

BMJ Open Effects of chronic ethnic discrimination in the daily life of Turkish immigrants living in Austria: study protocol of a 30-day ambulatory assessment study

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ABSTRACT

Introduction Chronic ethnic discrimination is associated with negative mental and physical health outcomes in ethnic minority groups. It is assumed that suffering from repeated discriminatory events leads, over time, to psychological consequences such as higher perceived stress, higher negative affect and lower positive affect. Higher stress reactivity to non-discriminatory stressors, such as daily hassles, as well as anticipation and avoidance behaviour regarding discriminatory events, may further contribute to the overall burden for affected individuals. Studies investigating chronic ethnic discrimination and its psychological consequences in the daily lives of affected persons are lacking. Here, we present a study protocol to investigate the impact of chronic ethnic discrimination and acute discriminatory events in the daily lives of Turkish immigrants living in Austria, using an ambulatory assessment design. The feasibility of our study design was tested and confirmed in a pilot study (n=10).

Methods and analysis Ninety male Turkish immigrants will complete daily questionnaires for 30 days. Participants will indicate stress, perceived discrimination, negative and positive affect, daily hassles, anticipation and avoidance behaviour, as well as rumination with regard to discriminatory events on a daily basis. Furthermore, they will use preprogrammed iPods to assess acute discriminatory events in real time. Our hypotheses will be tested using multilevel analyses.

Ethics and dissemination This study has been approved by the institutional review board of the University of Vienna (reference number 00358). Results will be presented at conferences and submitted for publication in a peer-reviewed journal.

INTRODUCTION

Numerous studies have documented the negative impact of ethnic discrimination on mental and physical health.^{1–4} If frequent experiences of ethnic discrimination are encountered in day-to-day life, they may be perceived as threatening and require the mobilisation of internal resources.⁵ Chronic exposure to discriminatory events may thus constitute a persistent social stressor in

Strengths and limitations of this study

- This is the first study to investigate the direct and time-lagged effects of chronic ethnic discrimination on psychological consequences in the daily life of Turkish immigrants.
- Using an ambulatory assessment design, exposure to discriminatory events will be assessed by electronic devices in the daily life of Turkish immigrants in real-time and over 30 days.
- Psychological consequences (ie, perceived stress, affect, stress reactivity to daily hassles, anticipation and avoidance behaviour, as well as rumination) will be assessed using a daily diary design.
- Two groups will be compared: Turkish immigrants who experience chronic ethnic discrimination and Turkish immigrants who rarely experience ethnic discrimination in their lives.
- This study uses self-report measures, and potential effects due to assessment reactivity (ie, changes in participant experiences and behaviour) may arise.

ethnic minority groups, potentially leading to psychological consequences such as negative affect,⁵ higher stress reactivity to non-discriminatory stressors^{6 7} and maladaptive coping behaviours.^{8–10} However, the mechanisms through which chronic ethnic discrimination (CED) leads to impaired health are not fully understood. A stress and coping framework^{11–13} suggests the investigation of psychological mechanisms as well as potential protective factors, coping strategies and resources that may help persons to deal with the psychological consequences of ethnic discrimination.^{1,14}

Most studies in this area of research are cross-sectional in nature and do not examine individuals on a day-to-day level. The framework of ambulatory assessment methods—which includes daily diaries and experience sampling¹⁵—allows for reports of discriminatory events and relevant outcomes over longer periods of time and in real-time, rendering

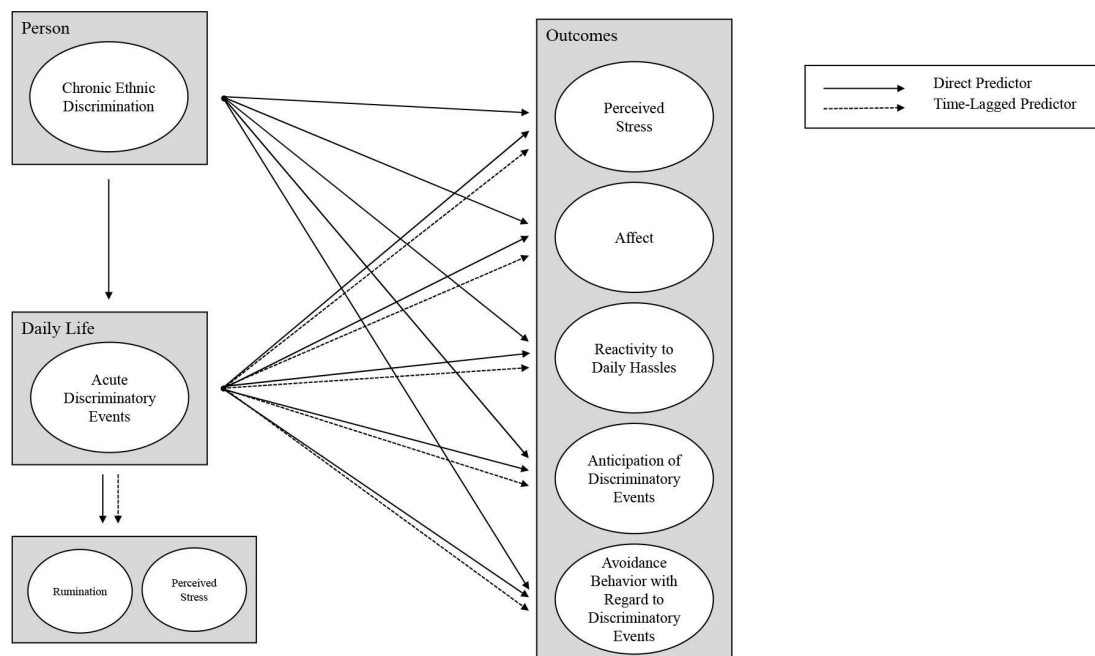


Figure 1 Model of the effects of chronic ethnic discrimination and acute discriminatory events that we plan to investigate in the proposed study.

it possible to investigate between-person and within-person effects without recall bias.^{16 17} Compared with single assessments, an ambulatory assessment approach provides highly reliable, ecologically valid and repeated assessments of the outcomes of interest.^{18 19} Therefore, we present a study protocol of an ambulatory assessment study that aims to investigate the effects of both CED and acute discriminatory events on stress, affect, stress reactivity to daily hassles, anticipation of discriminatory events and avoidance behaviour with regard to discriminatory events. We plan to investigate these factors over 30 days in the daily lives of Turkish immigrants living in Austria, taking into account direct and indirect (ie, time-lagged) variables. See [figure 1](#) for an overview of the study variables.

Chronic ethnic discrimination as a stressor

Depending on individual factors, any event could be perceived as stressful.¹² Two fundamental mechanisms determine the psychological stress reaction—the exposure and the reactivity to stressful events.²⁰ In individuals who experience CED, discriminatory events occur frequently and the effects of these events have to be endured over an extended period of time (similar to non-discriminatory chronic stressors).^{21 22} It has been suggested that the frequent exposure to chronic stressors, such as discriminatory events, depletes the capability to cope with the stress elicited by these potentially threatening and harmful events.^{5 23} The combination of the frequent stress exposure and the burdensome use of coping resources may thus, over time, lead to a higher reactivity to discriminatory events as they continue to occur in daily life.^{5 24}

The effects of acute ethnic discrimination in daily life, that is, the psychological responses following a discriminatory event, have not been investigated in detail. Few studies have explored responses to acute discriminatory events in a standardised way in the laboratory.^{25 26} However, they were limited to single discriminatory events²⁷ or exclusion paradigms²⁸ and did not investigate responses to acute ethnic discrimination in everyday life. Acute discriminatory events in everyday life may occur in many forms and across contexts, that is, they may be subtle or overt, intentional or unintentional, interpersonal or online. All those events may elicit acute psychological responses if they are perceived as discriminatory by the person.

Most studies in the literature have focused on the impact of overt forms of discrimination (eg, threatening behaviour, name-calling), whereas subtle and covert ethnic discrimination has not been investigated as frequently.²⁹ Subtle ethnic discrimination encompasses behaviours that are low in intensity, and which can easily be denied by perpetrators.³⁰ This distinct form of ethnic discrimination has also been investigated under the label ethnic/racial microaggressions,^{31 32} and it seems to have similar detrimental effects on individuals to overt forms.^{29 33 34} It is, therefore, important to account for the different forms of ethnic discrimination when investigating the daily life of ethnic minority groups. In our ambulatory assessment study, any discriminatory event, irrespective of its form, will be reported and included in our analyses.

Affect

Evidence suggests an association between a higher frequency of ethnic discrimination and more negative affect^{5 35} as well as less positive affect,³⁶ supporting the

notion that well-being may be substantially reduced by the emotional impact of discriminatory events.^{37 38} Negative affect is a further risk factor for impaired mental and physical health.³⁹ In addition to cross-sectional studies,^{40 41} daily diary studies have also found ethnic discrimination to be an indicator of low levels of daily negative affect.^{7 34 42–44}

Stress spillover to daily hassles

The impact that arises from repeated exposure to discriminatory events may also contribute to an accumulation of perceived stress in other domains.^{7 45 46} According to this model of stress spillover, the frequent experience of stressful discriminatory events may amplify the reactivity to daily hassles, that is, to negative everyday life events that are potentially stressful.⁴⁷ Studies have found that people who are chronically exposed to ethnic discrimination are more likely to report a greater number of stressful life events.^{48 49} As different sources of stress in daily life may interact, it is necessary to capture the frequency of and reactivity to daily hassles in a differentiated way in order to understand how CED leads to deleterious psychological outcomes in minority groups.

Coping strategies

Coping refers to various cognitive or behavioural efforts that one undertakes in order to manage situations that are appraised to exceed, strain or tax personal resources.^{11 13} The anticipation of future occurrences of discriminatory events might be a predictive factor for the adverse health impact of CED.⁵⁰ Several researchers have emphasised that anticipatory and heightened vigilance may constitute a coping strategy that leads to intrusive thoughts or images and may play an important role in determining the negative effects of stressors on health.^{46 51} Other maladaptive coping strategies in this context are avoidance behaviour and rumination. Avoidance behaviour may occur after discriminatory events have happened and may manifest in behaviours such as not thinking about the discriminatory event and reducing social contact due to fear of renewed discrimination.⁵² Moreover, avoidance behaviour seems to be a predictor of general life stress in Mexican Americans^{9 53} and has been associated with worse mental health status.^{54–56} Rumination is the tendency to passively perseverate on negative feelings and problems,⁵⁷ and it has been found to increase symptoms of depression⁵⁸ and negative affect.⁵⁹ Potentially, ruminating on negative experiences (eg, after a discriminatory event) exacerbates and prolongs the already existing emotions, further leading to heightened stress.⁶⁰

PROPOSED STUDY

Taken together, past research has illustrated the damaging effects of ethnic discrimination on health.^{4 61} Suffering from CED both leads to higher stress and has a negative impact on affect, and also spills over to other domains.

Further proximal predictors, such as anticipation and avoidance behaviour, as well as protective factors like coping strategies, have been suggested to play a key role in the processes that ultimately lead to negative effects of ethnic discrimination. Past studies—even longitudinal and diary studies—had limitations in this regard, as they merely looked at single predictors alone, had a limited sampling time period (from 24 hours up to 14 days; with only a small number of studies sampling for 20 days^{62 63}), or did not distinguish between the effects of CED and acute discriminatory events.^{5–7 16 36 64–66} Due to these limitations of previous studies in this field, we plan to conduct the outlined study in order to add to the understanding of processes that ultimately lead to negative health outcomes for minority groups.

In our proposed study, we will focus on male Turkish immigrants living in Austria. Persons with a Turkish migration background constitute the largest group of non-EU citizens in Austria and other European countries.⁶⁷ They are often the target of discrimination,⁶⁸ and population-based studies clearly indicate that Turkish immigrants are at increased risk of mental disorders and stress-related physical illnesses.^{69 70} Only males will be included since this study is part of a series of studies that also investigates biological factors of CED (eg, using hair cortisol and salivary cortisol levels as outcomes). Due to a greater variability in cortisol levels in females depending on the menstrual cycle phase or the use of hormonal contraceptives,⁷¹ we chose to focus on male participants in these studies. Moreover, women may experience discrimination based on the combination of gender and ethnic background (ie, intersectional discrimination⁷²). Since we aim to specifically focus on the consequences of ethnic discrimination, intersectional discrimination would be a potentially confounding factor that we wanted to reduce.

To thoroughly investigate the differential impact of CED on Turkish immigrants living in Austria, we will employ an ambulatory assessment method in a sample of individuals who experience CED and in a comparison group comprising Turkish immigrants who rarely experience ethnic discrimination in their lives (rare ethnic discrimination; RED). Our study will utilise daily diary assessments to depict the effects of CED and acute discriminatory events on perceived stress, affect, stress reactivity to daily hassles, anticipation and avoidance, for 30 consecutive days.

Our hypotheses are as follows:

1. Turkish immigrants who experience CED will report higher perceived stress, lower positive affect, higher negative affect, a higher stress reactivity to daily hassles, higher anticipation of discriminatory events and higher avoidance behaviour with regard to discriminatory events than Turkish immigrants who experience RED.
2. On days when acute discriminatory events occur, Turkish immigrants who experience CED will report higher perceived stress, lower positive affect, higher negative affect, a higher stress reactivity to daily hassles, high-



- er anticipation of discriminatory events and stronger rumination than Turkish immigrants who experience RED.
3. Immediately after acute discriminatory events occur, Turkish immigrants who experience CED will report higher perceived stress than Turkish immigrants who experience RED.
 4. On the days after the occurrence of acute discriminatory events, Turkish immigrants who experience CED will report higher perceived stress, lower positive affect, higher negative affect and a higher stress reactivity to daily hassles than on days when no acute discriminatory events occurred on the previous day.
 5. On days when discriminatory events occur, Turkish immigrants who experience CED will report higher anticipation of discriminatory events and higher avoidance behaviour with regard to discriminatory events than on days when no acute discriminatory events occur.

METHOD

We present the method of our study protocol for the in-depth investigation of the immediate and prolonged effects of both chronic discrimination and acute discriminatory events in the daily life of Turkish immigrants. Participants in this study will provide reports in two ways: at the end of each day via a daily diary questionnaire, and directly after a discriminatory event has occurred via a preprogrammed iPod. In a pilot study conducted from December 2019 to March 2020, we set out to test the feasibility and acceptability of the study design using a small-scale sample of $n=10$ male Turkish immigrants. Ninety-four percent of all daily assessments were completed by the participants throughout the 30-day assessment, and six discriminatory events were reported. A detailed description of the pilot study is provided in the online supplemental material (see online supplemental table 1).

Participants

We aim to recruit twice as many participants in the CED group than in the RED group to have a sample size that is efficiently powered to compare the two groups over time (hypotheses 1–3) and to detect event-based effects in the CED group alone (hypotheses 4 and 5). We, therefore, conducted power analyses with the software *powerlmm*⁷³ using the parameters of our pilot study (94% completed assessments, a mean intraclass correlation of 0.39 and a mean within-variance ratio of 2.12; see online supplemental material. Simulations showed that with group sizes of $n=60$ and $n=30$, our study has a power of 82% to detect cross-level interactions⁷⁴ with a medium effect size at $\alpha=0.05$. Therefore, we aim to include a total of $n=90$ male participants ($n=60$ Turkish immigrants who experience CED and $n=30$ Turkish immigrants who experience RED)⁷⁵ in this study.

To be considered an immigrant, participants themselves, or at least one of their parents, have to have

been born in Turkey (ie, first-generation or second-generation). Further inclusion criteria are male sex, age between 18 and 65 years, sufficient command of the German language, no alcohol or drug abuse, no medical illnesses, no mental disorders and a body mass index between 18 and 30 kg/m².

Procedure

For our study, we will recruit participants via advertisements in public places (eg, local shops), and on social media platforms. The study will be conducted in the laboratories of the Faculty of Psychology in Vienna, Austria. Persons who express an interest in participating will undergo a telephone interview and will be screened regarding our eligibility criteria. The absence of a mental disorder will be determined via individual items from the German version of the Structured Interview for Diagnostic and Statistical Manual of Mental Disorders, fourth edition, Axis I Disorders⁷⁶ and the Patient Health Questionnaire (PHQ).⁷⁷ Furthermore, as our main focus is on the investigation of Turkish immigrants who experience CED, we will ask participants to complete a 10-item version of the Everyday Discrimination Scale (EDS)⁷⁸ in a German translation⁷⁹ via telephone. The EDS is one of the most widely used measures of perceived discrimination and captures aspects of interpersonal discrimination in daily life.⁵⁰ Participants are instructed to report how often they are treated unfairly because of their Turkish background. Items include daily experiences such as being treated with less respect, being treated with less courtesy and people acting as if they think that one is not smart, and will be rated on a 6-point Likert-type scale (1–never, 6–almost every day). The EDS scores will be coded according to a novel approach proposed by Michaels *et al*,⁷⁵ which provides a more nuanced exposure assessment than traditional frequency scores, thereby allowing for the comparison of two extreme value groups (ie, CED and RED). In this approach, responses are adjusted to the number of days per year, resulting in the following anchors: 1 (never)=0; 2 (less than once a year)=0.5; 3 (a few times a year)=3; 4 (a few times a month)=36; 5 (at least once a week)=104; 6 (almost every day)=260. A summed value can be calculated—with a potential range from 0 to 2600—referring to the total number of discriminatory events per year (ie, the chronicity). In their study, Michaels *et al*⁷⁵ provided evidence for the robustness and sensitivity of this scale-coding approach, and proposed cutoffs with scores of <25 indicating rare exposure to ethnic discrimination and scores of >481 indicating chronic exposure. For the proposed study, we will use a slightly adapted cut-off score for CED (>500) and retain <25 as a cut-off for RED. Potential participants will only be included in the planned study if they fall above or below these cut-off values.

After the screening procedure, participants will be invited to the laboratories of the Faculty of Psychology at the University of Vienna for an introductory session. During this introductory session, participants will

provide written informed consent, complete the baseline measures and will be trained to handle the daily diary questionnaire and a preprogrammed iPod touch (iDialogPad, G Mutz, Cologne, Germany) to report discriminatory events. The definition of discriminatory events (ie, any event that is perceived as discriminatory based on the persons' ethnic background) will be explained and examples of different forms of discriminatory events (eg, subtle, overt) will be provided and discussed. Participants will be instructed to report discriminatory events throughout the assessment time of 30 days via the iPod touch immediately after they are experienced. Additionally, they should provide answers to the daily diary questionnaire every day. The daily diary questionnaire will be completed via an internet survey platform (Unipark EFS Survey, Globalpark, Cologne, Germany), and emails providing a link to each day's questionnaire will be sent every evening at 8 p.m. The daily diary questionnaire can be completed on a personal computer, smartphone or the provided iPod. To match repeated assessments on the daily diary questionnaire, all participants will be provided with an individual code, which they have to enter at every study assessment. Furthermore, a manual will be provided with detailed step-by-step descriptions of the procedure, handling of the iPod, responding to the different items and contact information of the study team.

After completing the study, participants will again be invited to our laboratories to return the iPods and for a postparticipation interview. Each participant will receive 100 € as compensation.

Measures

Baseline

The baseline measures will be presented to participants during the introductory session. First, participants will provide information on their age, sex and education. In the following, we will report the primary variables that are relevant for our hypotheses (ie, the daily diary variables). We will also assess secondary variables that are relevant in the field of ethnic discrimination and health but do not pertain to our specific hypotheses. These variables are cross-sectional and assess aspects of chronic stress, depressive and somatoform symptoms, potential protective factors (eg, in-group identification, acculturation, social support and emotion regulation), as well as personality traits. The secondary variables are listed and described in the online supplemental material, and an overview of all study variables and measures is provided in online supplemental table 2.

Daily diary

In the daily diary assessment, participants will first be asked whether discriminatory events have occurred over the course of the day and if so, to provide detailed descriptions of the event in a text box. Subsequently—and irrespective of the occurrence of acute discriminatory events—current perceived stress and perceived discrimination will be assessed with two items (ie, 'How stressed/

discriminated do you feel right now?'). Both items are rated on a 5-point Likert-type scale ranging from 1—not at all to 5—very much.

Affect

To assess daily positive and negative affect, the 20-item Positive and Negative Affect Schedule (PANAS)⁸⁰ will be used. The PANAS is one of the most widely used scales to assess affect and was previously validated to assess daily affect.⁸¹ Positive affect (eg, excited, proud) and negative affect (eg, upset, afraid) will be assessed with 10 items each, with responses ranging from 1—not at all to 5—very much.

Daily hassles

Stress reactivity to daily hassles will be assessed with 18 items of the Daily Hassles Scales revised.⁸² The items cover negative events from six different domains of life: financial problems, time pressure, work hassles, environmental hassles, family hassles and health hassles. Daily hassles may occur without being perceived as stressful. Therefore, all items are rated on a 5-point Likert scale, with the response options 0—did not occur, 1—occurred, not stressful, 2—occurred, somewhat stressful, 3—occurred, moderately stressful and 4—occurred, very stressful.

Rumination

If a discriminatory event has occurred on a particular day, three items measuring rumination following discriminatory events will be presented. These items ('I kept thinking about it', 'I re-enacted the situation in my mind' and 'I thought about the reasons why I was treated badly') will be rated on a 5-point Likert-type scale ranging from 1—not at all to 5—very much. The items are adapted from the Anger Rumination Scale,⁸³ which was previously used in the context of ethnic discrimination.⁸⁴

Anticipation of discriminatory events

The anticipation of discriminatory events will be assessed with three items (eg, 'I try to prepare for possible discriminatory events that may happen tomorrow') from the Racism-related Vigilance Scale.^{85 86} Items will be rated on a 5-point Likert-type scale ranging from 1—not at all to 5—very much.

Avoidance behaviour with regard to discriminatory events

We will present four items assessing avoidance behaviour with regard to discriminatory events. These items (eg, 'Today, I avoided people or situations because I feared being discriminated against') are adapted from the avoidance subscale of the Coping Strategy Indicator,⁵² which was previously used to assess avoidance coping with regard to perceived ethnic discrimination in a sample of African-American students.⁵⁵ Items will be rated on a 5-point Likert-type scale ranging from 1—not at all to 5—very much.

Discriminatory events

After experiencing acute discriminatory events during the day, participants should start an assessment by activating the iPod. Subsequently, they will be asked: 'Did you encounter a discriminatory event?', followed by: 'What exactly has happened?', with a range of response options: 'threatened', 'called names or insulted', 'attacked', 'treated as if I knew little/taken for a fool', 'offered advice and opinions I didn't want', 'treated worse, received poorer service', 'denied entry (eg, night club)' and 'other'. These response options were derived from several resources in the literature on unfair treatment and ethnic discrimination^{7 87 88} and aim to account for different forms of discriminatory events (ie, overt and subtle, as well as everyday discrimination).

Subsequently, participants will be asked how many persons (from a list of 1–10 or more), and who, discriminated against them, with the response options 'familiar person(s)', 'unfamiliar person(s)', 'the police', 'medical personnel', 'vendor/salesperson', 'service personnel', 'doorman' and 'other'. It is possible to choose multiple options (eg, to choose both familiar person(s) and service personnel to report a waiter who is familiar to the participant) in order to facilitate nuanced responses. The next question asks about the specific area of life in which the event happened, with the response options 'work', 'spare time', 'shopping', 'restaurant/eating or drinking out', 'dealing with government agencies', 'doctor's visit/healthcare setting', 'internet/online gaming' and 'other'. These responses were adapted from a representative study on discrimination by the German Federal Anti-Discrimination Agency.⁸⁹ Finally, two items will be presented assessing perceived stress and perceived discrimination during the discriminatory event (ie, 'How stressed did you feel in this situation' and 'How discriminated did you feel in the situation?'), both rated on a 5-point Likert type scale, ranging from 1—not at all to 5—very much.

Data analysis

Analysis will be conducted using the software IBM SPSS 25,⁹⁰ HLM 7.03⁹¹ and R 3.6.⁹² Descriptive statistics of baseline variables and discriminatory events will be presented, and our hypotheses will be analysed using multilevel models. Repeated data entries at level 1 (ie, stress, affect, reactivity to daily hassles, anticipation of discriminatory events, avoidance behaviour with regard to discriminatory events and rumination) will be nested in participants (level 2).

For hypothesis 1 (effects of CED in daily life), we will compute models with the time-invariant predictor *group* coded as 0/1 (RED/CED) as a random intercept and the daily diary variables as outcomes.

For hypothesis 2 (effects of acute discriminatory events in daily life), random slope models will be computed. These models include the time-invariant predictor *group* as a random intercept, the time-varying predictor *event* coded as 0/1 (acute discriminatory event occurred:

no/yes, as indicated in the daily diary assessments) as a random slope, and the cross-level interaction *group* × *event*. The outcomes will be the daily diary variables. These models will allow us to explain the variance in the effect of the level 1 predictor *event* with a level 2 predictor *group*.⁹³

For hypothesis 3 (immediate effects of acute discriminatory events in daily life), we will compute one model with the time-invariant predictor *group* as a random intercept and the outcome perceived stress immediately after acute discriminatory events occurred. Analyses pertaining to this hypothesis are only possible if the structure of the data permits—especially regarding the frequency and distribution of discriminatory events in the rare discrimination group. Therefore, we may adjust the analyses of hypothesis 3 after data collection is complete (ie, compare immediate stress of the chronic group with a proxy of daily stress in the rare group).

For hypothesis 4 (prolonged effects of acute discriminatory events), random slope models will be computed. These models will include the predictor *group* as a random intercept and a time-varying predictor *event* –1 coded as 0/1 (acute discriminatory event occurred on the day before: no/yes, as indicated in the daily diary assessments) denoting the day after the discriminatory event as a random slope. The outcomes will be the daily diary variables. If discriminatory events occurred on two (or more) consecutive days, only the day following the most recent discriminatory event will be included in the analyses.

Finally, for hypothesis 5 (anticipation of discriminatory events and avoidance behaviour with regard to discriminatory events), two models will be computed. These models will include the time-invariant predictor *group* as a random intercept, the time-varying predictor *event* coded as 0/1 (acute discriminatory event occurred: no/yes, as indicated in the daily diary assessments) as a random slope, and the cross-level interaction *group* × *event*. The outcomes will be the anticipation and avoidance behaviour variables, respectively, from the daily diary questionnaire.

Ethics and dissemination

The study protocol and the corresponding pilot study were approved by the institutional review board of the University of Vienna (reference number 00358). Informed consent will be obtained by all participants in writing during the introductory session (see Procedure). Data will be collected and stored in a pseudonymised manner with a coded ID stored separately in locked cabinets. Only the project team has access to these cabinets and any personalised data or identifiers. After data collection has finished, all personalised data and identifiers will be deleted. The results of this study will be presented at conferences and submitted to a peer-reviewed journal.

Patient and public involvement

There was no involvement of participants or the public in the development of this study protocol. The results of

this study will be forwarded to interested participants and disseminated via a peer-reviewed journal and at scientific conferences. Furthermore, the results will be disseminated and communicated to relevant stakeholders, persons working in (mental) healthcare and/or persons affected by ethnic discrimination.

ANTICIPATED RESULTS/DISCUSSION

Guided by stress and coping frameworks as well as models of ethnic discrimination, the proposed study aims to examine the direct and indirect effects that both CED and acute discriminatory events exert on stress and stress-related outcomes in Turkish immigrants living in Austria. As noted in our hypotheses, we expect that experiencing CED will lead to reports of more negative outcomes and, furthermore, that acute discriminatory events will have additional negative effects on our outcomes.

The study is based on a pilot study that we conducted to evaluate the feasibility and acceptability of our design. In the pilot study, we were able to recruit a sufficient number of participants in a reasonable period of time, and the compliance with the daily diary assessments was very high. We, therefore, conclude that the design of our pilot study is feasible and can be implemented on a larger scale. However, the cross-sectional reports of perceived ethnic discrimination (ie, the classification of CED according to the EDS, using the cut-off by)^{94,95} were discrepant with the occurrence during the sampling period, as only six acute discriminatory events were reported by six persons. This was unexpected, as the number of discriminatory events did not fully correspond to the subpopulation of immigrants we intended to investigate (ie, Turkish immigrants suffering from CED). We conclude that a higher cut-off value should be chosen for inclusion as a chronically discriminated (CED) person in the proposed ambulatory assessment study. Therefore, we will classify participants based on chronicity scores suggested by Michaels *et al.*⁷⁵ (see Procedure in the Study Protocol).

Several biases may potentially influence the results of our study. Only males will participate in our study and this focus on one gender will not allow us to generalise our findings to other genders. Thus, we may capture discriminatory events that are more often experienced by males than by females and are not able to assess events exclusively experienced by females. However, one large meta-analysis⁴ found that gender did not influence the associations between ethnic discrimination and mental or physical health. Selection bias may occur, that is, the participants of our study may not be fully representative of the population of Turkish immigrants living in Austria, since only healthy, non-obese participants that score below or above the cutoffs in the EDS are included. These inclusion criteria are necessary since the goal of our study is to investigate discrimination based on ethnicity as precisely as possible and we are thus unable to assess the impact of ethnic discrimination on unhealthy or impaired participants. In addition, selection bias may arise by our inclusion criteria of a sufficient command of the

German language as persons who are experiencing discrimination based on their language skills are not assessed. Furthermore, and due to the language inclusion criteria, our sample may represent a group of persons who are more integrated into Austrian society. Internet access at home will be required for participation, however, internet penetration rates are relatively high in Austria with 89% of all persons in Austria having internet access⁹⁶ and internet access is often provided for free at restaurants, cafés, or public organisations.

We assume that the inclusion criteria regarding language and internet access are of little relevance since the sample we recruited for our pilot study provided the first evidence that our recruitment strategy and the design are feasible for people with a broad range of socioeconomic backgrounds. We attempt to limit biases regarding social desirability or assessment reactivity (due to the long assessment period) with a thorough briefing and training during the introductory session and by providing a study manual to participants. Importantly, the results of our study will be interpreted with caution and in light of all putative biases.

Overall, investigating the direct and indirect ways in which ethnic discrimination may impact the everyday life of ethnic minority groups is crucial to facilitate the understanding of the link between ethnic discrimination and health. Moreover, our findings will inform the development of ecological momentary interventions that target the negative effects of ethnic discrimination in the daily lives of affected persons.

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Contributors AG, UMN and RM contributed to the conception and design of the study protocol. AG collected the data for the pilot study, analysed the data and wrote the first version of the manuscript. RM was the principal investigator of the study and was a major contributor in writing the manuscript. UMN provided critical revisions to the manuscript. All authors approved the final version of the manuscript and provided approval for publication.

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