

# It is worth taking a closer look: A field experiment on intergroup contact between Austrian pupils and refugees

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Sophie Nägele,<sup>1</sup>  Katja Corcoran<sup>2</sup> and Ulrich Klocke<sup>3</sup> 

## Abstract

Intergroup contact is an effective way to improve intergroup relations, but appropriate evaluative and field research is lacking. We assessed the short- and long-term effectiveness of intergroup contact between refugees and pupils with the workshop “Taking a Closer Look.” A total of 388 pupils from 11 Austrian schools were divided into two groups: the contact group attended the workshop including intergroup contact; and the no-contact group, without it. Intergroup contact predicted changes from 1 week before to immediately after the workshop: The pupils’ attitudes toward refugees improved in the contact group, whereas they remained unchanged in the no-contact group. Empathy, support for refugee-friendly policies,  and willingness to engage in intergroup contact increased in both groups, but significantly stronger in the contact group. Intergroup anxiety decreased and knowledge about refugees increased equally in both groups. One month after the workshop, this knowledge gain remained stable in both groups, but the other effects disappeared.

## Keywords

attitudes, contact hypothesis, field experiment, intergroup dynamics, multilevel analysis

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Negative attitudes toward refugees are omnipresent in Austria (Bischof & Rupnow, 2017). In 2015, when many refugees started coming to Austria, a tilt to the right in Austrian public opinion was observed (Bischof & Rupnow, 2017; Steinmayr, 2016), and antirefugee rhetoric dominated politics (Scheibelhofer, 2017). A survey by the Austrian market research company Growth From Knowledge in 2016 revealed that 65% of the participants agreed with the statement that migrants

exploit the welfare system, and 44% agreed with the statement that people from other countries

<sup>1</sup>Independent researcher, Berlin, Germany

<sup>2</sup>University of Graz, Austria

<sup>3</sup>Humboldt Universität zu Berlin, Germany

## Corresponding author:

Sophie Nägele, independent researcher, Torstraße 118, Berlin, 10119, Germany.

Email: [sophie\\_naegele@web.de](mailto:sophie_naegele@web.de)

would never be integrated into the Austrian society (Bretschneider, 2017). From 1994 to 2008, Austrian hostility toward foreigners grew strongly, which the authors explain as due to fast social changes like globalization (Friesl et al., 2010). As negative attitudes toward refugees are related to discrimination (Carlsson & Eriksson, 2017), reducing such attitudes can improve refugees' daily life.

In his contact hypothesis, Allport (1954) identified the potential of intergroup contact to reduce negative intergroup relations. Recent decades of research have provided impressive evidence of the positive effects of direct intergroup contact on intergroup relations (Pettigrew & Tropp, 2006), including Austrian people–refugee relations. People in Austrian municipalities not located close to the border who had contact with refugees after 2015 showed decreased support for far-right parties compared with those from other municipalities (Steinmayr, 2021). **[AQ: 3]** In June 2016, two out of three municipalities in Austria accommodated refugees (Renner et al., 2017). Another study showed that only 13% of the respondents indicated having “a lot” of contact with refugees, 36% had little contact, 28% had very little contact, and 22% had no contact at all (Bretschneider, 2017). Merely living together could improve intergroup relations over time; however, planned and structured interventions promoting intergroup contact, for example, based on Allport's intergroup contact conditions, can be useful for further unfolding its potential (Pettigrew & Tropp, 2006). In Austrian schools, half of the refugee pupils experience verbal, social, or physical bullying because of their refugee status, religion, and language (Bešić et al., 2020). Therefore, schools are important places to conduct intergroup contact interventions.

In the workshop “Taking a Closer Look,” Austrian pupils have intergroup contact with refugees to improve intergroup relations. **[AQ: 4]** Until now, there has been a lack of appropriate evaluative research concerning intergroup contact interventions in the field (von Berg & Roth, 2003), especially for adolescents (Spencer et al., 2008). The aim of the present study was to extend

research on broad intergroup contact by evaluating the intergroup contact workshop “Taking a Closer Look” in a field experiment. We tested whether short direct intergroup contact between Austrian pupils and refugees improved the pupils' intergroup relations with refugees.

### *Intergroup Relations: A Multifaceted Construct*

Intergroup relations subsume every feeling, thought, and behavior that happens between members of different groups (Hogg, 2013). The most relevant aspect is behavior because it has the most direct impact on the other group. When pupils do not discriminate against classmates with a refugee background but instead treat them with respect, they reduce the latter group's risk of feeling ostracized and its possibility of developing mental health problems (Schmitt et al., 2014). When locals openly express positive attitudes toward refugees or show support for refugee-friendly policies, politicians are likely to improve refugees' legal status and state support, as politicians depend on locals' decisions in the next election. However, assessing actual behavior is challenging, so research on intergroup relations predominantly focuses on their antecedents. **[AQ: 5]** The most studied variable in the context of intergroup relations is intergroup attitudes, that is, how a person evaluates another group. Attitudes toward an outgroup (e.g., refugees) are important bases not only for positive but also for negative behavioral intentions toward its members (Wagner et al., 2008). Knowledge about the other group, as another cognitive aspect of intergroup relations, is likewise a predictor of intergroup attitudes, but it is less important than affective components (Pettigrew & Tropp, 2008). **[AQ: 6]** Learning about an outgroup and its worldviews, norms, and values can promote understanding and improve intergroup relations (Stephan, 2014). Therefore, interventions that improve intergroup relations promote the ingroup's knowledge about the outgroup (e.g., Over & McCall, 2018).

An affective aspect of intergroup relations is intergroup empathy, which is defined, on the one

hand, as taking the perspective of an outgroup member and, on the other hand, as the assimilative emotional reaction towards an outgroup member's feelings (Stephan & Finlay, 1999). Feeling intergroup empathy leads to more positive intergroup attitudes (Batson et al., 1997). Furthermore, intergroup empathy is negatively correlated with antisocial behavior, **[AQ: 7]** and predicts whether someone is likely to show stigmatization and discrimination to an outgroup member (Eisenberg, 2010). Intergroup anxiety, which is defined as anxiety when having intergroup contact and may only be experienced with certain outgroups or in certain situations (Stephan, 2014), is another affective aspect of intergroup relations. It can lead to negative intergroup interaction (Hogg, 2013) and can result in anger and offensive action tendencies through an increased negative threat appraisal of outgroup-initiated intergroup contact (van Zomeren et al., 2007). It is assumed that affect is an important causal factor for behavioral intentions that are more affectively based, such as willingness to engage in future intergroup contact (Esses & Dovidio, 2002), which also influences future intergroup relations. Intergroup anxiety is negatively correlated with positive intergroup attitudes (Stephan, 2014) and can strengthen negative emotional reactions and even boost the expression of negative intergroup attitudes (Crandall & Eshleman, 2003).

Because intergroup relations is such a multifaceted construct, examining all of its dimensions separately is relevant. Therefore, we will analyze attitudes, anxiety, empathy, support for refugee-friendly policies, willingness to engage in intergroup contact, and knowledge about refugees to better investigate this construct.

### *Effects of Intergroup Contact on Intergroup Relations*

**[AQ: 8]** Allport's (1954) vision was to reduce intergroup hostility through intergroup face-to-face contact. Research has confirmed Allport's assumptions numerous times (Pettigrew & Tropp, 2006), and intergroup contact is now

considered one of the most powerful ways to enhance intergroup relations (Dovidio et al., 2003). Previous research on intergroup contact has included many aspects of intergroup relations. Intergroup contact is effective in improving intergroup attitudes between social groups (Allport, 1954; Lemmer & Wagner, 2015), including youths (Spencer et al., 2008). On the affective side, positive intergroup contact results in lower levels of intergroup anxiety (e.g., Voci & Hewstone, 2003), and is positively associated with empathy toward outgroup members (Turner et al., 2007). Intergroup contact enables one to empathize with another person (Pettigrew & Tropp, 2008) because it is easier to empathize with someone one has met before. Other aspects are less well studied, and the positive effects of contact could only be deduced indirectly. As intergroup contact can enhance more cognitively based aspects of intergroup attitudes, such as knowledge (Stephan, 2014), we assume that intergroup contact enhances support for refugee-friendly policies as well. During contact, group members communicate with one another, share opinions or experiences, and disclose themselves to other individuals. Therefore, contact should alter and increase intergroup knowledge. An important goal of intergroup contact interventions is to promote future intergroup contact. Thus far, the behavioral intention of willingness to engage in intergroup contact in the future has not been studied often (Ron et al., 2017), but it is an important aspect when discussing the potential of intergroup contact to improve intergroup relations. If intergroup contact leads to an increased willingness to engage in future intergroup contact, which should lead to improved intergroup relations, its effects can accumulate (Pettigrew, 1998).

Apart from these direct intergroup contact effects, previous research has identified several moderators of intergroup contact (Pettigrew & Tropp, 2006). We will investigate four potential moderator variables: perceived valence of the contact, indirect intergroup contact effects, and, exploratively, attitudes before being in contact with the other group and the influence of the

type of school in which the contact takes place. First, if the contact is perceived as inadequate or vastly negative, an underlying negative attitude can be confirmed (Crandall & Eshleman, 2003), and the positive effects of contact could be reduced. For example, university students who had negative intergroup contact with a foreigner had more negative attitudes toward the whole group, compared with students who had positive intergroup contact (Graf et al., 2014). Second, merely hearing about a positive intergroup contact experienced by another person could improve intergroup relations (Pettigrew et al., 2011). Such indirect contact might be especially likely if within an institutional setting (e.g., a school) only a subgroup (e.g., some classes) takes part in a contact intervention, as it is the case in this study. Third, evidence shows that intergroup contact can be especially effective for prejudiced people (Adesokan et al., 2011). The authors investigated 255 university students and showed that the intergroup attitudes of students with less favorable diversity beliefs changed more with intergroup contact. Fourth, we will exploratively investigate whether the effect of a workshop, which includes intergroup contact, depends on the type of school in which the workshop takes place.

Taken together, intergroup contact seems to improve many aspects of intergroup relations, and interventions that include intergroup contact might be especially effective if they target prejudiced people and ensure a positive contact experience. Although there is an abundance of research on intergroup contact, there are also typical shortcomings that could be identified in these studies.

### *Methodological Limitations in Previous Intergroup Contact Research*

Despite the many studies of intergroup contact and their profound theoretical considerations, limitations in the empirical evidence need to be pointed out. First, there are only a few field experiments of intergroup contact interventions (von Berg & Roth, 2003). In a comprehensive meta-analysis, only 5% of the studies of intergroup contact used an experimental design

(Pettigrew & Tropp, 2006). The potential for improving intergroup relations through intergroup contact was mainly tested with correlation (e.g., Lemmer & Wagner, 2015) or an analysis of the relation between self-reported previous intergroup contact and aspects of intergroup relations (e.g., Wilson-Daily et al., 2018). Deriving the causal effects of intergroup contact on intergroup relations from these studies is not possible. More studies with controlled contact between the ingroup and the outgroup are needed to evaluate the intergroup contact hypothesis. Second, the majority of the few intergroup contact evaluation studies that are available did not include a control group (e.g., Boulden, 2006). Therefore, whether the changes in intergroup relations are caused by intergroup contact, or simply by time, or the repeated answering of the same questionnaire remains unclear. Third, in most of these studies, no follow-up measurement points were used, so no long-term effects were investigated (Lemmer & Wagner, 2015). As in other experimental studies, researchers tended to focus on immediate outcomes (Paluck et al., 2018), even though long-term effects were vital to consider, as short- and long-term effects may differ. Fourth, many authors did not acknowledge potential statistical dependency within a sample, such as between children from one class (e.g., Boulden, 2006). If data are clustered and, therefore, observations are not independent, residuals are correlated. Statistical tests often lean on the assumption of independent observations. If these tests are used with dependent observations, the variance (compared with the case of a genuinely random sample) and the estimation of standard errors are too small, leading to an increased alpha error probability. Fifth, aside from methodological difficulties in intergroup contact research, intergroup contact experiments, **[AQ: 9]** such as multiethnic camps, are accompanied by great organizational and financial effort, making them unsuitable for many organizations such as schools (for a closer investigation, see Beelmann & Heinemann, 2014; Lemmer & Wagner, 2015). The majority of evaluated intergroup contact programs were long-term interventions (see e.g., Bratt, 2008;



Scacco & Warren, 2018; Wayne, 2008), varying from 2 days up to 1 year.

### *The Present Study*

We investigated the effects of an intergroup contact workshop called “Taking a Closer Look” in schools located in Styria, Austria. The standard workshop consists of three parts. In the first part, the lecturer gives the pupils information about fleeing. An accompanying refugee adds personal information, and the pupils can ask questions. Second, a short exercise demonstrating the influence of prejudice on memory processes, which is not part of our analysis, takes place. Third, the accompanying refugee presents their story, and pupils can ask questions again. In our study, we varied whether a refugee was present at the workshop or not (contact group vs. no-contact group). To investigate the effectiveness of the workshop and the contact, we assessed participants’ intergroup attitudes, anxiety, empathy, support for refugee-friendly policies, willingness to engage in intergroup contact, and knowledge about refugees.

To overcome the first methodological issue with previous intergroup contact research, we analyzed the causal effects of intergroup contact in a field experiment. To address the second issue, we randomly assigned the classes to two conditions. The contact group participated in the full workshop, including intergroup contact with a refugee. The no-contact group participated in the workshop without intergroup contact, which led to a conservative comparison group. We assumed that this shortened workshop also affected the dependent variables (DVs) through learning something about refugees. To overcome the third issue, we set three measurement points: 1 week before the workshop (T1), immediately after the workshop (T2), and 1 month after the workshop (T3). To address the fourth issue, we calculated multilevel models. Fifth, this workshop is short, affordable, and designed for school classes, as it is accompanied by reasonable organizational effort. Lastly, workshops conducted in schools might also help overcome a final limitation of research on

intergroup contact: people with negative attitudes toward an outgroup avoiding contact with outgroup members. This phenomenon is called selection bias (Pettigrew & Tropp, 2006). As this study was conducted in schools, and the pupils were not aware of meeting a refugee during the workshop, we were able to overcome this problem as well.

### *Hypotheses*

We derive the following hypotheses: Hypothesis 1 (immediate effects): After the workshop “Taking a Closer Look” (T2), without taking the groups into account, the pupils’

- (a) attitudes toward refugees are more positive,
- (b) intergroup anxiety is reduced, and
- (c) empathy toward refugees,
- (d) support for refugee-friendly policies,
- (e) willingness to engage in intergroup contact, and
- (f) knowledge about refugees are increased,

compared with the case before the workshop (T1).

Hypothesis 2 (group differences): These effects are strengthened by a short direct contact intervention with a refugee (contact group), compared with the classes that had no such contact intervention (no-contact group).

Hypothesis 3 (long-term effects): **[AQ: 10]** The effects of Hypotheses 1 and 2 remain observable 1 month later.

Hypothesis 4 (contact valence): The changes in the DVs in the contact group are moderated by how positive or negative the contact with the refugee is perceived. **[AQ: 11]** The more positive the contact, the more positive the changes in pupils’ attitudes, the higher the reduction in intergroup anxiety, and the higher the increase in (a) empathy toward refugees, (b) support for refugee-friendly policies, (c) willingness to engage in intergroup contact, and (d) knowledge about refugees.

Hypothesis 5 (indirect contact): The difference between the contact and no-contact group

in changes in the DVs is decreased the more the contact and the no-contact group talked about the intergroup contact.

Exploratory Question 1 (initial level): Are the effects of the contact intervention (compared with the no-contact group) on the DVs moderated by the values of the respective DVs at the first measurement point?

Exploratory Question 2 (school type): **[AQ: 12]** Are the effects on workshop knowledge moderated by the type of school the pupils visit (more theoretical vs. more practical)?

## Method

### *Participants and Design*

A total of 410 pupils from 22 classes in 11 schools participated, with two classes from each school; one class was randomly assigned to the contact group and the other to the no-contact group. The contact group participated in the whole workshop “Taking a Closer Look” including intergroup contact. The no-contact group participated in the workshop but without intergroup contact. Intergroup relations were assessed at three time points: 1 week before the intervention (T1), immediately afterwards (T2), and 1 month later (T3). The schools were recruited by Arbeitsgemeinschaft (ARGE) Jugend gegen Gewalt und Rassismus,<sup>1</sup> the lecturers of “Taking a Closer Look,”<sup>2</sup> and by us. A detailed description of the selection process of the schools can be found in the supplemental material (S.2.1.). The workshop, which normally costs €181.50, was free for the schools because of their participation in the field experiment.

Based on the response pattern approach (Huang et al., 2012), we excluded 13 pupils who answered all seven questions on support for refugee-friendly policies or all six items of the Intergroup Anxiety Questionnaire in a row (except when it was the scale midpoint), because these scales contained reverse-coded items. We also excluded nine participants who fled themselves or whose parents fled from Syria, Afghanistan, or Nigeria. These pupils may have

**Table 1.** Gender (proportion in percentage) of the pupils in the contact and no-contact groups.

	Contact group ( <i>n</i> = 193)	No-contact group ( <i>n</i> = 195)
Gender		
Male	52.8 %	47.2 %
Female	40.0 %	46.1 %
Others	0.0 %	1.6 %
Missing	7.2 %	5.2 %

perceived the accompanying refugee as an ingroup member. The other pupils were mainly born in Austria (95.4%), including their mothers (81.7%) and fathers (82.2%). Participants in the final sample were 388 pupils (see description in Table 1), of which, 368 filled out the questionnaires at T1, 331 at T2, and 297 at T3. In the contact group, the mean age was  $M=14.2$  ( $SD=1.3$ , min = 12.0, max = 17.0), whereas in the no-contact group, the mean age was  $M=14.4$  ( $SD=1.5$ , min = 12.0, max = 19.0).

Five class levels attended the field experiment (7th–11th grades). In nine schools, the contact and no-contact groups were from the same class levels, whereas in two schools, they were from two consecutive class levels. Three of the schools are located in a city with 291,134 citizens. Three others are located in cities with 15,650 to 7,611 citizens. The remaining five schools are located in villages with 4,928 to 1,302 citizens. Six schools had a more practical focus, with an attendance period of 4 years. Five schools had a more theoretical focus, with an attendance period of 8 years, and enabled pupils to attend university afterwards.

The study was approved by the Ethics Committee of the University of Graz and Bildungsdirektion Steiermark (Education Directorate Styria). Furthermore, the study was pre-registered on May 8, 2019 in the Open Science Framework **[AQ: 13]** (<https://osf.io/ugqp3/>). All deviations from the preregistration were disclosed.

### *Procedures*

*Procedure of the field experiment.* The questionnaires were administered by the teacher, the first author,

**Table 2.** Procedures of the workshop in the contact and no-contact groups.

<b>Both groups</b>	Each workshop was run by one of five lecturers of “Taking a Closer Look,” one men and four women from Austria between 22 and 25 years old
<b>1. No-contact group</b>	<p><b>1.1. Lecture about fleeing (approximately 40 minutes)</b> The lecturer explained certain words (asylum seeker, migrant, illegal migration, subsidiary protection, and refugee), the asylum procedure and directives, and the procedures for granting the right to asylum in Austria. They also showed statistics on the number of refugees who have come to Austria in the last 15 years, how many of them received positive replies to their application for asylum, and how many of them were male.</p> <p><b>1.2. Exercise (approx. 20 min.)</b> Exercise demonstrating the influence of prejudice on memory processes (see the supplemental material [S.2.12.]</p>
<b>2. Contact group</b>	<p>In the contact group, the lecturers were accompanied by one of three refugees. One refugee was a 21-year-old woman, she was born in Iran but grew up in Afghanistan. The others were men, born in Iraq, and they were 28 and 30 years old. The pupils could ask the refugee any questions at all times. This means that the intergroup contact was not strictly structured, but still had a framework: at the beginning, everyone, including the refugee, introduced themselves, then the workshop was conducted; the intergroup contact lasted a maximum of 2 hours. The intergroup contact was not between the refugee and individual pupils, but between the refugee and the corresponding class.</p> <p><b>2.1. Lecture about fleeing (approx. 40 min.)</b> The refugee added some personal information.</p> <p><b>2.2. Exercise (approx. 20 min.)</b></p> <p><b>2.3. Refugee presentation (approx. 20 min.)</b> The refugee told their own story. They explained how they came to Austria and why they had to leave their home country. They described how they experienced fleeing and their time in the different countries they had passed. They also explained their asylum application and the administrative barriers they must overcome in Austria. During and after the presentation, the pupils could ask questions.</p>

or the workshop team. The pupils provided their own signed permission slips and those signed by their parents. Questionnaires were analyzed only when the pupils had their parents' permission slips until the third measurement point; otherwise, their questionnaires were destroyed. All material can be found in the supplemental material (S.2.2.–S.2.11).

At the first measurement point (T1), the teacher distributed the paper-and-pencil questionnaires in the classroom to the pupils. To guarantee anonymity, the pupils generated an individual code, which they used at all three measurement points. This code consisted of the first letter of their mother's first name, the first letter of their father's first name, the day of their birthday, and the month of their birthday. At each measurement point, a detailed description was

given of how the pupils should generate the code, to keep the error rate as low as possible. While the pupils completed the questionnaires, the teachers or the first author rated the degree of disturbances (e.g., running around or talking) from “very high” to “very low” on a 5-point Likert scale. The pupils returned their questionnaires in envelopes, which the teacher closed in front of them. Approximately 1 week later, the workshop took place, and the second questionnaire (T2) was distributed immediately afterwards. One month later, the questionnaire was administered again (T3).

*Procedure of the workshop (contact manipulation).* The structure of the workshop was the same in both groups, but intergroup contact was not included in the no-contact group (see Table 2).

## Measures

The same questionnaire was used at all three measurement points, and the items in the questionnaires of the two groups were almost identical. Only at T2 were there additional items asking the contact group how much they liked the refugee and, for the no-contact group, how much they liked the lecturer (the answers of the no-contact group were not analyzed but were collected to have the same number of questions for both groups). At T3, both groups were asked whether they talked about the workshop with the other class at the same school that also participated. The questionnaires for the pupils were written in German and translated into English for the present paper. We calculated the scale scores for the participants who answered at least half of the items on the respective scales.

The questionnaire was pretested in the first participating school at T1. The pupils were given the opportunity to comment on each item in the additional response options on the questionnaire. Moreover, eight pupils (five in the contact group and three in the no-contact group) were interviewed after completing the questionnaire. They were asked what they thought the different questions meant and which ones they did not understand. After these interviews and an analysis of the questionnaires, it was determined that there were two adjectives and one question that the pupils did not understand. We rephrased these parts.

No variable exceeded a skewness of 2, and only one univariate outlier ( $M \pm 4 SD$ ) was detected (for the variable of perceived positivity of intergroup contact). We transformed this outlier as preregistered, to reduce its impact on the analyses.

*Attitudes.* The pupils were asked to evaluate refugees on five 7-point bipolar dimensions taken from the German translation of the questionnaire by Paolini et al. (2004) (cheerful/reserved, negative/positive, hostile/peaceful, conniving/honest, and disrespectful/respectful, but not admiration/disgust). We averaged all items, with

higher scores indicating more positive attitudes toward refugees,  $\alpha(T1) = .90$ ,  $\alpha(T2) = .91$ ,  $\alpha(T3) = .93$ .

*Intergroup anxiety.* Based on Paolini et al. (2004), we asked the pupils, **[AQ: 14]** “How would you feel if you were the only person in a group of refugees (e.g., waiting for your bus)?” The pupils rated six emotions (1 = *not at all*, 5 = *very much*): happy, awkward, embarrassed, self-confident, relaxed, and defensive. We reverse-scored the items happy, self-confident, and relaxed, and then averaged all items. Higher scores indicate greater intergroup anxiety toward refugees,  $\alpha(T1) = .74$ ,  $\alpha(T2) = .80$ ,  $\alpha(T3) = .81$ .

*Empathy.* We slightly adapted the German translation (Fatfouta et al., 2015) of the Empathy Scale (Batson & Shaw, 1991) by asking, “What emotions do you experience if you think about refugees in Austria?” The pupils rated four emotions (1 = *not at all*, 5 = *very much*): sympathetic, compassionate, warm-hearted, and emotionally touched. The mean was calculated, with higher scores indicating greater empathy with refugees,  $\alpha(T1) = .85$ ,  $\alpha(T2) = .86$ ,  $\alpha(T3) = .87$ .

*Willingness to engage in intergroup contact.* The pupils were asked to rate two statements: “I would like to have more contact with refugees” and “I would like to get to know refugees better” (1 = *not true*, 5 = *very true*). We calculated the mean for each participant, with higher scores indicating greater willingness to engage in intergroup contact,  $\alpha(T1) = .88$ ,  $\alpha(T2) = .89$ ,  $\alpha(T3) = .89$ .

*Support for refugee-friendly policies.* **[AQ: 15]** The European Social Survey measured attitudes toward the trustworthiness of asylum applications and assumptions about the appropriate political handling of asylum seekers (Prinz & Glöckner-Rist, 2014). We slightly adapted the given German translation to make it easier for the pupils to understand. The pupils were asked to rate seven items (e.g., “While their applications for refugee status are being considered, refugees should be allowed to work in Austria,” “While



their cases are being considered, refugees should be kept in detention centers” [reverse-scored], and “The government should be generous in judging people’s applications for refugee status”) on a 5-point Likert scale (1 = *disagree strongly*, 5 = *agree strongly*). We calculated the mean, with higher scores representing greater support for refugee-friendly policies,  $\alpha(T1) = .74$ ,  $\alpha(T2) = .74$ ,  $\alpha(T3) = .79$ .

*Knowledge about refugees.* To test the pupils’ knowledge about refugees, fleeing, and asylum, we asked them six questions with an open-answer format (e.g., “How much money are refugees allowed to earn without getting their subsidy reduced?” Answers between €250 and €400 were scored as correct; the exact correct answer is €320. “How much money do refugees get if they want to supply themselves alone?” Answers between €80 and €150 were scored as correct; the exact correct answer is €115). The questions were based on the lectures the pupils were given during the workshop. Correct answers were scored as 1, whereas incorrect answers and unanswered questions were scored as 0. We calculated the sum score, with higher scores representing more knowledge. As knowledge is a heterogeneous construct, we calculated test–retest reliability instead of Cronbach’s alpha. As the workshop was likely to affect knowledge development between T1 and T2, we analyzed the correlation between T2 and T3, which was acceptable ( $r = .47$ ,  $p < .001$ ).

*Control variables.* At T2, the pupils were asked, **[AQ: 16]** “How did you like the lecture with the refugee?” (very bad, rather bad, neutral, rather good, or very good), to check whether the pupils experienced intergroup contact with the refugee (in the contact group) positively. They were also asked to rate the statement, “I liked the refugee” **[AQ: 17]** (*not true, somewhat true, moderately true, rather true, or very true*; Cronbach’s  $\alpha = .70$ ).

To determine whether the pupils in the no-contact and contact groups from the same school talked to each other about the workshop, we asked the following at the third measurement

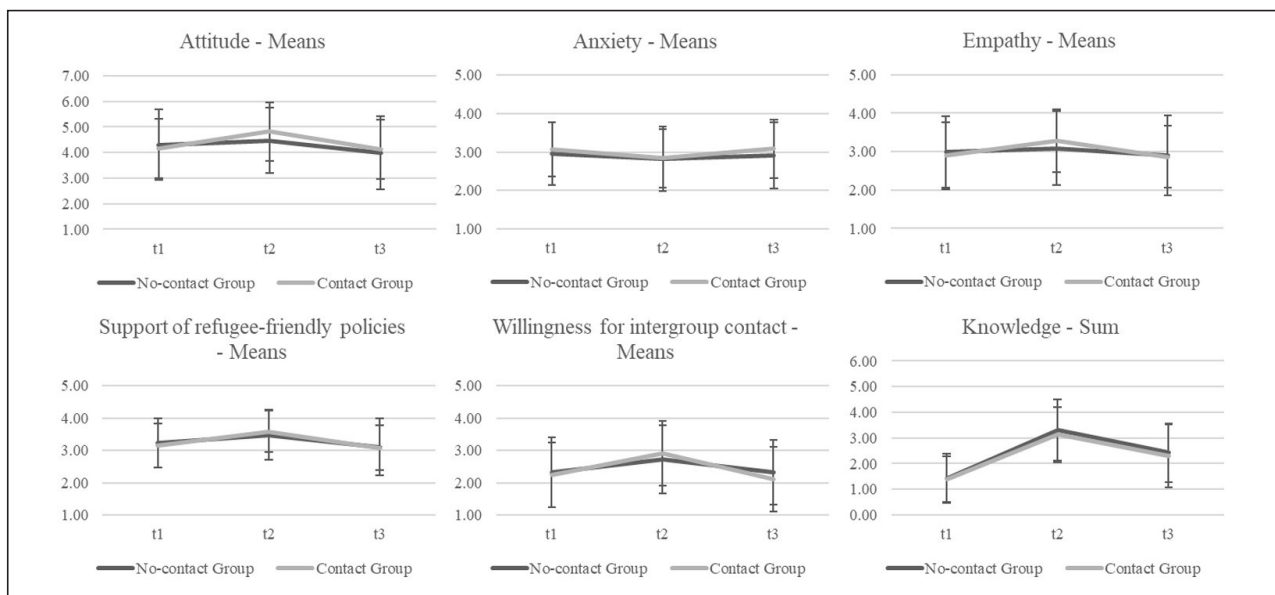
point: “In another class of your school, the workshop ‘Taking a Closer Look’ has been conducted as well. Did you speak with the pupils of the other class about your experiences with the workshop?” **[AQ: 18]** (*not at all, 1–2 times, 3–4 times, 5–6 times, or more than 6 times*). Finally, the pupils were asked to provide their age, gender, and where they and their parents were born.

### *Statistical Analyses*

The completed questionnaires were transferred into an SPSS data file by hand, and processed with IBM SPSS 25 for Windows. To test our hypotheses, we calculated multilevel models. Other than stated in the preregistration, no grand mean centering of the variables was done, as all hypotheses were tested with intercepts and grand mean centering affects the intercepts. Descriptive statistics of the initial values can be found in the supplemental material separately for the contact and no-contact groups (S.1.1.). We calculated two differential values for each DV: T2 minus T1 for short-term effects, and T3 minus T1 for long-term effects. These differential values were then included as DVs. Descriptive statistics of the differential values can be found in the supplemental material separately for the contact and no-contact groups (S.1.2.).

To analyze Hypothesis 1, we calculated intercept-only models (IOMs). The intercepts in the IOM represent the changes in the respective DVs from T1 to T2, without taking the groups (contact vs. no-contact) into account. Negative intercepts represent a reduction from T1 to T2, and positive intercepts represent an increase in the respective DVs. The same approach was followed to analyze H3a, but it was for the changes in each DV from T1 to T3.

To analyze Hypothesis 2, we expanded the IOMs using the predictor group (contact or no-contact group), **[AQ: 19]** and obtained the random intercept fixed slope models (RIFSMs) for each DV. **[AQ: 20]** We also calculated the random intercept random slope models for all DVs, but as these did not reveal a statistically

**Figure 1.** Means or sums of the DVs at three measurement points in the contact and no-contact groups.

*Note.* Lower values represent lower levels of the variables.

significant better model fit, we used the results of the fixed slope models. The intercepts in this model represent the changes within the group, which are dummy-coded with zero from the first to the second measurement points. The *bs* of the predictor group represent the differences between the contact and no-contact groups. The same approach was followed to analyze H3b (but it was for the changes in each DV from T1 to T3), as well as for the analysis of H4 (but it was only for the contact group, and with contact positivity as a continuous predictor instead of group as a dichotomous predictor).

To answer our first exploratory question, we determined whether the effects of the contact intervention (compared with those in the no-contact group) were moderated by the values of the respective DVs at the first measurement point. For this purpose, we calculated the RIFSMs with the predictors group, initial values of the respective DVs, and the moderation term of initial values and group for each of the DVs, both for short- and long-term effects. The *b* of group represents the difference between the contact and no-contact groups. The *b* of initial value represents the effect of initial value on the changes in the DV. The *b* of the moderation

term of group and initial value represents the effects of the interaction of initial value and group on the changes in the respective DVs.

**[AQ: 21]** To answer the second exploratory question, we extended the IOM to predict the changes in knowledge about refugees from T1 to T2 and from T1 to T3 using the variable type of school, and obtained a RIFSM.

## Results

As determined in the preregistration, we did not keep class level in the models because it did not improve model fit (see the supplemental material, S.1.3.). Therefore, we calculated two-level models for each DV with an individual (pupil) and a school level. The intraclass correlations for the DVs ranged from 0.00 to 0.10, indicating that there was substantial clustering within schools, at least for some variables (Heck et al., 2014). **[AQ: 22]** Therefore, we consistently calculated multilevel models.

Overall, the pupils showed rather moderate intergroup relations (means: 2.23–4.30) but had little specific knowledge about refugees' situation before the intervention (contact group:  $M = 1.39$ ; no-contact group:  $M = 1.43$ ; see Figure 1).

**Table 3.** Intercorrelations for T2.

	Attitude	Anxiety	Empathy	Support	Willingness
Attitude					
Intergroup anxiety	-.39**				
Empathy	.63**	-.44**			
Support for refugee-friendly policies	.59**	-.45**	.70**		
Willingness to engage in intergroup contact	.59**	-.43**	.70**	.64	
Knowledge about refugees	.18**	-.10	.13*	.18**	.11

\*\* $p < .005$ . \* $p < .05$ . **[AQ: 23]**

**Table 4.** Results of the multilevel analysis: Predicting changes in the dependent variables from T1 to T2 without taking the groups into account.

Variable	Intercept-only model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	0.35 (0.06)	5.71	< .001	11.67
Intergroup anxiety	-0.21 (0.04)	-5.55	< .001	294.00
Empathy	0.25 (0.04)	5.92	< .001	299.00
Support for refugee-friendly policies	0.32 (0.04)	7.93	< .001	8.66
Willingness to engage in intergroup contact	0.55 (0.08)	6.84	< .001	10.55
Knowledge about refugees	1.88 (0.14)	13.40	< .001	11.29

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4.

Intercorrelations of the variables at each measurement point ranged from moderate to high (see Table 3; see comparable correlations for T1 and T3 in the supplemental material, S.1.4.).

### *Hypothesis 1: Immediate Effects of the Workshop*

We expected that the workshop would improve intergroup relations immediately afterwards, and we were able to confirm this first hypothesis for all DVs (see Table 4). Without taking the contact and no-contact groups into account, at T2 compared with T1, pupils' attitudes toward refugees became more positive, and their intergroup anxiety was reduced. Pupils' empathy toward refugees was improved, and so was their support for refugee-friendly policies, willingness to engage in intergroup contact, and knowledge about refugees.

### *Hypothesis 2: Immediate Effects of Contact*

We expected that, compared with the workshop without intergroup contact, the workshop with intergroup contact would be more beneficial for intergroup relations immediately after the workshop. We confirmed this second hypothesis on the effects of contact on pupils' attitudes, empathy, support for refugee-friendly policies, and willingness to engage in intergroup contact. However, we had to reject the second hypothesis for the variables of intergroup anxiety and knowledge about refugees (see Table 5). In the no-contact group, pupils' attitudes toward refugees did not change, but in the contact group, they improved. In the no-contact group, empathy, support for refugee-friendly policies, and willingness to engage in intergroup contact increased, and in the contact group, this increase was higher.

**Table 5.** Short-term effects: Multilevel analyses of the changes in the dependent variables from T1 to T2.

Variable	Random intercept fixed slope model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
<b>Attitudes</b>				
No-contact group	0.12 (0.08)	1.45	.150	304.00
Contact group	0.58 (0.09)	6.88	< .001	304.00
Group difference	0.46 (0.12)	3.88	< .001	304.00
<b>Intergroup anxiety</b>				
No-contact group	-0.16 (0.05)	-3.09	.002	294.00
Contact group	-0.25 (0.05)	-4.76	< .001	294.00
Group difference	-0.09 (0.07)	-1.15	.253	294.00
<b>Empathy</b>				
No-contact group	0.12 (0.06)	2.07	.040	299.00
Contact group	0.37 (0.06)	6.42	< .001	299.00
Group difference	0.25 (0.08)	3.05	.003	299.00
<b>Support for refugee-friendly policies</b>				
No-contact group	0.21 (0.05)	4.01	.001	22.96
Contact group	0.42 (0.05)	8.23	< .001	20.24
Group difference	0.21 (0.06)	3.39	.001	273.52
<b>Willingness to engage in intergroup contact</b>				
No-contact group	0.41 (0.10)	4.28	< .001	18.08
Contact group	0.70 (0.10)	7.34	< .001	18.34
Group difference	0.30 (0.09)	3.13	.002	300.92
<b>Knowledge about refugees</b>				
No-contact group	1.89 (0.16)	12.07	< .001	17.70
Contact group	1.85 (0.16)	11.61	< .001	18.75
Group difference	-0.02 (0.15)	-0.16	.874	240.39

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. Estimates of group differences were calculated with the following coding: contact group = 1, no-contact group = 0. Calculating group differences with the coding being the other way around reverses the sign only, but the value does not change. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4. To estimate the change within the no-contact group: dummy-coded = 0, contact group = 1. To estimate the change within the contact group: dummy-coded = 0, no-contact group = 1.

Anxiety was reduced both in the no-contact and contact groups, and knowledge about refugees improved in both groups.

### *Hypotheses 3a and 3b: Long-Term Effects of the Workshop and of Contact*

We expected the effects of the workshop (H3a) and of contact (H3b) to last at least 1 month. Hypothesis 3a was confirmed for knowledge about refugees and rejected for the other DVs (see Table 6). Without taking the contact and no-contact groups into account, pupils' knowledge

about refugees significantly improved from T1 to T3. Pupils' attitudes toward refugees did not change significantly from T1 to T3, but a negative tendency was observed. **[AQ: 24]** Pupils' intergroup anxiety did not change significantly from T1 to T3, but a tendency to decrease was observed. Pupils' empathy toward refugees, support for refugee-friendly policies, and willingness to engage in intergroup contact did not change significantly from T1 to T3.

We did not detect long-term effects of intergroup contact, and had to reject H3b (see Table 7). Whether the pupils were in the no-contact



**Table 6.** Results of multilevel analysis: Predicting changes in the dependent variables from T1 to T3 without taking the groups into account.

Variable	Intercept only model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	-0.13 (0.06)	-2.11	.063	9.29
Intergroup anxiety	-0.07 (0.04)	-1.80	.073	264.00
Empathy	0.03 (0.05)	0.65	.517	274.00
Support for refugee-friendly policies	-0.02 (0.04)	-0.50	.633	7.83
Willingness to engage in intergroup contact	0.01 (0.08)	0.15	.855	8.64
Knowledge about refugees	1.08 (0.13)	8.50	< .001	9.10

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4.

**Table 7.** Long-term effects: Multilevel analyses of the changes between T1 and T3.

Variable	Random intercept fixed slope model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
<b>Attitudes</b>				
No-contact group	-0.23 (0.09)	-2.59	.014	32.22
Contact group	-0.04 (0.09)	-0.40	.689	31.14
Group difference	0.19 (0.12)	1.60	.110	269.31
<b>Intergroup anxiety</b>				
No-contact group	-0.12 (0.06)	-2.19	.029	264.00
Contact group	-0.02 (0.06)	-0.38	.702	264.00
Group difference	0.10 (0.08)	1.30	.195	264.00
<b>Empathy</b>				
No-contact group	-0.01 (0.06)	-0.12	.909	274.00
Contact group	0.07 (0.09)	1.03	.302	274.00
Group difference	0.07 (0.09)	0.81	.417	274.00
<b>Support for refugee-friendly policies</b>				
No-contact group	-0.07 (0.06)	1.12	.276	22.62
Contact group	0.02 (0.06)	0.34	.735	19.68
Group difference	0.09 (0.07)	1.18	.240	244.27
<b>Willingness to engage in intergroup contact</b>				
No-contact group	0.06 (0.09)	0.67	.515	17.13
Contact group	-0.04 (0.09)	-0.42	.682	17.16
Group difference	-0.10 (0.10)	-1.00	.317	270.40
<b>Knowledge about refugees</b>				
No-contact group	1.10 (0.16)	7.02	< .001	20.33
Contact group	1.06 (0.16)	6.72	< .001	19.51
Group difference	-0.04 (0.18)	-0.22	.825	199.76

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. Estimates of group differences were calculated with the following coding: contact group = 1, no-contact group = 0. Calculating group differences with the coding being the other way around reverses the sign only, but the value does not change. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4. To estimate the change within the no-contact group: dummy-coded = 0, contact group = 1. To estimate the change within the contact group: dummy-coded = 0, no-contact group = 1.

**Table 8.** Results of the multilevel analysis: Moderation effects of how positive the contact with the refugee was perceived on the changes in each dependent variable from T1 to T2.

Variable	Random intercept fixed slope model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	0.23 (0.13)	1.85	.066	148.27
Intergroup anxiety	0.01 (0.07)	0.15	.878	149.00
Empathy	0.26 (0.08)	3.14	.002	151.00
Support for refugee-friendly policies	0.10 (0.07)	1.56	.120	133.18
Willingness to engage in intergroup contact	0.31 (0.10)	3.16	.002	153.10
Knowledge about refugees	-0.25 (0.17)	-1.46	.147	116.62

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4. Perceived positivity was group mean centered.

or contact group did not predict changes in the DVs from T1 to T3. Even though there was no significant group difference, we analyzed the changes in each group separately. Intergroup attitudes became more negative in the no-contact group, but no significant change was detected in the contact group. Intergroup anxiety was reduced in the no-contact group, but no significant effects were observed in the contact group. For empathy, support for refugee-friendly policies, and willingness to engage in intergroup contact, no long-term effects were found in either the contact or no-contact group. The pupils' knowledge about refugees significantly improved in both groups.

#### *Hypothesis 4: Contact Positivity as a Moderator of Contact Effects*

We expected the beneficial effects of contact on intergroup relations to be stronger the more positive the pupils perceived the contact to be. Hypothesis 4 was confirmed for short-term effects on pupils' empathy and willingness to engage in intergroup contact, a tendency was observed for attitudes, and it was rejected for the effects on pupils' intergroup anxiety, support for refugee-friendly policies, and knowledge about refugees (see Table 8).

Hypothesis 4 was not confirmed for long-term effects. How positive the pupils perceived

the contact with the refugee to be could not predict long-term changes in pupils' attitudes, intergroup anxiety, support for refugee-friendly policies, willingness to engage in intergroup contact, and knowledge about refugees (see Table 9).

#### *Hypothesis 5: Indirect Contact as a Moderator of Contact Effects*

In the second moderator hypothesis, we assumed that the difference in changes in the variables from T1 to T3 between the contact and no-contact groups would decrease the more the contact and no-contact groups talked about the workshop. As no statistically significant differences in changes from T1 to T3 between the contact and no-contact groups could be observed, we did not test this hypothesis.

#### *Exploratory Questions*

*Exploratory Question 1: Initial value as a moderator of contact effects.* The first exploratory question focused on whether the effects of the contact intervention (compared with the no-contact group) on the DVs were moderated by the values of the respective DVs at the first measurement point. The assumed moderation effects were not observable for changes in the respective DVs from T1 to T2 (see the supplemental material, S.1.5.). **FAQ: 25** Beyond that, the analyses

**Table 9.** Results of the multilevel analysis: Moderation effects of how positive the contact with the refugee was perceived on the changes in each dependent variable from T1 to T3.

Variable	Random intercept fixed slope model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	0.19 (0.14)	1.33	.188	119.49
Intergroup anxiety	-0.12 (0.10)	-1.26	.211	119.00
Empathy	0.13 (0.10)	1.35	.210	119.45
Support for refugee-friendly policies	0.09 (0.08)	1.13	.262	114.69
Willingness to engage in intergroup contact	0.13 (0.09)	1.35	.179	118.93
Knowledge about refugees	0.07 (0.22)	0.32	.748	87.85

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -7 to +7; for all other variables = -5 to +5. Perceived positivity was group mean centered.

**Table 10.** Results of the multilevel analysis: Influence of the initial value from T1 to T2.

Variable	Intercept-only model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	-0.42 (0.04)	-9.97	< .001	11.66
Intergroup anxiety	-0.30 (0.05)	-6.49	< .001	294.00
Empathy	-0.36 (0.04)	-8.19	< .001	299.00
Support for refugee-friendly policies	-0.34 (0.04)	-8.23	< .001	8.66
Willingness to engage in intergroup contact	-0.38 (0.05)	-8.41	< .001	10.55
Knowledge about refugees	-0.72 (0.07)	-8.31	< .001	11.29

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4.

revealed that for each DV, initial value had negative effects on the changes in the respective DV from T1 to T2, without taking group into account (see Table 10). This means, for example, that the more negative the pupils' attitudes at T1, the more positive the changes in attitudes from T1 to T2; or the higher the intergroup anxiety at T1, the greater the reduction in intergroup anxiety from T1 to T2.

For changes in the DVs from T1 to T3, moderation effects were found but only for empathy. The lower the empathy at T1, the higher the change from T1 to T3 in the contact group compared with the no-contact group,  $b = -0.25$  ( $SE = 0.10$ ),  $t(272.40) = -6.58$ ,  $p = .011$ . **[AQ: 26]** Furthermore, these analyses again revealed that for each DV, initial value negatively predicted changes in the respective value from T1 to T3, without tak-

ing group into account (see Table 11 and the supplemental material, S.1.6.).

*Exploratory Question 2: School types and an increase in knowledge about refugees.* We were also interested in the effects of school type (more practical or more theoretical) on pupils' increase in knowledge about refugees from T1 to T2 and from T1 to T3. The analyses revealed that pupils from more theoretical schools gained more knowledge about refugees from T1 to T2 than those from more practical schools did,  $t(10.04) = 3.61$ ,  $p = .005$ . Change for theoretical schools:  $b = 2.22$  ( $SE = 0.13$ ),  $t(8.68) = 16.65$ ,  $p < .001$ ; change for practical schools:  $b = 1.54$  ( $SE = 0.13$ ),  $t(11.76) = 11.61$ ,  $p < .001$ . For increase in knowledge about refugees from T1 to T3, a tendency

**Table 11.** Results of the multilevel analysis: Influence of the initial values from T1 to T3.

Variable	Intercept-only model			
	Estimate ( <i>SE</i> )	<i>t</i>	<i>p</i>	<i>df</i>
Attitudes	-0.34 (0.04)	-7.89	< .001	9.29
Intergroup anxiety	-0.28 (0.05)	-5.79	< .001	264.00
Empathy	-0.31 (0.05)	-6.31	< .001	274.00
Support for refugee-friendly policies	-0.31 (0.05)	-6.37	< .001	7.83
Willingness to engage in intergroup contact	-0.41 (0.05)	-9.19	< .001	8.64
Knowledge about refugees	-0.71 (0.09)	-8.27	< .001	9.10

*Note.* Estimates represent nonstandardized regression coefficients. Estimates represent the results of separate analyses for each dependent variable. School and individual levels were included. Possible range for differential values: attitudes = -6 to +6; for all other variables = -4 to +4.

in the same direction was observed,  $t(8.19) = 2.08$ ,  $p = .071$ . Change for theoretical schools:  $b = 1.27$  ( $SE = 0.14$ ),  $t(6.24) = 9.30$ ,  $p < .001$ ; change for practical schools:  $b = 0.84$  ( $SE = 0.16$ ),  $t(10.33) = 5.34$ ,  $p < .001$ .

## Discussion

Negative attitudes toward refugees and other signs of rejection show the importance of identifying interventions to improve intergroup relations between natives and refugees. In a field experiment in Austrian schools, we demonstrated that integrating even short-term intergroup contact (less than 2 hours) into a workshop [AQ: 27] about fleeing immediately improves intergroup relations compared with a workshop without intergroup contact. Not only intergroup attitudes but also empathy, willingness to engage in future contact, and support for refugee-friendly policies improved as a result of intergroup contact. For intergroup anxiety and knowledge about refugees, no further improvement through intergroup contact beyond the effect of the workshop itself was observed. [AQ: 28] The effects of intergroup contact on intergroup relations were moderated by perceived quality of the contact. When the pupils liked the refugee participating in the workshop, they felt greater empathy with refugees in general and were more willing to meet more refugees than they were before the workshop.

The results regarding attitudes (Spencer et al., 2008) and empathy (Turner et al., 2007) are in line with previous research. They support the expectation that intergroup contact results in better future intergroup relations. This is especially true because intergroup attitudes and empathy positively influence intergroup behavior (Eisenberg, 2010; Wagner et al., 2008), resulting in less discrimination and greater support.

To the best of our knowledge, the effects of intergroup contact on willingness to engage in future intergroup contact and support for refugee-friendly policies have not been studied so far. However, both aspects are likely to translate into real-world consequences. An improvement in willingness to engage in intergroup contact may lead to real future intergroup contact, thereby improving intergroup relations in the long run. [AQ: 29] An improvement in support for refugee-friendly policies can relate to politicians' actual decisions, thus affecting the legal situation of refugees.

Contrary to our hypothesis, intergroup contact did not reduce intergroup anxiety or improve pupils' knowledge about refugees above the effects of the workshop without intergroup contact. Thus, direct intergroup contact might not be necessary to reduce intergroup anxiety, but indirect contact might be. Previous research has also found mixed results. [AQ: 30] For example, in a study by Ioannou et al. (2018), there was no difference in anxiety about future intergroup



contact between Greek and Turkish Cypriots in direct and indirect intergroup contact groups. By contrast, Paolini et al. (2004) observed less intergroup anxiety between Catholics and Protestants in Northern Ireland with direct compared with indirect cross-group friendships. Further research is needed to identify a sufficient type and amount of contact for reducing intergroup anxiety.

Concerning the failed impact of contact on knowledge about refugees, we suspect that the methodological shortcomings of our study can account for this result. Our hypothesis was based on the assumption that the refugees enriched the information provided in the workshops with their individual stories. However, several factors during the contact might have inhibited this effect. First, the stories that the refugees told may not have been closely related to the information given in the lecture and requested in the test. These stories might just have provided additional information for the pupils. Second, learning might have been prevented by a language barrier. The refugees were not yet fully proficient in German, and following their stories and retrieving specific information might have been difficult for the pupils. Overall, the content of the lecture and the knowledge test might have been too complex and specific to be enriched by the story of the refugees. **[AQ: 31]** Our result that pupils visiting more theoretical schools learned more than did pupils visiting more practical schools supports this assumption.

There was little evidence of long-term effects, even though our data indicated immediate workshop effects and, more importantly, that intergroup contact with a refugee during the workshop improved several aspects of intergroup relations even further. The only long-term effect we observed was a similar knowledge gain in both groups. This is in line with a meta-analysis showing that diversity training has stronger effects on knowledge and other cognitive variables than on attitudes (Bezrukova et al., 2016). **[AQ: 32]** Other previous research has revealed that the effects of intergroup contact can persist over time (Lemmer & Wagner, 2015). However, most prior studies have analyzed long-term intergroup contact. Not only was intergroup contact within the

workshop “Taking a Closer Look” short and just between the refugee and the whole class, not single pupils, but so was the workshop itself. Intergroup contact in the workshop and the intervention in general were possibly too short for long-term effects to materialize. The conditions of positive intergroup contact postulated by Allport (1954) were also not completely met in the workshop. For example, ensuring the same status of pupils and refugees is difficult, as refugees are clearly legally and mostly economically disadvantaged. Introducing common goals during the short intergroup contact was likewise difficult. We suggest that only long and optimized contact interventions can withstand the potential counteractive social influence of parents, the media, or friends outside the classes in the long run. So far, only a few studies on intergroup contact interventions have included assessments of long-term effects. Lemmer and Wagner (2015) showed that only 19% of meta-analytically investigated studies had a post hoc design. However, when long-term results were published, significant effects were usually found.

Despite the lack of evidence of long-term effects, it seems that in terms of both long- and short-term effects, the workshop was particularly effective for pupils with poor intergroup relations. The more negative the intergroup relations before the workshop, the higher the changes in the respective variables. People who have negative attitudes toward outgroups often avoid contact with them, a phenomenon called selection bias (Pettigrew & Tropp, 2006). Furthermore, negative attitudes are likely to influence the perception of a contact and therefore diminish its positive effect. However, these people seem to particularly benefit from interventions such as “Taking a Closer Look.” School interventions or mandatory workshops in other organizational structures, such as workplaces, provide the opportunity to reach people with negative outgroup attitudes.

### *Limitations and Future Research*

Although we overcame some methodological issues with previous research on intergroup contact, some limitations need to be acknowledged.

First, at the third measurement point, some pupils complained openly about having to complete the questionnaires again. The effect was evident in seven meaningless answers in the comments section of the questionnaires. At T2, there were zero meaningless answers, and at T1, there was one. Furthermore, there were more missing data at the last measurement point than at the earlier ones. This may have reduced the power of the measurement. However, the missing data were equally distributed between groups, so internal validity was not compromised. It is likely that anger or boredom had a negative effect on the assessment of long-term effects and can explain why, for example, attitudes toward refugees became more negative in the no-contact group and returned to baseline levels in the contact group. Future researchers might consider including a third group with no treatment at all, to control for the effects of repeating the same questionnaire three times. This would also enable a more rigorous analysis of the effects of the workshop without intergroup contact.

Second, at the second measurement point, in the contact group, pupils were in the same room as the refugee while answering the questionnaires. This might have contributed to the positive contact effects. However, anonymity of the pupils was strictly ensured, as they themselves placed the questionnaires in prepared envelopes and used participation codes. Furthermore, if being in the same room as one member of an outgroup while completing an anonymous questionnaire improves attitudes toward the whole outgroup, this result further supports the importance of contact. Also, pupils were not aware of the contact manipulation. The short-term effect of the workshop might partially be due to social desirability and demand characteristics, because the goal of the workshop was obvious and evaluation relied on self-report measures; **[AQ: 33]** however, the specific contact effect could not as easily be explained by these mechanisms.

Third, our study tested the effects of externally initiated, short-term contact between one member of a low-status group and several members of a high-status group. Our results might be

applied to similar contact situations, for example, when a single refugee, ethnic or religious minority member, disabled person, or queer person is invited to a school class, youth center, university course, club, or religious community. Our results might not be applied to self-initiated or long-term contact, for example, in mixed schools with cooperative learning, mixed neighborhoods, or jobs in which people with diverse backgrounds work on a common goal.

Future research should systematically compare different intensities of intergroup contact (e.g., duration, number of meetings, number of outgroup members) to determine the amount and kind of contact needed to achieve long-term effects. As Pettigrew (1998) concluded, effects can accumulate through repeated contact. Furthermore, Stephan (2014) stated that intergroup contact should involve multiple outgroup members, different social contexts, and a longer duration. These modifications might have beneficial effects on the long-term effectiveness of intergroup contact during “Taking a Closer Look.” Finally, the analysis of Lemmer and Wagner (2015) revealed similar effects of delayed posttests (1–12 months later) compared with direct posttests. They also showed that relatively few studies included posttests with a delay of 1 or more months. This means that assessing whether the results of our study are unusual or whether there is a publication bias for long-term effects and only significant long-term effects are reported, is difficult. **[AQ: 34]** More registered reports are needed with peer reviews before the results are known, which might influence the decisions of authors, reviewers, and editors on whether to publish the results. Future research should assess additional possible moderators that might influence the effects of short contact, such as the (perceived) attitudes of pupils’ parents and peers, or (perceived) institutional support.

### *Practical Implications and Conclusion*

Individuals with negative attitudes toward refugees or other social groups are likely to avoid intergroup contact. Often, naturally occurring,

long-term contact is difficult to implement, for example, because of segregated schools, neighborhoods, or jobs. For these cases, our experiment demonstrates that short-term contact in workshops can initiate an improvement in intergroup relations. Schools are central locations for such interventions because of compulsory schooling, which means everybody can be reached and, at the same time, poor intergroup relations in schools easily result in bullying and discrimination, or more severe effects. Furthermore, a short workshop is an efficient way of improving knowledge about the situation of refugees even 1 month after the workshop. This makes such interventions easier to organize, affordable, and suitable for more institutions. Another important insight of our experiment is that short-term contact has short-term but not necessarily long-term effects. It is likely that contact needs to be longer, more intense, or accompanied by other interventions [AQ: 35] (e.g., repeating the issue or providing vicarious contact in school lessons) in order to achieve long-term effects. Schools should invest more time and resources in comparable interventions.

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### ORCID iD [GQ: 3]

Sophie Nägele  <https://orcid.org/0000-0003-4999-6710>

### Supplemental material

Supplemental material for this article is available online.

### Notes

- [AQ: 36] This organization is a specialized office for violence prevention, human rights education, and antidiscrimination work. It aims to provide advice, education, and project and public relations work on these ARGE topics (for further information, see <https://www.argejugend.at/>). The workshop “Genauer hinschauen” (“Taking a Closer Look”) is one of the projects of ARGE, which is part of their program since 2018.
- The workshop was developed by three people, based on critical theory of education. The three founders share an interest in improving the integration of refugees in Austria. The workshop was not part of a political initiative, but the founders determined the need for such a program and took action themselves. The work was funded by ARGE (for further information, see <https://www.argejugend.at/2018/09/genauer-hinschauen/>).

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