariance (ANCOVA) predicting post-intervention measurements of the dependent variable from condition (mindfulness vs. control) and adjusting for baseline measurements. This ensures that comparisons by treatment group were independent of pre-intervention variation. The Bonferroni test was employed in post-hoc analyses of statistically significant results to account for multiple comparisons.

### **Results**

We conducted an analysis of covariance (ANCOVA) on each of the dependent variables. First, participants in the mindfulness condition showed greater post-intervention scores on self-compassion than participants in the control condition, adjusting for baseline measures of self-compassion,  $t(22) = 2.21$ ,  $p = .038$ . Second, participants in the mindfulness condition showed greater post-intervention scores on lifestyle liberty than participants in the control condition, adjusting for baseline measures of lifestyle liberty,  $t(22) = 2.45$ ,  $p = .023$ . Third, participants in the mindfulness condition showed greater post-intervention scores on political party support for the Liberal Democrats than participants in the control condition, adjusting for baseline measures of political party support for the Liberal Democrats,  $t(22) = 2.42$ ,  $p = .024$ . However, after adjusting the p-value with the Bonferroni correction, the effect of condition on post-intervention

was not significant for self-compassion, lifestyle liberty, or political party support for the Liberal Democrats.

Analyses of covariance, predicting post-intervention measurements from condition (adjusting for baseline measurements), revealed no significant differences between the mindfulness condition and the control condition for any of the other dependent variables (see Appendix A for more details).

**Funding** This study was funded by allowing the students to have £20 of the course fee returned to them if they agreed to participate in the study.

**Ethical Approval** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The procedures for the study were approved by the Research Ethics Committee of Department of Sociology (DREC) at the University of Oxford.

**Informed Consent** Informed consent was obtained from all individual participants included in the studies.

**Conflict of Interest** There was no conflict of interest.

## **(Pilot) Study 2**

Authors:<sup>5</sup> Otto Simonsson<sup>1</sup>, Sunjuri Sun<sup>2</sup>, and Craig Hassed<sup>3</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>Monash University, Faculty of Medicine, Nursing and Health Sciences

<sup>3</sup>Monash University, Department of General Practice

### **Methods**

#### *Participants*

The inclusion criteria were to be a student between 18 and 65 years in medicine or another health-related degree program (e.g. biomedicine, nursing, paramedic, physiotherapy) within the Faculty of Medicine, Nursing and Health Sciences. Participation in this study was voluntary. Students at Monash University were invited to participate in the study and automatically qualified for participation in a raffle with a single prize of \$50 AUD if they completed the study. The study was advertised through emails and social media, but first-year medical students also received information about the study from their tutors in the Health Enhancement Program. They were asked if they would like to participate in the study during tutorials before the start of the course. A total of 227 eligible participants from Monash University completed the study (166 women, 2 other, 1 prefer not to say; mean age = 21).

#### *Procedure*

The interested participants enrolled in the study via a link, where information about the project and the consent form were presented to them. If they agreed to participate, they were first asked about their age, gender, citizenship, degree program, and current year of study. Participants also

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<sup>5</sup> Author Contribution: OS designed and executed most of the study. OS analyzed the data and wrote the manuscript. SS contributed to the conception of the study design and assisted with participant recruitment for the study. CH provided advice on the research design, helped to facilitate the implementation of the study, and authored and coordinated the mindfulness intervention.

completed baseline measures before the start of the first mindfulness course. At the termination of the six-week program, all participants were asked to complete the post-intervention survey (identical to baseline survey).

### *Intervention*

The Health Enhancement Program is a six-week mindfulness-based healthy lifestyle program and part of the core curriculum for first-year medical students at Monash University in Melbourne, Australia. The course consists of eight lectures and six 2-hour tutorials. The lectures outline the evidence base around mind-body medicine, mindfulness-based interventions, behaviour change strategies, and the ESSENCE lifestyle program. The tutorials include one hour of the Stress Release Program and one hour dedicated to the other ESSENCE elements. The tutors in the tutorials are all health professionals trained and supervised in mindfulness-based therapies and are encouraged to maintain their own personal practice of mindfulness. The students keep a personal reflective journal, which is handed in each week to the tutor and returned to each student with feedback the following week. This invites self-reflection and integration of the various mindfulness principles covered in everyday life.

### The Stress Release Program

The Health Enhancement Program is comprised of an hour per week of the lifestyle medicine principles outlined above, and an additional hour of mindfulness training delivered via the Stress Release Program, which is a mindfulness-based stress management program. It combines mindfulness-based practices with a series of cognitive strategies to raise awareness of the processes behind negative emotions, stress, and poor performance. The students are invited to personally apply the mindfulness-based practices in their daily life, as part of their weekly home practice. They are recommended to have two 5-min “full stops” every day and as many 15–30-s “commas” as they need, but the frequency and duration of practice can differ according to need and motivation (Hassed et al., 2009). The experiences and insights from their home

practice are discussed the following week in small-group tutorials. The tutor facilitates discussions, which naturally focus on the issues, insights, and questions that arise for the students as they go through the program. The materials for the course include a student manual, a course text (Hassed, 2002), and a range of downloadable guided meditation practices ranging from 1 to 20 minutes.

### The ESSENCE Lifestyle Program

The ESSENCE lifestyle program is comprised of seven topics: Education (the importance of knowledge), Stress management (the importance of mental health), Spirituality (the role of spirituality in health and illness), Exercise (the importance of physical activity), Nutrition (the role of healthy nutrition), Connectedness (the role of social support for wellbeing), and Environment (the importance of a healthy social and emotional environment). The students explore an ESSENCE topic each week and are invited to nonjudgmentally examine their own motivations, attitudes, and behaviours that promote or obstruct a healthy lifestyle. It is an approach designed to promote awareness, empathy, conscious choice, and behaviour change strategies (Hassed et al., 2009).

### *Measures*

**Self-Compassion.** To assess self-compassion, we asked participants to complete the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011).

**Mindfulness Practice.** The degree to which the participants trained in mindfulness was measured using a single question: “Some people practise a form of meditation known as ‘mindfulness’. Generally speaking, which of the following best describes how often you practise mindfulness?” The options were: (1) “I haven’t practised mindfulness”; (2) “Hardly at all”; (3) “I practiced fairly regularly for a while then I stopped”; (4) “I practise from time to time”; (5) “I practise most days for just a few minutes each time”; and (6) “I practise for several hours a week”.

**Liberal-Conservative Attitudes.** To assess liberal-conservative attitudes, we asked participants to complete two measures that capture different aspects of liberal-conservative attitudes: Political Party Quiz (Zell & Bernstein, 2014) and Economic System Justification (Jost & Thompson, 2000).

**Political Trade-Offs.** Trade-offs were measured by asking participants two questions designed to tap into whether they prioritised (1) the environment or the economy and (2) civil rights or the fight against terrorism. The first question asked, “Many environmental issues involve difficult trade-offs with the economy. Which of the following statements best describes your view?” The responses were rated from 1 (“The highest priority should be given to protecting the environment, even if it hurts the economy”) to 4 (“The highest priority should be given to economic considerations such as jobs even if it hurts the environment”). The second question asked, “The fight against terrorism involves difficult trade-offs with many civil liberties. Which of the following statements best describes your view?” The responses were rated from 1 (“The highest priority should be given to the fight against terrorism, even if it limits civil liberties”) to 4 (“The highest priority should be given to civil liberties, even if it limits the fight against terrorism”). The scores were reversed for civil rights versus the fight against terrorism. Responses to both questions were combined into a single score.

**Political Self-Identification.** Political self-identification was measured using three different questions. The first question asked, “Where on the following scale of political orientation (from extremely progressive [i.e. left wing] to extremely conservative [i.e. right wing]) would you place yourself (overall, in general)?” The second question asked, “In terms of social and cultural issues, such as same sex marriage, abortion, and immigration, how progressive or conservative are you?” The third question asked, “In terms of economic issues, such as taxes, the federal budget, and government spending, how progressive or conservative are you?” The responses were rated from 1 (“Extremely Progressive”) to 9 (“Extremely Conservative”).

**Voting Intention.** Voting intention was measured using a single question: “Using a scale that runs from 1 to 11, where 1 means very unlikely and 11 means very likely, how likely is it that you would vote for each of the following parties if there was an election tomorrow?” The options were: (1) “The Liberal-National Coalition (LNP)”; (2) “The Labor Party (ALP)”; (3) “The Greens”; and (4) “One Nation”.

**Speciesism.** To assess speciesism, we asked participants to complete the Speciesism Scale, a six-item instrument designed to capture individual differences in speciesism (Caviola, Everett & Faber 2019).

## Results

We conducted an analysis of covariance (ANCOVA) on each of the dependent variables. First, participants in the mindfulness condition showed greater post-intervention scores on self-compassion than participants in the control condition, adjusting for baseline measures of self-compassion,  $t(224) = 3.10$ ,  $p = .002$ . Second, participants in the mindfulness condition also showed greater post-intervention scores on mindfulness practice than participants in the control condition, adjusting for baseline measures of mindfulness practice,  $t(205) = 4.93$ ,  $p < .001$ . Third, participants in the mindfulness condition showed greater post-intervention scores on speciesism than participants in the control condition, adjusting for baseline measures of speciesism,  $t(209) = 2.56$ ,  $p = .011$ . However, after adjusting the p-value with the Bonferroni correction, the effect of condition on post-intervention was not significant for speciesism.

Analyses of covariance, predicting post-intervention measurements from condition (adjusting for baseline measurements), revealed no significant differences between the mindfulness condition and the control condition for any of the other dependent variables (see Appendix B for more details).

**Ethical Approval** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or

comparable ethical standards. The procedures for the study were approved by the Research Ethics Committee of Department of Sociology (DREC) at the University of Oxford.

**Informed Consent** Informed consent was obtained from all individual participants included in the studies.

**Funding** This study was funded by a research grant awarded to the lead author by the Lars Hierta Foundation.

**Conflict of Interest** CH developed the health enhancement program.

### **(Cancelled) Study 3**

Students at Harvard University (between 18-65 years) with no prior meditation course experience were eligible for the study, which was advertised through the university's internal recruitment platform. The intervention was Compassion Cultivation Training (CCT), a secular compassion-based program developed at Stanford University's Center for Compassion and Altruism Research and Education. The course consists of eight weekly classes, each of which lasts for two hours. The classes involve active group discussion, guided group meditation, interactive exercises related to each week's theme, and in-class exercises designed to prime feelings of compassion. The participants are invited to engage in formal and informal exercises at home for at least 15 minutes using recorded audio meditations.

The interested students were given more details about the study and were invited to give their consent to participate via an online link. If they agreed to participate in the study, participants were offered \$40 at the end of the study. The intention was to recruit at least 60 participants, but only 22 participants had registered with just a few days before the start of the course, which led the study to be cancelled. The low number of registered participants was likely a function of the length of the course and the payments offered for participation. Hence, the following study used a shorter course and a higher incentive for the participants.

#### **(Cancelled) Study 4**

Students at Harvard University (between 18-65 years) with no prior meditation course experience were eligible for the study, which was advertised through the university's internal recruitment platform. The intervention was a four-week modified version of Compassion Cultivation Training (CCT), which was taught by a certified CCT teacher with several years of teaching experience.

The interested students were given more details about the study and were invited to give their consent to participate via an online link. If they agreed to participate in the study, participants were incentivized with up to \$100. 78 participants completed baseline measures in an online survey and were randomized into one of two conditions (compassion condition vs waitlist condition) before the start of the first meditation course. The first class was only attended by a dozen participants and the CCT teacher had a family emergency during the second class, which led the study to be cancelled. The reasons for the low turnout are unclear and none of the participants were asked about the reasons for their absence, but the participants who did not show up did at least receive reminders about the upcoming class.

## Lessons

First, the results from the pilot studies suggest that mindfulness-based programs can significantly increase self-compassion, even with small sample sizes (due to considerable effect sizes). The therapeutic effects of mindfulness-based programs are thought to be partly dependent on increases in self-compassion, which makes it a reasonable manipulation check. While the research to date has commonly used self-compassion as a dependent variable, it can also be useful to use self-compassion as a manipulation check to determine the effectiveness of the mindfulness intervention.

Second, the findings from the pilot studies did not offer substantial evidence that mindfulness-based programs can significantly affect liberal-conservative attitudes. There were no significant results after correcting for multiple comparisons on any variable that measured liberal-conservative attitudes. There were, however, results worthy of further investigation on lifestyle liberty, political party support for the Liberal Democrats, and speciesism. The three variables were included in the randomized controlled trial on the eight-week mindfulness-based program (chapter seven), but speciesism was also included in the randomized controlled trial on the eight-week compassion-based program (chapter seven).

Third, the experiences with the cancelled studies suggest that there are several ways to improve the quality and viability of the study. For example, it can be useful to have a reserve teacher ready to teach if the primary teacher cannot make it, but it might also be helpful to recruit participants through different means and to exclude participants who do not respond to emails. Hence, in the randomized controlled trial on the eight-week compassion-based program (chapter seven), the participants had a reserve teacher if the primary teacher could not make it; the participants received an email after registration and were excluded from the study if they did not respond; the participants were recruited with various methods, including social media, emails, and advertisements through the university's recruitment platform.

## References

- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. doi: 10.1037/0022-3514.84.4.822
- Caviola, L., Everett, J. A. C., Faber, N. S. (2019). The moral standing of animals: Towards a psychology of speciesism. *Journal of Personality and Social Psychology*, 116(6), 1011-1029. doi: 10.1037/pspp0000182
- Curry, T. E., Reiner, D. M., de Figueiredo, M. A., & Herzog, H. J. (2005). A survey of public attitudes towards energy & environment in Great Britain. Cambridge, MA, Massachusetts Institute of Technology.
- Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology*, 101(2), 366. doi: 10.1037/a0021847
- Hassed, C. (2002). *Know Thyself: The Stress Release Program*. Michelle Anderson Publishing.
- Hassed, C., de Lisle, S., Sullivan, G., & Pier, C. (2009). Enhancing the health of medical students: outcomes of an integrated mindfulness and lifestyle program. *Advances in Health Sciences Education: Theory and Practice*, 14(3), 387-98. doi: 10.1007/s10459-008-9125-3
- Heath, A., Evans, G., & Martin, J. (1994). The measurement of core beliefs and values: The development of balanced socialist/laissez faire and libertarian/authoritarian scales. *British Journal of Political Science*, 24(1), 115-132. doi: 10.1017/S0007123400006815
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO<sub>7</sub> scale. *Journal of Personality and Social Psychology*, 109(6), 1003–1028. doi: 10.1037/pspi0000033

- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PloS one*, 7(8), e42366. doi: 10.1371/journal.pone.0042366
- Jost, J. T. & Thompson, E. P. (2000). Group-Based Dominance and Opposition to Equality as Independent Predictors of Self-Esteem, Ethnocentrism, and Social Policy Attitudes among African Americans and European Americans. *Journal of Experimental Social Psychology*, 36(3), 209-232. doi: 10.1006/jesp.1999.1403
- Lalljee, M., Evans, G., Sarawgi, S., & Voltmer, K. (2013). Respect your enemies: Orientations towards political opponents and political involvement in Britain. *International Journal of Public Opinion Research*, 25(1), 119-131. doi: 10.1093/ijpor/eds009
- Olatunji, B. O., Williams, N. L., Tolin, D. F., Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The Disgust Scale: item analysis, factor structure, and suggestions for refinement. *Psychological Assessment*, 19(3), 281. doi: 10.1037/1040-3590.19.3.281
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy*, 18, 250-255. doi: 10.1002/cpp.702
- Williams, M., & Penman, D. (2011). *Mindfulness: A Practical Guide to Finding Peace in a Frantic World*. Piatkus.
- Zakrisson, I. (2005). Construction of a short version of the Right-Wing Authoritarianism (RWA) scale. *Personality and Individual Differences*, 39(5), 863-872. doi: 10.1016/j.paid.2005.02.026
- Zell, E. & Bernstein, M. J. (2014). You May Think You're Right... Young Adults Are More Liberal Than They Realize. *Social Psychological and Personality Science*, 5(3), 326-33. doi: 10.1177/1948550613492825

## Appendix A

Table A1: Descriptive statistics and results of ANCOVA analyses for measures in Study 1

	Mindfulness			Waitlist Control			ANCOVA Results	
	T1	T2	N	T1	T2	N	<i>t</i>	<i>p</i>
Self-Compassion	2.58 (0.70)	3.08 (0.63)	12	2.36 (0.41)	2.52 (0.44)	13	2.21	.038
Trait Mindfulness	3.15 (0.53)	3.46 (0.69)	12	3.23 (0.50)	3.20 (0.53)	13	1.53	.139
Libertarian	1.77 (0.76)	1.71 (0.50)	12	2.04 (0.59)	1.98 (0.75)	13	-0.44	.666
Socialist	2.76 (0.78)	2.76 (0.93)	12	2.42 (0.84)	2.29 (0.72)	13	0.94	.355
Economic System Justification	3.77 (0.82)	3.77 (0.99)	12	3.47 (1.40)	3.24 (1.14)	13	1.38	.182
Social Dominance Orientation	2.05 (0.75)	2.30 (1.02)	12	2.12 (0.83)	2.13 (0.86)	13	0.73	.471
Right-Wing Authoritarianism	3.19 (1.11)	3.27 (1.15)	12	3.48 (0.80)	2.25 (0.66)	13	1.32	.199
Harm	5.01 (0.81)	4.94 (0.81)	12	4.96 (0.59)	4.91 (0.64)	13	-0.07	.948
Fairness	5.12 (0.61)	5.04 (0.57)	12	4.87 (0.43)	4.77 (0.56)	13	0.48	.636
Ingroup	3.35 (0.93)	3.31 (0.93)	12	2.78 (0.64)	2.67 (0.53)	13	1.08	.291
Authority	2.88 (0.85)	2.96 (0.97)	12	3.17 (0.82)	2.96 (0.85)	13	1.92	.067
Purity	2.33 (0.95)	2.35 (1.00)	12	2.47 (0.80)	2.18 (0.72)	13	1.59	.126
Economic Liberty	3.42 (0.51)	3.57 (0.42)	12	3.10 (0.38)	3.28 (0.48)	13	0.68	.502
Lifestyle Liberty	4.36 (1.02)	4.92 (0.71)	12	4.54 (0.60)	4.36 (0.70)	13	2.45	.023
Political Self- Identification	4.88 (2.22)	5.08 (2.34)	12	4.27 (1.45)	4.31 (1.74)	13	0.47	.644

Conservatives	6.44 (3.85)	6.33 (4.16)	12	4.79 (3.67)	4.79 (3.34)	13	0.30	.765
Labour	7.81 (3.31)	8.19 (3.17)	12	8.77 (1.64)	8.21 (1.97)	13	1.30	.208
Liberal Democrats	8.31 (2.11)	9.28 (2.04)	12	7.92 (3.01)	6.90 (2.65)	13	2.42	.024
The Green Party	6.97 (3.20)	6.89 (3.67)	12	7.56 (2.99)	8.21 (2.94)	13	-0.85	.404
UKIP	6.11 (5.33)	5.67 (5.60)	12	1.41 (0.43)	2.03 (3.01)	13	-0.09	.930
Disgust Sensitivity	2.63 (0.60)	2.54 (0.58)	12	2.90 (0.46)	2.91 (0.34)	13	-1.67	.109
Trade Offs	2.17 (0.58)	2.00 (0.60)	12	1.77 (0.60)	1.92 (0.64)	13	-0.72	.478
Climate Concern	8.83 (1.11)	8.75 (1.76)	12	9.69 (0.95)	9.25 (0.87)	13	0.22	.825
Trust in Politicians	6.08 (3.26)	5.58 (2.64)	12	5.15 (1.95)	5.08 (1.75)	13	-0.04	.969

**Note.** Scores are noted as means (standard deviations).

## Appendix B

Table B1: Descriptive statistics and results of ANCOVA analyses for measures in Study 2

	Mindfulness			Waitlist Control			ANCOVA Results	
	T1	T2	N	T1	T2	N	<i>t</i>	<i>p</i>
Self-Compassion	3.45 (0.18)	3.50 (0.40)	89	3.38 (0.28)	3.31 (0.30)	138	3.10	.002
Mindfulness Practice	3.15 (0.53)	3.46 (0.69)	84	3.23 (0.50)	3.20 (0.53)	124	4.93	<.001
Political Party Quiz	6.62 (1.05)	6.56 (1.09)	87	6.71 (1.06)	6.64 (1.15)	132	-0.14	.890
Economic System Justification	4.02 (0.93)	4.05 (0.95)	86	4.00 (1.04)	4.00 (1.20)	131	0.30	.764

Speciesism	3.75 (1.60)	4.02 (1.66)	85	3.33 (1.47)	3.36 (1.51)	127	2.56	.011
Political Self- Identification	3.69 (1.33)	3.80 (1.57)	84	3.51 (1.39)	3.44 (1.43)	123	1.77	.079
Trade-Offs	2.29 (0.40)	2.29 (0.43)	86	2.17 (0.41)	2.13 (0.44)	129	1.81	.072
Support for LNP	4.95 (2.88)	5.14 (3.13)	81	4.40 (2.84)	4.63 (3.17)	117	0.34	.731
Support for ALP	6.43 (2.91)	6.67 (3.13)	81	6.66 (2.89)	7.10 (2.69)	117	-0.91	.366
Support for the Greens	5.68 (3.11)	7.17 (3.45)	81	6.70 (3.33)	7.45 (3.33)	117	1.22	.226
Support for One Nation	1.95 (1.82)	2.30 (2.64)	81	2.29 (2.39)	2.33 (2.58)	117	0.39	.699

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**Note.** Scores are noted as means (standard deviations).

## Chapter 7: The Politics of Meditation: Effects of Mindfulness-Based and Compassion-Based Programs on Liberal-Conservative Attitudes

Authors:<sup>6</sup> Otto Simonsson<sup>1</sup>, Mehul Vaghani<sup>2</sup>, Vivien Hasan<sup>2</sup>, Anjali Mehta<sup>3</sup>, Sunjuri Sun<sup>4</sup>,  
Miles Bukiet<sup>5</sup>, Dean Baltiansky<sup>6</sup>, Craig Hassed<sup>7</sup>, Femke E. Bakker<sup>8</sup>, James Doty<sup>9</sup>, Maryanne  
Martin<sup>10</sup> & Stephen Fisher<sup>1</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>University of Oxford, Department of Politics and International Relations

<sup>3</sup>New York University, Department of Applied Psychology

<sup>4</sup>Monash University, Faculty of Medicine, Nursing and Health Sciences

<sup>5</sup>Columbia University, School of Social Work

<sup>6</sup>Stanford University, Department of Psychology

<sup>7</sup>Monash University, Department of General Practice

<sup>8</sup>Leiden University, Institute of Political Science

<sup>9</sup>Stanford University, Center for Compassion and Altruism Research and Education

<sup>10</sup>University of Oxford, Department of Experimental Psychology

### Abstract

Objectives: Empirical studies have shown that training in mindfulness and compassion can have a range of positive effects, but none have explored whether they can affect liberal-conservative attitudes. In two studies, using randomized controlled designs, we investigated the effects of

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<sup>6</sup> Author Contribution: OS conceptualized both studies. OS designed and executed both studies with input from SF and MM. OS wrote the manuscript and analyzed the data. DB contributed to the results section, produced the figure, and provided comments on manuscript. In Study 1, VH and MV facilitated participant recruitment, assisted data collection and reviewed the manuscript. In Study 2, AM facilitated participant recruitment, assisted data collection and reviewed the manuscript, while MB taught the course and provided comments on manuscript. SF and MM supervised both studies and edited the final manuscript together with SS, CH, FB, JD.

mindfulness-based and compassion-based programs on liberal-conservative attitudes in university students.

**Methods:** In Study 1, students at the University of Oxford were randomized into starting an eight-week mindfulness-based program immediately (mindfulness condition) or three months later (waitlist control condition). In Study 2, students at New York University were randomized into starting an eight-week compassion-based program immediately (compassion condition) or three months later (waitlist control condition). The participants were assessed pre- and post-intervention on liberal-conservative attitudes and several exploratory variables such as political self-identification and speciesism.

**Results:** In Study 1, the participants in the mindfulness condition reported, relative to the participants in waitlist control condition, no significant difference in liberal-conservative attitudes at post-intervention, adjusting for baseline measurements. In Study 2, participants in the compassion condition reported, relative to the participants in waitlist control condition, significantly more liberal political attitudes at post-intervention, adjusting for baseline measurements.

**Conclusions:** Taken together, the findings suggest that participation in an eight-week compassion-based program might increase liberal political attitudes, but strong causal conclusions are not merited at present.

**Key words:** Mindfulness; Compassion; Politics; Liberal-Conservative Attitudes

The practice of mindfulness has become widespread in parliaments around the world and has become especially popular in the UK Parliament, where hundreds of politicians from different political parties have attended an eight-week mindfulness program, adapted from mindfulness-based cognitive therapy, since 2013. The popularity of the mindfulness training in Westminster has led to the formation of the All-Party Parliamentary Group on Mindfulness (APPGM), which has reviewed the scientific evidence on mindfulness and has assessed its potential role in public policy. The practice of mindfulness has become part of both the policy agenda and the daily agenda for many politicians (Bristow, 2019), but Ferguson (2016) notes that political science has still barely discussed mindfulness and its political implications.

Moore (2016) argues that mindfulness, taught in a secular context, should be politically neutral and is unlikely to change fundamental beliefs. The intention of mindfulness-based practices is, after all, to change the relationship to (rather than the content of) thoughts and feelings, which suggests that mindfulness training would not affect liberal-conservative attitudes. The evidence to date suggests that there is no association between trait mindfulness and liberal-conservative attitudes (Kashdan et al., 2011; Niemiec et al., 2010). There is also limited evidence of a link with social dominance orientation and right-wing authoritarianism (Nicol & De France, 2018), two psychological constructs closely associated with political conservatism. However, there is some evidence (although mixed) to suggest that mindfulness-based interventions might increase empathy (Beddoe & Murphy, 2004; Birnie, Speca & Carlson, 2010; Galantino et al., 2005; Shapiro, Schwartz & Bonner, 1998), which has been linked to political liberalism (Iyer et al., 2012; Morris, 2020).

The success of the APPGM in the UK Parliament has been followed by a campaign for increased compassion in politics, which envisions a more compassionate political system and argues that politicians need more compassion to effectively tackle issues such as climate change, global migration, and economic inequality (Haines, 2019). The campaign has received significant media attention and has led to the formation of an All-Party Parliamentary Group for Compassionate Politics (APPGCP; Parliament, 2020). While compassion has been investigated

in political science, little remains known about the political implications of more compassion in politics.

The construct of compassion has been associated with political liberalism (Hirsh et al., 2010; Osborne, Wootton & Sibley, 2013). It correlates negatively with hierarchy-legitimizing views on social policy (Sinclair & Saklofske, 2019) and positively with pro-environmental tendencies (Pfattheicher, Sassenrath & Schindler, 2015), benevolent attitudes towards asylum-seekers and refugees (Yelpaze & Güler, 2018), and support for economic redistribution (Szynger et al., 2017), but a brief compassion intervention has also been shown to increase support for pro-environmental policies (Lu & Schuldt, 2016; Pfattheicher, Sassenrath & Schindler, 2015). Hence, the evidence to date suggests that increased compassion might lead to more liberal political attitudes.

Hirsh, Walberg & Peterson (2013) found that a 4-minute guided meditation induced a shift towards more liberal political attitudes and lower scores on social dominance orientation (but not right-wing authoritarianism). Here, in two randomized controlled trials, we investigate how participation in an eight-week mindfulness-based program and an eight-week compassion-based program broadly affect liberal-conservative attitudes in university students. As a manipulation check, we use self-compassion, which has been shown to increase after participation in both mindfulness-based and compassion-based programs (Kirby, Tellegen & Steindl, 2017; Wasson, Barratt & O'Brien, 2020). We also examine several exploratory variables such as political self-identification and speciesism.

In light of potential link between mindfulness and empathy, we hypothesized that (Study 1) participants randomly assigned to complete an eight-week mindfulness course would exhibit significantly more liberal political attitudes at post-intervention, adjusting for baseline measurements, than participants randomly assigned to a waitlist control condition; and because of the evidence on the association between compassion and political liberalism, we hypothesized that (Study 2) participants randomly assigned to complete an eight-week

compassion course would also exhibit significantly more liberal political attitudes at post-intervention, adjusting for baseline measurements, than participants randomly assigned to a waitlist control condition.

## **Study 1**

### **Methods**

#### *Participants*

Students at the University of Oxford with no prior mindfulness course experience were eligible for the study, which was advertised through emails, posters, and social media. Some of the students got the course paid in full by their college, while the rest paid a subsidized fee (£45). The interested students were given more details about the study and were invited to give their consent to participate via an online link. If they agreed to participate in the study, they were asked about their age, gender, and nationality before they took the first survey. 101 eligible participants were analyzed (62 women; mean age for all participants = 22 years; see Figure 1 for an overview of the flow of recruitment).

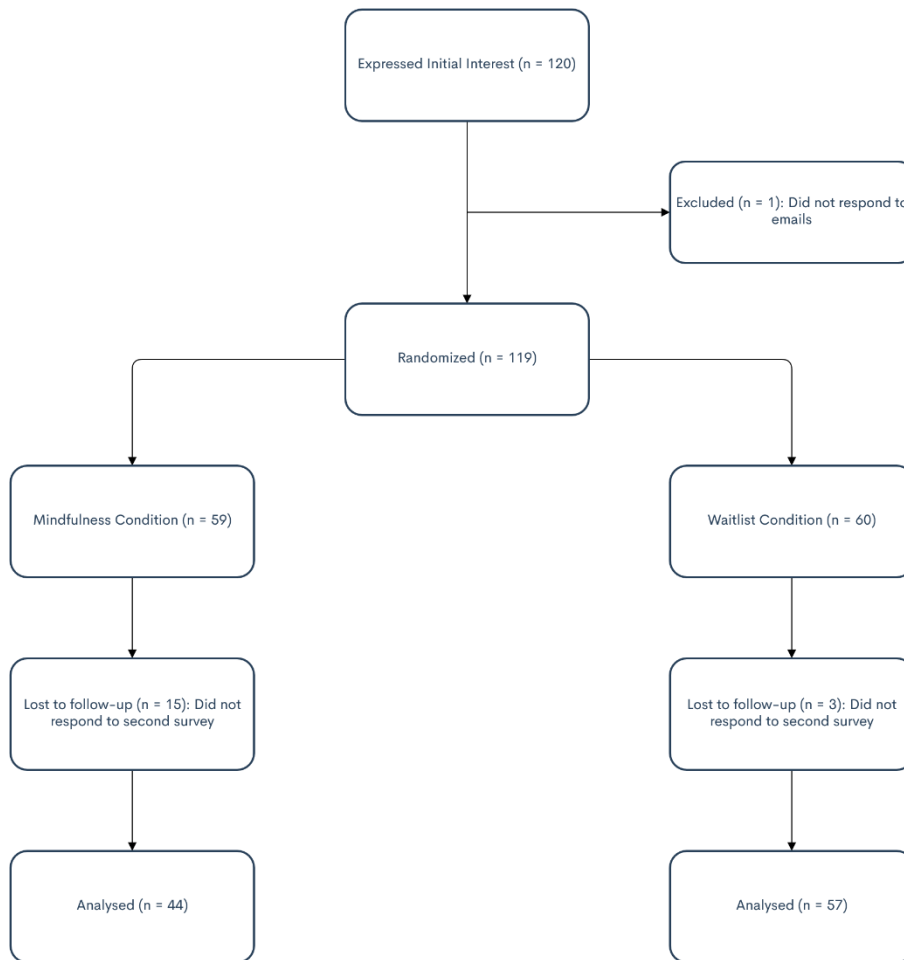


Figure 1. Flowchart of recruitment in Study 1.

The majority of participants were British citizens and female. There were no significant baseline differences across conditions on age, gender, or citizenship, but there were significant baseline differences across conditions on Political Party Quiz, political trade-offs, political self-identification, voting intention for Conservatives, Labour, and the Green Party (see Appendix A for more details).

### *Procedure*

Participants completed baseline measures in an online survey and were then randomly assigned to one of two conditions: a mindfulness condition or a waitlist control condition. Participants in the mindfulness condition started an eight-week mindfulness program after taking the baseline survey. Participants in the waitlist condition were notified that they had been put on a waitlist for the advertised eight-week mindfulness program. At the termination of the eight-week

program, all participants were asked to complete the post-intervention survey (identical to the baseline survey). If participants could not attend a particular session, they were offered the opportunity to attend the same class (but with another group) on a different day that week. The mean number of classes attended by participants in the mindfulness condition was 6.23 (out of 8). Data were collected from September 2018 to December 2019.

### *Intervention*

The eight-week mindfulness program was based on the Finding Peace curriculum (Williams & Penman, 2011), which is a curriculum that has also been delivered to politicians in the UK Parliament. The course is adapted from mindfulness-based cognitive therapy and has eight weekly classes, each of which lasts for 90 minutes. The classes involve active group discussion, guided group meditation, interactive exercises related to each week's theme, and in-class exercises designed to increase mindfulness skills. The students are assigned one or two chapters to read for homework every week and are encouraged to set aside up to 30 minutes a day, 6 days a week, for mindfulness-based exercises at home (3-15 minutes per exercise). The experiences and insights from their home practice are discussed the following week in class. While there is lack of consensus on the definition of mindfulness (Van Dam et al., 2018), mindfulness in the Finding Peace curriculum is defined as the awareness that emerges from intentionally and nonjudgmentally paying attention to the present experience (Williams & Penman, 2011). The mindfulness teacher, who was trained at University of Oxford's Mindfulness Centre and has several years of experience teaching meditation, was blind to the research focus and the hypotheses.

### *Measures*

**Self-Compassion.** To assess self-compassion, participants were asked to complete the 12-item Self-Compassion Scale (Raes et al., 2011). They indicated the frequency (1 = Almost Never to 5 = Almost Always) in which they engage in self-caring cognitions, such as “[W]hen I’m going

through a very hard time, I give myself the caring and tenderness I need.” Baseline internal consistency was good (Cronbach’s alpha = .85).

**Liberal-Conservative Attitudes.** To assess liberal-conservative attitudes, we asked participants to complete three batteries of questions that capture different aspects of liberal-conservative attitudes: the twelve-item Political Party Quiz (Zell & Bernstein, 2014), the three-item Lifestyle Liberty Foundation Questionnaire (Iyer et al., 2012), and a two-item measure of political trade-offs. A composite mean score was taken from these three scores, but as the internal consistency was poor (Cronbach’s alpha = .36), each of them were analyzed separately in the end.

For the twelve-item Political Party Quiz (Zell & Bernstein, 2014), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 4 = Strongly Agree) with twelve statements about current issues in political discourse, such as “[A]bortion should be illegal in all or most cases.” The third item in the original scale, “[T]he growing number of newcomers from other countries threaten traditional American customs and values,” was changed to “[T]he growing number of newcomers from other countries threaten traditional British customs and values.” Baseline internal consistency was sufficient (Cronbach’s alpha = .66).

For the three-item Lifestyle Liberty Foundation Questionnaire (Iyer et al., 2012), participants were asked to read three statements and indicate the extent to which they agreed with them or perceived them as relevant (1 = Strongly Disagree or Not at all Relevant to 6 = Strongly Agree or Extremely Relevant), such as “[P]eople should be free to decide what group norms or traditions they themselves want to follow,” and relevance-rated items such as “[W]hether or not everyone was free to do as they wanted.” Baseline internal consistency was poor (Cronbach’s alpha = .47).

For the two-item political trade-offs measure, participants were asked two questions designed to capture priority of (1) the environment over the economy; and (2) civil rights over the fight against terrorism. The first question asked, “Many environmental issues involve difficult trade-

offs with the economy. Which of the following statements best describes your view?" The responses were rated from 1 ("The highest priority should be given to protecting the environment, even if it hurts the economy") to 4 ("The highest priority should be given to economic considerations such as jobs even if it hurts the environment"; Curry et al., 2005). The second question asked, "The fight against terrorism involves difficult trade-offs with many civil liberties. Which of the following statements best describes your view?" The responses were rated from 1 ("The highest priority should be given to civil liberties, even if it limits the fight against terrorism") to 4 ("The highest priority should be given to the fight against terrorism, even if it limits civil liberties"). The Pearson correlation between the two items was low ( $r = .11, p = .273$ ).

**Exploratory Measures.** There were four additional variables included in the study: political self-identification, voting intentions, the six-item Speciesism Scale (Caviola, Everett & Faber, 2019), and a composite measure of quality of life (OECD, 2013).

To assess political self-identification, participants were asked to indicate their political orientation (1 = extremely liberal/left to 11 = extremely conservative/right) on three distinct questions. The first question asked, "Where on the following scale of political orientation (from extremely liberal/left to extremely conservative/right) would you place yourself (overall, in general)?" The second question asked, "In terms of social and cultural issues, how liberal or conservative are you?" The third question asked, "In terms of economic issues, how leftist or rightist are you?" A mean score of these three items was created. Baseline internal consistency was good (Cronbach's alpha = .81).

To assess voting intentions, participants were presented with a battery of questions: "[U]sing a scale that runs from 1 to 11, where 1 means very unlikely and 11 means very likely, how likely is it that you would vote for each of the following parties if there was an election tomorrow?" The listed political parties were the following: the Conservative Party, the Labour Party, the

Liberal Democrats, UKIP, and the Green Party. Participants could also select “Don’t Know” or “Prefer not to say.”

For the six-item Speciesism Scale (Caviola, Everett & Faber, 2019), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 7 = Strongly Agree) with six statements that relate to the treatment of nonhuman animals, such as “[M]orally, animals always count for less than humans.” Baseline internal consistency was sufficient (Cronbach’s alpha = .77).

For the composite measure of quality of life, participants were asked to complete the six-item Quality of Life Questionnaire (OECD, 2013) and the one-item Life Satisfaction measure (OECD, 2013). As part of the Quality of Life Questionnaire, participants indicated the extent to which they agreed (1 = Disagree Completely to 11 = Agree Completely) with statements that relate to their quality of life, such as “[I] generally feel that what I do in my life is worthwhile,” and reverse-scored items such as “[W]hen things go wrong in my life it generally takes me a long time to get back to normal.” Baseline internal consistency was sufficient (Cronbach’s alpha = .87). For the single-item life satisfaction measure, participants were asked to indicate their overall satisfaction with life (1 = Not at all Satisfied to 11 = Completely Satisfied). The internal consistency of the composite measure at baseline was good (Cronbach’s alpha = .89).

### *Analysis Plan*

The hypotheses were tested using analysis of covariance (ANCOVA) predicting post-intervention measurements of the dependent variable from condition (mindfulness versus waitlist) and adjusting for baseline measurements. This ensures that comparisons by treatment group were independent of pre-intervention variation. The Bonferroni test was employed in post-hoc analyses of statistically significant results to account for multiple comparisons.

## **Results**

### *Self-Compassion*

As a manipulation check, we conducted an analysis of covariance (ANCOVA) to determine if participants in the mindfulness condition showed more post-intervention self-compassion than participants in the waitlist condition. Participants in the mindfulness condition showed greater post-intervention scores on self-compassion than participants in the waitlist condition, adjusting for baseline measures of self-compassion,  $\beta = .48$ ,  $SE = .14$ ,  $t(98) = 3.56$ ,  $p = .001$  (see Appendix B for more details).

### ***Liberal-Conservative Attitudes***

To determine if there was a significant difference in liberal-conservative attitudes between the mindfulness condition and the waitlist condition, we ran an analysis of covariance (ANCOVA). Adjusting for baseline measures, post-intervention scores on the Political Party Quiz for participants in the mindfulness condition were not significantly different from those of participants in the waitlist condition,  $\beta = -.03$ ,  $SE = .11$ ,  $t(98) = -.30$ ,  $p = .768$ ; adjusting for baseline measures, post-intervention scores on lifestyle liberty for participants in the mindfulness condition were not significantly different from those of participants in the waitlist condition,  $\beta = -.06$ ,  $SE = .18$ ,  $t(99) = -.32$ ,  $p = .746$ ; and adjusting for baseline measures, post-intervention scores on political trade-offs for participants in the mindfulness condition were not significantly different from those of participants in the waitlist condition,  $\beta = .06$ ,  $SE = .15$ ,  $t(98) = .41$ ,  $p = .680$  (see Appendix B for more details).

### ***Exploratory Measures***

Apart from liberal-conservative attitudes, changes in political self-identification, voting intentions, speciesism, and quality of life were examined. Analyses of covariance, predicting post-intervention measurements from condition (adjusting for baseline measurements), revealed no significant differences between the mindfulness condition and the waitlist condition for any of the exploratory measures (see Appendix B for more details).

## **Study 2**

## Methods

### *Participants*

Students from New York University with no prior participation in a meditation program were eligible to participate in the study, which was advertised through emails, posters, social media, and university participant pools. The course was free to attend for participants in the study. 45 eligible participants were analyzed (36 women; mean age for all participants = 22 years; see Figure 2 for an overview of the flow of recruitment).

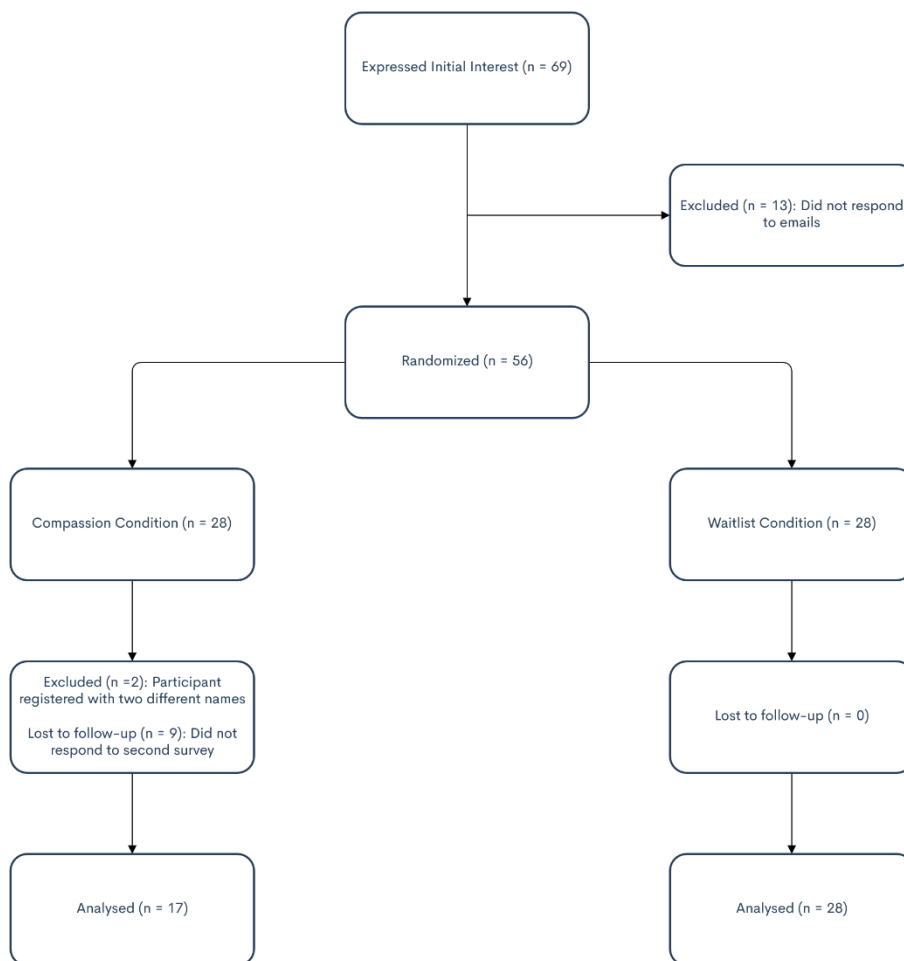


Figure 2. Flowchart of recruitment in Study 2.

The majority of participants were American citizens and female. There were no significant baseline differences across conditions on age, gender, citizenship, or any of the measured variables (see Appendix A for more details).

### *Procedure*

The interested students were given more details about the study and were invited to give their consent to participate via an online link. If they agreed to participate in the study, they were asked about their age, gender, and nationality before they took the first survey. After completing baseline measures, participants were randomized into two conditions: a compassion condition or a waitlist control condition. Those who were randomly assigned to the compassion condition started an eight-week compassion-based program immediately after completing the baseline measures survey. To increase attendance, they were incentivized with \$100 to attend at least four sessions and complete both surveys. Participants in the waitlist condition were notified that they had been put on a waitlist for the advertised eight-week compassion program. They received \$50 as compensation for completion of both surveys. At the termination of the eight-week program, all participants were asked to complete the post-intervention survey (identical to the baseline survey). The mean number of sessions attended by participants in the compassion condition was 5.47 (out of 8). Data were collected between September 2019 and December 2019.

### *Intervention*

The intervention was Compassion Cultivation Training (CCT), a secular compassion-based program developed at Stanford University's Center for Compassion and Altruism Research and Education. The course consists of eight weekly classes, each of which lasts for two hours. The classes involve active group discussions, guided group meditations, interactive exercises related to each week's theme, and in-class exercises designed to prime feelings of compassion. The participants are invited to engage in formal and informal exercises at home for at least 15 minutes using recorded audio meditations. While there is lack of consensus on the definition of compassion (Strauss et al., 2016), compassion in the CCT protocol is defined as a complex process comprised of four main components (Jinpa, 2010): (1) a cognitive component that involves awareness of suffering; (2) an affective component that involves gentle and caring

concern related to being emotionally moved by suffering; (3) an intentional component that involves a wish for the suffering to be relieved; and (4) a motivational component that involves a readiness to take action and help relieve the suffering (Jazaieri et al., 2013). The CCT teacher, who was trained in Stanford University's CCT program and has several years of experience teaching meditation, was blind to the research focus and the hypotheses.

### *Measures*

**Self-Compassion.** To assess self-compassion, participants were asked to complete the 12-item Self-Compassion Scale (Raes et al., 2011). They indicated the frequency (1 = Almost Never to 5 = Almost Always) in which they engage in self-caring cognitions, such as “[W]hen I’m going through a very hard time, I give myself the caring and tenderness I need.” Baseline internal consistency was good (Cronbach’s alpha = .87).

**Liberal-Conservative Attitudes.** To assess liberal-conservative attitudes, we asked participants to complete four batteries of questions that capture different aspects of liberal-conservative attitudes: the 12-item Political Party Quiz (Zell & Bernstein, 2014), the 17-item Economic System Justification Scale (Jost & Thompson, 2000), the 12-item Right-Wing Authoritarianism Scale (RWA; Funke, 2005), and the 8-item Social Dominance Orientation Scale (SDO7; Ho et al., 2015). A composite mean score was taken from these four scores. Baseline internal consistency was good (Cronbach’s alpha = .81).

The Political Party Quiz (Zell & Bernstein, 2014) was similar to the one completed in Study 1, with the exception of item 3 that was now back to its original phrasing in the American context. Participants indicated the extent to which they agreed (1 = Strongly Disagree to 9 = Strongly Agree) with 12 statements on current political issues. Baseline internal consistency was sufficient (Cronbach’s alpha = .66).

For the Economic System Justification Scale (Jost & Thompson, 2000), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 9 = Strongly Agree) with 17 statements about the fairness of the American economic system. Items included statements

such as “[M]ost people who don't get ahead in our society should not blame the system; they have only themselves to blame,” and reverse-scored items such as “[I]t is unfair to have an economic system which produces extreme wealth and extreme poverty at the same time.”

Baseline internal consistency was good (Cronbach's alpha = .88).

For the Right-Wing Authoritarianism Scale (Funke, 2005), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 9 = Strongly Agree) with 12 statements about the appropriateness of leaders' authority and the corresponding behavior of their constituents. Items included statements such as “[W]hat our country really needs is a strong, determined leader who will crush evil, and take us back to our true path,” and reverse-scored items such as “[I]t is good that nowadays younger people have greater freedom ‘to make their own rules’ and to protest against things they don't like.” Baseline internal consistency was good (Cronbach's alpha = .81).

For the Social Dominance Orientation Scale (SDO7; Ho et al., 2015), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 9 = Strongly Agree) with 8 statements about intergroup relations. Items included statement such as “[A]n ideal society requires some groups to be on top and others to be on the bottom,” and reverse-scored items such as “[G]roups at the bottom are just as deserving as groups at the top.” Baseline internal consistency was sufficient (Cronbach's alpha = .74).

**Exploratory Measures.** There were four additional variables included in the study: political self-identification, political party support, intergroup empathy bias, and the six-item Speciesism Scale (Caviola, Everett & Faber, 2019).

To assess political self-identification, participants were asked to indicate their political orientation (1 = Extremely Liberal to 9 = Extremely Conservative) in a similar way to how it was measured in Study 1. Baseline internal consistency was sufficient (Cronbach's alpha = .75).

To assess political party support, participants were asked to respond to six questions and indicate the extent to which they like, value, and feel connected to each of the major parties

(i.e., Democratic and Republican parties) on a 7-point scale (1 = Not at All to 7 = Very Much). Questions assessing favorability with the Democratic party were reverse-scored. Baseline internal consistency was sufficient (Cronbach's alpha = .76).

To assess intergroup empathy bias, participants were presented with eight vignettes, each of which described a misfortune for a character who was randomly characterized as a Democrat or a Republican. Items included statements such as "George is a [Democrat/Republican]. George broke his foot," and "Bryan is a [Democrat/Republican]. Bryan lost a week of work when his computer crashed." The participants were asked "How bad does this make you feel?" and their responses were rated on a 0- (Not at all bad) to 100-point (Extremely bad) slider scale. The participants were also asked "How good does this make you feel?" and their responses were rated on a 0- (Not at all good) to 100-point (Extremely good) slider scale [reverse scored]. To calculate intergroup empathy bias, the mean difference between the score given to the political ingroup versus the political outgroup was computed. The intergroup empathy bias was computed from four mean scores: outgroup schadenfreude, reversed ingroup schadenfreude, ingroup empathy, and reversed outgroup empathy, excluding participants who identified equally with both political parties. The political ingroup was defined as whichever political party had the highest score of political party support at baseline. Baseline internal consistency was good (Cronbach's alpha = .90).

For the six-item Speciesism Scale (Caviola, Everett & Faber, 2019), participants were asked to indicate the extent to which they agreed (1 = Strongly Disagree to 7 = Strongly Agree) with six statements that relate to the treatment of nonhuman animals, such as "[M]orally, animals always count for less than humans." Baseline internal consistency was good (Cronbach's alpha = .85).

### *Analysis Plan*

The hypotheses were tested using analysis of covariance (ANCOVA) predicting post-intervention measurements of the dependent variable from condition (compassion versus waitlist) and adjusting for baseline measurements. This ensures that comparisons by treatment

group were independent of pre-intervention variation. The Bonferroni test was employed in post-hoc analyses of statistically significant results to account for multiple comparisons.

## **Results**

### ***Self-Compassion***

As a manipulation check, we conducted an analysis of covariance (ANCOVA) to determine if participants in the compassion condition showed more post-intervention self-compassion than participants in the waitlist condition. Participants in the compassion condition showed greater post-intervention scores on self-compassion than participants in the waitlist condition, adjusting for baseline measures of self-compassion,  $\beta = .75$ ,  $SE = .18$ ,  $t(42) = 4.17$ ,  $p < .001$  (see Appendix C for more details).

### ***Liberal-Conservative Attitudes***

To determine if there was a significant difference in liberal-conservative attitudes between the compassion condition and the waitlist condition, we conducted an analysis of covariance (ANCOVA). Adjusting for baseline measures of liberal-conservative attitudes, post-intervention scores on liberal-conservative attitudes for participants in the compassion condition were significantly lower (more liberal) than those of participants in the waitlist condition,  $\beta = -.39$ ,  $SE = .14$ ,  $t(41) = -2.70$ ,  $p = .010$  (see Figure 3 and Appendix C for more details).

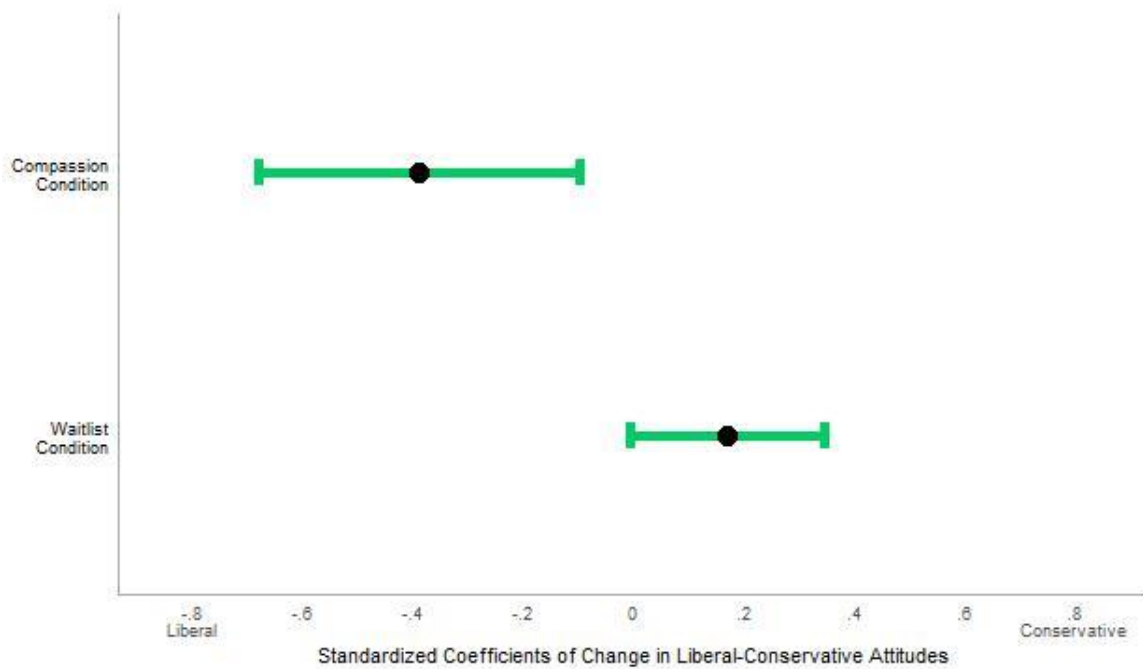


Figure 3. Compassion-based program increased liberal political attitudes. The graph displays standardized beta coefficients of change in liberal-conservative attitudes, adjusting for baseline measurements. The waitlist condition represents absolute difference scores, whereas the compassion condition represents difference scores relative to the waitlist condition. Error bars represent 95% confidence intervals.

Because four exploratory dependent variables (political self-identification, political party support, intergroup empathy bias, and speciesism) were examined as well, we applied the Bonferroni correction for multiple comparisons. After adjusting the p-value with the Bonferroni correction, the effect of condition on post-intervention liberal-conservative attitudes remains significant,  $p = .050^7$ . To assess the robustness of these results, we performed additional analyses that other researchers may have chosen to use when analyzing our data. These analyses produced similar pattern of results (see Appendix D for more details).

### ***Exploratory Measures***

Apart from liberal-conservative attitudes, changes in political self-identification, political party support, intergroup empathy bias, and speciesism were examined as well. Analyses of covariance, predicting post-intervention measurements from condition (adjusting for baseline

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<sup>7</sup>  $p = .049641$

measurements), revealed no significant differences between the compassion condition and the waitlist condition for any of the exploratory measures (see Appendix C for more details).

## **Discussion**

The present research explored whether sustained training in mindfulness and compassion can affect liberal-conservative attitudes. In two separate randomized controlled trials, we investigated how participation in an eight-week mindfulness-based program (Study 1) and an eight-week compassion-based program (Study 2) affected liberal-conservative attitudes in university students. In Study 1, participants in the mindfulness condition reported, relative to the participants in waitlist control condition, no significant difference in liberal-conservative attitudes at post-intervention, adjusting for baseline measurements. In Study 2, participants in the compassion condition reported, relative to the participants in waitlist control condition, significantly more liberal political attitudes at post-intervention, adjusting for baseline measurements. Taken together, the present research suggests that participation in an eight-week compassion-based program might increase liberal political attitudes.

The results from Study 1 corresponds with the suggested political neutrality of mindfulness (Moore, 2016) and the lack of association between trait mindfulness and liberal-conservative attitudes (Kashdan et al., 2011; Niemiec et al., 2010), while the results from Study 2 corresponds with the association between compassion and political liberalism (Hirsh et al., 2010; Osborne, Wootton & Sibley, 2013). The different findings across the two studies also corresponds with discovery that mindfulness-based and compassion-based practices and programs yield different outcomes (Brito-Pons, Campos & Cebolla, 2018; Hildebrandt, McCall & Singer, 2017; Singer & Engert, 2019).

The discipline of political psychology has shown that epistemic and existential needs to manage and reduce threat and uncertainty are linked to and covary with liberal-conservative attitudes (Jost et al., 2003), but relatively little is known about the political implications of positive mind states (e.g. compassion, gratitude, awe, and love). The findings of the present research suggest

that participation in an eight-week compassion-based program increases liberal political attitudes, which opens the possibility of a new subfield at the intersection of the contemplative and political sciences.

### **Limitations and Future Research**

There are significant limitations that need serious consideration before the results in the present research are interpreted. First, the samples consisted exclusively of university students who self-selected into the studies, but the university students also skewed towards the liberal end of the political spectrum at baseline, which left little room for further increases post-intervention. Second, the two studies used slightly different measures to examine liberal-conservative attitudes and both occurred at politically heated moments in the United Kingdom and the United States. For example, Study 1 took place during negotiations for the planned withdrawal of the UK from the EU, while Study 2 ended just a few weeks before the impeachment of Donald Trump was initiated. The participants in both studies might therefore have been influenced by the political developments in the respective countries. Third, the samples in both studies were mixed with both citizens and non-citizens. While citizenship did not differ significantly across conditions, it is possible that the citizens and non-citizens were affected differently by the interventions. Fourth, the waitlist control conditions limited the risk of fluctuations due to a temporal confound, but it could not account for placebo effects that might have causally influenced the results. Fifth, the small sample sizes, especially in the study on the compassion program, decreased statistical power and increased the risk of false positives and negatives. In sum, strong causal conclusions are not merited. There is instead a need for a large double-blind randomized controlled trial with an active control condition and a representative sample of the general population to rigorously test the hypothesized causal effects of a compassion-based program on liberal-conservative attitudes.

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**Ethical Approval** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The procedures for Study 1 were approved by the Research Ethics Committee of Department of Sociology (DREC) at the University of Oxford, while the procedures for Study 2 were approved by the University Committee on Activities Involving Human Subjects (UCAIHS) at New York University.

**Informed Consent** Informed consent was obtained from all individual participants included in the studies.

**Conflict of Interest** There was no conflict of interest.

## References

- Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *Journal of Nursing Education*, 43(7), 305-312. doi: 10.3928/01484834-20040701-07
- Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health*, 26(5), 359-371. doi: 10.1002/smi.1305
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: 10.1016/j.copsyc.2018.11.003
- Brito-Pons, G., Campos, D., & Cebolla, A. (2018). Implicit or explicit compassion? Effects of compassion cultivation training and comparison with mindfulness-based stress reduction. *Mindfulness*, 9(5), 1494-1508. doi: 10.1007/s1C
- Caviola, L., Everett, J. A. C., Faber, N. S. (2019). The moral standing of animals: Towards a psychology of speciesism. *Journal of Personality and Social Psychology*, 116(6), 1011-1029. doi: 10.1037/pspp0000182
- Curry, T. E., Reiner, D. M., de Figueiredo, M. A., & Herzog, H. J. (2005). A survey of public attitudes towards energy & environment in Great Britain. Cambridge, MA, Massachusetts Institute of Technology.
- Ferguson, M. L. (2016). Symposium: mindfulness and politics: introduction. *New Political Science*, 38(2), 201-205. doi: 10.1080/07393148.2016.1153190
- Funke, F. (2005). The Dimensionality of Right-Wing Authoritarianism: Lessons from the Dilemma between Theory and Measurement. *Political Psychology*, 26(2), 195–218. doi: 10.1111/j.1467-9221.2005.00415.x
- Galantino, M. L., Baime, M., Maguire, M., Szapary, P. O., & Farrar, J. T. (2005). Association of psychological and physiological measures of stress in health-care professionals

- during an 8-week mindfulness meditation program: Mindfulness in practice. *Stress and Health: Journal of the International Society for the Investigation of Stress*, 21(4), 255-261. doi: 10.1002/smi.1062
- Gardner, J., Carr-Cornish, S. G., & Ashworth, P. N. (2008). Exploring the acceptance of a domestic distributed energy market in Australia. *Australasian Journal of Environmental Management*, 15(2), 93–103. doi: 10.1080/14486563.2008.9725189
- Haines, G. (2019). Politics: time for an era of compassion? *Positive News* [Online]. Available at: <https://www.positive.news/uk/politics-time-for-an-era-of-compassion/> [Accessed 2020-01-27].
- Hildebrandt, L. K., McCall, C., & Singer, T. (2017). Differential effects of attention-, compassion-, and socio-cognitively based mental practices on self-reports of mindfulness and compassion. *Mindfulness*, 8(6), 1488-1512. doi: 10.1007/s12671-017-0716-z
- Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite conservatives: Associations of agreeableness with political ideology and moral values. *Personality and Social Psychology Bulletin*, 36(5), 655-664. doi: 10.1177/0146167210366854
- Hirsh, J. B., Walberg, M. D., & Peterson, J. B. (2013). Spiritual liberals and religious conservatives. *Social Psychological and Personality Science*, 4(1), 14-20. doi: 10.1177/1948550612444138
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., Foels, R., & Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO<sub>7</sub> scale. *Journal of Personality and Social Psychology*, 109(6), 1003–1028. doi: 10.1037/pspi0000033

- Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding Libertarian Morality: The Psychological Dispositions of Self-Identified Libertarians. *PloS one*, 7(8), 1-23. doi: 10.1371/journal.pone.0042366
- Jazaieri, H., Jinpa, G. T., McGonigal, K., Rosenberg, E. L., Finkelstein, J., Simon-Thomas, E., Cullen, M., Doty, J. R., Gross, J. J., & Goldin, P. R. (2013). Enhancing compassion: A randomized controlled trial of a compassion cultivation training program. *Journal of Happiness Studies*, 14(4), 1113-1126. doi: 10.1007/s10902-012-9373-z
- Jinpa, T. (2010). Compassion cultivation training (CCT): Instructor's manual. Unpublished, Stanford, CA.
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129(3), 339. doi: 10.1037/0033-2909.129.3.339
- Jost, J. T. & Thompson, E. P. (2000). Group-Based Dominance and Opposition to Equality as Independent Predictors of Self-Esteem, Ethnocentrism, and Social Policy Attitudes among African Americans and European Americans. *Journal of Experimental Social Psychology*, 36(3), 209-232. doi: 10.1006/jesp.1999.1403
- Kashdan, T. B., Afram, A., Brown, K. W., Birnbeck, M., & Drvoshanov, M. (2011). Curiosity enhances the role of mindfulness in reducing defensive responses to existential threat. *Personality and Individual Differences*, 50(8), 1227-1232. doi: 10.1016/j.paid.2011.02.015
- Kirby, J. N., Tellegen, C. L., & Steindl, S. R. (2017). A Meta-Analysis of Compassion-Based Interventions: Current State of Knowledge and Future Directions. *Behavior Therapy*, 48(6), 778–792. doi: 10.1016/j.beth.2017.06.003
- Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., Evans, A., Radford, S., Teasdale, J. D., & Dalgleish, T. (2010). How does mindfulness-based cognitive

- therapy work? *Behaviour research and therapy*, 48(11), 1105-1112. doi:  
10.1016/j.brat.2010.08.003
- Lu, H., & Schuldt, J. P. (2016). Compassion for climate change victims and support for mitigation policy. *Journal of Environmental Psychology*, 45, 192-200. doi:  
10.1016/j.jenvp.2016.01.007
- Moore, M. J. (2016). Buddhism, Mindfulness, and Transformative Politics. *New Political Science*, 38(2), 272-282. doi: 10.1080/07393148.2016.1153195
- Morris, S. G. (2020). Empathy and the Liberal-Conservative Political Divide in the US. *Journal of Social and Political Psychology*, 8(1), 8-24. doi: 10.5964/jspp.v8i1.1102
- Nicol, A. A., & De France, K. (2018). Mindfulness: Relations with prejudice, social dominance orientation, and right-wing authoritarianism. *Mindfulness*, 9(6), 1916-1930. doi:  
10.1007/s12671-018-0938-8
- Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *Journal of personality and social psychology*, 99(2), 344-365. doi: 10.1037/a0019388
- OECD (2013), "Question modules", in OECD Guidelines on Measuring Subjective Well-being, OECD, Publishing, Paris.
- Osborne, D., Wootton, L. W., & Sibley, C. G. (2013). Are liberals agreeable or not? Politeness and Compassion Differentially Predict Political Conservatism Via Distinct Ideologies. *Social Psychology*, 44, 354-360. doi: 10.1027/1864-9335/a000132
- Parliament (2020). Register Of All-Party Parliamentary Groups [as at 8 April 2020]: Compassionate Politics. *www.parliament.uk* [Online]. Available at:  
<https://publications.parliament.uk/pa/cm/cmllparty/200408/compassionate-politics.htm>  
[Accessed 2020-04-24].

- Pfattheicher, S., Sassenrath, C., & Schindler, S. (2015). Feelings for the Suffering of Others and the Environment. *Environment and Behavior*, 48(7), 929-945. doi: 10.1177/0013916515574549
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy*, 18, 250-255. doi: 10.1002/cpp.702
- Scarlet, J., Altmeyer, N., Knier, S., & Harpin, R. E. (2017). The effects of Compassion Cultivation Training (CCT) on health-care workers. *Clinical Psychologist*, 21(2), 116-124. doi: 10.1111/cp.12130
- Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*, 21, 581-599. doi: 10.1023/A:1018700829825
- Sinclair, V. M., & Saklofske, D. H. (2019). Is there a place in politics for compassion? The role of compassion in predicting hierarchy-legitimizing views. *Self and Identity*, 18(4), 425-442. doi: 10.1080/15298868.2018.1468354
- Singer, T., & Engert, V. (2019). It matters what you practice: Differential training effects on subjective experience, behavior, brain and body in the ReSource Project. *Current Opinion in Psychology*, 28, 151-158. doi: 10.1016/j.copsyc.2018.12.005
- Sznycer, D., Seal, M. F. L., Sell, A., Lim, J., Porat, R., Shalvi, S., Halperin, E., Cosmides, L. & Tooby, J. (2017). Support for redistribution is shaped by compassion, envy, and self-interest, but not a taste for fairness. *Proceedings of the National Academy of Sciences*, 114(31), 8420-8425. doi: 10.1073/pnas.1703801114
- Van Dam, N. T., van Vugt, M. K., Vago, D. R., Schmalzl, L., Saron, C. D., Olendzki, A., Meissner, T., Lazar, S. W., Kerr, C. E., Gorchov, J., Fox, K. C. R., Field, B. A., Britton, W. B., Brefczynski-Lewis, J. A., & Meyer, D. E. (2018). Mind the hype: A critical

evaluation and prescriptive agenda for research on mindfulness and meditation.

*Perspectives on Psychological Science*, 13(1), 36-61. doi: 10.1177/1745691617709589

Wasson, R. S., Barratt, C., & O'Brien, W. H. (2020). Effects of Mindfulness-Based Interventions on Self-compassion in Health Care Professionals: a Meta-analysis. *Mindfulness*, 1-21. doi: 10.1007/s12671-020-01342-5

Williams, M., & Penman, D. (2011). *Mindfulness: A Practical Guide to Finding Peace in a Frantic World*. Piatkus.

Yelpaze, İ., & Güler, D. (2018). The relationship between attitudes towards asylum seekers and compassion levels of university students. *International Journal of Assessment Tools in Education*, 5(3), 524-543. doi: 10.21449/ijate.444882

Zell, E. & Bernstein, M. J. (2014). You May Think You're Right... Young Adults Are More Liberal Than They Realize. *Social Psychological and Personality Science*, 5(3), 326-33. doi: 10.1177/1948550613492825

## Supplementary materials

### Appendix A

#### Participant Characteristics Across Conditions

##### Study 1

	Mindfulness	Waitlist Control	Total Number
Male	17	21	38
Female	27	35	62
Other	0	1	1
British Citizen	27	35	62
Irish Citizen	1	0	1
Commonwealth Citizen	1	1	2
EU Citizen	6	12	18
Other	9	9	18
Mean Age	22	22	22

**Demographic characteristics.** A one-way ANOVA revealed there were no significant differences in age across the two conditions,  $t(99) = 0.34$ ,  $p = .738$ . Chi-square tests showed that there were no significant differences in gender ( $X^2(2, N = 101) = 0.79$ ,  $p = .673$ ) or citizenship ( $X^2(4, N = 101) = 2.40$ ,  $p = .663$ ).

**Manipulation check.** A one-way ANOVA revealed there were no significant differences in self-compassion across the two conditions,  $t(99) = 0.31$ ,  $p = .758$ .

**Dependent variables.** One-way ANOVAs revealed there were no significant differences across the two conditions in lifestyle liberty,  $t(99) = 0.53$ ,  $p = .594$ , but there were significant differences across the two conditions in Political Party Quiz,  $t(98) = 4.34$ ,  $p < .001$ , and political trade-offs,  $t(98) = 4.32$ ,  $p < .001$ .

**Exploratory variables.** One-way ANOVAs revealed there were no significant differences across the two conditions in quality of life,  $t(99) = -0.91$ ,  $p = .367$ , speciesism,  $t(98) = 1.78$ ,  $p = .079$ , voting intention – Liberal Democrats,  $t(65) = -0.29$ ,  $p = .769$ , or voting intention – UKIP,  $t(71) = 1.45$ ,  $p = .151$ , but there were significant differences across the two conditions in

political self-identification,  $t(98) = 2.73$ ,  $p = .008$ , voting intention – Conservatives,  $t(69) = 2.65$ ,  $p = .010$ , voting intention – Labour,  $t(67) = -2.15$ ,  $p = .035$ , and voting intention – the Green Party,  $t(66) = -2.24$ ,  $p = .028$ .

## Study 2

	Compassion	Waitlist Control	Total Number
Male	3	5	8
Female	14	22	36
Other	0	1	1
American Citizen	13	18	31
Foreign Citizen	4	10	14
Mean Age	21	23	22

**Demographic characteristics.** A one-way ANOVA revealed there were no significant differences in age across the two conditions,  $t(43) = -0.92$ ,  $p = .363$ . Chi-square tests showed that there were no significant differences in gender ( $X^2(2, N = 45) = 0.63$ ,  $p = .731$ ) or citizenship ( $X^2(2, N = 45) = 0.73$ ,  $p = .392$ ).

**Manipulation check.** A one-way ANOVA revealed there were no significant differences in self-compassion across the two conditions,  $t(43) = 0.70$ ,  $p = .488$ .

**Dependent variable.** A one-way ANOVA revealed there were no significant differences across the two conditions in liberal-conservative attitudes,  $t(42) = 1.93$ ,  $p = .061$ .

**Exploratory variables.** One-way ANOVAs revealed there were no significant differences across the two conditions in political self-identification,  $t(42) = 0.55$ ,  $p = .588$ , political party support,  $t(42) = -1.40$ ,  $p = .169$ , intergroup empathy bias,  $t(34) = 1.00$ ,  $p = .324$ , or speciesism,  $t(42) = -0.45$ ,  $p = .657$ .

## Appendix B

Table B1: Descriptive statistics and results of ANCOVA analyses for measures in Study 1

Mindfulness	Waitlist Control	ANCOVA Results
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	T1	T2	N	T1	T2	N	$\beta$	SE	t	p
Self-Compassion	2.82 (0.55)	3.14 (0.54)	44	2.78 (0.64)	2.83 (0.59)	57	.48	.14	3.56	.001
Political Party Quiz	1.77 (0.38)	1.75 (0.33)	44	1.51 (0.23)	1.53 (0.29)	56	-.03	.11	-.30	.768
Lifestyle Liberty	2.00 (0.73)	2.02 (0.68)	44	1.93 (0.64)	2.02 (0.70)	57	-.06	.18	-.32	.746
Political Trade-Offs	2.32 (0.45)	2.25 (0.48)	44	1.95 (0.41)	1.94 (0.46)	56	.06	.15	.41	.680
Political Self-Identification	4.45 (1.90)	4.33 (1.98)	44	3.58 (1.31)	3.51 (1.38)	56	.00	.09	.02	.987
Support for Conservative Party	4.10 (3.44)	4.16 (3.22)	31	2.40 (1.88)	2.75 (2.71)	40	-.04	.14	-.27	.791
Support for Labour Party	6.10 (3.44)	5.94 (3.42)	31	7.74 (2.89)	8.05 (2.84)	38	-.27	.16	-1.73	.088
Support for Liberal Democrat Party	6.18 (3.23)	7.07 (2.64)	28	6.38 (2.50)	6.59 (2.84)	39	.21	.20	1.08	.284
Support for UK Independence Party	1.41 (1.79)	1.38 (1.45)	32	1.00 (.00)	1.37 (1.73)	41	.02	.25	.06	.949
Support for Green Party	5.43 (3.26)	5.40 (3.25)	30	7.13 (2.97)	7.05 (2.74)	38	-.13	.16	-.82	.417
Speciesism	2.98 (1.10)	3.09 (1.06)	44	2.61 (.97)	2.63 (.92)	56	.18	.13	1.45	.150
Quality of Life	6.72 (1.95)	7.52 (1.71)	44	7.08 (1.95)	7.26 (1.85)	57	.28	.14	1.93	.057

**Note.** Beta coefficients (standardized) represent mindfulness condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

Table B2: Descriptive statistics and results of ANOVA analyses for measures in Study 1

Mindfulness			Waitlist Control			ANOVA Results			
T1	T2	N	T1	T2	N	$\beta$	SE	t	p

Self-Compassion	2.82 (0.55)	3.14 (0.54)	44	2.78 (0.64)	2.83 (0.59)	57	.46	.15	3.13	.002
Political Party Quiz	1.77 (0.38)	1.75 (0.33)	44	1.51 (0.23)	1.53 (0.29)	56	-.12	.10	-1.25	.215
Lifestyle Liberty	2.00 (0.73)	2.02 (0.68)	44	1.93 (0.64)	2.02 (0.70)	57	-.11	.21	-.55	.581
Political Trade-Offs	2.32 (0.45)	2.25 (0.48)	44	1.95 (0.41)	1.94 (0.46)	56	-.15	.15	-1.04	.301
Political Self-Identification	4.45 (1.90)	4.33 (1.98)	44	3.58 (1.31)	3.51 (1.38)	56	-.06	.09	-.59	.554
Support for Conservative Party	4.10 (3.44)	4.16 (3.22)	31	2.40 (1.88)	2.75 (2.71)	40	-.13	.14	-.92	.362
Support for Labour Party	6.10 (3.44)	5.94 (3.42)	31	7.74 (2.89)	8.05 (2.84)	38	-.13	.16	-.78	.435
Support for Liberal Democrat Party	6.18 (3.23)	7.07 (2.64)	28	6.38 (2.50)	6.59 (2.84)	39	.25	.23	1.09	.278
Support for UK Independence Party	1.41 (1.79)	1.38 (1.45)	32	1.00 (.00)	1.37 (1.73)	41	-.34	.35	-.98	.329
Support for Green Party	5.43 (3.26)	5.40 (3.25)	30	7.13 (2.97)	7.05 (2.74)	38	-.02	.16	-.09	.925
Speciesism	2.98 (1.10)	3.09 (1.06)	44	2.61 (.97)	2.63 (.92)	56	.10	.13	.76	.451
Quality of Life	6.72 (1.95)	7.52 (1.71)	44	7.08 (1.95)	7.26 (1.85)	57	.33	.15	2.14	.034

**Note.** Beta coefficients (standardized) represent mindfulness condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

### Appendix C

Table C1: Descriptive statistics and results of ANCOVA analyses for measures in Study 2

	Compassion			Waitlist Control			ANCOVA Results			
	T1	T2	N	T1	T2	N	$\beta$	SE	t	p

Self-Compassion	2.83 (0.60)	3.44 (0.63)	17	2.69 (0.68)	2.82 (0.63)	28	.75	.18	4.17	<.001
Liberal-Conservative Attitudes	3.36 (1.04)	3.14 (1.10)	17	2.84 (0.76)	2.98 (1.00)	27	-.39	.14	-2.70	.010
Political Self-Identification	3.43 (1.17)	3.53 (1.63)	17	3.23 (1.16)	3.27 (1.55)	27	.03	.20	.16	.876
Political Party Support	2.44 (0.87)	2.69 (0.90)	17	2.81 (0.86)	2.83 (0.96)	27	.18	.21	.88	.383
Intergroup Empathy Bias	6.77 (9.49)	.74 (18.81)	14	.68 (21.38)	5.60 (13.47)	22	-.40	.34	-1.17	.252
Speciesism	2.70 (1.58)	2.76 (1.82)	17	2.91 (1.49)	3.06 (1.48)	27	-.07	.19	-.39	.700

**Note.** Beta coefficients (standardized) represent compassion condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

Table C2: Descriptive statistics and results of ANOVA analyses for measures in Study 2

	Compassion			Waitlist Control			ANOVA Results			
	T1	T2	N	T1	T2	N	$\beta$	SE	t	p
Self-Compassion	2.83 (0.60)	3.44 (0.63)	17	2.69 (0.68)	2.82 (0.63)	28	.52	.12	4.17	<.001
Liberal-Conservative Attitudes	3.36 (1.04)	3.14 (1.10)	17	2.84 (0.76)	2.98 (1.00)	27	-.43	.14	-3.10	.003
Political Self-Identification	3.43 (1.17)	3.53 (1.63)	17	3.23 (1.16)	3.27 (1.55)	27	-.01	.21	-.04	.970
Political Party Support	2.44 (0.87)	2.69 (0.90)	17	2.81 (0.86)	2.83 (0.96)	27	.28	.21	1.32	.194
Intergroup Empathy Bias	6.77 (9.49)	.74 (18.81)	14	.68 (21.38)	5.60 (13.47)	22	-.65	.42	-1.56	.128
Speciesism	2.70 (1.58)	2.76 (1.82)	17	2.91 (1.49)	3.06 (1.48)	27	-.05	.20	-.24	.814

**Note.** Beta coefficients (standardized) represent compassion condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

## Appendix D

To explore whether other statistical tests would yield similar pattern of results, we performed three additional analyses.

### Partial Correlation

The composite measure on liberal-conservative attitudes was entered as the dependent variable and the number of CCT classes attended were entered as the independent variable in a partial correlation, controlling for baseline scores on liberal-conservative attitudes. Adjusting for baseline measures of liberal-conservative attitudes, the number of CCT classes attended and changes in liberal-conservative attitudes were significantly associated,  $r(42) = -.37, p = 0.015$ .

### ANCOVAs

The four measures in the composite measure on liberal-conservative attitudes were entered as the dependent variables in separate ANCOVAs, controlling for baseline scores for the dependent variable being measured. The results were all in the same direction, but only the post-intervention measures of Political Party Quiz was significant after adjusting for baseline measures (see Table D1 for the results).

Table D1: Descriptive statistics and results of ANCOVA analyses for liberal-conservative attitudes

	Compassion			Waitlist Control			ANCOVA Results			
	T1	T2	N	T1	T2	N	$\beta$	SE	t	p
PPQ	3.11 (0.95)	2.75 (0.93)	17	2.43 (0.80)	2.51 (0.87)	27	-.41	.17	-2.40	.021
RWA	3.47 (1.47)	3.25 (1.73)	17	3.12 (1.00)	3.20 (1.26)	27	-.23	.12	-1.90	.064
SDO	3.10 (1.33)	2.98 (1.46)	17	2.41 (0.97)	2.75 (1.21)	27	-.24	.25	-.95	.347
ESJ	3.78 (1.32)	3.59 (1.41)	17	3.40 (1.22)	3.48 (1.20)	27	-.17	.16	-1.07	.290

**Note.** Beta coefficients (standardized) represent compassion condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

## ANOVAs

The four measures in the composite measure on liberal-conservative attitudes were also entered as the dependent variables in separate ANOVAs. The results were all in the same direction, but only the post-intervention measures of Political Party Quiz and Right-Wing Authoritarianism were significant (see Table D2 for the results).

Table D2: Descriptive statistics and results of ANOVA analyses for liberal-conservative attitudes

	Compassion			Waitlist Control			ANOVA Results			
	T1	T2	N	T1	T2	N	$\beta$	SE	t	p
PPQ	3.11 (0.95)	2.75 (0.93)	17	2.43 (0.80)	2.51 (0.87)	27	-.48	.16	-3.00	.005
RWA	3.47 (1.47)	3.25 (1.73)	17	3.12 (1.00)	3.20 (1.26)	27	-.25	.12	-2.08	.044
SDO	3.10 (1.33)	2.98 (1.46)	17	2.41 (0.97)	2.75 (1.21)	27	-.43	.25	-1.68	.100
ESJ	3.78 (1.32)	3.59 (1.41)	17	3.40 (1.22)	3.48 (1.20)	27	-.21	.16	-1.30	.200

**Note.** Beta coefficients (standardized) represent compassion condition post-intervention measures (T2), compared to waitlist condition post-intervention measures (T2), adjusting for baseline measures (T1). Scores are noted as means (standard deviations).

## Chapter 8: Love Thy (Partisan) Neighbor: Brief Befriending Meditation Reduces Affective Polarization

Authors:<sup>8</sup> Otto Simonsson<sup>1</sup>, Jayanth Narayanan<sup>2</sup> and Joseph Marks<sup>3</sup>

<sup>1</sup>University of Oxford, Department of Sociology

<sup>2</sup>National University of Singapore, Singapore

<sup>3</sup>University College London, Department of Experimental Psychology

### Abstract

The rising partisan animus between Democrats and Republicans has significant consequences for American society, both political and nonpolitical. The present study used two preregistered randomized controlled designs to investigate whether scalable meditation interventions could reduce affective polarization, relative to baseline scores measured 1 week earlier, in American adults (Study 1: N = 353; Study 2: N = 246) who affiliated with either the Democratic Party or the Republican Party. The results suggest that a brief befriending meditation can reduce affective polarization between Democrats and Republicans by increasing positive feelings relatively more for the political outgroup than the political ingroup.

Keywords: Affective Polarization; Intergroup Relations; Mindfulness; Befriending; Meditation

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The United States has become increasingly divided along partisan lines. The discrepancy between how American adults feel about their own political party and the political party opposed to their own – a phenomenon known as affective polarization – has grown significantly in recent decades. For example, on a scale ranging from cold (0) to warm (100), the difference between mean in-party feeling and mean out-party feeling has risen from 27.0 in 1978 to 45.9 points in 2016 (Boxell et al., 2020). The widening partisan division has largely been driven by increasingly negative out-party feelings, which in turn has been fueled by substantive changes in the political and media environment (Iyengar et al., 2019). Given that a well-functioning democracy requires a certain degree of respect and civility between political opponents, the high levels of affective polarization in the United States could have serious implications.

The evidence to date suggests that the rising partisan animus between Democrats and Republicans has both political and non-political consequences (Druckman et al., 2020a; Iyengar et al., 2019; McConnell et al., 2018). For instance, affective polarization has been shown to shape beliefs about ostensibly apolitical issues such as responses to a pandemic (Druckman et al., 2020b); increasingly negative out-party feelings have increased voting along party lines and discouraged elected officials from working with members of the opposing party (Abramowitz & Webster, 2016); and partisan animosity has undermined the level of trust toward the government, especially when the political outgroup has been in power (Hetherington & Rudolph, 2015). Hence, it is vital to better understand the causes of affective polarization and, perhaps more importantly, to investigate which interventions can reduce it.

### **Previous Psychological Approaches to Reducing Affective Polarization**

Previous research suggests that psychological interventions can reduce affective polarization in the United States. For example, Levendusky (2018) found that priming American national identity, thereby making a superordinate group identity more salient than partisan identity, decreased affective polarization between Democrats and Republicans (see also, Levine, Prosser, Evans, & Reicher, 2005). The priming of national identity could be used as an effective strategy

to reduce affective polarization among partisans, but it also has the potential to exacerbate affective polarization toward non-nationals, such as undocumented immigrants (Wojcieszak & Garrett, 2018). It may therefore be valuable to consider other psychological interventions to reduce affective polarization.

An alternative approach that holds promise is imagined intergroup contact (Crisp & Turner, 2009), which involves imagining positive interactions with one or more outgroup members. The approach has demonstrated effectiveness in improving intergroup attitudes and has recently also been shown to reduce affective polarization between Democrats and Republicans (Miles & Crisp, 2014; Warner & Villamil, 2017; see also, Bond, Shulman & Gilbert, 2018), with perceived commonality between the self and the political outgroup as an important underlying mechanism (Wojcieszak & Warner, 2020; Warner, Horstman & Kearney, 2020). It might be difficult, however, to get partisans with high levels of affective polarization to voluntarily imagine positive interactions with the political outgroup. Other psychological interventions that might be more easily accessible should therefore be investigated.

### **Meditation Practices and Affective Polarization**

There has recently been an upsurge of interest in mindfulness meditation (Simonsson, Martin & Fisher, 2020), with mindfulness-based programs reported in the education system, the workplace, the military (Creswell, 2017), and parliaments around the world (Bristow, 2019). The practice of mindfulness meditation involves bringing an open and non-judgmental attention to present-moment experiences (Kabat-Zinn, 2003), which facilitates emotion regulation and may reduce negative outgroup attitudes through lower intergroup anxiety (Price-Blackshear et al., 2017). It has been shown to increase prosocial behavior (Donald et al., 2019) and has also been suggested as a possible tool to attenuate affective polarization in the United States (Klein, 2020). While the effect of mindfulness meditation on affective polarization remains untested, Petersen and Mitkidis (2019) found no evidence for an association between trait mindfulness and political tolerance nor an effect of a brief mindfulness meditation on political tolerance, a

construct that is conceptually linked to affective polarization. The authors suggested that the results may be different with prolonged training with mindfulness meditation or with other types of meditation that are more oriented toward facilitating feelings of compassion for others. Indeed, trait compassion and similar constructs such as empathic concern have been associated with more positive and reconciliatory attitudes in intergroup settings (Klimecki, 2019), which indicates that compassion could play an important role in reducing affective polarization (but see also, Simas, Clifford & Kirkland, 2020).

Another type of meditation that has also been taught in parliaments – as part of an eight-week mindfulness-based program – is befriending meditation (Williams & Penman, 2011). The key difference between befriending meditation and mindfulness meditation is that the former involves changing one's thoughts and feelings toward oneself and others, whereas the latter involves changing one's relationship toward present-moment experiences. Befriending meditation may therefore influence affective polarization through the same mechanism as imagined intergroup contact. Like imagined intergroup contact, befriending meditation engages the imagination and involves bringing different types of people to mind, including people who may be perceived as difficult or challenging. The goal of both approaches is to foster positive feelings toward others. The difference between these approaches is that befriending meditation involves directly generating feelings of kindness and good-will toward whoever has been brought to mind, while imagined intergroup contact interventions involves imagining positive interactions with them. Previous research has shown that befriending meditation and other kindness-based practices such as loving-kindness and compassion meditation can strengthen compassion toward others (Galante et al., 2014); increase perceived commonality between the self and others (Kok & Singer, 2017); and boost positivity toward strangers who were not brought to mind during the meditation (Hutcherson et al., 2008). Indeed, positive attitudes toward one outgroup may positively influence attitudes toward other outgroups (Pettigrew, 2009; van Laar et al., 2005) and could therefore make befriending meditation a suitable intervention to reduce affective polarization.

Research from recent population studies show an overall increase in meditation use in the United States (Black et al., 2018; Clarke et al., 2018), with millions of Americans voluntarily choosing to meditate. Given that this is not true for the other psychological approaches designed to reduce affective polarization, it does suggest meditation might be a more scalable intervention. Here, we therefore investigate the effects of brief meditation interventions on affective polarization between Democrats and Republicans.

### **The Present Research**

Our overarching hypothesis was that compassion reduces affective polarization, while mindfulness does not. We tested this hypothesis by 1) examining the naturally occurring relationships between affective polarization, trait compassion and trait mindfulness, and 2) directly influencing compassion and mindfulness by having participants complete either a befriending meditation or a mindfulness meditation. Building on prior work (Klimecki, 2019; Petersen & Mitkidis, 2019), we hypothesized that trait compassion but not trait mindfulness would be negatively associated with affective polarization in American adults who affiliated with either the Democratic Party or the Republican Party. We also hypothesized that a brief befriending meditation would reduce affective polarization between Democrats and Republicans.

In Study 1, using an online sample of American adults, we assessed whether individual differences in trait compassion and trait mindfulness were associated with pre-intervention variation in affective polarization. We also investigated whether participants randomly assigned to complete a brief befriending meditation would exhibit a greater reduction in affective polarization, relative to baseline levels measured one week earlier, than participants who completed a brief mindfulness meditation or listened to a talk on the topic of meditation. In Study 2, using a separate online sample of American adults, we only compared the impact of a brief befriending meditation on affective polarization with that of the control task (listening to a talk on the topic of meditation). We did not ask any participants to complete a mindfulness

meditation in Study 2. Finally, by pooling the data from Study 1 and Study 2, we conducted additional exploratory analyses to test whether the effects varied across measurements of affective polarization or self-identified political affiliation.

## Study 1

### Materials and Methods

The study (hypotheses, design plan, sampling plan, variables, and analysis plan) was pre-registered on the Open Science Framework (OSF) at <https://osf.io/qscfk>. Sample size was determined using a power analysis (G\*Power Version 3.1.9.2; Faul et al., 2007). A sample size of 243 participants (81 per condition) achieves 80% power to detect a small effect (effect size  $f = 0.10$ , partial  $\eta^2 = .01$ ) with an alpha of .05. Hence, the aim was to recruit 450 participants in total at time one, with 150 participants per condition, assuming that not all would complete the second part of the study.

### *Participants*

Participants were recruited on Prolific Academic (<https://app.prolific.co>). We used the custom prescreening function to only recruit American citizens over 18 years of age who spoke English and who affiliated with either the Democratic Party or the Republican Party. Stratified random sampling was used to ensure we had approximately equal numbers of Democrats and Republicans, as Democrats tend to be over-represented on online platforms (Arechar & Rand, 2020; Paolacci & Chandler, 2014). 225 Democrats and 226 Republicans completed the first part of the study on March 17, 2020. 81.78% of the Democrats and 77.88% of the Republicans completed the second part of the study one week later, over a two-day period from March 24 to 26, 2020. The participants who failed the attention checks were removed, leaving the final number of participants at 353 (172 females, 178 males and 3 who preferred not to provide gender information; 182 Democrats and 171 Republicans; aged 18–76 years:  $M = 37.15$ ,  $SD = 13.05$ ). All participants gave informed consent and provided demographic information

(age, gender, education, meditation experience, first language, and whether they have asthma) through Qualtrics (<https://www.qualtrics.com/>), the platform used to collect the data for the study. The participants were naïve to the purpose of the experiment and were simply told that the aim was to “expand the existing knowledge in the fields of mindfulness, compassion and political attitudes.” All participants were paid £1 for participating in the first session and £3 for participating in the second session.

### ***Design and Procedure***

We utilized a longitudinal randomized controlled design to assess the causal effects of meditation practices on affective polarization. Specifically, we examined whether mindfulness and/or befriending meditation reduced affective polarization, relative to baseline scores measured one week earlier. Changes in affective polarization over time were compared to a control condition, in which participants listened to a talk about mindfulness meditation, to ensure that fluctuations were not due to a temporal confound. The current study therefore had 3 between-subjects factor (mindfulness, befriending, control) and 2 within-subjects factors (time: pre-intervention, post-intervention). Randomization checks confirm that the between-subjects conditions were balanced on demographic, political, trait, and polarization variables (see Supplemental Online Materials).

**Pre-Intervention Stage.** In the pre-intervention stage (Time 1), participants were asked to indicate their political party affiliation (Democrat, Republican, Independent, Other, None) and answered five items designed to assess how strongly they identified with that party (e.g., “How important is your identity as a Democrat to you?”; Druckman & Levendusky, 2019). They were also asked to complete two questionnaires to examine their levels of trait mindfulness (CAMS-R; Feldman et al., 2007) and trait compassion (SCBCS; Hwang et al., 2008).

Affective polarization was then assessed using three validated measures that are all strongly related to one another (Druckman & Levendusky, 2019): the feeling thermometer (asks

respondents to rate how cold or warm they feel toward Democratic Party and Republican Party voters [party candidates and elected officials]); trait ratings (asks respondents to rate how well positive traits, such as intelligence, honesty and generosity, and negative traits such as, hypocrisy, selfishness and meanness, describe the two parties' voters [party candidates and elected officials]); trust measure (asks respondents how much of the time they think they can trust the two parties' voters [party candidates and elected officials] to do what is right for the country). Our preregistration specified that we would specifically ask participants to rate each party's voters on these three measures. After submitting the preregistration, but before collecting the data, we decided to also assess participants' feelings, trait ratings and trust toward *party candidates and elected officials*, as done by (Druckman & Levendusky, 2019). We analyzed these two sets of data separately and note in the results section that the preregistered analysis (i.e. the analysis of affective polarization when participants are asked to focus on voters) is confirmatory, while the analysis of participants' feelings, trait ratings and trust toward party candidates and officials must be considered exploratory.

**Intervention Stage.** One week later (Time 2), the participants were invited to complete the second part of the study, in which they were randomly assigned to one of the three conditions (mindfulness, befriending, control). Participants in the mindfulness condition listened to a 10-minute guided mindfulness meditation (focused on sounds and thoughts). During the recording, they were instructed to: (1) settle into a comfortable posture; (2) bring awareness to sounds for a few minutes; (3) bring awareness to thoughts for a few minutes; and (4) bring awareness to the breath and body in the last moments of the guided meditation. Participants in the befriending condition listened to a 10-minute guided befriending meditation. During the recording, they were instructed to: (1) settle into a comfortable posture; (2) bring kindness and friendship to themselves by silently saying: "May I be free from suffering, may I be happy and healthy, may I have ease of being"; (3) bring to mind a loved one and wish them well in the same way; (4) bring to mind a stranger and wish them well in the same way; (5) bring to mind a difficult person and wish them well in the same way; (6) extend kindness and friendship to all living

beings and wish them well in the same way; and (7) bring awareness to the breath and body in the last moments of the guided meditation. Participants in the active control condition listened to a 10-minute audio recording about mindfulness meditation. During the recording, they were educated about mindfulness meditation and the evidence to date on the neuroscience of mindfulness and the efficacy of mindfulness-based programs. The word mindfulness was never mentioned in the mindfulness condition, but it was mentioned repeatedly in the talk about mindfulness meditation, which was focused on the concept (rather than the practice) of mindfulness. The audio recording for the control condition was a combination of talks by Professor Mark Williams, who has been delivering the mindfulness teachings to the British politicians together with Chris Cullen from the Oxford Mindfulness Centre (Bristow, 2019). The audio recordings used in the mindfulness and befriending conditions were also recorded by Professor Mark Williams and were derived from *Mindfulness: A Practical Guide to Finding Peace in a Frantic World* (Williams & Penman, 2011), which forms the basis for the teachings in the UK Parliament. After listening to the audio recording, the participants were then assessed on the three affective polarization measures (the feelings thermometer, trait ratings and trust measure).

**Attention Checks.** In the pre-intervention stage, participants were presented with one attention check question embedded in the trait mindfulness questionnaire, “Please select the disagree option for this question,” and one embedded in one of the trait rating measures, “Please click Very Well.” Participants who did not give the desired responses to these questions ( $n = 32$ ) were not invited to complete the second part of the study.<sup>9</sup>

In the second part of the study, participants were presented with an attention check that followed the audio recording to which they had been assigned: mindfulness condition (“During the audio recording, I was instructed to...” 1. focus on sounds and thoughts 2. recite a mantra 3. stretch my body); befriending condition (“During the audio recording, I was instructed to...” 1.

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<sup>9</sup> Note, the attention checks in the pre-intervention stage were added after submission of the preregistration.

generate feelings of kindness toward myself and others 2. memorize numbers and dates 3. stretch my body); control condition (“During the audio recording, I learnt about...” 1. mindfulness and meditation 2. sports and gymnastics 3. politics and law). Participants who gave the wrong answer on these questions (n = 5) were excluded from data analyses, as were those who gave the same answer for every item on the trait mindfulness questionnaire (as this included reverse-coded items).

**Manipulation Check.** After listening to the audio recording to which they had been assigned, all participants also completed a manipulation check: “How much did you generate feelings of kindness and good-will toward others during the recording you listened to?” and “How much did you focus on the present moment during the recording you listened to?” The responses were rated on a 1- (Not at all) to 5-point (Very Much) Likert scale. Participants in the befriending condition were expected to provide higher scores on the kindness question than participants in the other two conditions, while those in the mindfulness condition were expected to provide higher scores on the presence question.

### *Statistical Analyses*

As specified in our preregistration, we computed composite measures of affective polarization for each timepoint. Aggregating numerous closely linked measures of the same latent construct can reduce measurement noise (Rushton, Brainerd, & Pressley, 1983), increase test-retest reliability (Eisenberg et al., 2019), and alleviate the need for researchers to conduct multiple statistical tests. We based our decision to aggregate affective polarization scores on the feeling thermometers, trait ratings, and trust measure on previous research showing that these three measures are strongly correlated with one another (Druckman & Levendusky, 2019).

To compute the composite affective polarization scores, we first created a net trait rating for each group of voters per participant by subtracting the sum of the negative traits from the sum of the positive traits, consistent with earlier studies (Druckman & Levendusky, 2019; Iyengar,

Sood, & Lelkes, 2012). Next, ratings on the feeling thermometer, net trait rating, and trust measure were standardized. Note, we did not write that we would do this in our preregistration, however standardization was necessary as the ratings were provided on different scales. Specifically, we linearly scaled scores on each measure onto a 0 to 100 scale. Affective polarization scores on each measure at each timepoint were then computed by calculating the difference between the participants' rating of their own party's voters and their rival party's voters. We then aggregated these three measures, separately for each timepoint, to produce a Time 1 and Time 2 composite affective polarization measure. A reliability analysis performed on the Time 1 data revealed that this composite measure has good internal consistency (Cronbach alpha = 0.86, average inter-item correlation = 0.67; all inter-item correlations are reported in the Supplemental Online Materials). We repeated these steps, using participants' feelings, trait ratings and trust toward each party's candidates and elected officials, to create a second composite measure of affective polarization, with a different target of focus (Cronbach alpha = 0.85, average inter-item correlation = 0.66).

To test our first preregistered hypothesis – that trait compassion, but not trait mindfulness, negatively correlates with pre-intervention affective polarization scores – we assessed the bivariate (Pearson) correlations between baseline (Time 1) composite affective polarization scores, trait mindfulness, and trait compassion scores. We also assessed the partial correlation between baseline composite affective polarization scores and trait mindfulness, controlling for trait compassion, and the partial correlation between baseline affective polarization scores and trait compassion, controlling for trait mindfulness.

To test our second preregistered hypothesis – that befriending meditation reduces affective polarization more than mindfulness meditation or listening to a talk about mindfulness meditation – we tested whether there was an effect of the meditation practice condition on composite affective polarization change scores. In a slight deviation from the analysis plan set out in our preregistration, we calculated the change in affective polarization by subtracting the

Time 1 affective polarization composite scores from the Time 2 scores. We then performed a one-way ANOVA on these change scores, with the meditation practice condition entered as the between-subjects factor. The rationale for deviating from the preregistered analysis plan, as well as the results of the preregistered analysis, are reported in the Supplemental Online Materials.

## **Results**

### *Confirmatory Analyses*

#### **Correlations Between Baseline Affective Polarization, Trait Mindfulness, And Trait**

**Compassion.** Our overarching hypothesis was that feeling compassion reduces affective polarization, while being mindful does not. We therefore investigated the naturally occurring relationship between reported trait compassion and pre-intervention composite affective polarization scores (based on ratings of Democratic and Republican Party voters) to test whether people with higher trait compassion scores exhibit lower levels of affective polarization. Contrary to our hypothesis, a one-tailed bivariate (Pearson) correlation did not reveal a significant relationship between trait compassion and baseline levels of affective polarization ( $r(353) = .035, p = .257$ ). There was also no significant relationship between reported trait mindfulness and baseline affective polarization ( $r(353) = -.058, p = .140$ ). A one-tailed partial correlation between trait compassion and baseline affective polarization revealed that this null finding held when controlling for trait mindfulness ( $r_{\text{partial}}(350) = .038, p = .237$ ), and a one-tailed partial correlation between trait mindfulness and baseline affective polarization, controlling for trait compassion, also showed no significant association ( $r_{\text{partial}}(350) = -.060, p = .132$ ).

**Effects of Meditation Practices on Affective Polarization.** As a manipulation check, we assessed whether the befriending meditation induced feelings of compassion more than the mindfulness meditation and the control task. A one-way ANOVA revealed a significant effect of the meditation practice condition on how much participants generated feelings of kindness

and good-will toward others while listening to the audio recording ( $F(2,352) = 20.44, p < .001, \eta_p^2 = .105$ ). Post hoc Tukey's honestly significant difference (HSD) tests demonstrated that participants in the befriending condition reported generating more compassion ( $M = 3.73, SD = 1.01$ ) than participants in the mindfulness condition ( $M = 2.94, SD = 1.15, p < .001$ ) and those in the control condition ( $M = 3.01, SD = 1.00, p < .001$ ). We also tested whether the mindfulness meditation was more effective at inducing a mindful state than the befriending meditation and the control task. A one-way ANOVA revealed that the meditation practice condition did not have a significant effect on how much participants reported focusing on the present moment while listening to the audio recording ( $F(2,352) = 0.56, p = .570, \eta_p^2 = .003$ ), suggesting that participants who completed the mindfulness meditation were no more likely to have entered a mindful state than those in the befriending and control conditions.

We then tested whether the meditations reduced levels of affective polarization. Specifically, we assessed whether pre- to post-intervention changes in the composite affective polarization scores (based on ratings of Democratic and Republican Party voters) varied between the meditation practice conditions. A one-way ANOVA revealed a marginal but not significant effect of the meditation practice condition on these change scores ( $F(2,352) = 2.59, p = .076, \eta_p^2 = .015$ ; see Table 1).

### *Exploratory Analyses*

We repeated the above analyses using the composite affective polarization scores comprised of participants' ratings of Democratic and Republican Party candidates and elected officials as a robustness check. Again, we found no relationship between trait compassion and baseline levels of affective polarization ( $r(353) = .059, p = .135$ ), even when controlling for trait mindfulness ( $r_{\text{partial}}(350) = .062, p = .124$ ). Nor was there a correlation between trait mindfulness and baseline affective polarization ( $r(353) = -.045, p = .199$ ), or a partial correlation between these two variables when controlling for trait compassion ( $r_{\text{partial}}(350) = -.048, p = .182$ ).

We did, however, find a significant effect of the meditation practice condition on the pre- to post-intervention change in composite affective polarization scores. A one-way ANOVA revealed a significant effect of the meditation practice condition on affective polarization change scores ( $F(2,352) = 3.66, p = .027, \eta_p^2 = .020$ ). Post hoc Tukey's honestly significant difference (HSD) tests indicated that participants in the befriending condition exhibited a greater reduction in affective polarization ( $M = -4.95, SD = 12.69$ ) than those in the control condition ( $M = -0.86, SD = 14.30, p = .038$ ) and a marginally greater reduction than those in the mindfulness condition ( $M = -1.35, SD = 10.91, p = .075$ ). There was no difference in change scores between the mindfulness condition and the control condition ( $p = .953$ ). Thus, although our confirmatory analyses did not produce significant results, we did find some evidence to support the hypothesis that befriending meditation influences affective polarization.

Closer inspection of the change scores suggested that befriending meditation may not affect all measures of affective polarization equally. Table 1 suggests that there was little change between Time 1 and Time 2 affective polarization scores on the trust measure, both when participants rated parties' voters and when they rated parties' candidates and elected officials, while there was pre- to post-intervention movement in the expected direction on the feelings thermometers and net trait rating. Second, although the three Time 1 affective polarization measures showed good internal consistency and were strongly related to one another, the internal consistency of the change scores (Time 2 scores minus Time 1 scores) was low and the inter-item correlations were weak, both when participants' rated each parties' voters (Cronbach alpha = 0.47, average inter-item correlation = 0.23) and when they rated parties' candidates and elected officials (Cronbach alpha = 0.40, average inter-item correlation = 0.18).

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<b>Mean Change in Affective Polarization (Standard Deviation)</b>			
<b>Condition</b>	<b>Feeling Thermometer</b>	<b>Net Trait Rating</b>	<b>Trust</b>
		<b>Voters</b>	
<b>Befriending</b>	-6.85 (23.00)	-3.65 (14.86)	-2.10 (19.14)

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<b>Mindfulness</b>	-2.22 (18.66)	-2.15 (13.39)	-1.47 (20.40)
<b>Control</b>	-0.26 (21.50)	-0.57 (18.13)	0.22 (23.30)
<b>Candidates and Elected Officials</b>			
<b>Befriending</b>	-6.29 (20.84)	-6.88 (15.98)	-1.68 (18.04)
<b>Mindfulness</b>	-3.69 (16.79)	-0.58 (15.64)	0.21 (19.12)
<b>Control</b>	-1.60 (22.66)	0.11 (19.47)	-1.09 (20.78)

Table 1. Mean change scores on each measure of affective polarization for participants in the befriending, mindfulness, and control conditions.

## Discussion

In Study 1, confirmatory analyses found that affective polarization was not significantly associated with trait compassion or trait mindfulness and that a brief befriending meditation had a marginal but not significant effect on affective polarization when Democratic and Republican Party voters were the target of the ratings. However, exploratory analyses found that a brief befriending meditation significantly reduced affective polarization when Democratic and Republican Party candidates and elected officials were the target of the ratings, which provided some evidence to support the hypothesis that befriending meditation influences affective polarization.

In addition to the confirmatory and exploratory analyses, the change scores in Table 1 indicated that the effects of a brief befriending meditation varied across the measurements of affective polarization (feeling thermometer, net trait rating, trust measure), with the largest changes observed on the feeling thermometer. In Study 2, we therefore tested whether befriending meditation caused a pre- to post-intervention reduction in affective polarization, relative to an active control condition, on the feeling thermometer only.

## Study 2

### Materials and Methods

The study was pre-registered on the Open Science Framework (OSF) at <https://osf.io/sd3uf>. Sample size was determined using a power analysis (G\*Power Version 3.1.9.2; Faul et al., 2007). We entered the mean change scores on the feelings thermometer for participants in the befriending condition and control condition of Study 1 ( $M_{\text{Befriending}} = -6.85$ ,  $M_{\text{Control}} = -0.26$ ), as well as the standard deviation of these change scores ( $SD_{\text{Befriending}} = 23.00$ ,  $SD_{\text{Control}} = 21.50$ ), into the power analysis and found that a sample size of 284 participants would achieve 80% power to detect an effect size  $d$  of 0.296 with an alpha of .05. We therefore recruited 350 participants in total at time one, assuming that the dropout and exclusion rates would be similar to those in Study 1.

### ***Participants***

The recruitment procedure was the same as for Study 1, except participants who completed Study 1 were prevented from also taking part in Study 2. Participants were paid £0.5 for participating in the first session and £2 for participating in the second session (the compensation was slightly less than in Study 1 because questions were removed and the time it took to complete the study was therefore shortened). 175 Democrats and 175 Republicans completed the first part of the study on December 2, 2020; 74.29% of the Democrats and 79.43% of the Republicans who completed the first part also completed the second part of the study one week later, over a three-day period from December 9 to 11, 2020. Due to a technical error in the recruitment process, 18 participants who had not completed the first session took part in the second part of the study. These participants, as well as those who failed attention checks, were excluded from the analysis, leaving the final number of participants at 246 (123 females, 120 males, two who said ‘other’ when asked about gender, and three who preferred not to provide gender information, 125 Democrats and 121 Republicans, aged 18–96 years:  $M = 34.18$ ,  $SD = 12.77$ ).

### ***Design and Procedure***

As in Study 1, we used a longitudinal randomized controlled design to investigate whether reductions in affective polarization over time were greater for participants who completed a befriending meditation than those who listened to a talk about mindfulness meditation. We did not include a mindfulness meditation condition in this study and therefore had a mixed design with 2 between-subject factors (befriending, control) and 2 within-subject factors (time: pre-intervention, post-intervention).

**Pre-Intervention Stage.** In the pre-intervention stage (Time 1), participants were asked to indicate their political party affiliation (Democrat, Republican, Independent, Other, None) and answered five items designed to assess how strongly they identified with that party (e.g., “How important is your identity as a Democrat to you?”; Druckman & Levendusky, 2019). Trait mindfulness and trait compassion were not recorded in this study.

Participants then rated Democratic Party and Republican Party voters, as well as party candidates and elected officials, on the feeling thermometer, trait ratings, and trust measure as in Study 1. Our preregistration specified that we would focus the confirmatory analysis on participants’ ratings of each parties’ voters on the feeling thermometers, however we decided to collect data on all three measures (with both voters and party candidates and elected officials specified as the target) to allow for further exploratory analysis.

**Intervention Stage.** One week later (Time 2), the participants were invited to complete the second part of the study, in which they were randomly assigned to one of the two conditions (befriending, control). Participants in the befriending condition listened to a 10-minute guided befriending meditation, while those in the control condition listened to a 10-minute talk about mindfulness meditation. The audio clips were the same as those played to participants in the befriending and control conditions in Study 1.

**Attention Checks.** In the pre-intervention stage, participants were presented with an attention check question embedded in one of the trait rating measures, “Please click Very Well.” In the

second session, participants were presented with an attention check immediately after the intervention to ensure they had listened to the audio clip. The question asked and the response options were the same as for Study 1. Participants who gave the wrong answer on these questions ( $n = 3$ ) were excluded from data analyses, as were those who failed the attention check question in session one ( $n = 21$ ).

**Manipulation Check.** After listening to the audio recording to which they had been assigned, all participants also completed a manipulation check. The question asked and the response options were the same as for Study 1.

### *Statistical Analyses*

As specified in our preregistration, in this study our focal measure of affective polarization was built using participants' ratings on the feeling thermometer only. Specifically, we subtracted participants' ratings of out-group voters from their ratings of in-group voters, separately for each timepoint. Change scores were then computed by calculating the difference between these Time 1 and Time 2 affective polarization scores. An independent samples t-test was conducted to test our preregistered hypothesis that participants in the befriending condition would exhibit a greater reduction in affective polarization than those in the control condition.

### **Results**

The results of the independent-samples t-test indicated that there was a significant difference in the change scores between conditions ( $t(244) = 2.47$ ,  $p = .014$ ,  $d = 0.31$ ). As hypothesized, there was a greater reduction in affective polarization in participants who completed the befriending meditation (befriending condition:  $M = -6.55$ ,  $SD = 19.74$ ) than in those who listened to the talk about mindfulness meditation (control condition:  $M = -0.65$ ,  $SD = 17.83$ ). This finding held when participants who failed attention checks were not excluded (Supplemental Online Materials). This suggests that befriending meditation does influence affective polarization when

the difference in feelings toward in-group and out-group voters is used as the dependent variable.

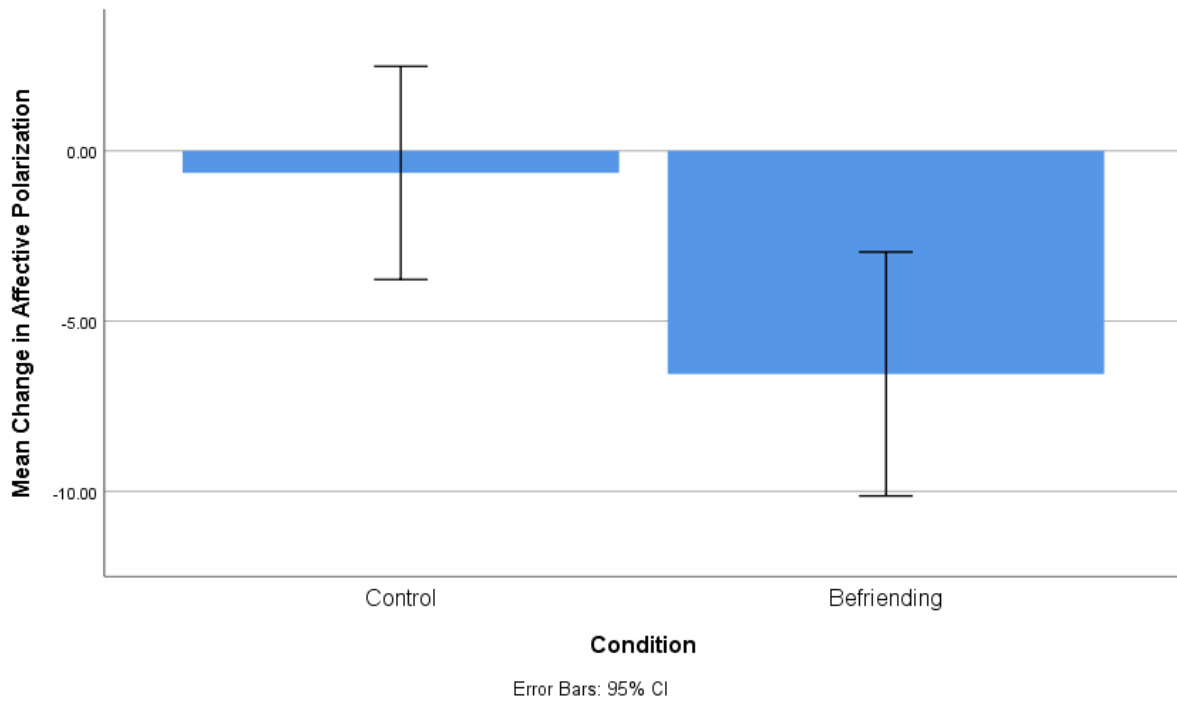


Figure 1. Change in affective polarization over time by condition. Affective polarization is calculated by subtracting participants' ratings of out-group voters on the feeling thermometer from their ratings of in-group voters. The reduction in affective polarization was greater in the befriending condition than in the control condition.

## Discussion

In Study 2, our confirmatory analysis found that a brief befriending meditation significantly reduced affective polarization, relative to an active control condition, as measured by the feeling thermometer only. While the findings are novel, the results are broadly in line with findings from studies that have used kindness-based interventions to reduce prejudice and intergroup bias in other contexts (Berger, Brenick & Tarrasch, 2018; Kang et al., 2014).

The results from these two studies still leave many questions unanswered. Given that Study 1 and Study 2 used the same befriending and control conditions, it was possible to pool the data from the two studies to increase the sample size and allow additional exploratory analyses to be conducted beyond the overall intervention effect (Bangdiwala et al., 2016).

## Pooling Data from Study 1 and Study 2

We pooled the data from Study 1 and Study 2 to answer two additional questions. The first is whether the effect of befriending meditation on affective polarization varies depending on the instrument used to measure it. Study 2 showed that befriending meditation reduces the difference in feelings toward in-group and out-group voters, while Table 1 suggests that it may have less (or no) effect on how much members of rival groups trust each other. The second so far unanswered question is whether the effect of befriending meditation on affective polarization differs for Democrats and Republicans. While political affiliation has not yet been investigated as a moderator in meditation research, there are several neurocognitive and personality differences across the political spectrum that could possibly influence individual responses to meditation interventions (Amodio et al., 2007; Carney et al., 2008; Jost et al., 2003). For example, conservatives tend to value ingroup loyalty more than liberals (Graham et al., 2009) and may therefore respond differently to the instructions to bring kindness and friendship toward the various target categories (oneself, a loved one, a stranger, a difficult person, all living beings) in a befriending meditation.

## **Methods**

Data from Study 1 and Study 2 were pooled to conduct additional exploratory analyses. We excluded participants who failed attention checks, using the same criteria as used in the respective study, and those from Study 1 who were assigned to the mindfulness condition, as there was no mindfulness condition in Study 2.

We computed change scores on each measure of affective polarization. As in Study 1, we built a net trait rating score for each group of voters per participant by subtracting the sum of the negative traits from the sum of the positive traits. We then standardized the feeling thermometer, net trait rating, and trust measure by linearly scaling the ratings on each measure onto a 0 to 100 scale. Affective polarization scores on each measure at each timepoint were computed by calculating the difference between the participants' rating of their own party's voters [candidates and elected officials] and their rival party's voters [candidates and elected

officials]. Lastly, we computed the change in affective polarization on each measure by subtracting the Time 1 scores from the Time 2 scores.

## **Results**

### *Effects of Befriending Meditation on Different Measures of Affective Polarization*

To test whether befriending meditation reduced affective polarization on some measures more than others, we entered the change scores from all six affective polarization measures (feeling thermometer, net trait rating and trust differences for voters and candidates and elected officials) into a 2 (target: voters, candidates and elected officials) x 3 (measure: feeling thermometer, net trait rating, trust) x 2 (meditation practice condition: befriending, control) x 2 (study number: one, two) mixed ANOVA. The target and measure were entered as within-subjects factors, the meditation practice condition and study number were entered as between-subjects factors.

The results revealed a main effect of the meditation practice condition ( $F(1,476) = 11.71, p = .001, \eta_p^2 = .024$ ), a main effect of the measure used to record affective polarization ( $F(2,475) = 9.86, p < .001, \eta_p^2 = .040$ ), and an interaction between the meditation practice condition and the measure ( $F(2,475) = 3.31, p = .037, \eta_p^2 = .014$ ). The main effect of the meditation practice condition indicated that, when collapsing the data across the other independent variables, participants who completed the befriending meditation exhibited a greater reduction in affective polarization ( $M = -4.31, SE = 0.74$ ) than those who completed the control task ( $M = -0.77, SD = 0.73$ ). The main effect of the measure demonstrated that, when collapsing the data across the other independent variables, the pre- to post-intervention change scores varied depending on which instrument was used to record affective polarization. Post-hoc Bonferroni-corrected pairwise comparisons revealed that change scores on the trust measure ( $M = -0.26, SE = 0.76$ ) were smaller than those on the feeling thermometers ( $M = -4.29, SE = 0.81, p < .001$ ) and the net trait rating measure ( $M = -3.08, SE = 0.64, p = .003$ ), while there was no difference between

the change scores on the feeling thermometers and net trait rating ( $p = .584$ ). The interaction between the meditation practice condition and the measure was characterized by differences between the befriending and control conditions on the feeling thermometer change scores ( $F(1,476) = 13.64, p < .001, \eta_p^2 = .028$ ) and the net trait rating change scores ( $F(1,476) = 8.01, p = .005, \eta_p^2 = .017$ ) but not on the trust change scores ( $F(1,476) = 0.48, p = .487, \eta_p^2 = .001$ ). This suggests that befriending meditation reduces affective polarization on the feeling thermometer and net trait rating but does not influence how much Democrats and Republicans trust out-group voters, candidates, and elected officials relative to the same in-group targets. There was no main effect of the target (i.e. voters vs candidates and elected officials;  $F(1,476) = 0.93, p = .336, \eta_p^2 = .002$ ) or the study number ( $F(1,476) < 0.01, p = .980, \eta_p^2 < .001$ ) on affective polarization change scores. All other two- and three-way interactions were not significant ( $p$ -values  $> .05$ ). There was a marginal four-way interaction between the meditation practice condition, measure, target and study number ( $F(2,475) = 3.02, p = .050, \eta_p^2 = .013$ ).

### ***Effects of Befriending Meditation on Affective Polarization in Democrats and Republicans***

In all previous analyses, we combined data from participants who affiliated with the Democratic Party or the Republican Party. Here, we tested whether befriending meditation impacts these two groups to different extents. If so, we should observe an interaction between the meditation practice condition and participants' political affiliation.

As the above analysis showed that befriending meditation influenced affective polarization on the feeling thermometer and net trait rating but not on the trust measure, we did not include the change scores on the trust measure in this analysis. Entering the four change scores of interest (pre- to post-intervention changes in affective polarization on the feeling thermometers and net trait rating when participants rated voters and candidates and elected officials) into a 2 (meditation practice condition: befriending, control) x 2 (political affiliation: Democrats, Republicans) x 2 (study number: one, two) Multivariate Analysis of Variance (MANOVA) revealed a main effect of the meditation practice condition ( $F(4,469) = 4.69, p = .001$ ,

$\eta_p^2 = .038$ ), no main effect of political affiliation ( $F(4,469) = 1.06, p = .374, \eta_p^2 = .009$ ), and no interaction between the meditation practice condition and political affiliation ( $F(4,469) = 0.13, p = .972, \eta_p^2 = .001$ ). This suggests that the effects of befriending meditation on affective polarization did not vary by political affiliation. There was also no main effect of the study number ( $F(4,469) = 1.27, p = .281, \eta_p^2 = .011$ ), a marginal but not significant interaction between the meditation practice condition and study number ( $F(4,469) = 2.04, p = .088, \eta_p^2 = .017$ ), and no three-way interaction ( $F(4,469) = 0.23, p = .919, \eta_p^2 = .002$ ).

## **Discussion**

Using pooled data from Study 1 and Study 2, exploratory analyses found that the effects of a brief befriending meditation on affective polarization did not differ for Democrats and Republicans. The effects did, however, vary across the measurements of affective polarization; befriending meditation only reduced affective polarization more than the control task on the feeling thermometer and trait ratings measures. The trust-change scores did not vary between conditions, which suggests that a brief befriending meditation does not necessarily decrease the difference in trust toward the political out-group and in-group. Befriending meditation does, on the other hand, increase positive feelings toward, and perceptions of, the political out-group more than the political in-group.

## **General Discussion**

The present research builds on previous literature by testing whether meditation interventions can reduce affective polarization in American adults who affiliate with either the Democratic Party or the Republican Party. Across two studies, we found evidence that a brief befriending meditation reduces affective polarization between Democrats and Republicans by increasing positive feelings and trait perceptions relatively more for the political out-group than the political in-group. While exploratory analyses found varying effects of the befriending mediation across measurements of affective polarization, the effects did not differ for

Democrats and Republicans. Taken together, the findings in the present study are the first to identify a causal relationship between a brief befriending meditation and affective polarization.

While affective polarization was not significantly associated with baseline levels of trait compassion, a brief befriending meditation significantly reduced affective polarization between Democrats and Republicans. The measurement of trait compassion evaluates compassion toward others more generally and does not measure intergroup feelings of compassion. It may therefore be less useful in understanding affective polarization than a variable that is more specific about intergroup feelings. For example, previous research has shown that different types of meditation can increase perceived commonality between the self and the other (Kok & Singer, 2017), which has recently also been shown to mediate the effects of imagined intergroup contact on affective polarization (Wojcieszak & Warner, 2020). Future research should investigate whether perceived commonality between the self and the political out-group, rather than general feelings of compassion, might mediate the effects of a brief befriending meditation on affective polarization.

The results from the two studies are particularly promising considering the increasing popularity of meditation and the scalability of meditation interventions. For example, between 2012 and 2017, the percentage of meditation users in the United States increased ninefold for children (0.6 to 5.4 percent) and threefold for adults (4.1 to 14.2 percent; Black et al., 2018; Clarke et al., 2018). Recent evidence also suggest that meditation-based apps have become the most common way of learning to meditate (Simonsson, Fisher & Martin, 2020), which demonstrates the promise of meditation as a scalable intervention.

The present research project utilized a rigorous research design to assess the effects of mindfulness and befriending meditation on affective polarization, but there are several important points to consider when interpreting the results. First, the sample was not representative of the American adult population, participants self-selected into the study, and the study took place during the coronavirus disease (COVID-19) outbreak. The same effects

might therefore not be present in a different sample or at a different time point, which limits the generalizability of the findings. Second, this research assessed the immediate effects of 10-minute meditation interventions. As such, further empirical work is needed to test whether changes in affective polarization caused by befriending meditation are sustainable over longer periods of time. We speculate that longer, more regular, practice would be required for this intervention to generate deeper, more lasting, change. Third, both studies in this paper utilized within-subject, repeated-measures designs, which may introduce order effects and/or increase demand characteristics. However, by introducing a week-long gap between the pre-intervention stage (in which we recorded baseline measures) and the intervention stage (in which we applied the intervention and measured affective polarization once more), we reduce the possibility of demand characteristics that may have resulted from participants providing responses on the same measures twice. It is important to note that participants may still have been able to discern the link between the befriending instructions and the measures of affective polarization. Future studies should therefore utilize research designs that further minimize the effect of demand characteristics (e.g., lagged designs that consider the lasting effects of meditation interventions).

In sum, the findings suggest that even a brief online befriending meditation can reduce affective polarization between Democrats and Republicans by increasing positive feelings and trait perceptions relatively more for the out-group than the in-group. The results contribute to the existing scientific literature and provide support for the benefits of befriending meditation in political contexts, which opens the possibility of a new subfield at the intersection of the contemplative and political sciences.

**Ethical Approval** All procedures performed involving human participants were in accordance with the ethical standards of the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Research Ethics Committee of the Department of Sociology (DREC) at the University of Oxford.

**Informed Consent** Informed consent was obtained from all individual participants included in the studies.

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**Data accessibility statement** Research data and code supporting the results reported in this paper are available on the Open Science Framework (<https://osf.io/u9m3c/>).

## References

- Abramowitz, A. I., & Webster, S. (2016). The rise of negative partisanship and the nationalization of US elections in the 21st century. *Electoral Studies*, 41, 12-22. doi: <https://doi.org/10.1016/j.electstud.2015.11.001>
- Amodio, D. M., Jost, J. T., Master, S. L., & Yee, C. M. (2007). Neurocognitive correlates of liberalism and conservatism. *Nature neuroscience*, 10(10), 1246-1247. doi: <https://doi.org/10.1038/nn1979>
- Arechar, A. A., & Rand, D. G. (2020, June 4). Turking in the time of COVID. <https://doi.org/10.31234/osf.io/vktqu>
- Bangdiwala, S. I., Bhargava, A., O'Connor, D. P., Robinson, T. N., Michie, S., Murray, D. M., Stevens, J., Belle, S. H., Templin, T. N., & Pratt, C. A. (2016). Statistical methodologies to pool across multiple intervention studies. *Translational behavioral medicine*, 6(2), 228–235. doi: <https://doi.org/10.1007/s13142-016-0386-8>
- Berger, R., Brenick, A., & Tarrasch, R. (2018). Reducing Israeli-Jewish pupils' outgroup prejudice with a mindfulness and compassion-based social-emotional program. *Mindfulness*, 9(6), 1768-1779. doi: <https://doi.org/10.1007/s12671-018-0919-y>
- Black, L. I., Barnes, P. M., Clarke, T. C., Stussman, B. J., & Nahin, R. L. (2018). Use of yoga, meditation, and chiropractors among US children aged 4-17 years. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Bond, R. M., Shulman, H. C., & Gilbert, M. (2018). Does having a political discussion help or hurt intergroup perceptions? Drawing guidance from social identity theory and the contact hypothesis. *International Journal of Communication*, 12, 21.

- Boxell, L., Gentzkow, M., & Shapiro, J. M. (2020). Cross-Country Trends in Affective Polarization (No. w26669). National Bureau of Economic Research. doi: 10.3386/w26669
- Bristow, J. (2019). Mindfulness in politics and public policy. *Current Opinion in Psychology*, 28, 87-91. doi: <https://doi.org/10.1016/j.copsyc.2018.11.003>
- Carney, D. R., Jost, J. T., Gosling, S. D., & Potter, J. (2008). The secret lives of liberals and conservatives: Personality profiles, interaction styles, and the things they leave behind. *Political Psychology*, 29(6), 807-840. doi: <https://doi.org/10.1111/j.1467-9221.2008.00668.x>
- Clarke, T. C., Barnes, P. M., Black, L. I., Stussman, B. J., & Nahin, R. L. (2018). Use of yoga, meditation, and chiropractors among US adults aged 18 and over. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.
- Creswell, J. D. (2017). Mindfulness interventions. *Annual review of psychology*, 68, 491-516. doi: <https://doi.org/10.1146/annurev-psych-042716-051139>
- Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions?: Reducing prejudice through simulated social contact. *American Psychologist*, 64(4), 231. <https://doi.org/10.1037/a0014718>
- Donald, J. N., Sahdra, B. K., Van Zanden, B., Duineveld, J. J., Atkins, P. W., Marshall, S. L., & Ciarrochi, J. (2019). Does your mindfulness benefit others? A systematic review and meta-analysis of the link between mindfulness and prosocial behaviour. *British Journal of Psychology*, 110(1), 101-125. doi: <https://doi.org/10.1111/bjop.12338>

- Druckman, J. N., Klar, S., Krupnikov, Y., Levendusky, M., & Ryan, J. B. (2020a). Affective polarization, local contexts and public opinion in America. *Nature Human Behaviour*, 1-11. doi: <https://doi.org/10.1038/s41562-020-01012-5>
- Druckman, J. N., Klar, S., Krupnikov, Y., Levendusky, M., & Ryan, J. B. (2020b). How Affective Polarization Shapes Americans' Political Beliefs: A Study of Response to the COVID-19 Pandemic. *Journal of Experimental Political Science*, 1-12.
- Druckman, J. N., & Levendusky, M. S. (2019). What do we measure when we measure affective polarization? *Public Opinion Quarterly*, 83(1), 114-122. doi: <https://doi.org/10.1093/poq/nfz003>
- Eisenberg, I. W., Bissett, P. G., Enkavi, A. Z., Li, J., MacKinnon, D. P., Marsch, L. A., & Poldrack, R. A. (2019). Uncovering the structure of self-regulation through data-driven ontology discovery. *Nature Communications*, 10(1), 1-13. doi: <https://doi.org/10.1038/s41467-019-10301-1>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. doi: <https://doi.org/10.3758/BF03193146>
- Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of psychopathology and Behavioral Assessment*, 29(3), 177. doi: <https://doi.org/10.1007/s10862-006-9035-8>
- Galante, J., Galante, I., Bekkers, M.-J., & Gallacher, J. (2014). Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(6), 1101–1114. doi: <https://doi.org/10.1037/a0037249>

- Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of personality and social psychology*, 96(5), 1029. doi: <https://doi.org/10.1037/a0015141>
- Hetherington, M. J., & Rudolph, T. J. (2015). *Why Washington won't work: Polarization, political trust, and the governing crisis*. University of Chicago Press.
- Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, 8(5), 720. doi: <https://doi.org/10.1037/a0013237>
- Hwang, J. Y., Plante, T., & Lackey, K. (2008). The development of the Santa Clara brief compassion scale: An abbreviation of Sprecher and Fehr's compassionate love scale. *Pastoral Psychology*, 56(4), 421-428. doi: <https://doi.org/10.1007/s11089-008-0117-2>
- Iyengar, S., Lelkes, Y., Levendusky, M., Malhotra, N., & Westwood, S. J. (2019). The origins and consequences of affective polarization in the United States. *Annual Review of Political Science*, 22, 129-146. doi: <https://doi.org/10.1146/annurev-polisci-051117-073034>
- Iyengar, S., Sood, G., & Lelkes, Y. (2012). Affect, not ideology: A social identity perspective on polarization. *Public Opinion Quarterly*, 76(3), 405–431. doi: <https://doi.org/10.1093/poq/nfs038>
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological bulletin*, 129(3), 339. doi: <https://doi.org/10.1037/0033-2909.129.3.339>
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. doi: <https://doi.org/10.1093/clipsy.bpg016>

- 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. doi: <https://psycnet.apa.org/doi/10.1037/a0034150>
- Klein, E. (2020). *Why we're polarized*. Simon and Schuster.
- Klimecki, O. M. (2019). The role of empathy and compassion in conflict resolution. *Emotion Review*, 11(4), 310-325. doi: <https://doi.org/10.1177/1754073919838609>
- Kok, B. E., & Singer, T. (2017). Effects of contemplative dyads on engagement and perceived social connectedness over 9 months of mental training: A randomized clinical trial. *Jama psychiatry*, 74(2), 126-134. doi: 10.1001/jamapsychiatry.2016.3360
- Levendusky, M. S. (2018). Americans, not partisans: Can priming American national identity reduce affective polarization? *The Journal of Politics*, 80(1), 59-70. doi: <https://doi.org/10.1086/693987>
- Levine, M., Prosser, A., Evans, D., & Reicher, S. (2005). Identity and emergency intervention: How social group membership and inclusiveness of group boundaries shape helping behavior. *Personality and Social Psychology Bulletin*, 31(4), 443-453. doi: <https://doi.org/10.1177/0146167204271651>
- Luberto, C. M., Shinday, N., Song, R., Philpotts, L. L., Park, E. R., Fricchione, G. L., & Yeh, G. Y. (2018). A systematic review and meta-analysis of the effects of meditation on empathy, compassion, and prosocial behaviors. *Mindfulness*, 9(3), 708-724. doi: <https://doi.org/10.1007/s12671-017-0841-8>
- Mascaro, J. S., Darcher, A., Negi, L. T., & Raison, C. L. (2015). The neural mediators of kindness-based meditation: a theoretical model. *Frontiers in Psychology*, 6, 109. doi: <https://doi.org/10.3389/fpsyg.2015.00109>

- McConnell, C., Margalit, Y., Malhotra, N., & Levendusky, M. (2018). The economic consequences of partisanship in a polarized era. *American Journal of Political Science*, 62(1), 5-18. doi: <https://doi.org/10.1111/ajps.12330>
- Miles, E., & Crisp, R. J. (2014). A meta-analytic test of the imagined contact hypothesis. *Group Processes & Intergroup Relations*, 17(1), 3-26. doi: <https://doi.org/10.1177/1368430213510573>
- Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science*, 23(3), 184-188.
- Petersen, M. B., & Mitkidis, P. (2019). A sober second thought? A pre-registered experiment on the effects of mindfulness meditation on political tolerance.
- Pettigrew, T. F. (2009). Secondary transfer effect of contact: Do intergroup contact effects spread to noncontacted outgroups?. *Social Psychology*, 40(2), 55. doi: <https://doi.org/10.1027/1864-9335.40.2.55>
- Price-Blackshear, M. A., Kamble, S. V., Mudhol, V., Sheldon, K. M., & Bettencourt, B. A. (2017). Mindfulness practices moderate the association between intergroup anxiety and outgroup attitudes. *Mindfulness*, 8(5), 1172-1183. doi: <https://doi.org/10.1007/s12671-017-0689-y>
- Rushton, J. P., Brainerd, C. J., & Pressley, M. (1983). Behavioral development and construct validity: the principle of aggregation. *Psychological Bulletin*, 94(1), 18-38. doi: <https://doi.org/10.1037/0033-2909.94.1.18>
- Simas, E. N., Clifford, S., & Kirkland, J. H. (2020). How empathic concern fuels political polarization. *American Political Science Review*, 114(1), 258-269. doi: <https://doi.org/10.1017/S0003055419000534>

- Simonsson, O., Fisher, S., & Martin, M. (2020). Awareness and Experience of Mindfulness in Britain. *Sociological Research Online*. doi: 1360780420980761.
- Simonsson, O., Martin, M., & Fisher, S. (2020). Sociodemographic characteristics and health status of mindfulness users in the United States. *Mindfulness*, 11(12), 2725-2729. doi: <https://doi.org/10.1007/s12671-020-01486-4>
- van Laar, C., Levin, S., Sinclair, S., & Sidanius, J. (2005). The effect of university roommate contact on ethnic attitudes and behavior. *Journal of Experimental Social Psychology*, 41(4), 329-345. doi: <https://doi.org/10.1016/j.jesp.2004.08.002>
- Warner, B. R., Horstman, H. K., & Kearney, C. C. (2020). Reducing political polarization through narrative writing. *Journal of Applied Communication Research*, 48(4), 459-477. <https://doi.org/10.1080/00909882.2020.1789195>
- Warner, B. R., & Villamil, A. (2017). A test of imagined contact as a means to improve cross-partisan feelings and reduce attribution of malevolence and acceptance of political violence. *Communication Monographs*, 84(4), 447-465. <https://doi.org/10.1080/03637751.2017.1336779>
- Williams, M., & Penman, D. (2011). *Mindfulness: A practical guide to finding peace in a frantic world*. Piatkus.
- Wojcieszak, M., & Garrett, R. K. (2018). Social identity, selective exposure, and affective polarization: How priming national identity shapes attitudes toward immigrants via news selection. *Human Communication Research*, 44(3), 247-273. doi: <https://doi.org/10.1093/hcr/hqx010>
- Wojcieszak, M., & Warner, B. R. (2020). Can Interparty Contact Reduce Affective Polarization? A Systematic Test of Different Forms of Intergroup Contact. *Political Communication*, 1-23. <https://doi.org/10.1080/10584609.2020.1760406>

## Supplemental Online Materials

### Study 1

#### Demographic Information

Participants reported:

Political affiliation (frequencies reported in main text).

Gender and age (descriptive statistics reported in main text).

Whether English was their first language: 98% said “yes”, “2%” said no.

Whether they have asthma: 11% said “yes”, “89%” said no.

Table S1. Highest level of education completed.

Education Level	Percentage of sample
No formal qualifications	0.28%
Secondary education (e.g. GED/GCSE)	0.57%
High school diploma / A-levels	19.26%
Technical/community college	14.16%
Undergraduate degree (BA/BSc/other)	43.91%
Graduate degree (MA/MSc/MPhil/other)	18.98%
Doctorate degree (PhD/other)	2.83%
Don't know / not applicable	0%

Table S2. Previous meditation experience.

Frequency of meditation practice	Percentage of sample
Daily	5.10%
Four to six times per week	3.97%
Two to three times per week	7.08%
Once per week	5.10%
Two to three times per month	10.20%
Once per month	13.88%
Never	54.67%

Table S3. Equipment used to listen to the audio clip (i.e. the intervention).

Equipment	Percentage of sample
Headphones	72.52%
Speakers	27.20%
Other	0.30%

The individual that selected ‘Other’ reported using a “Mix of speakers and headphones.”

#### Questionnaire Scores

CAMS-R:  $M = 59.32$ ,  $SD = 10.56$ , Range = 19-82, Cronbach's  $\alpha = .85$

SCBCS:  $M = 25.09$ ,  $SD = 5.92$ , Range = 7-35, Cronbach's  $\alpha = .89$

Political Identity Strength:  $M = 15.32$ ,  $SD = 4.72$ , Range = 5-25, Cronbach's  $\alpha = .91$

### Randomization Checks

Table S4. Balance tests for demographic, political, trait, and polarization variables.

Variable (statistical test)	Test statistics
Age (ANOVA)	$F(2,350) = 0.38$ , $p = .68$
Gender (Chi Square)	$X^2(4, N = 353) = 3.07$ , $p = .55$
First language (Chi Square)	$X^2(2, N = 353) = 3.53$ , $p = .17$
Education (Chi Square)	$X^2(12, N = 353) = 17.43$ , $p = .13$
Meditation practice (Chi Square)	$X^2(12, N = 353) = 12.78$ , $p = .39$
Asthma (Chi Square)	$X^2(2, N = 353) = 0.87$ , $p = .65$
Audio equipment (Chi Square)	$X^2(4, N = 353) = 6.94$ , $p = .14$
Political affiliation: Democrat, Republican (Chi Square)	$X^2(2, N = 353) = 0.16$ , $p = .93$
Strength of party identification (ANOVA)	$F(2,350) = 1.07$ , $p = .34$
Trait compassion (ANOVA)	$F(2,350) = 1.37$ , $p = .26$
Trait mindfulness (ANOVA)	$F(2,350) = 0.65$ , $p = .52$
Time 1 AP for voters on feeling thermometer (ANOVA)	$F(2,350) = 0.23$ , $p = .79$
Time 1 AP for voters on net trait rating (ANOVA)	$F(2,350) = 0.14$ , $p = .87$
Time 1 AP for voters on trust measure (ANOVA)	$F(2,350) = 0.58$ , $p = .56$
Time 1 AP for candidates and officials on feeling thermometer (ANOVA)	$F(2,350) = 0.56$ , $p = .58$
Time 1 AP for candidates and officials on net trait rating (ANOVA)	$F(2,350) = 1.34$ , $p = .26$
Time 1 AP for candidates and officials on trust measure (ANOVA)	$F(2,350) = 0.58$ , $p = .25$

Note: AP = Affective Polarization.

### Deviations from the Preregistered Analysis

In our preregistered analysis plan, we specified that we would enter the composite measure of affective polarization as the dependent variable into a 3 (condition: befriending, mindfulness, control) x 2 (time: pre-intervention, post-intervention) mixed ANCOVA, controlling for age, gender, education and language, and examine the pairwise comparisons for any significant

effects. In response to peer-reviewers' comments, we altered the analysis strategy in the following ways: First, ratings on the feeling thermometer, net trait rating, and trust measures were standardized, as the ratings were provided on different scales. Reliability analyses and inter-item correlations were also performed to assess the internal consistency and the relationships between these measures. Second, we did not include the above covariates in the model. As participants were randomly assigned to the between-subjects (contemplative practice) conditions, and the randomization checks show that the conditions were balanced on demographic, political, trait, and polarization variables (see Table S4), including these covariates is unnecessary and may bias the results (Mutz and Pemantle 2015; Mutz, Pemantle, and Pham 2019). Third, we calculated the change in affective polarization per participant, by subtracting the Time 1 affective polarization composite scores from the Time 2 scores, and entered these change scores into a one-way ANOVA, rather than using a repeated-measures model. This was done to allow for a comparison of the change in affective polarization between conditions, rather than a comparison of the Time 1 vs Time 2 affective polarization scores across conditions. Post-hoc Tukey's HSD tests were then used to examine the pairwise comparisons, rather than paired-samples t-tests.

Running the analysis set out in our preregistration (after linearly scaling each dependent variable) produces the same results as those reported in the main text. Entering the Time 1 and Time 2 composite measures of affective polarization (using ratings of in-group and out-group voters) into a 3 (condition: befriending, mindfulness, control) x 2 (time: pre- intervention, post-intervention) mixed ANCOVA, controlling for age, gender, education and language, revealed a marginal interaction between the condition and time ( $F(2,345) = 2.59, p = .077, \eta_p^2 = .015$ ).

Re-running this analysis using ratings of each party's candidates and elected officials revealed a significant interaction between the condition and time ( $F(2,345) = 3.86, p = .022, \eta_p^2 = .022$ ).

Bonferroni corrected pairwise comparisons indicated that there was a reduction in

affective polarization at Time 2 relative to Time 1 in the befriending condition ( $F(1,345) = 6.20$ ,  $p = .013$ ,  $\eta_p^2 = .018$ ) but not the mindfulness condition ( $F(1,345) = 2.26$ ,  $p = .134$ ,  $\eta_p^2 = .006$ ) or the control condition ( $F(1,345) = 1.68$ ,  $p = .196$ ,  $\eta_p^2 = .005$ ).

### Inclusion of Participants Who Failed Attention Checks

To test whether our decision to exclude participants who failed attention checks affected the results, we re-ran the main analyses reported in the main text with participants who exhibited inattentive responding (for whom we have data from both session one and two) included. The results are reported in Table S5. The final column of Table S5 indicates whether the result reported here matches the one in the main text.

Table S5. Results of main analyses without exclusions.

Analysis	Result	Replicates main text
Bivariate correlation between trait compassion and Time 1 AP (voters)	$r(360) = .034$ , $p = .262$	Yes
Bivariate correlation between trait compassion and Time 1 AP (candidates and officials)	$r(360) = .055$ , $p = .148$	Yes
Bivariate correlation between trait mindfulness and Time 1 AP (voters)	$r(360) = -.051$ , $p = .168$	Yes
Bivariate correlation between trait mindfulness and Time 1 AP (candidates and officials)	$r(360) = -.039$ , $p = .230$	Yes
Partial correlation between trait compassion and Time 1 AP (voters)	$r_{\text{partial}}(357) = .037$ , $p = .243$	Yes
Partial correlation between trait compassion and Time 1 AP (candidates and officials)	$r_{\text{partial}}(357) = .058$ , $p = .138$	Yes
Partial correlation between trait mindfulness and Time 1 AP (voters)	$r_{\text{partial}}(357) = -.053$ , $p = .158$	Yes
Partial correlation between trait mindfulness and Time 1 AP (candidates and officials)	$r_{\text{partial}}(357) = -.043$ , $p = .211$	Yes
Change in composite AP (voters) between conditions	$F(2,359) = 2.74$ , $p = .066$ , $\eta_p^2 = .015$	Yes
Change in composite AP (candidates and officials) between conditions	$F(2,359) = 3.46$ , $p = .033$ , $\eta_p^2 = .019$	Yes

Post hoc Tukey HSD test comparing the befriending and control conditions	Mean difference = 3.84, SE = 1.63, p = .050.	Yes
Post hoc Tukey HSD test comparing the mindfulness and control conditions	Mean difference = 0.29, SE = 1.63, p = .983.	Yes

Note: AP = Affective Polarization.

### Differences Between Dropouts and Participants Who Completed Both Sessions

We tested whether there were differences between participants who completed both sessions of the experiment and those who only completed session one on the variables recorded at Time 1. The results are reported in Table S6. The final column of Table S6 indicates whether there is a significant difference on the given variable between the two groups.

Table S6. Differences between dropouts and participants who completed both sessions.

Variable (statistical test)	Test statistics	Significant difference
Political affiliation: Democrat, Republican (Chi Square)	$X^2 (1, N = 451) = 1.07, p = .302$	No
Strength of party identification (T-Test)	$t(449) = 0.15, p = .880$	No
Trait compassion (T- Test)	$t(449) = 1.05, p = .293$	No
Trait mindfulness (T- Test)	$t(449) = 0.16, p = .872$	No
Time 1 AP for voters on feeling thermometer (T- Test)	$t(449) = 0.30, p = .767$	No
Time 1 AP for voters on net trait rating (T- Test)	$t(449) = -0.98, p = .329$	No
Time 1 AP for voters on trust measure (T- Test)	$t(449) = -0.83, p = .410$	No
Time 1 AP for candidates and officials on feeling thermometer (T- Test)	$t(449) = 0.15, p = .881$	No
Time 1 AP for candidates and officials on net trait rating (T- Test)	$t(449) = -0.12, p = .908$	No
Time 1 AP for candidates and officials on trust measure (T- Test)	$t(449) = -0.14, p = .891$	No

Note: AP = Affective Polarization.

### Hypothetical Helping Behaviour

In addition to measuring affective polarization, we also included a measure of helping intentions as an additional exploratory analysis to see whether affective changes are reflected in individuals' behavioral intentions. The participants were asked to rate how likely they would be to help someone from their own party and someone from the rival party in a hypothetical scenario: “Laura is a [political party affiliation]. If you were walking down the street and saw Laura fall over, how likely would you be to go over and offer assistance?” Participants were asked to rate how likely they would be to go over and offer assistance on a scale from 0 (“Not at all likely”) to 100 (“Extremely likely”). As the experiment period took place during the covid-19 outbreak, the participants were also asked if they took the new guidance on social distancing into account when answering the hypothetical helping question at Time 2 (but not at Time 1).

To compute a measure of ‘helping polarization’ (i.e. the difference between participants’ willingness to help someone from their own party compared to someone from the rival party) we subtracted the out-group ratings from the in-group ratings. This was done separately for ratings at Time 1 and Time 2. We then computed change scores by calculating the difference between helping polarization at Time 1 and Time 2.

To assess whether there were differences in hypothetical helping across the meditation practice conditions at Time 1, we performed a one-way ANOVA. This revealed that there were no significant differences in helping polarization at the pre-intervention stage between the conditions ( $F(2,350) = 1.40, p = .25$ ).

We next tested whether changes in helping polarization over time were influenced by the meditation practice condition to which participants were randomly assigned by entering the helping polarization change scores into a one-way ANOVA. This revealed that the effect of the condition was not significant ( $F(2,352) = 1.40, p = .248, \eta_p^2 = .008$ ). This suggests that neither

befriending meditation nor mindfulness meditation influenced participant’s greater willingness to help someone from their own party.

As the hypothetical helping behavior involved interacting with someone during outbreak of the covid-19 outbreak, it is possible that social distancing guidelines may have influenced responses on this question. We therefore excluded participants who reported that they took the guidance on social distancing into account when answering this question and re- ran the analysis. This did not change the result: we again found no effect of the condition on helping polarization change scores ( $F(2,323) = 0.17, p = .846, \eta_p^2 = .001$ ).

## Study 2

### Demographic Information

Participants reported:

Political affiliation (frequencies reported in main text).

Gender and age (descriptive statistics reported in main text).

Whether English was their first language: 97% said “yes”, “3%” said no. Whether

they have asthma: 12% said “yes”, “88%” said no.

Table S7. Highest level of education completed.

Education Level	Percentage of sample
No formal qualifications	0.80%
Secondary education (e.g. GED/GCSE)	2.44%
High school diploma / A-levels	22.36%
Technical/community college	14.63%
Undergraduate degree (BA/BSc/other)	40.65%
Graduate degree (MA/MSc/MPhil/other)	13.82%
Doctorate degree (PhD/other)	5.28%
Don't know / not applicable	0%

Table S8. Previous meditation experience.

Frequency of meditation practice	Percentage of sample
Daily	4.88%
Four to six times per week	2.44%

Two to three times per week	10.98%
Once per week	7.32%
Two to three times per month	8.94%
Once per month	19.11%
Never	46.34%

Table S9. Equipment used to listen to the audio clip (i.e. the intervention).

Equipment	Percentage of sample
Headphones	67.07%
Speakers	32.11%
Other	0.81%

One individual that selected ‘Other’ reported using a “Built in Laptop speakers”, while the other reported using “Computer speaker for the first half then headphones for the last half.”

### Randomization Checks

Table S10. Balance tests for demographic, political, trait, and polarization variables.

Variable (statistical test)	Test statistics
Age (T-Test)	$t(244) = 0.36, p = .718$
Gender (Chi Square)	$X^2 (3, N = 246) = 2.95, p = .399$
First language (Chi Square)	$X^2 (1, N = 246) = 1.53, p = .216$
Education (Chi Square)	$X^2 (6, N = 246) = 18.52, p = .006$
Meditation practice (Chi Square)	$X^2 (6, N = 246) = 3.66, p = .728$
Asthma (Chi Square)	$X^2 (1, N = 246) = 0.04, p = .84$
Audio equipment (Chi Square)	$X^2 (2, N = 246) = 2.07, p = .356$
Political affiliation: Democrat, Republican (Chi Square)	$X^2 (1, N = 246) = 0.02, p = .892$
Strength of party identification (T-Test)	$t(244) = -0.70, p = .487$
Time 1 AP for voters on feeling thermometer (T-Test)	$t(244) = -0.02, p = .986$

Note: AP = Affective Polarization.

As education varied between the conditions at Time 1, we ran a regression analysis to test whether this difference affected our main result. Specifically, we entered the feeling thermometer polarization change scores as the dependent variable in a linear regression and entered the meditation practice condition (befriending = 1, control = 0) and level of education as independent variables. This revealed a significant effect of the condition ( $\beta = -6.66, SE = 2.43,$

$t(243) = -2.74, p = .007$ ), suggesting that impact of befriending meditation on affective polarization was not due to pre-existing differences in education between the intervention and control groups. The effect of education was not significant ( $\beta = -1.59, SE = 0.98, t(243) = -1.62, p = .107$ ).

### **Inclusion of Participants Who Failed Attention Checks**

We re-ran the main analysis to assess whether the effect held when participants who failed the attention checks (for whom we have data from both session one and two) were included. An independent samples t-test revealed a greater reduction in affective polarization in the befriending condition ( $M = -6.65, SD = 19.63$ ) than in the control condition ( $M = -0.28, SD = 19.28; t(267) = 2.69, p = .008, d = 0.33$ ), indicating that excluding participants who failed the attention checks did not affect the result.

### **Differences Between Dropouts and Participants Who Completed Both Sessions**

We tested whether there were differences between participants who completed both sessions of the experiment and those who only completed session one on the variables recorded at Time 1. The results are reported in Table S11. The final column of Table S11 indicates whether there is a significant difference on the given variable between the two groups.

Table S11. Differences between dropouts and participants who completed both sessions.

<b>Variable (statistical test)</b>	<b>Test statistics</b>	<b>Significant difference</b>
Political affiliation: Democrat, Republican (Chi Square)	$\chi^2 (1, N = 350) = 1.30, p = .254$	No
Strength of party identification (T-Test)	$t(348) = 0.55, p = .583$	No
Time 1 AP for voters on feeling thermometer (T-Test)	$t(348) = 1.93, p = .055$	No
Time 1 AP for voters on net trait rating (T- Test)	$t(348) = 0.87, p = .383$	No

Time 1 AP for voters on trust measure (T- Test)	$t(348) = 0.96, p = .340$	No
Time 1 AP for candidates and officials on feeling thermometer (T- Test)	$t(348) = 2.41, p = .016$	Yes
Time 1 AP for candidates and officials on net trait rating (T- Test)	$t(348) = 1.22, p = .223$	No
Time 1 AP for candidates and officials on trust measure (T- Test)	$t(348) = 1.93, p = .054$	No

*Note: AP = Affective Polarization.*

## Chapter 9: Conclusion

This thesis has examined meditative practices and their correlates and consequences for political attitudes. The first part of the thesis investigated (use of; awareness of; engagement with) mindfulness in society and its distribution across sociodemographic and political groups, while the second part investigated the effects of mindfulness-based and kindness-based practices and programs on liberal-conservative attitudes and affective polarization. Taken together, the findings represent a significant and substantial contribution to the research literature by showing that: (1) mindfulness use is sufficiently widespread in the United States and Britain to be worthy of investigation in sociology; (2) mindfulness use among adults in the United States varies widely based on several sociodemographic variables, including marital status, family composition, and employment status; (3) awareness of mindfulness and level of engagement with mindfulness among adults in Britain varies widely based on several sociodemographic and political variables, including age group, household income, and voting behaviour; (4) participation in an eight-week compassion-based program induces a shift towards more liberal political attitudes in university students; and (5) a brief befriending meditation reduces affective polarization between Democrats and Republicans.

### **Part One**

The first part of the thesis was comprised of one theoretical chapter and two empirical chapters. The theoretical (second) chapter reviewed the research literature on the prevalence of mindfulness use in society and the key theoretical explanations for why some groups might use mindfulness more than others. The literature review broadly showed that there were significant weaknesses in the research to date, including using samples exclusively from the United States; relying mostly on data from 2012; and only investigating mindfulness use as the dependent

variable. The following two empirical chapters sought to address the weaknesses in the research to date and provide a more nuanced analysis of mindfulness as a social phenomenon.

The first empirical (third) chapter investigated the prevalence of mindfulness use and used publicly available data from the 2017 National Health Interview Survey, with the sample weighted to be representative of the adult population in the United States. Taken together, the results suggest that five per cent of adults in the United States had used mindfulness during the 12 months prior to the survey interview, but mindfulness use was less likely among married adults and more likely among women, sexual minorities, young and middle-aged adults, white adults, employed adults, adults without minor children in the family, adults from the West of the United States, adults with access barriers to healthcare, adults with cost barriers to healthcare, adults with mental illness, and adults with physical pain.

The second empirical (fourth) chapter investigated awareness of mindfulness and level of engagement with mindfulness and used data from an online survey in 2018, with the sample weighted to be representative of the adult population in Britain. Taken together, the results suggest that fifteen per cent of adults in Britain had learnt to practise mindfulness, but awareness of mindfulness was more likely among women, unmarried adults, adults from middle and high-income households, and those who voted Remain in the 2016 EU Referendum; and higher levels of engagement with mindfulness, beyond awareness, was more likely among young and middle-aged adults.

The first and second empirical chapters analyzed different dependent variables and used samples from two different national contexts. The comparisons that can be made between the two chapters are therefore limited, but the main theme that emerged from the analyses was that (use of; awareness of; engagement with) mindfulness varied widely across groups, which raised several important questions. For example, the degree of mindfulness practice differed across

political groups in the second empirical chapter and suggested a slightly higher level of mindfulness practice for those who voted Leave in the Brexit Referendum and those who voted Conservative in the General Election. The explanation for the results could be either self-selection or causation. The second part of this thesis therefore sought to investigate how mindfulness-based (and kindness-based) practices and programs might affect political attitudes.

## **Part Two**

The second part of the thesis was comprised of one theoretical chapter and three empirical chapters. The theoretical (fifth) chapter reviewed the research literature on the main causes and correlates of political attitudes and the key theoretical explanations for why meditative practices may (or may not) affect political attitudes. The literature review showed that there were significant gaps in the research to date, including a lack of research on how mindfulness-based and kindness-based interventions affect liberal-conservative attitudes and affective polarization. In sum, previous research suggests that kindness-based (and to a lesser extent mindfulness-based) interventions might increase liberal political attitudes and reduce affective polarization, which was examined in the following three empirical chapters.

The first empirical (sixth) chapter outlined results and lessons from two pilot studies and two randomized controlled trials that were never completed due to unforeseen circumstances. Taken together, the results from the pilot studies suggest that self-compassion could be a sensible manipulation check, while the lessons from the failed studies suggest that it is important that: (1) there is a reserve teacher ready to teach in case the primary teacher cannot make it; (2) the registered participants are really motivated to attend the course; and (3) the recruitment does not depend solely on one single recruitment platform.

The second empirical (seventh) chapter investigated the causal effects of eight-week mindfulness-based and compassion-based programs on liberal-conservative attitudes in university students and used data from two randomized controlled trials in the United States and Britain. Taken together, the results showed that participation in an eight-week compassion-based program increased liberal political attitudes, but there were also null findings on several exploratory variables.

The third empirical (eight) chapter investigated the causal effects of brief meditation interventions on affective polarization in American adults and used data from two online randomized controlled trials. Taken together, the results showed that a brief befriending meditation reduced affective polarization between Democrats and Republicans by increasing positive feelings relatively more for the political outgroup than the political ingroup.

The second and third empirical chapters analyzed different dependent variables and used interventions with different lengths. The comparisons that can be made between the two chapters are therefore limited, but the main theme that emerged from the analyses was that kindness-based interventions produced statistically significant effects on both liberal-conservative attitudes and affective polarization, which raised several important questions. For instance, one of the possible mechanisms underlying the changes observed in the second and third empirical chapters could be compassion. There have already been research studies on compassion that show an association with both liberal-conservative attitudes and positive intergroup attitudes (Hirsh et al., 2010; Klimecki, 2019; Osborne, Wootton & Sibley, 2013), but the changes might depend on whether the ingroup or outgroup is the target of the compassion. In fact, recent findings suggest that liberals and conservatives differ in their intergroup empathy and interconnectedness biases (Sparkman, Eidelman & Till, 2019; Waytz et al., 2016). The kindness-based interventions might therefore have induced compassion relatively more for

outgroups than ingroups, which effectively increased liberal political attitudes and decreased affective polarization.

### **Limitations and Future Research Directions**

This thesis has contributed considerably to a better understanding of meditative practices and their correlates and consequences for political attitudes. The chapters have, in many ways, complemented each other and have enabled the research questions to be examined in depth, but the studies have substantial limitations that need to be highlighted. For instance, neither of the cross-sectional studies investigated the psychological mechanisms that increased the likelihood of mindfulness use, awareness of mindfulness, and level of engagement with mindfulness. The experimental studies did also not investigate the psychological mechanisms that underlie the changes in liberal-conservative attitudes and affective polarization, which was a significant limitation that should be addressed in future research.

While this thesis has answered several research questions, numerous questions remain to be answered by future research. For example, the prevalence of kindness-based practices in society has not been investigated in population studies. The number of users might be too low at present to detect significant differences, but the National Health Interview Survey and similar surveys could likely provide sufficient sample sizes for significant findings. It is also important to expand the research on kindness-based interventions to a range of political contexts, including the effects of kindness-based practices and programs on democratic values, violent political ideologies, and peacebuilding and reconciliation in post-conflict countries.

### **Policy Implications**

The cross-sectional and experimental studies in this thesis have multiple limitations and weaknesses, which are important to consider when the results are interpreted. While the

findings need to be replicated and more should be done to investigate the themes covered in each of the chapters, the research studies in this thesis still establish correlational and causal associations that could have important policy implications.

First, the results from chapter three and four broadly suggest that many sociodemographic groups with worse health outcomes (e.g. men, older adults, and racial minorities) are less likely to self-report mindfulness use. Rose, Zell and Strickhouser (2020) show that mindfulness training can have positive effects on a range of health outcomes, which indicates that policies designed to increase access to mindfulness-based interventions for vulnerable populations could be useful as part of a national preventive health strategy. It would likely require different strategies for specific populations, however, given that both awareness of mindfulness and interest to learn to practise mindfulness varies across sociodemographic and political groups.

Second, the results from chapter seven and eight broadly suggest that kindness-based interventions can increase liberal political attitudes and reduce tensions between political groups. While the findings from chapter seven could very well politicize kindness-based interventions and influence the political will to implement kindness-based practices and programs, the findings from chapter eight could motivate the use of kindness-based interventions to reduce animosity between political groups in democracies and also to facilitate peacebuilding and reconciliation in post-conflict countries. It could easily be scaled up to reach large groups of people, even if different cultural circumstances might require slight adjustments to the teachings.

### **Final Thoughts**

This thesis has examined meditative practices and their correlates and consequences for political attitudes. The first part of the thesis investigated the prevalence of mindfulness use in

society and its distribution across sociodemographic and political groups, while the second part investigated the effects of mindfulness-based and kindness-based practices and programs on liberal-conservative attitudes and affective polarization. Taken together, the findings represent a significant and substantial contribution to the research literature and opens the possibility of new subfields, which can inspire more sociological and political work on mindfulness-based and kindness-based interventions.

## References

- Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite conservatives: Associations of agreeableness with political ideology and moral values. *Personality and Social Psychology Bulletin*, 36(5), 655-664. doi: 10.1177/0146167210366854
- Klimecki, O. M. (2019). The role of empathy and compassion in conflict resolution. *Emotion Review*, 11(4), 310-325. doi: 10.1177/1754073919838609
- Osborne, D., Wootton, L. W., & Sibley, C. G. (2013). Are liberals agreeable or not? Politeness and Compassion Differentially Predict Political Conservatism Via Distinct Ideologies. *Social Psychology*, 44, 354-360. doi: 10.1027/1864-9335/a000132
- Rose, S., Zell, E., & Strickhouser, J. E. (2020). The effect of meditation on health: a metasynthesis of randomized controlled trials. *Mindfulness*, 11(2), 507-516. doi: 10.1007/s12671-019-01277-6
- Sparkman, D. J., Eidelman, S., & Till, D. F. (2019). Ingroup and outgroup interconnectedness predict and promote political ideology through empathy. *Group Processes & Intergroup Relations*, 22(8), 1161-1180. doi: 10.1177/1368430218819794
- Waytz, A., Iyer, R., Young, L., & Graham, J. (2016). Ideological differences in the expanse of empathy. *Social Psychology of Political Polarization*, 61-77.