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SUPPLEMENTARY INFORMATION

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A large-scale test of the link between intergroup contact and support for social change

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Supplementary Materials for

A large-scale test of the link between intergroup contact and support for social change.

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Data and materials have been deposited on the Open Science Framework under the following link https://osf.io/m5pb6. Since our participants only consented to having their data published in aggregated form and publishing the raw data may pose a threat to the confidentiality and safety of the participants, we published the residualized data only. That is, each variable containing participants' responses was subjected to a one-way ANOVA using the subsample identifier variable as factor. The residuals of this ANOVA were used for all analyses reported in the paper.

Summary of Deviations from the Preregistration

The main difference between the plan as filed (see https://osf.io/6hfcu/) and the publication is that in the interest of more efficient communication of results we report only the relation between intergroup contact and support for social change. Leaving out measures of need satisfaction during contact allowed us to also include participants who reported having no contact with the respective outgroup. Moreover, we also included items assessing indirect contact (i.e., the knowledge or observation that one or more ingroup member have contact with one or more outgroup members) – originally, we planned to include only measures of direct contact. Further, based on theoretical considerations, we deviated from the proposed starting point in the construction of the intergroup contact scales and excluded two items among LGBTIQ+ individuals (see below). For a detailed overview see Supplementary Table 13. The main conclusions remain unaltered by the changes to the inclusion and construction of scales.

Sample

Our sample includes 12,997 participants from 69 countries. The sample is made up of 3,216 ethnic majority group members, 4,898 cis-heterosexuals, 1,000 ethnic minority group members, and 3,883 LGBTIQ+[1] individuals. Informed consent from all included participants was

[1] The term LGBTIQ+ denotes individuals identifying as lesbian, gay, bisexual, transgender, intersexual, queer, or other sexual and gender minorities.

obtained. For more detailed information on the composition of our sample and each of the four populations (i.e., ethnic majorities, cis-heterosexuals, ethnic minorities, and LGBTIQ+ individuals) refer to Supplementary Table 1 for the ethnic context and Supplementary Table 2 for the LGBTIQ+ context. The LGBTIQ+ population is further specified in Supplementary Table 3, which contains the frequencies of LGBTIQ+ subgroups based on sexual orientation and gender identity.

Supplementary Table 1

Overview of Included Participants – Ethnic Context

		Ethnic Majorities			**Ethnic Minorities**		
Intergroup Context	**Country**	***N***	**Mean Age (*SD*)**	**Gender**	***N***	**Mean Age (*SD*)**	**Gender**
Belgians / Moroccans	Belgium	122	18.61 (1.99)	male = 0 female = 122 other = 0	–	–	–
Belgians / Turks	Belgium	40	18.48 (0.78)	male = 0 female = 40 other = 0	–	–	–
Whites / Blacks	Brazil	167	32.31 (12.11)	male = 37 female = 129 other = 1	–	–	–
Non-Indigenous / Mapuche	Chile	170	28.23 (9.54)	male = 60 female = 110 other = 0	118	29.92 (10.14)	male =56 female = 61 other = 0 NA = 1
Chileans / Peruvians	Chile	133	30.61 (14.06)	male = 58 female = 74 other = 1	127	33.10 (12.02)	male = 59 female = 67 other =0 NA = 1
Non-Muslims / Muslims	Germany	198	32.25 (12.30)	male = 71 female = 124 other = 3	110	31.94 (11.35)	male = 70 female = 39 other = 1
Germans / Refugees	Germany	181	30.44 (14.06)	male = 48 female = 130 other = 3	–	–	–
Germans / Refugees	Germany	175	35.50 (12.17)	male = 95 female = 80 other = 0	–	–	–
Germans / Turks	Germany	205	34.71 (12.03)	male = 120 female = 85 other = 0	–	–	–

Jews / Arabs	Israel	120	24.53 (2.36)	male = 34 female = 86 other = 0	–	–	–
Jews / Ethiopians	Israel	101	25.84 (4.72)	male = 39 female = 62 other = 0	–	–	–
Albanians / Serbs	Kosovo	146	20.45 (1.60)	male = 15 female = 131 other = 0	112	24.70 (4.80)	male = 44 female = 68 other = 0
Polish / Ukrainians	Poland	155	36.29 (12.60)	male = 73 female = 82 other = 0	89	22.66 (4.83)	male = 29 female = 60 other = 0
Serbs / Bosniaks	Serbia	122	21.33 (2.05)	male = 23 female = 99 other = 0	95	31.62 (11.65)	male = 40 female = 55 other = 0
Non-Roma/ Roma	Spain	536	24.44 (7.62)	male = 172 female = 360 other = 4	27	33.04 (12.23)	male = 14 female = 13 other = 0
Non-Muslims / Muslims	Switzerland	121	28.41 (11.96)	male = 37 female = 83 other = 1	89	32.26 (12.81)	male = 40 female = 49 other = 0
Swiss / Portuguese immigrants	Switzerland	129	29.24 (10.88)	male = 32 female = 97 other = 0	–	–	–
British / Asians	United Kingdom	101	21.20 (7.25)	male = 23 female = 78 other = 0	127	21.50 (5.77)	male = 21 female = 106 other = 0
Non-Muslims / Muslims	United Kingdom	157	36.75 (12.39)	male = 76 female = 80 other = 1	–	–	
Whites / Blacks	United States	133	20.08 (1.29)	male = 23 female = 110 other = 0	–	–	
Non-Muslims / Muslims	United States	4	36.75 (8.46)	male = 4 female = 0 other = 0	106	34.15 (13.41)	male = 39 female = 67 other = 0
	Total	***3,216***	28.08 (11.28)	male = 1040 female = 2162 other = 14	***1,000***	29.15 (11.13)	male = 412 female = 585 other = 1 NA = 2

Note. In the first column, the social category before the slash (/) refers to the ethnic majority and the social category after the slash refers to the ethnic minority targeted in the measures for this country. Note that for simplicity, we use the term “ethnic” to also refer to social categories differing by their racial, national, tribal, religious, or cultural origin or background.

Supplementary Table 2
Overview of Included Participants – Sexual and Gender Identity Context

	Cis-Heterosexuals			**Sexual and Gender Minorities**		
Country	***N***	***Age (SD)***	***Gender***	***N***	***Age (SD)***	***Gender***
Argentina	1	22.00 (NA)	male = 0 female = 1	6	32.00 (22.09)	male = 1 female = 4 other = 1
Australia	19	36.42 (12.93)	male = 4 female = 15	73	38.93 (14.21)	male = 23 female = 31 other = 19
Austria	74	43.14 (16.48)	male = 42 female = 32	110	35.38 (11.66)	male = 36 female = 65 other = 9
Azerbaijan	1	22.00 (NA)	male = 0 female = 1	–	–	–
Belarus	1	30.00 (NA)	male = 1 female = 0	1	21.00 (NA)	male = 1 female = 0 other = 0
Belgium	190	19.80 (7.00)	male = 4 female = 186	158	38.94 (17.51)	male = 88 female = 60 other = 10
Bolivia	–	–	–	1	35.00 (NA)	male = 1 female = 0 other = 0
Bosnia and Hercegovina	1	24.00 (NA)	male = 0 female = 1	4	26.75 (8.06)	male = 0 female = 4 other = 0
Botswana	–	–	–	1	26.00 (NA)	male = 0 female = 0 other = 1
Brazil	123	35.77 (12.15)	male = 49 female = 74	103	30.14 (9.38)	male = 45 female = 56 other = 2
Canada	402	22.23 (5.92)	male = 93 female = 309	228	26.40 (10.19)	male = 57 female = 127 other = 44
Chile	316	25.99 (11.18)	male = 102 female = 214	236	23.66 (7.33)	male = 107 female = 121 other = 8
China	26	22.27 (2.81)	male = 14 female = 12	19	24.84 (6.37)	male = 6 female = 8 other = 5
Columbia	1	40 (NA)	male = 0 female = 1	2	32.50 (4.95)	male = 1 female = 1 other = 0
Croatia	186	27.25 (8.73)	male = 32 female = 154	107	26.83 (8.61)	male = 47 female = 56 other = 4
Czech Republic	116	28.53 (12.33)	male = 48 female = 68	125	23.12 (6.40)	male = 28 female = 96

						other = 1
Denmark	3	31.67 (14.19)	male = 1 female = 2	4	33.50 (12.29)	male = 2 female = 2 other = 0
El Salvador	–	–	–	1	19.00 (NA)	male = 0 female = 1 other = 0
Estonia	1	25 (NA)	male = 1 female = 0	2	32.00 (14.14)	male = 2 female = 0 other = 0
Ethiopia	–	–	–	1	31.00 (NA)	male = 1 female = 0 other = 0
France	14	26.64 (9.37)	male = 5 female = 9	122	34.00 (15.80)	male = 59 female = 29 other = 34
Germany	678	40.81 (15.55)	male = 442 female = 236	445	34.80 (13.15)	male = 141 female = 239 other = 65
Greece	1	18 (NA)	male = 0 female = 1	1	32.00 (NA)	male = 1 female = 0 other = 0
Hungary	259	22.47 (5.37)	male = 55 female = 204	177	30.44 (12.10)	male = 78 female = 86 other = 13
Iceland	–	–	–	9	28.11 (10.46)	male = 4 female = 4 other = 1
India	1	27 (NA)	male = 0 female = 1	3	48.00 (12.12)	male = 2 female = 0 other = 1
Iran	–	–	–	1	27.00 (NA)	male = 1 female = 0 other = 0
Isle of Man	1	19 (NA)	male = 0 female = 1	–	–	–
Israel	1	29 (NA)	male = 0 female = 1	2	25.50 (6.36)	male = 0 female = 2 other = 0
Italy	177	29.51 (10.25)	male = 38 female = 139	200	28.98 (10.49)	male = 58 female = 122 other = 20
Japan	1	26 (NA)	male = 0 female = 1	2	27.50 (2.12)	male = 1 female = 0 other = 1
Kazakhstan	2	40 (7.07)	male = 2 female = 0	–	–	–
Kosovo	144	21.88 (3.83)	male = 9 female = 135	39	23.64 (5.05)	male = 19 female = 20 other = 0
Kyrgyzstan	–	–	–	1	22.00 (NA)	male = 1 female = 0

						other = 0
Latvia	1	35 (NA)	male = 1 female = 0	–	–	–
Liechtenstein	–	–	–	2	28.50 (6.36)	male = 1 female = 1 other = 0
Lithuania	2	33.00 (16.97)	male = 1 female = 1	–	–	–
Luxembourg	1	30 (NA)	male = 0 female = 1	–	–	–
Macedonia	1	22 (NA)	male = 0 female = 1	–	–	–
Malaysia	1	37 (NA)	male = 0 female = 1	–	–	–
Mexico	106	24.72 (9.32)	male = 19 female = 87	59	27.75 (9.90)	male = 25 female = 31 other = 3
Moldova	–	–	–	2	34.50 (7.78)	male = 0 female = 1 other = 1
Monaco	–	–	–	1	34.00 (NA)	male = 1 female = 0 other = 0
Montenegro	–	–	–	2	20.00 (1.41)	male = 0 female = 1 other = 1
Netherlands	286	20.77 (5.61)	male = 51 female = 235	162	38.93 (19.01)	male = 71 female = 81 other = 10
New Zealand	–	–	–	9	28.33 (8.86)	male = 3 female = 3 other = 3
Nicaragua	–	–	–	1	33.00 (NA)	male = 0 female = 1 other = 0
Norway	1	28 (NA)	male = 0 female = 1	3	40.67 (21.22)	male = 1 female = 2 other = 0
Peru	1	18 (NA)	male = 0 female = 1	3	19.00 (0.00)	male = 0 female = 3 other = 0
Poland	293	40.79 (11.58)	male = 126 female = 167	178	27.83 (7.73)	male = 54 female = 110 other = 14
Portugal	–	–	–	1	28.00 (NA)	male = 1 female = 0 other = 0
Russia	190	30.97 (12.07)	male = 35 female = 155	123	28.00 (8.57)	male = 50 female = 65 other = 8
Rwanda	–	–	–	1	24.00	male = 1

					(NA)	female = 0 other = 0
Serbia	58	31.57 (9.54)	male = 13 female = 45	80	29.31 (8.29)	male = 47 female = 29 other = 4
Singapore	2	45.50 (16.26)	male = 2 female = 0	–	–	–
Slovakia	6	26.17 (8.86)	male = 3 female = 3	6	25.50 (7.50)	male = 3 female = 3 other = 0
South Africa	1	25 (NA)	male = 0 female = 1	1	51.00 (NA)	male = 0 female = 1 other = 0
Spain	419	23.54 (5.69)	male = 110 female = 309	319	24.70 (7.73)	male = 121 female = 188 other = 10
Suriname	–	–	–	1	66.00 (NA)	male = 0 female = 0 other = 1
Sweden	3	29.33 (0.58)	male = 0 female = 3	4	33.50 (9.11)	male = 2 female = 0 other = 2
Switzerland	338	30.71 (12.95)	male = 95 female = 243	324	33.17 (12.74)	male = 88 female = 195 other = 41
Taiwan	–	–	–	1	17.00 (NA)	male = 0 female = 1 other = 0
Thailand	–	–	–	3	46.00 (26.63)	male = 1 female = 2 other = 0
The Bahamas	–	–	–	1	23.00 (NA)	male = 0 female = 0 other = 1
Turkey	111	28.95 (7. 93)	male = 39 female = 72	56	28.07 (7.85)	male = 29 female = 21 other = 6
Ukraine	19	33.42 (8.17)	male = 4 female = 15	68	32.31 (11.25)	male = 25 female = 41 other = 2
United Arabic Emirates	–	–	–	1	34.00 (NA)	male = 1 female = 0 other = 0
United Kingdom	119	29.39 (12.38)	male = 33 female = 86	127	34.35 (14.25)	male = 47 female = 68 other = 12
United States	199	35.64 (12.54)	male = 101 female = 98	160	28.08 (11.59)	male = 62 female = 79 other = 19
Total	***4,898***	29.47 (12.84)	male = 1,575 female = 3,323	***3,883***	30.42 (12.53)	male = 1,445 female = 2,061 other = 377

Supplementary Table 3
Sample Composition (LGBTIQ+ Individuals)

Sexual Orientation/ Gender	Male	Female	Intersex	Other	*Total N*
Heterosexual	31 (31)	19 (19)	3 (1)	26 (16)	79 (67)
Bisexual	227 (32)	854 (30)	11 (4)	83 (69)	1175 (135)
Homosexual	1109 (28)	900 (34)	10 (4)	63 (48)	2082 (114)
Asexual	28 (8)	105 (6)	4 (2)	45 (39)	182 (55)
Other	50 (23)	183 (23)	2 (0)	130 (117)	365 (163)
Total N	1445 (122)	2061 (112)	30(11)	347 (289)	3883 (534)

Note: In parentheses: Individuals identifying as transgender.

Recruitment and Exclusion of Participants

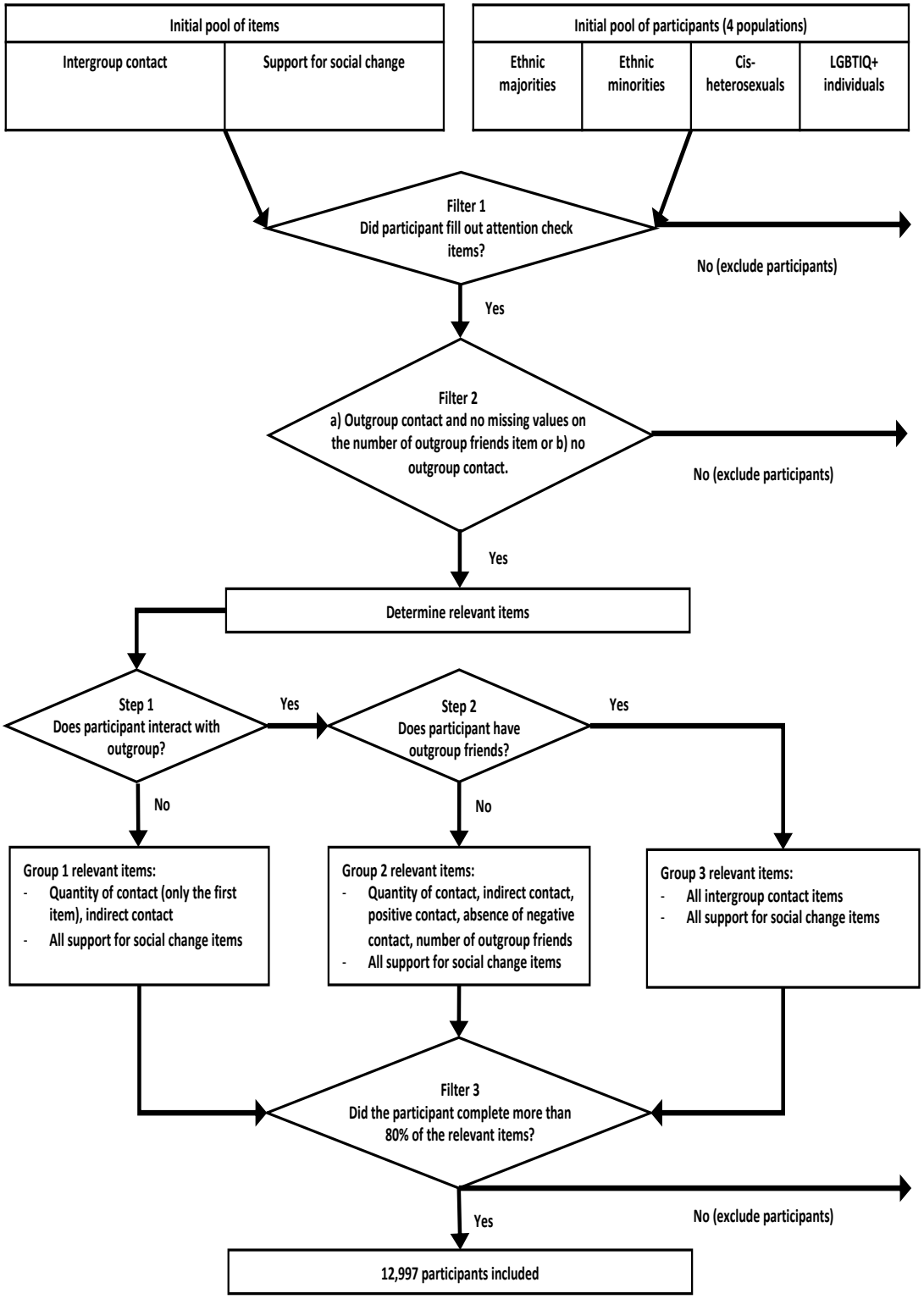
We collected the data between June 2016 and June 2017. We recruited participants through online platforms (e.g., social networking sites, snowball sampling, and contacting relevant organizations) to voluntarily complete our survey online, and on university campuses or on the street to voluntarily complete paper/pencil surveys. Participants were told that they would complete a study about relations between different groups in society. They completed the survey either for (a) course credits or (b) a chance to win one of two vouchers worth 250 Euros or one of twenty vouchers worth 50 Euros. Upon completion, participants were thanked and debriefed. All participants consented to their data being used for research purposes as well as being published in anonymized and aggregated form.

Supplementary Figure 1 depicts the exclusion process.[2] The first filter excluded participants who had missing values on the attention check items and, therefore, did not complete all measures of interest. The second filter excluded all participants with missing values on the first *quantity of contact* item (How often do you interact with [participants' outgroup]?), and all participants who reported having outgroup contact but had missing values on the *number of*

[2] During the data preparation we excluded a few cases: test persons, participants indicating being younger than 16, participants who entered impossible values for age and/or country. Since the legal rights of LGBTIQ+ people vary between countries, we also excluded participants indicating a dual group membership (e.g., residency in two countries).

outgroup friends item (How many of your friends are [participants' outgroup]?). Hence, we included only participants who either had (a) outgroup contact and no missing values on the *number of outgroup friends* item, or (b) no outgroup contact (see Supplementary Table 4 for measures and items). The third filter excluded all participants who had not answered 20% (or more) of the items used in the analyses, i.e., all *support for social change* items and all *intergroup contact* items which were not skipped due to specific filters (see Supplementary Table 4 for relevant items). All *support for social change* items were treated as relevant to all participants.

Regarding intergroup contact, for participants who had indicated never interacting with the outgroup, only the first *quantity of contact* item ('How often do you interact with [outgroup members]?') and the three *indirect contact* items (quantity of indirect outgroup friends, positive indirect contact, absence of negative indirect contact) were classified as relevant items. For participants with outgroup contact but without outgroup friends, both *quantity of contact* items, the three *indirect contact* items, as well as the *positive contact*, *absence of negative contact*, and *number of outgroup friends* items were classified as relevant items. For participants with both outgroup contact and outgroup friends, all intergroup contact items were classified as relevant items.



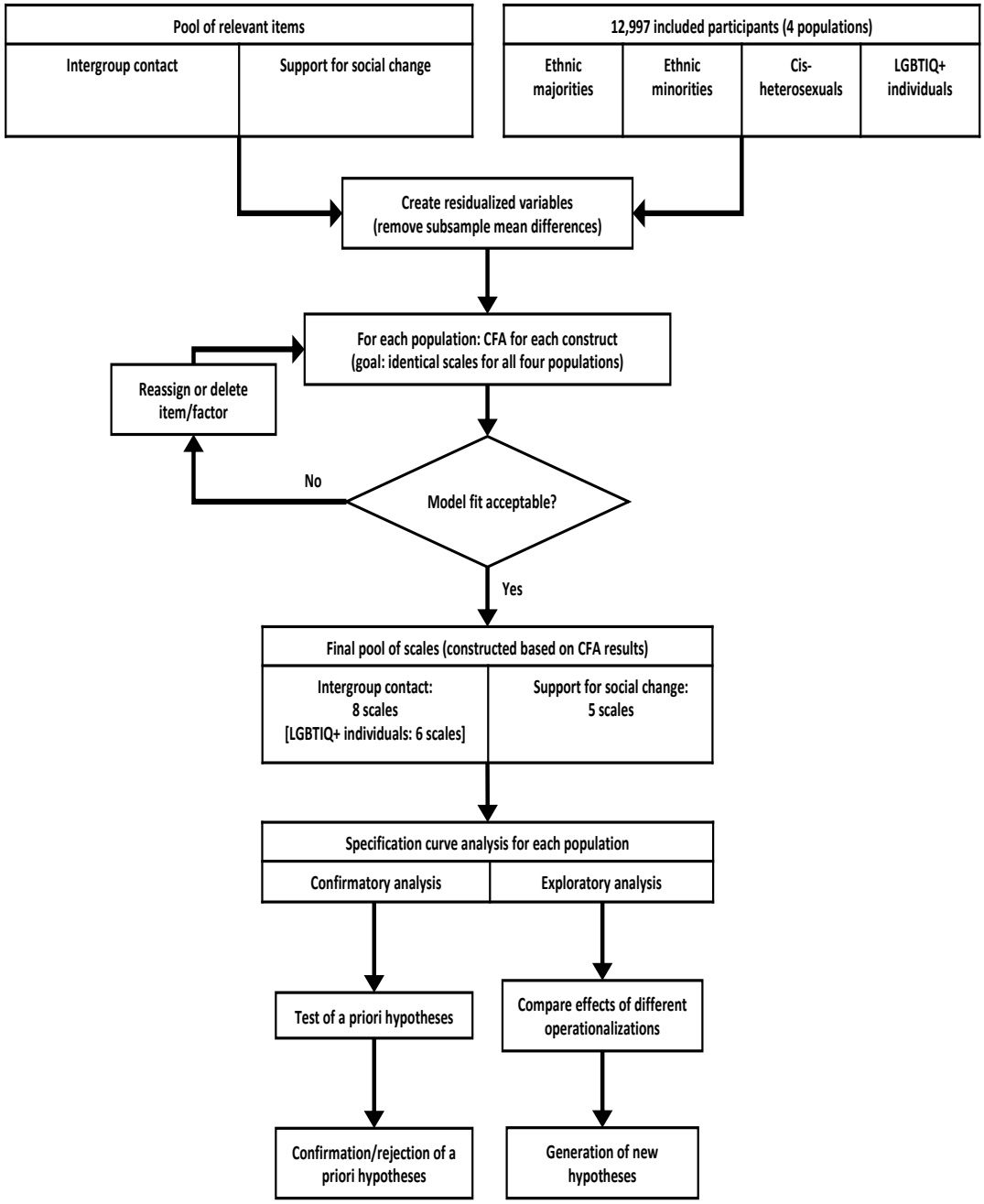
Supplementary Figure 1. Exclusion of participants.

Measures

We used parallel survey items for each of the four populations. All questionnaires contained additional measures not reported in the main article and this supplementary material (the full questionnaires can be found here: https://osf.io/uv7aq/). The constructs of interest were intergroup contact and support for social change. To assess the influence of operationalization on the results using specification curve analysis, we included an array of commonly used measures of both constructs. We additionally included two new measures of *support for social change* focusing on the willingness to (1) work in solidarity with the outgroup to promote social equality and to (2) raise awareness of social inequality among ingroup members. We also included two attention check items. Participants who selected a wrong answer at least once were classified as having failed the attention check. 12.6% of the participants failed the attention check. Please refer to Supplementary Table 4 for a detailed overview of the final set of measures, to Supplementary Table 5 for descriptive statistics among advantaged groups, and to Supplementary Table 6 for descriptive statistics among disadvantaged groups.

The top half of Supplementary Figure 2 depicts the data preparation process, which includes the construction of the final scales. Consistent with the preregistration, the final number of items and measures per construct was determined by the results of the CFA. Controlling for the mean differences between specific subsamples, we ran CFAs, separately by the four populations, on all items used to measure intergroup contact and support for social change. More detailed information on the CFA and the construction of the final scales can be found below (see section *Confirmatory Factor Analysis and Final Scale Construction)*. The final set of measures includes the same five *support for social change* scales for all four populations. The number of *intergroup contact* scales for LGBTIQ+ individuals (6) differs from those of the other groups (8) because we did not include *quantity of contact* and *quantity of indirect outgroup friends* for

LGBTIQ+ individuals (unlike members from different ethnic groups LGBTIQ+ individuals and cis-heterosexuals are in constant contact).



Supplementary Figure 2. Data preparation and analytic procedure.

Supplementary Table 4
Overview of Constructs, Measures, and Items

Constructs & Measures	Items	Source/Comment
Intergroup Contact		
1) Quantity of contact†	1†) How often do you interact with [participants' outgroup]? (1 = *Never,* 2 = *Less than once a year*, 3 = *Yearly*, 4 = *A few times a year*, 5 = *Monthly*, 6 = *Weekly*, 7 = *Daily*) 2†) How many [participants' outgroup] people do you know, at least as acquaintances? (0 = *None*, 10 = *10 or more*)	Adapted from Voci & Hewstone (2003)
2) Positive contact	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact is friendly? 2) You cooperate well with each other? 3) You interact as equals? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Kelly & Breinlinger (1995) Tropp & Brown (2004)
3) Absence of negative contact (negative contact, recoded)	When you interact with [participants' outgroup], to what extent do you experience the following: 1) The contact was unpleasant? 2) The contact is negative? (1 = *Strongly disagree* to 7 = *Strongly agree*)	Adapted from Barlow et al. (2012)
4) Number of outgroup friends	1) How many of your friends are [participants' outgroup]? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Tropp & Pettigrew (2005)
5) Frequency of meeting outgroup friends	1) How often do you meet your [participants' outgroup] friends? (1 = *Never* to 7 = *Daily*)	Adapted from Tropp & Pettigrew (2005)
6) Quantity of indirect outgroup friends†	1†) As far as you are aware, how many of your [participants'-ingroup] friends or close relatives have [participants' outgroup] friends? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Turner, Hewstone, and Voci (2007)
7) Positive indirect contact	1) As far as you are aware, how many of your [participants' ingroup] friends or close relatives have had good experiences with [participants' outgroup] members? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Mazziotta et al. (2015)
8) Absence of negative indirect contact (negative indirect contact, recoded)	1) As far as you are aware, how many of your [participants' ingroup] friends or close relatives have had bad experiences with [participants' outgroup] members, like tensions or conflict? (1 = *None of my friends* to 7 = *All of my friends*)	Adapted from Mazziotta et al. (2015)

Support for Social Change		
1) Low cost collective action	Would you like to engage in the following activities in the future? 1) Voting for political candidates who support the equal treatment of [disadvantaged group]. 2) Signing an online/regular petition to support action against the unequal treatment of [disadvantaged group]. 3) Sharing posts on Facebook to support [disadvantaged groups] equality. (1 = *Not at all* to 7 = *Very much*)	Adapted from Van Zomeren, Postmes, Spears, & Bettache (2011). CFA: 2 factor solution: low vs. high cost behavior.
2) High cost collective action	Would you like to engage in the following activities in the future? 1) Attending meetings or workshops regarding the unequal treatment of [disadvantaged group]. 2) Writing letters to public officials or other people of influence to protest against the unequal treatment of [disadvantaged group]. 3) Attending demonstrations, protests or rallies against the unequal treatment of [disadvantaged group]. (1 = *Not at all* to 7 = *Very much*)	Adapted from van Zomeren et al. (2011). CFA: 2 factor solution: low vs. high cost behavior.
3) Support for empowering policies	1) [Disadvantaged group] should obtain much more power in the decision-centers of our society. 2) Institutions of my country should allocate more places to [disadvantaged group] as a form of affirmative action. 3) The State budget should be distributed equally so that the resources that are allocated to [disadvantaged group] are proportional to those that are allocated to [advantaged group]. (1 = *Strongly disagree* to 7 = *Strongly agree*)	Shnabel, Dovidio, & Levin (2016)
4) Raising ingroup awareness	When I come into contact with ingroup members, we talk about… 1) … injustices in society regarding [disadvantaged group]. 2) … personal experiences with discrimination against [disadvantaged group]. 3) … the existence of [advantaged groups] privilege. (1 = *Not at all* to 7 = *Very often*)	Adapted from Saguy, Dovidio, & Pratto (2008)
5) Working in solidarity	1) How willing are you to cooperate with [participants' outgroup] to work for justice for [disadvantaged group]? 2) How willing are you to unite with [participants' outgroup] to work for justice for [disadvantaged group]? 3) How willing are you to protest alongside [participants' outgroup] to work for justice for [disadvantaged group]? (1 = *Not at all* to 7 = *Very much*)	Based on Glasford & Calcagno's (2012) conceptualization of group-based solidarity
Attention Check	1) When you have read this item, please select the second point on the scale (to the right of 'Strongly disagree'). 2) When you have read this item, please select the sixth point on the scale (to the left of 'Strongly agree').	

Note. †Quantity of contact and quantity of indirect outgroup friends were not included among LGBTIQ+ individuals. Unless indicated otherwise, the final scales and items were identical across the four populations and were assessed on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Participants' outgroups and ingroups were adapted to the specific context. Apart from this, all measures and items were identical across the four populations.

Supplementary Table 5
Descriptive Statistics – Advantaged Groups

Construct Scale	Ethnic Majorities					Cis-Heterosexuals				
	N	Items	*M*	*SD*	*Alpha*	*N*	Items	*M*	*SD*	*Alpha*
Intergroup contact										
Quantity of contact	3,216	2	4.04	1.87	.60	4,898	2	4.24	1.82	.64
Positive contact	2,964	3	5.24	1.42	.86	4,429	3	6.08	1.05	.81
Absence of negative contact	2,963	2	5.87	1.41	.86	4,428	2	6.37	1.07	.79
Number of outgroup friends	2,964	1	1.73	1.01	–	4,429	1	1.97	0.88	–
Frequency of meeting OG friends	1,500	1	4.65	1.57	–	4,252	1	4.13	1.90	–
Quantity of indirect OG friends	3,207	1	2.74	1.62	–	4,898	1	3.22	1.74	–
Positive indirect contact	3,204	1	3.68	1.92	–	4,896	1	4.31	2.08	–
Absence of indirect negative contact	3,206	1	5.79	1.42	–	4,896	1	6.44	0.92	–
Support for social change										
Low cost collective action	3,216	3	3.66	2.02	.85	4,897	3	4.23	2.04	.84
High cost collective action	3,215	3	2.66	1.69	.89	4,898	3	2.93	1.77	.87
Support for empowering policies	3,216	3	4.14	1.55	.76	4,897	3	4.60	1.53	.77
Raising ingroup awareness	3,180	3	2.56	1.47	.85	4,896	3	2.59	1.45	.86
Working in solidarity	3,200	3	4.40	1.75	.91	4,898	3	4.70	1.79	.92

Note: OG = Outgroup.

Supplementary Table 6
Descriptive Statistics – Disadvantaged Groups

Construct Scale	Ethnic Minorities					LGBTIQ+ Individuals				
	N	Items	*M*	*SD*	*Alpha*	*N*	Items	*M*	*SD*	*Alpha*
Intergroup contact										
Quantity of contact	1,000	2	6.16	1.37	.61	–	–	–	–	–
Positive contact	988	3	5.46	1.33	.84	3,838	3	5.75	1.15	.83
Absence of negative contact	987	2	5.85	1.31	.79	3,837	2	5.78	1.24	.80
Number of outgroup friends	988	1	3.41	1.78	–	3,839	1	4.78	1.45	–
Frequency of meeting OG friends	849	1	4.73	1.70	–	3,832	1	5.90	1.14	–
Quantity of indirect OG friends	1,000	1	4.15	1.87	–	–	–	–	–	–
Positive indirect contact	999	1	4.61	1.75	–	3,881	1	5.67	1.35	–
Absence of negative indirect contact	1,000	1	5.13	1.60	–	3,880	1	4.00	1.99	–
Support for social change										
Low cost collective action	1,000	3	4.36	2.00	.82	3,882	3	5.64	1.49	.68
High cost collective action	1,000	3	3.64	2.03	.91	3,883	3	4.59	1.76	.82
Support for empowering policies	1,000	3	5.11	1.46	.73	3,883	3	5.45	1.30	.67
Raising ingroup awareness	1,000	3	3.66	1.86	.91	3,881	3	4.48	1.66	.89
Working in solidarity	914	3	5.59	1.56	.90	3,883	3	6.23	1.15	.86

Analytic Procedure

The analytic procedure is depicted in Supplementary Figure 2 (see above). We first created residualized items by removing the sample means, then selected the final set of items and scales using CFA, and finally applied specification curve for the main analyses reported in the paper.

Residualization

We included heterogenous convenience samples from diverse countries. Hence, we expected variance between samples. We regressed the original items on the subsample identifier variable and used the residualized items in the CFA and main analyses to separate out this between-sample variance. Thus, we tested the hypotheses at the level of individuals instead of samples.

Confirmatory Factor Analysis and Final Scale Construction

We ran CFAs, separately for the four populations and separately for all the contact items (one set of analysis) and for all the support for social change items (one set of analysis).

Starting Models.

For *support for social change*, we started with the measurement model postulated in the preregistration. For *intergroup contact,* we deviated from the preregistration in two ways: First, as the present paper focuses only on *intergroup contact* and *support for social change*, we could also include the three *indirect contact* items (*quantity of indirect outgroup friends*, *positive indirect contact*, and *negative indirect contact*) which were not meant to be included in the full model described in the preregistration. Second, based on theoretical considerations, we used the following scales as a starting point of the CFA: *quantity of contact* (not included for LGBTIQ+ individuals), *positive contact*, *negative contact*, *number of outgroup friends*, *frequency of meeting outgroup friends*, *quantity of indirect outgroup friends* (not included for LGBTIQ+ individuals),

positive indirect contact, and *negative indirect contact*. The final scale names *absence of negative contact* and *absence of negative indirect contact* result from recoding items which originally measured *negative contact* and *negative indirect contact*. Based on our a priori hypotheses, (positive) *intergroup contact* was expected to correlate positively with *support for social change* among advantaged groups and negatively among disadvantaged groups. The reverse coded versions of the *negative (indirect) contact* measures allowed us to derive reasonable and accurate conclusions from the results of our specification curve analysis. Next, we checked for both constructs whether the items would form unidimensional scales as expected separately for each of the four populations.

Refined Models.

As described in Supplementary Figure 2, we adapted the measurement models if the model fit did not meet the following criteria of acceptable model fit suggested by Hu and Bentler (1999): CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. As postulated a priori, we aimed to use as many items as possible without reducing model fit below the above cutoff points. We further aimed to be consistent among the four populations (i.e., to include the same items and scales among all four populations). When the planned set of items and scales failed to produce a satisfactory model fit, we deleted or rearranged items or scales until model fit for the specific construct within each population was satisfactory. Importantly, these analyses were carried out separately for each construct and population so that we would not be aware of the relation between constructs when deciding on the items to be used for the main analyses. All steps of the CFAs can be reproduced with the file `Scale_Construction_CFA.R`, which can be found here: https://osf.io/8rcz9/.

The CFAs of the refined models suggested acceptable model fit for the measurement models of *support for social change* and *contact* for all four populations. The only exception was

the measurement model for *contact* among cis-heterosexuals where we found a slightly too high RMSEA value (0.071). To keep the scales consistent between the populations, we decided to go along with this value. See Supplementary Table 4 for a detailed overview of the final set of scales and items.

Specification Curve Analysis

In order to estimate the bivariate correlations between intergroup contact and support for social change conditional on methodological choices, we conducted specification curve analyses following Simonsohn and colleagues' procedure (Simonsohn, Simmons, & Nelson, 2015). All steps of the specification curve analysis can be reproduced with the `Master_Script.R` (lines 1-239) and the underlying `Functions.R` script. The files and the aggregated dataset underlying the specification curve analysis as well as the corresponding codebook can be found online (https://osf.io/m5pb6/).

Specification curve analysis allows for both confirmatory and exploratory research. Although both types of research are equally valuable (e.g., Nosek, Ebersole, DeHaven, & Mellor, 2017; Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2011), it is important to clearly demarcate confirmatory research (here: testing our a priori hypotheses regarding the asymmetrical contact effect) from exploratory research (here: exploring the influence of choices regarding operationalizations and analytic decisions). Supplementary Figure 3 shows our implementation of specification curve analysis, which can be subdivided into (1) estimating the bivariate correlations, (2) confirmatory analysis, and (3) exploratory analysis.

Step 1: Estimating the bivariate correlations

1a: Identifying/defining the set of reasonable specifications

5 (measures of support for social change) x 8 [6] (measures of intergroup contact) x 2 (attention check failures included/excluded) x 2 (outliers included/excluded) = 160 [120] model specifications

1b: Estimating the results for all model specifications

How many of the 160 [120] model specifications produce statistically significant results?
E.g., 64 of the 160 model specifications show a significant correlation in the predicted direction.

Step 2: Confirmatory analysis

2a: Creation of 1000 shuffled datasets

How many significant model specifications do we find by chance in each of the 1000 shuffled datasets?
E.g., shuffled dataset 1: 17 out of 160, shuffled dataset 2: 5 out of 160, …

Note: Colored in green: All predictor variables before shuffling. Colored in red: Randomly reordered values of the predictor variables.

2b: Joint significance test

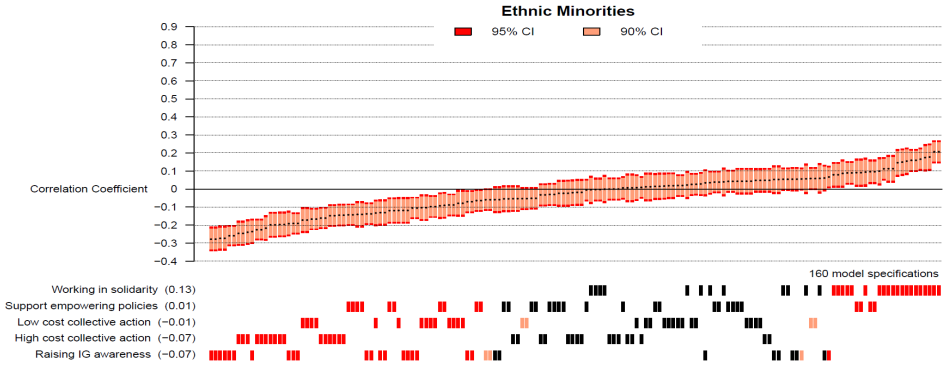
Divide the number of shuffled datasets with at least as many significant model specifications as in the original dataset by the number of shuffled datasets, e.g.:

I. 200 of 1000 shuffled datasets have at least 64 significant effects.
   This leads to a p-value for the joint test of $p = .20$.
II. Zero of 1000 shuffled datasets have at least 64 significant effects.
   This leads to a p-value for the joint test of $p < .001$.

Step 3: Exploratory analysis

3a: Visual inspection of the specification curve

E.g., where do effects of *working in solidarity* cluster?



3b: Meta-regression

To guide, substantiate, and complement the visual inspection.

Supplementary Figure 3. Specification curve analysis.

Step 1: Estimating the bivariate correlations.

Specification curve analysis entails reporting the results of all reasonable model specifications instead of focusing on a small subset thereof (Simonsohn et al., 2015). To do so, one needs to first identify and define relevant specification factors. Besides testing the influence of using particular measures of *intergroup contact* and *support for social change*, we also tested the impact of two analytic decisions: the inclusion or exclusion of attention check failures as well as outliers. Thus, we identified four specification factors: the operationalization of 1) *intergroup contact*, 2) *support for social change*, and the in- or exclusion of 3) *attention check failures*, and 4) *outliers*. After determining the specification factors, the set of possible choices for each specification factor has to be defined. Please refer to Supplementary Table 7 for an overview of our four specification factors.

Supplementary Table 7
Overview of Specification Factors

Specification Factor I Measure of Intergroup Contact	**Specification Factor II** Measure of Support for Social Change	**Specification Factor III** Analytic Decision I: In-/Exclusion of Attention Check Failures	**Specification Factor IV** Analytic Decision II: In-/Exclusion of Statistical Outliers
1) Quantity of contact† 2) Positive contact 3) Absence of negative contact 4) Number of outgroup friends 5) Frequency of meeting outgroup friends 6) Quantity of indirect outgroup friends† 7) Positive indirect contact 8) Absence of negative indirect contact	1) Low cost collective action 2) High cost collective action 3) Support for empowering policies 4) Raising ingroup awareness 5) Working in solidarity	1) Inclusion 2) Exclusion	1) Inclusion 2) Exclusion
8 (intergroup contact measures [6 for LGBTIQ+ individuals]) x 5 (support for social change) x 2 (attention check failures) x 2 (statistical outliers) = 160 [120] model specifications			

Note: †: not included among LGBTIQ+ individuals.

The first specification factor consists of eight [six for LGBTIQ+ individuals] measures of *intergroup contact*, the second specification factor of five measures of *support for social change* (see Supplementary Table 4 for an overview of these measures and Supplementary Table 5 for descriptive statistics among advantaged groups and Supplementary Table 6 for descriptive statistics among disadvantaged groups). The third specification factor refers to the decision to include or exclude participants who failed at least one of two attention check items (12.6% of our participants). The fourth specification factor concerns the decision to include or exclude statistical outliers. In the preregistered analysis plan, we defined outliers as values at least three times the interquartile range away from the end of the box in Tukey's boxplot. Each specific combination of one measure of *intergroup contact* and one measure of *support for social change*, as well as a decision to remove (or not) participants failing the attention check and to remove (or not) statistical outliers constitutes a model specification. This resulted in 8 [6 for LGBTIQ+ individuals] (intergroup contact measures) × 5 (support for social change measures) × 2 (attention check failures included/excluded) x 2 (outliers included/excluded) = 160 [120] model specifications.

Each model specification constitutes a different way to test our hypotheses that *intergroup contact* and *support for social change* are positively related among advantaged groups (i.e., ethnic majorities and cis-heterosexuals) and negatively related among disadvantaged groups (i.e., ethnic minorities and LGBTIQ+ individuals). We conducted an *individual* significance test for *every single* model specification. We performed one-tailed tests using an alpha of .05 for the confirmatory tests in line with the preregistered directional hypotheses. For example, in Supplementary Figure 3, 64 of 160 model specifications produced statistically significant bivariate correlations between *intergroup contact* and *support for social change* in the predicted direction (i.e., negative correlations; see Table 2 in the main article).

Step 2: Confirmatory analysis.

The goal of the confirmatory analysis was to test the overall hypothesis that *intergroup contact* predicts *social change* positively for advantaged groups and negatively for disadvantaged groups, using the joint significance test proposed by Simonsohn and colleagues (2015), which can be summarized as follows.

To determine how many model specifications would lead to significant correlations under the null hypothesis (i.e., by chance), we used a procedure called "shuffling" which (a) separates the dependent and independent variables in the dataset, (b) randomly reorders the values of the predictor variables, and (c) puts the dependent and the independent variables back together again (see Supplementary Figure 3). After shuffling, the data still have the same features as before (e.g., skewness, collinearity), but it is guaranteed that there is no linear relationship between the independent and the dependent variables. We then recalculated the bivariate correlations and significance tests from Step 1 for all 160 [120] model specifications using this shuffled dataset. We repeated this procedure 1,000 times. For example, in the first shuffled dataset, 17 out of 160 model specifications might produce significant correlations in the predicted direction, in the second shuffled dataset, 5 out of 160, and so on. We then counted how many of these analyses using shuffled datasets produced at least as many significant correlations as the observed dataset, e.g., at least 64 significant correlations. The p-value of this joint significance test was calculated by dividing this number by the total number of shuffled datasets (i.e., 1,000). With 1,000 shuffled datasets, the smallest estimate of the p-value is $p < .001$ if none of the 1,000 shuffled datasets produced at least as many significant correlations as the observed data set. (i.e., $p < 1/1{,}000$). We rejected the null hypothesis whenever this proportion was less than .05. For example, if 200 of

1,000 shuffled datasets would have led to at least 64 significant correlations, the *p*-value would have been $p = 200/1{,}000 = .20$. Thus, we would not have rejected the null hypothesis.

In our four populations, none of the 1,000 shuffled datasets produced at least as many significant correlations as the original data. This led to a *p*-value of $p < .001$ in all four populations (see Table 2 in the main article). We therefore rejected the null hypothesis that the number of significant correlations in the predicted direction observed in our original datasets occurred by chance.

Step 3: Exploratory analysis.

Step 3a: Visual inspection of the specification curve.

The goal of the exploratory analysis was to understand in more detail how results depend on model specifications. For this purpose, we first displayed the correlations from Step 1 (see above) in descriptive specification curves (see Step 3a in Supplementary Figure 3; Figures 1 and 2 in the main article). The top part of a descriptive specification curve shows sorted point estimates of the correlations between *intergroup contact* and *support for social change* and 90% (95%) confidence intervals in light (dark) red. The bottom part shows the so-called dashboard: It indicates the combination of measures and analytic decisions (i.e., the model specifications) underlying a specific correlation. Black bars indicate model specifications that produced non-significant correlations, light red bars indicate one-tailed significance (since we formulated and preregistered directional hypotheses), dark red bars indicate two-tailed significance. The exploratory analysis involved a visual examination of the descriptive specification curve. For example, when looking at the descriptive specification curve for ethnic minorities (see Supplementary Figure 3; Figure 2A in the main article), one might notice that all model specifications which produced the largest positive effects contain *working in solidarity* as a measure of *support for social change.*

Step 3b: Meta-Regression.

Since visual inspection is crude, we quantified the influence of the choices regarding measures on the effect sizes using meta-regression. We regressed the 160 [120] effect sizes on the (effect-coded) specification factors Measure of Support for Social Change, Measure of Intergroup Contact, Exclusion of Attention Check Failures, Exclusion of Outliers. The underlying regression for each of the four populations is[3]:

Predicted Effect Size = $b_0 + b_1$* Effect Coded Specification Factor I: Support for Social Change ($b_{0j} + b_{1j}$*DV2 + b_{2j}*DV3 + b_{3j}*DV4 + b_{4j}*DV5) + b_2* Effect Coded Specification Factor II: Intergroup Contact ($b_{0k} + b_{1k}$*IV2 + b_{2k}*IV3 + b_{3k}*IV4 + b_{4k}*IV5 + b_{5k}*IV6 + b_{6k}*IV7† + b_{7k}*IV8†) + b_3* Effect Coded Specification Factor III: Attention Check Failures ($b_{0l} + b_{1l}$*ACF) + b_4* Effect Coded Specification Factor IV: Outliers ($b_{0m} + b_{1m}$*O)

Note: † Not included among LGBTIQ+ individuals. DV = Dependent variable, IV = Independent variable, ACF = Attention Check Failures, OUT = Outliers.
We effect coded the variables for each specification factor. We used the first measurement variable as the reference category or Factor I and II. For the analytical decision we used 'inclusion' of all participants as reference category. The constant within a specification factor represents the grand mean of this respective specification factor. The coefficient of each of the effect variables is equal to the difference between the grand mean and the mean of the variable. To estimate the reference category, all of the coefficients within one specification factor are summed and multiplied by -1.

The coefficients from this regression allow us to quantify the predicted change in effect size resulting from using one particular measure rather than using all measures within a given

[3] The high correlations between the observed effect sizes and the predicted effect sizes for each population (i.e., $r_{\text{ethnic minorities}} = .90$, $r_{\text{LGBTIQ+ individuals}} = .96$, $r_{\text{ethnic majorities}} = .90$, $r_{\text{cis-heterosexuals}} = .96$) indicate that the specification factors explain the effect sizes well even without including interaction effects. Indeed, main effects alone explained more than 80% of the variance in effect sizes among each population (see Supplementary Table 11).

specification factor and averaging over the effect sizes. Results of these meta-regressions are reported in Supplementary Table 8 (and in Figures 1 and 2 in the main paper). The significance test for these coefficients draws on the distribution of the coefficients resulting from meta-regressions run on 1,000 shuffled datasets. We counted how often a particular coefficient deviated from zero at least as much as in the original dataset. We rejected the null hypothesis that this deviation occurred by chance whenever this proportion was less than .05. This second permutation test allows us to quantify the influence of using a specific measure of contact or support for social change on the effect sizes. For example, for ethnic minorities (see Supplementary Table 8; Figure 2A in the main article), *working in solidarity* produced a significantly larger effect than the grand mean of effects. In the dashboard of our descriptive specification curves, the measures of *intergroup contact* and *support for social change* are ordered by the size of the coefficients. The majority of deviations were statistically significant (see Supplementary Table 8), indicating that the different operationalizations affected the size of predicted effects. Moreover, some deviations from the grand mean were consistent across all four populations: Among measures for support for social change w*orking in solidarity* produced a significant larger effect than the grand mean of support for social change effects. By contrast, *raising ingroup-awareness* produced significantly smaller effects than the grand mean of effects. With regard to measures of contact, *positive indirect contact* produced significant larger and *absence of negative indirect contact* significant smaller effects than the grand mean of contact effects. Other measures led to inconsistent patterns between the four populations.

Supplementary Table 8
Results from Meta-Regression: Deviations from the Grand Mean

	Ethnic Majorities		Cis-Heterosexuals		Ethnic Minorities		LGBTIQ+ Individuals	
	b	*p*	*b*	*p*	*b*	*p*	*b*	*p*
Support for Social Change								
Working in solidarity	0.07	<.001	0.08	<.001	0.13	<.001	0.15	<.001
Raising ingroup awareness	-0.09	<.001	-0.12	<.001	-0.07	<.001	-0.10	<.001
High cost collective action	-0.00	.469	0.00	.850	-0.07	<.001	-0.05	<.001
Support for empowering policies	0.01	.081	0.01	.041	0.01	.404	-0.01	.059
Low cost collective action	0.01	.020	0.04	<.001	-0.01	.662	0.02	.009
Intergroup Contact								
Quantity of contact	-0.04	<.001	0.10	<.001	0.08	<.001	–	–
Positive contact	0.13	<.001	0.06	<.001	-0.02	.119	0.01	.370
Positive indirect contact	0.04	<.001	0.04	<.001	0.06	<.001	0.10	<.001
Number of OG friends	-0.01	.254	0.02	.003	-0.05	.008	-0.04	<.001
Frequency of meeting OG friends	-0.11	<.001	0.02	.070	0.09	<.001	0.08	<.001
Quantity of indirect OG friends	-0.04	<.001	0.00	.943	0.03	.053	–	–
Absence of negative contact	0.05	<.001	-0.02	.019	-0.07	.002	-0.01	.546
Absence of negative indirect contact	-0.02	.093	-0.22	<.001	-0.12	<.001	-0.14	<.001

Note. *b* = unstandardized regression coefficient, *p* = *p*-value from permutation test. Given the negligible effect sizes of the influence of analytic decisions (i.e., exclusion of statistical outliers and attention check failures) we did not conduct significance tests for these coefficients.

Alternative Test: Benjamini-Yekutieli Procedure

To further validate the results of our joint significance test, we also followed the procedure outlined in Benjamini & Yekutieli (2001) to control the false discovery rate of multiple tests under dependency. This procedure adjusts the *p*-values of individual correlations such that the false discovery rate among the significant results is at most 5%. Supplementary Table 9 contains the numbers and proportions of significant correlations based on both adjusted and raw *p*-values. For all four populations, the number of significant correlations in the predicted direction remains above chance (i.e., 5%) after adjustment. The largest drop of significant correlations in the predicted direction (both relative and absolute) was found for ethnic minorities.

Supplementary Table 9
Numbers and Proportions of Significant Correlations

Population	*p*	Positive correlations		Negative correlations	
		Adjusted	Raw	Adjusted	Raw
Ethnic Majorities					
	< .1	154 (96%)	158 (99%)	0 (0%)	0 (0%)
	< .05	152 (95%)	156 (98%)	0 (0%)	0 (0%)
Cis-Heterosexuals					
	< .1	145 (91%)	149 (93%)	4 (3%)	5 (3%)
	< .05	144 (90%)	147 (92%)	4 (3%)	4 (3%)
Ethnic Minorities					
	< .1	17 (11%)	28 (18%)	52 (33%)	64 (40%)
	< .05	11 (7%)	25 (16%)	48 (30%)	60 (38%)
LGBTIQ+ Individuals					
	< .1	18 (15%)	20 (17%)	84 (70%)	86 (72%)
	< .05	18 (15%)	18 (15%)	82 (68%)	84 (70%)

Note. $p < .1$ denotes one-sided tests (for preregistered hypotheses), $p < .05$ two-sided tests. For ethnic majorities and cis-heterosexuals, positive correlations were predicted; for ethnic minorities and LGBTIQ+ individuals, negative correlations were predicted. Adjusted: numbers of significant correlations; in brackets: proportion of significant correlation (number of significant correlations divided by total number of specifications) based on *p*-values adjusted using the procedure by Benjamini and Yekutieli (2001). Raw: raw *p*-values.

Since one of our main findings is the special role of working in solidarity, we also used the Benjamini-Yekutieli procedure to substantiate our claim that working in solidarity is positively associated with intergroup contact among both advantaged and disadvantaged groups. Supplementary Table 10 contains the numbers and proportions of significant correlations for specifications with working in solidarity. For ethnic minorities, again a large drop of significant correlations due to adjustment can be observed. Nonetheless, at least 34% of the specifications with working in solidarity show positive correlations between working in solidarity and intergroup contact after adjustment, while 0 % of correlations between working in solidarity and intergroup contact are significantly negative for ethnic minorities. For LGBTIQ+ individuals, 67% of the specifications with working in solidarity lead to significant positive correlations, 17% show significant negative correlations.

Supplementary Table 10
Numbers and Proportions of Significant Correlations for Specifications with Working in Solidarity

Population	*p*	Positive correlations		Negative correlations	
		Adjusted	Raw	Adjusted	Raw
Ethnic Majorities					
	< .1	32 (100%)	32 (100%)	0 (0%)	0 (0%)
	< .05	32 (100%)	32 (100%)	0 (0%)	0 (0%)
Cis-Heterosexuals					
	< .1	30 (94%)	32 (100%)	0 (0%)	0 (0%)
	< .05	29 (91%)	32 (100%)	0 (0%)	0 (0%)
Ethnic Minorities					
	< .1	15 (47%)	20 (63%)	0 (0%)	0 (0%)
	< .05	11 (34%)	20 (63%)	0 (0%)	0 (0%)
LGBTIQ+ Individuals					
	< .1	16 (67%)	16 (67%)	4 (17%)	4 (17%)
	< .05	16 (67%)	16 (67%)	4 (17%)	4 (17%)

Note. $p < .1$ denotes one-sided tests (for preregistered hypotheses), $p < .05$ two-sided tests. For ethnic majorities and cis-heterosexuals, positive correlations were predicted; for ethnic minorities and LGBTIQ+ individuals, negative correlations were predicted. Adjusted: numbers of significant correlations; in brackets: proportion of significant correlation (number of significant correlations with working in solidarity divided by total number of specifications with working in solidarity) based on *p*-values adjusted using the procedure by Benjamini and Yekutieli (2001). Raw: raw *p*-values.

Cross-Validation

The meta-regressions help to answer the question how the effect sizes of the correlation between contact and support for social change depend on the specific operationalization of these constructs. It is instructive to compare the answers to this question across the four populations. We expected to find similar answers for ethnic majorities and cis-heterosexuals (being both advantaged groups) and similar answers for ethnic minorities and LGBTIQ+ individuals (being both disadvantaged groups).

As a method of cross-validation we used the coefficient estimates from one group (e.g., ethnic minorities) to generate predicted values of effect sizes in another group (e.g., LGBTIQ+ individuals). The meta-regression can be reproduced with the file `Master_Script.R`, which

can be found online at: https://osf.io/8rcz9/. The strong positive correlations between these predicted values and the actual effect sizes (see Supplementary Table 11) indicate that the results depend on the specification factors in broadly similar ways across both disadvantaged groups (correlation between ethnic minority model and predicted data of LGBTIQ+ individuals $r = .90$, and vice versa $r = .85$). Among advantaged groups we find a smaller degree of cross-validation compared to disadvantaged groups (correlation between ethnic majority model and predicted data of cis-heterosexuals $r = .45$, and vice versa $r = .42$; see also Supplementary Table 11).

This is reflected in the greater variance of the effects of intergroup contact measures among both advantaged groups (see Figures 1A and 1B in the main paper): While the measure *absence of negative contact* produced larger positive correlations among ethnic majorities, correlations involving this measure of contact were more scattered among cis-heterosexuals. In contrast, while model specifications including the measure *absence of negative indirect contact* consistently produced the smallest positive (and, indeed, a few negative) correlations among cis-heterosexuals, the same model specifications produced more varied correlations among ethnic majorities. Finally, while model specifications including the measure *frequency of meeting outgroup friends* were consistently associated with smaller positive correlations among ethnic majorities, the same model specification produced more varied correlations among cis-heterosexuals.

Supplementary Table 11
Explained Variance and Cross-validation

Model/ Predicted data	Data – Ethnic minorities	Data – LGBTIQ+ individuals	Data – Ethnic majorities	Data – Cis-Heterosexuals
Model – Ethnic minorities	.90 (R^2 = .81)	.90	.15	.69
Model – LGBTIQ+ individuals	.85	.96 (R^2 = .92)	.38	.78
Model – Ethnic majorities	.15	.40	.90 (R^2 = .80)	.45
Model – Cis-Heterosexuals	.65	.78	.42	.96 (R^2 = .92)

Note. The table shows correlations between the observed effect sizes and the predicted effect sizes based on the coefficients of the meta-regression of effect sizes on specification factors. The correlations on the main diagonal correspond to the multiple correlation *R*. The squared correlation between the observed data and the predicted data within one sample is the variance explained only by the main effects. Off diagonal correlations indicate cross-validation with model and data from different groups. All correlations involving LGBTIQ+ coefficients or data exclude quantity of direct or indirect contact.

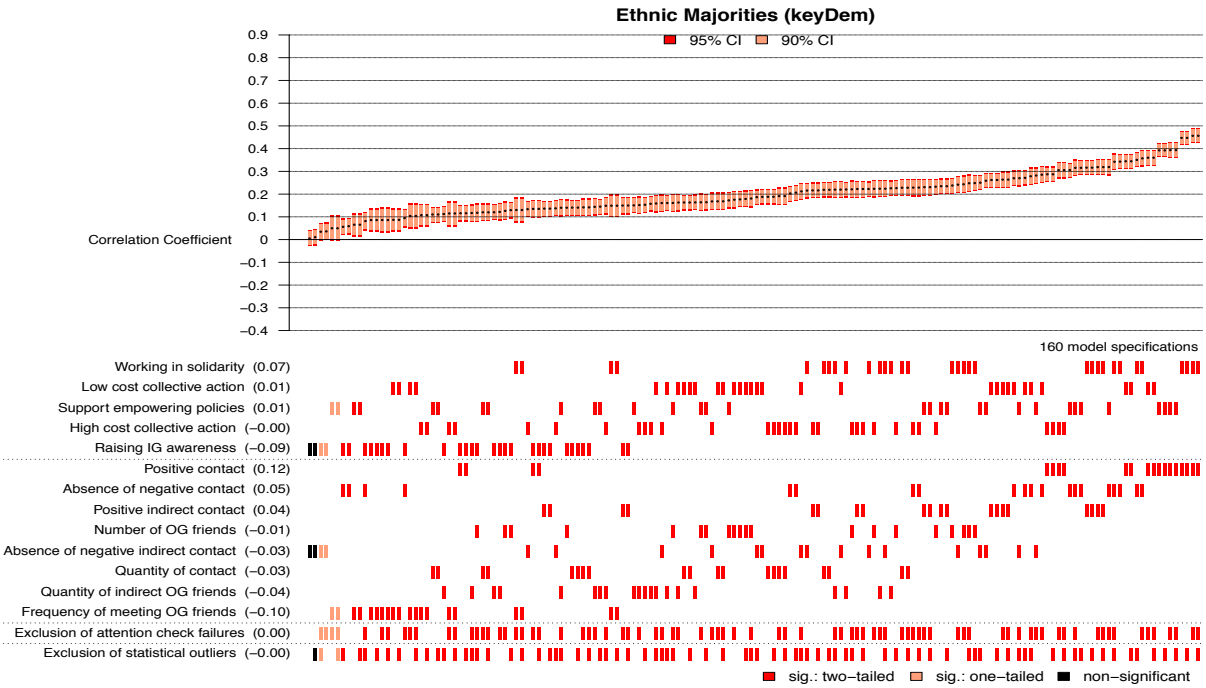
Additional Specification Curve Analysis

To strengthens our conclusions, we have re-estimated the association between contact and support for social change among all four populations controlling for age, gender, and socioeconomic status. Our conclusions remain unchanged.

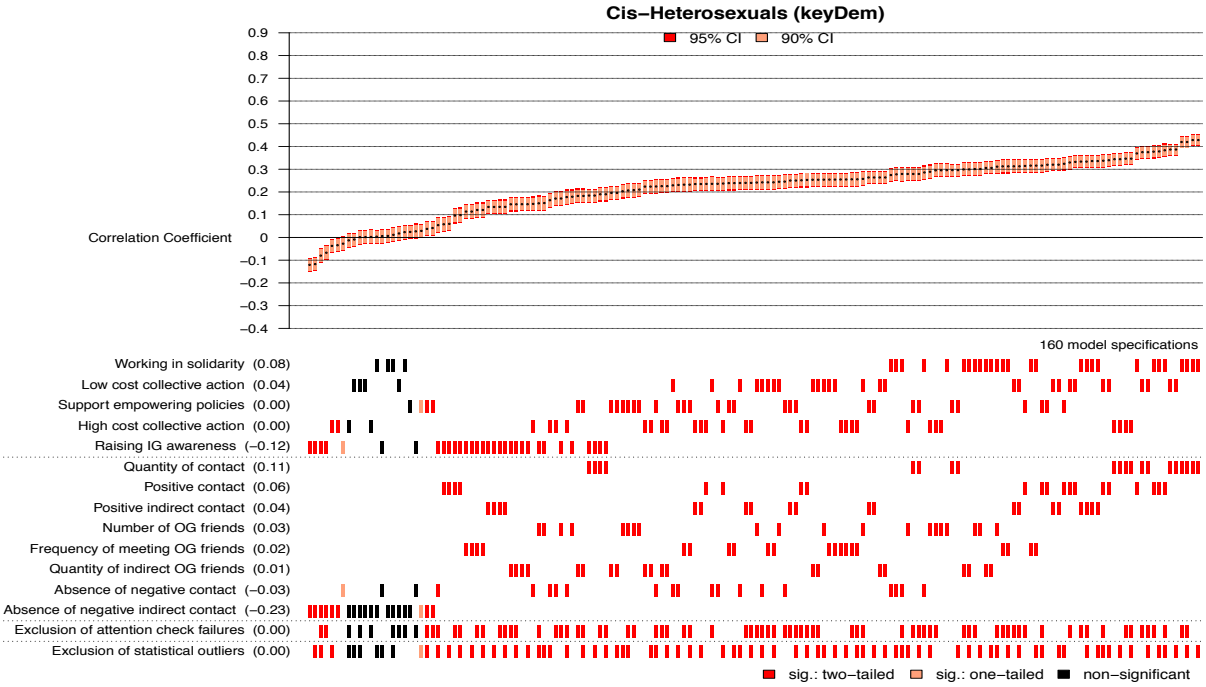
Supplementary Table 12
Additional specification curves controlling for age, gender, and socioeconomic status

Population	Sample size	Number of tests	Number of significant results in predicted direction[1]	*p*-value[2]
Ethnic Majorities	3,216	160	158 (154)	<.001
Cis-Heterosexuals	4,898	160	140 (138)	<.001
Ethnic Minorities	1,000	160	64 (53)	<.001
LGBTIQ+ Individuals	3,883	120	84 (81)	<.001

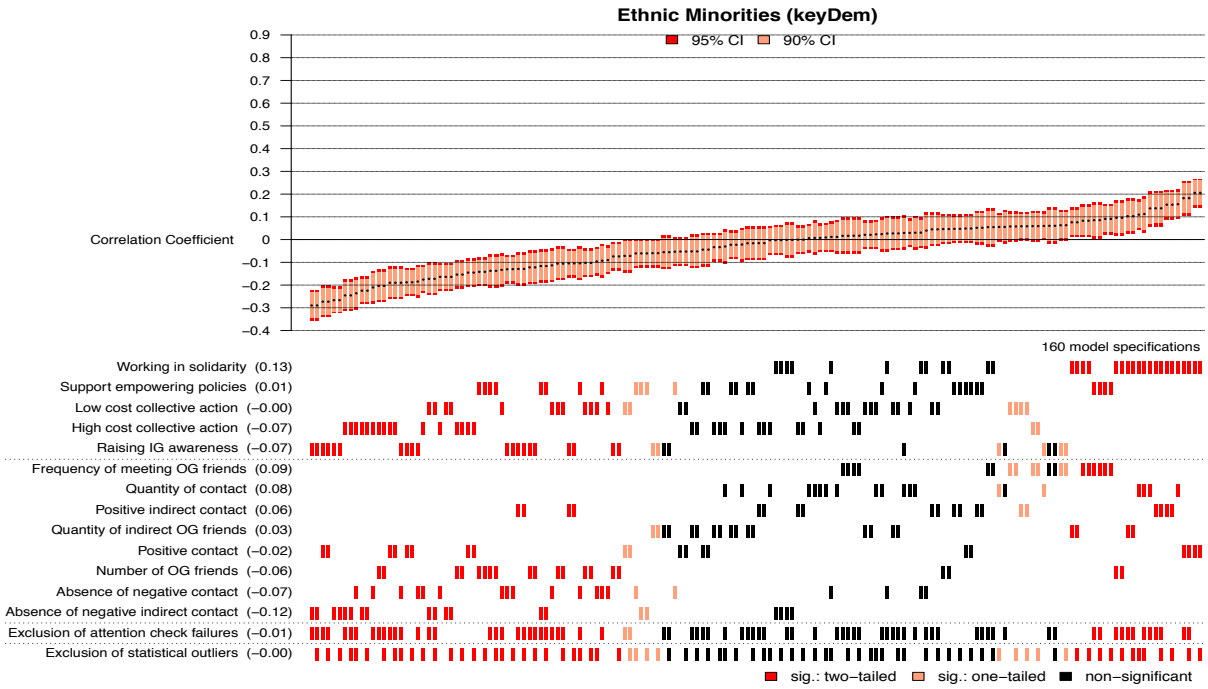
Note:[1] The number in parentheses indicates the number of significant results after adjusting the *p*-values using the Benjamini-Yekutieli procedure so that the false discovery rate is at most 5%; [2] *p*-values correspond to the number of shuffled datasets with as many or more significant correlations than in the original data set divided by the total number of shuffled datasets (i.e., 1,000). The smallest possible *p*-value with 1,000 reshuffled samples is $p < 1/1{,}000$.



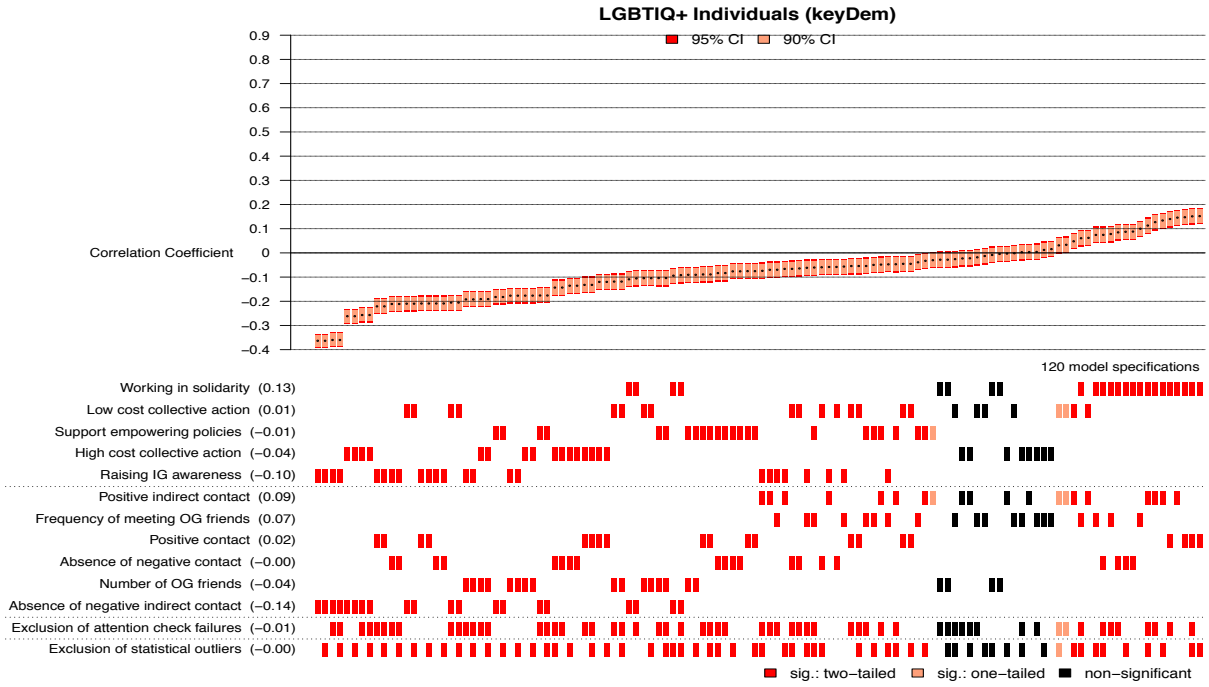
Supplementary Figure 4A. Specification curve analysis. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among ethnic majorities (n = 3,216) controlling for key demographic variables.



Supplementary Figure 4B. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among cis-heterosexuals (n = 4,898) controlling for key demographic variables.



Supplementary Figure 5A. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among ethnic minorities (n = 1,000) controlling for key demographic variables.



Supplementary Figure 5B. Results of the specification-curve analysis showing the correlation between intergroup contact and support for social change among sexual minorities (n = 3,883) controlling for key demographic variables.

Deviations from the Preregistration

A complete list of deviations from the preregistration plan (https://osf.io/6hfcu/) is provided in Supplementary Table 13.

Supplementary Table 13

Summary of all Deviations Between the Preregistration as Filed and the Final Publication

Preregistration	Publication: How does contact between advantaged and disadvantaged groups predict support for social change?	Comment
Planned included constructs: Intergroup contact, support for social change, group-specific need satisfaction, perceived illegitimacy	*Final included constructs:* Intergroup contact, support for social change	This is a concise summary of the main results of this project. All remaining results will be reported in a separate publication.
Planned included measures: Intergroup contact: Only direct contact	*Final included measures:* Intergroup contact: Direct and indirect contact	Running the model without group-specific need satisfaction (which refers to need satisfaction during direct contact only) enabled us to include additional measures that could not be included in the full model because the interaction terms could not be properly constructed.
Planned data collection: June 2016 until 15th of April, 2017	*Final data collection:* June 2016 to 15th June, 2017	The data collection was extended to include participants recruited via PlanetRomeo (largest social network for gay, bisexual and transgender men). We expected to reach more participants from populations which are usually underrepresented in academic studies.
Planned sample: Participants from 18 ethnic majority samples, 10 ethnic minority samples, 18 sexual and gender minority samples, 18 cis-heterosexual samples.	*Final sample:* All participants from the four populations of interest (ethnic majority members, ethnic minority members, LGBTIQ+ individuals, cis-heterosexuals) were included.	Due to widespread dissemination of the link to the survey, individuals from additional countries participated in the survey. However, we did not include participants with double group-membership or implausible data (e.g., country = "Helicopter") at the population level.
Planned sample inclusion: At least 100 usable participants per sample	*Final sample inclusion:* No minimum sample size	The hypotheses reported in this publication are tested at the level of individuals (using residualized variables) instead of samples. Therefore, we were able to also include participants from smaller samples.
Planned exclusion of participants:	*Final exclusion of participants:*	In this publication, we only report the relation between intergroup contact

Everyone without outgroup contact.	Participants with more than 20% missingness on relevant items (contact and support for social change items).	and support for social change. This allowed us to also include participants who reported having no contact with the respective outgroup. To assure data quality, we excluded participants with more than 20% missingness on the relevant items.
Planned confirmatory factor analysis: Criterion: Use as many items as possible without reducing model fit below the following cutoff points as suggested by Hu and Bentler (1999): a CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of less than .08 as well as χ^2/df ratio of less than 3 indicates (Kline, 1998).	*Final confirmatory factor analysis:* Criterion: Use as many items as possible and keep scales consistent across groups without reducing model fit below the following cutoff points: CFI of .95 or above, a RMSEA of .06 or less, and a SRMR of close to .08. Exception: The measurement model for contact had a slightly too high RMSEA value (0.071) among cis-heterosexuals.	We never reached a χ^2/df ratio of less than 3. However, the χ^2 statistics has been criticized because it tends to inflate when there is a large sample size (Newsome, 2015). Thus, we referred to the CFI, RMSEA, and SRMR. Regarding cis-heterosexuals: We decided that not reaching the targeted RMSEA in one population is preferable to excluding further scales/items among cis-heterosexuals or all four populations.
Planned initial measurement model for contact: Two different measures of intergroup contact: 1) Contact quality 2) Contact quantity (4 items, i.e., frequency of contact with OG, number of acquaintances, relative number of friends, frequency of meeting with friends).	*Initial measurement model for contact:* Eight different measures of intergroup contact: 1) Quantity of contact (not included among LGBTIQ+ individuals) 2) Positive contact 3) Absence of negative contact (negative contact, recoded) 4) Number of outgroup friends 5) Frequency of meeting outgroup friends 6) Quantity of indirect outgroup friends (not included among LGBTIQ+ individuals) 7) Positive indirect contact 8) Absence of negative indirect contact (negative indirect contact, recoded)	Experts on intergroup contact among our collaborators raised theoretical concerns regarding our planned operationalization of intergroup contact during our second project meeting (January, 2018). Hence, we deviated from the proposed starting point in the construction of the intergroup contact scales. The goal was to better represent the typical operationalizations used in the literature. Further, we added three items assessing various forms of indirect contact (see above). Finally, we excluded scales assessing both quantity of contact and quantity of indirect outgroup friends among LGBTIQ+ individual because almost every LGBTIQ+ individual has more cis-heterosexual friends than 10 (i.e., the highest scale value) or LGBTIQ+ friends who have more than 10 cis-heterosexual friends.
Planned model underlying specification curve analysis: Multilevel model	*Final model underlying specification curve analysis:* Bivariate correlations	We used residualized items to separate out the between-sample variance to test the hypotheses at the level of individuals instead of samples.

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