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Measuring Perceived Realistic Physical Threat Imposed by Migrants

Scale Development and Validation

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Abstract: Individuals differ in the extent to which they perceive threat imposed by out-groups like migrants. An established distinction in intergroup threat research is between symbolic and realistic threat. While symbolic threats concern a perceived menace against societal values, realistic threats jeopardize in-group members' well-being more directly. Typically applied realistic threat conceptions explicitly include the aspect of physical integrity, but most empirical research captures only realistic economic threats, arguably also due to a lack of appropriate measures. Therefore, we have developed the Perceived Realistic Physical Threat scale (PRPT) with samples from Germany and the UK (total $N = 1,391$). Moreover, we conducted follow-up analyses with data from a subsample ($N = 473$) of the initial UK sample. Factor analyses indicated an 8-item one-factorial solution for the PRPT scale. We further identified measurement invariance across samples and over time and stability across 21 months. We found convincing evidence for its convergent and divergent validity and for its predictive and, importantly, incremental validity, above and beyond the prediction of relevant criteria by other threat types. The PRPT scale appears to be a distinct, comprehensive, and psychometrically sound measure of perceived realistic physical threat, complementing the existing body of available measures.

Keywords: intergroup threat, realistic physical threat, migrants, migration



In recent years, millions of individuals have moved from one country to another (Echterhoff et al., 2020). For many societies, immigration will remain among their key challenges within the foreseeable future (Deaux & Verkuyten, 2014). It is thus critical to identify psychological key factors that facilitate or inhibit migrant integration (Echterhoff et al., 2020). One of receiving country citizens' most common responses to immigrants entering "their" country is the perception of various types of threat posed by immigrants (Esses et al., 2017). Understanding these threats' negative impact on attitudes and their consequences toward migrant groups is of immense practical and theoretical importance (Stephan & Stephan, 2017). While different scales designed to assess aspects of threat posed by out-group members have been applied, surprisingly few have

been psychometrically tested with appropriate sample sizes (cf. Landmann et al., 2019) and across multiple populations, and only very few of them targeted physical threat as an important, but currently under-investigated facet of perceived threat. Here, we add to this research by presenting and validating a new measure of perceived realistic physical threat (PRPT).

Threat Types

Threats imposed by migrants may refer to the in-group, but also individuals with differential consequences of these threat types (Stephan et al., 2009). For instance, the effect of threat level (group vs. individual) on prejudice is moderated by in-group identification in that group threats predict prejudice more strongly when individuals strongly identify with their in-group (Bizman & Yinon, 2001; Tausch et al., 2007). Despite having limited contact with migrants, many residents of Western receiving countries hold negative attitudes toward them (Esses et al., 2017). In these

circumstances, the threats are not proximal to the individual, and in-group identification appears to critically boost this association. To understand such dependencies, we focus on threats toward the in-group, which is in line with previous assessments of threats to physical safety (e.g., Cottrell & Neuberg, 2005). Also, all described threats refer to *subjective* perceptions and not to assessments of *factual* threats.

Realistic and Symbolic Threat

Integrated threat theory (Stephan & Stephan, 2000), and subsequently intergroup threat theory (Stephan & Stephan, 2017; Stephan et al., 2009), postulated a differentiation between realistic threat and the symbolic threat posed by out-groups. Symbolic threat relates to the perception of cultural differences and a perceived menace to fundamental values in the receiving society via migrants' or out-group members' participation (Stephan & Stephan, 2000). The realistic threat, in contrast, is associated with particular direct (e.g., economic, physical, and other health-related) consequences for the well-being of the individual and their fellow majority in-group members (Stephan et al., 2009). The realistic threat is frequently assessed exclusively via perceived *economic* threat from out-groups and focused on perceived economic and societal dominance, for example, of Asian Americans in the US (Maddux et al., 2008), or on the realistic economic threat from Muslims in the Dutch society (Velasco González et al., 2008).

Beyond Realistic Economic and Symbolic: The Relevance of Realistic Physical Threat

Another important but seldom examined aspect of the realistic threat is perceived *physical* threat, perceived direct harm to majority in-group members' physical integrity by out-group members. The physical threat is explicitly described in intergroup threat theory, particularly in its conceptualization of realistic threat (Stephan et al., 2009), and is critical in current societal discussions. Many residents of Western countries fear for their physical integrity because of immigration to their countries (see Wike et al., 2016; for a discussion, see Supplemental Material 1 in Hellmann et al., 2021).

Importantly, different threat types can lead to different attitudes, emotions, or behaviors (Landmann et al., 2019). For example, threats to the in-group's property and economic resources induce self-reported anger, whereas perceived threats to physical safety induce self-reported fear (Cottrell & Neuberg, 2005). Unraveling such differential effects of threat types with psychometrically sound measures is therefore relevant for nuanced theory-building in the context of migration (Echterhoff et al., 2020).

Despite the conceptual and practical importance of PRPT, focused assessment approaches are rare. Some studies used scenarios of realistic threat that include different aspects like an economic threat, a threat to one's health, and the physical threat from violence (Cottrell & Neuberg, 2005; Stephan et al., 2005). Similarly, the specific aspect of terroristic threat has been investigated (Uenal, 2016). However, this research has not systematically employed and validated scales to assess perceived direct harm to majority in-group members' physical integrity.

Recently, Landmann and colleagues (2019) have developed and validated a differentiated measure of threat perceptions including a subscale capturing threat to the majority in-group's safety. This safety threat subscale is useful for assessing threats to a country's security due to immigration on a broad level. It consists of three items asking about threats (a) to public safety, (b) due to an increase in criminal acts in general, and (c) because of an increase in acts of violence due to refugee immigration. While this subscale is an important step forward in the assessment of physical threat, it can still be complemented. The item wording may not unambiguously determine whether migrants are actors (e.g., by attacking members of the receiving society) or targets of the increase in criminal acts and violence (e.g., by being attacked or via a general increase in right-wing criminal acts). Accordingly, it may not be unequivocally clear that out-group members pose a threat to in-group members, which is an inherent part of threat conceptualizations in intergroup threat theory (Stephan & Stephan, 2017). Additionally, this subscale provides a rather global assessment of physical threat also including terroristic threat. For instance, the term public safety may evoke associations with terroristic acts that affect the general public. To provide a more comprehensive direct assessment of PRPT, it appears critical to additionally have a scale targeting more specific crimes such as knife attacks or sexual assaults. This would help to assess physical threats that are more directly threatening to individuals and fellow in-group members at an interpersonal level (e.g., being attacked). Such more circumscribed threats are also very salient in the media (Fujioka, 2011). Whereas safety threat mainly refers to broader societal phenomena (e.g., public safety, criminal acts), PRPT may rather account for physical threats that are more proximal to in-group members (e.g., being attacked). These threat-types could thus result in differential emotional (e.g., intense fear) and behavioral (e.g., pronounced avoidance or hostility) responses.

The Present Research

Overall, the existing literature provides instruments that are well-suited to assess either different threat types with a broad assessment (Landmann et al., 2019) or single threat

types with specific scales such as terroristic threat (Uenal, 2016), symbolic threat, or economic threat (Stephan et al., 2002). Here, we build on and expand this field of assessing perceived threats by developing a new measure of PRPT imposed by migrants including items that capture specific direct threats to physical integrity. Following intergroup threat theory and the threat-level distinction mentioned above (Stephan et al., 2009), we assess perceptions of migrants as actors who may pose threats to in-group members.

In a detailed expert-based item development, items were selected based on linguistic clarity, content coverage, non-redundancy, and psychometrically supported dimension reduction techniques. We then tested validity with several meaningful constructs derived from the intergroup literature. For convergent validity, we expected positive relationships of PRPT with other types of threat, particularly, realistic economic and symbolic threat, right-wing political orientation, and fear of crime. For divergent validity, we expected not to find a relationship between PRPT and conscientiousness, achievement motive, and self-esteem. In a preregistered follow-up, we expected to demonstrate predictive validity by showing associations with fear of crime, nationalism, realistic, symbolic, safety, and terroristic threat, Islamophobia, modern racism, prejudice, political orientation, and two behavioral measures. In Supplemental Material 2 (see Hellmann et al., 2021), we discuss how we derived our validity hypotheses and present our hypotheses regarding differential effects of the different threat types concerning the outcome measures.

Method

Transparency and Openness Statement

We report how we determined our sample sizes, all data exclusions, all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established before data analysis, all measures in the study, and all analyses including all tested models (also see Supplemental Material, Hellmann et al., 2021). We report exact *p*-values, effect sizes, and 95% confidence or credible intervals. The initial studies were not preregistered, but the follow-up as Wave 2 with a subsample from the UK was. Materials can be found in the Open Science Framework (OSF; <https://osf.io/teh2g/>).

Item Development

We defined the construct of PRPT as “the perceived threat to one’s own or similar others’ physical integrity imposed by migrants.” To capture the possible breadth of the construct,

we generated a pool of 63 items. We identified redundant items and kept those of better language clarity. The resulting 25 items were again evaluated regarding their face validity, that is, their relevance for the construct, their utility for the questionnaire, and their potential to reveal interindividual differences (i.e., not being too easy or too difficult). Four items were excluded because of too general wording or because they did not refer to a threat of physical integrity, resulting in a pool of 21 items (Supplemental Material 3, Hellmann et al., 2021). In multiple rounds, this final item pool was carefully checked for language clarity and refined where necessary.

Items were developed in German and subsequently translated into English via a professional translation service. Two native German researchers, both proficient in English, back-translated the English item versions and compared the result with the original German items, leading to modest modifications. We employed a 5-point Likert-type scale, consistent with the Intergroup Threat Questionnaire (Stephan et al., 2002) and the Threat Types Questionnaire from Landmann et al. (2019). Response categories were 1 = *completely disagree*, 2 = *mostly disagree*, 3 = *neutral*, 4 = *mostly agree*, and 5 = *completely agree*. The instruction for respondents read “Please indicate the extent to which you agree with each of the following statements.”

Participants

In a first study, a German convenience sample was recruited online via social media. Here, we intended to collect data from as many individuals as possible until the end of the respective term. A second study assessed a convenience sample from the United Kingdom (UK) via Prolific Academic. We planned to collect data from 1,000 individuals in the UK because such sample sizes are well-suited for studies on scale development (Boateng et al., 2018). Initially, $N = 1,432$ individuals participated, $n = 407$ from Germany, and $n = 1,025$ from the UK. Data exclusion criteria were established prior to analyses. Eight German participants did not consent to data usage following participation, and four reported to be non-German, eight participants in the UK sample reported being non-British. Next, we checked response variability to reveal unreasonable response patterns before we recoded negatively stated items. Four German participants and 17 UK participants had no variance on the PRPT, although two items were reversely coded. Data exclusions resulted in final samples of $n = 391$ German and $n = 1,000$ respondents from the UK. In the German sample ($M_{\text{age}} = 27.70$, $SD = 10.81$), 281 (71.87%) participants were female, 107 (27.37%) male, and 3 (0.77%) participants did not indicate gender. In the UK sample ($M_{\text{age}} = 38.37$, $SD = 17.90$), 680 (68.00%) participants were female,

317 (31.70%) male, 3 (0.30%) participants did not indicate gender.

We also conducted preregistered follow-up analyses that took place after approximately 21 months, with $N = 508$ participants of the initial UK sample, again recruited via prolific. We excluded data from 12 participants with no consent to data use, and 23 without response-variability before reversely coded items were recoded. Of the remaining $N = 473$ ($M_{\text{age}} = 43.94$, $SD = 13.90$) participants, 157 were male (33.6%), 314 female (66.1%), two did not indicate gender. Forty-two participants had a migration background, for six participants, English was not their mother tongue. In several sensitivity analyses without these 48 participants, results and conclusions remained unaffected. After providing informed consent, and responding to demographics, participants filled out the PRPT and afterwards the validation scales in the presented order.

Wave-1-Validation Scales

Fear of Crime

Fear of crime was assessed on a two-dimensional scale with the facets of cognitive fear of crime and affective fear of crime (Armbrorst, 2014). Cognitive fear of crime measures more objective aspects such as an increased probability of crime, whereas affective fear of crime measures emotional aspects of these fears. Items were assessed on a 5-point Likert-type scale ranging from 1 = *not at all likely* to 5 = *very likely* for cognitive fear of crime and from 1 = *not at all afraid* to 5 = *very afraid* for affective fear of crime. Both the cognitive fear of crime ($\alpha_{\text{GER}} = .86$; $\alpha_{\text{UK}} = .89$) and the affective fear of crime ($\alpha_{\text{GER}} = .86$; $\alpha_{\text{UK}} = .90$) scale displayed good internal consistencies. Fear of crime was also assessed at the follow-up, with good internal consistencies (cognitive fear of crime, $\alpha_{\text{UK2}} = .90$; affective fear of crime, $\alpha_{\text{UK2}} = .87$).

Symbolic and Realistic Threat (German Sample)

In the German sample, we assessed symbolic threat with seven items (e.g., “Migrants and Germans have different values”), and realistic threat with eight items, all on a 5-point Likert-type scales, ranging from 1 = *completely disagree* to 5 = *completely agree*, adapted and translated from a questionnaire by Stephan et al. (2002). Symbolic ($\alpha_{\text{GER}} = .81$) and realistic threat ($\alpha_{\text{GER}} = .91$) had good to excellent internal consistencies.

Threat Types (UK Sample)

To test the range of different threat scales that are commonly used in threat research while simultaneously avoiding redundancy for participants, we used different threat scales in the UK sample. Here, we assessed threats

with recently developed and validated scales by Landmann et al. (2019), namely symbolic ($\alpha_{\text{UK}} = .92$), realistic ($\alpha_{\text{UK}} = .93$), safety ($\alpha_{\text{UK}} = .93$), cohesion ($\alpha_{\text{UK}} = .91$), prejudice ($\alpha_{\text{UK}} = .82$), and altruistic threat ($\alpha_{\text{UK}} = .83$), all measured with three items each, on a 5-point Likert-type scales ranging from 1 = *not at all* to 5 = *completely*.

Political Orientation

Political orientation was assessed with a single item on a 10-point Likert-type scale, ranging from 1 = *left* to 10 = *right* (Breyer, 2015): “Many people use the terms ‘left’ and ‘right’ when it comes to defining different political attitudes. Here, we present a scale that runs from left to right. If you think about your own political views, where would you classify these views on this scale?”

Achievement Motive

With the Achievement Motives Scale, we measured the two dimensions *hope of success* and *fear of failure* (Lang & Fries, 2006). Items were assessed on a 4-point Likert-type scale, ranging from 1 = *strongly disagree* to 4 = *strongly agree*. Both dimensions hope of success ($\alpha_{\text{GER}} = .82$; $\alpha_{\text{UK}} = .87$) and fear of failure ($\alpha_{\text{GER}} = .86$; $\alpha_{\text{UK}} = .85$) had good internal consistencies.

Self-Esteem

We included the Self-Esteem scale by Rosenberg (1965), on a 4-point Likert-type scale from 1 = *strongly disagree* to 4 = *strongly agree*. The scale showed excellent internal consistency ($\alpha_{\text{GER}} = .95$; $\alpha_{\text{UK}} = .92$).

Conscientiousness

We used the 12-item version of the conscientiousness subscale of the Big Five Inventory-2 (Danner et al., 2016), with a 5-point Likert-type scale, ranging from 1 = *disagree strongly* to 5 = *agree strongly*. Internal consistencies were good ($\alpha_{\text{GER}} = .87$; $\alpha_{\text{UK}} = .87$).

Wave-2-Validation Scales

To address potential order effects, there were two versions for the follow-up. In one version, the PRPT scale was presented before the validation scales ($N = 239$). In the other version, it was presented after the validation scales ($N = 234$). There were no mean level differences between the two versions on the PRPT or any of the validation scales, all $ps \geq .465$.

Political Orientation

We used three items asking participants to position themselves on a left-right continuum regarding social issues, economic issues, and in general (Imhoff & Bruder, 2014). Response options range from *left* to *right* on 10-point scales.

Threat Types

Realistic (economic, $\alpha_{UK2} = .95$), symbolic ($\alpha_{UK2} = .94$), and safety threats ($\alpha_{UK2} = .96$) were assessed as in the first wave with three items each (Landmann et al., 2019). We also assessed terroristic threat with a 3-item scale (Uenal, 2016), ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha_{UK2} = .84$).

Prejudice Against Asylum Seekers

The scale on prejudice against asylum seekers is divided into classical prejudice, a more blatant form of prejudice against asylum seekers ($\alpha_{UK2} = .98$), and conditional prejudice ($\alpha_{UK2} = .86$), a subtler and socially more accepted form of prejudice, qualifying a prejudicial statement with a condition (Anderson, 2018). Both facets were measured with eight items, with response options ranging from 1 = *not at all* to 7 = *absolutely*.

Islamophobia

We used the Islamophobia Scale (Lee et al., 2009). This scale consists of 16-items on scales ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha_{UK2} = .96$).

Nationalism

We also employed the Nationalism Scale (Davidov, 2009) consisting of five items with five response categories tailored to the exact questions, either ranging from 1 = *strongly disagree* to 5 = *strongly agree* or from 1 = *not proud at all* to 5 = *very proud*, respectively ($\alpha_{UK2} = .84$).

Modern Racism

We used an adapted version of the Modern Racism Scale (McConahay et al., 1981). The wording was adjusted to British people and one item was not deemed suitable because it was tailored to the context of the Black people in the United States. The scale comprises six items, ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha_{UK2} = .89$).

Behavioral Measure

We also included two potential petitions: (1) The British government should be investing more resources to support the refugees who are fleeing war and hardship and come to our borders; (2) The British government should be seizing assets from refugees to pay for their stay in the United Kingdom. For both fictitious petitions, response options were *sign for*, *sign against*, *not sign at all*.

Analytic Procedure

Analyses were performed in R version 3.5.1 (R Core Team, 2017). We used an exploratory bottom-up approach to detect the underlying structure of the questionnaire as proposed by the data. Exploratory Factor Analyses (EFA)

were conducted with the *psych* package (Revelle, 2017), and Confirmatory Factor Analyses (CFA) with the *lavaan* package (Rosseel, 2012). For cross-validation, we split the UK sample randomly into two subsamples for EFA ($N = 500$) and CFA ($N = 500$). To estimate the number of factors, we conducted parallel analysis (Horn, 1965) and visually inspected the scree-plot using the first UK subsample. Items loading above .50 on their respective factor were considered for subsequent CFAs, which were conducted independently for the second UK subsample and the German sample. We treated data as ordinal and used the weighted least squares mean and variance adjusted (WLSMV) estimator with scaled test statistics. The following criteria were considered as good fit: The Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) should be larger than 0.95 (Hu & Bentler, 1999), the Root Mean Square Error of Approximation (RMSEA) should be lower than .08, and the Weighted Root Mean Square Residual (WRMR) should be below 0.90 (Schreiber et al., 2006). We report omega total (ω_T) alongside Cronbach's α for internal consistency because of strong assumptions of Cronbach's α such as tau-equivalence (Trizano-Hermosilla & Alvarado, 2016). In Supplemental Material 6 (Hellmann et al., 2021), we describe latent reliability analyses using Item Response Theory.

With sequentially nested models, we tested measurement invariance across the second UK subsample and the German sample. First, the factorial structure was set equal across groups to establish configural invariance. Second, factor loadings were constrained to be equal across groups to establish weak (metric) invariance. Third, item thresholds conditional on the latent means were constrained to be equal across groups to test strong (scalar) invariance. Last, strict invariance was tested by setting the indicator residuals to equity. In these models, the ΔCFI should be less than .010 and the $\Delta RMSEA$ less than .015 to indicate measurement invariance (Milfont & Fischer, 2010). For the nomological network, we correlated PRPT scores with different threat types and other constructs that were theoretically derived to establish convergent (e.g., political orientation) and divergent construct validity (e.g., self-esteem). Sociodemographic correlates are discussed in Supplemental Material 7 (see Hellmann et al., 2021).

For the follow-up, we ran a CFA to confirm our factor solution found at baseline, and then tested measurement invariance for the two versions of the questionnaire at follow-up (i.e., different placements of the PRPT). Next, longitudinal measurement invariance for baseline versus follow-up was tested with the same logic as outlined above (yet the constraints were set to equity across time instead of groups). To examine our preregistered hypotheses and establish predictive validity, we used linear and logistic regression models including the PRPT, safety, symbolic,

and realistic threat scales at baseline as predictors for the outcome measures at follow-up. We present a correlation matrix covering all associations in Supplemental Material 8 (Table S3; Hellmann et al., 2021).

Results

Factor Structure and Item Reduction

Descriptive statistics (skewness and kurtosis, which can be found in Supplemental Material 3, see Hellmann et al., 2021, and corrected item-total correlations) indicated that all 21 initial items functioned well; all item-total correlations were $> .50$. Both parallel analysis and the scree plot revealed a one-factor solution for these 21 items. This factor displayed an eigenvalue of 14.52, explaining 69% of the total variance, all factor loadings were $> .50$ (see Supplemental Material 3, Hellmann et al., 2021).

Because long scales may lead to exhaustion, lack of attention and concentration, and unintended high dropout rates (Boateng et al., 2018), we intended to develop a relatively short measure. Beyond data-driven reduction techniques, we thus used expert evaluations of redundancy of items, clarity of language, and representativeness for the construct to reduce items. Here, redundancy refers to *similar* contents, whereas we excluded items with the *same* content in a previous step. Four authors of the study rated all items regarding their clarity of language and representativeness for the construct on a scale from 1 (= *not at all clear/representative*) to 5 (= *very clear/representative*). To avoid redundancy, items were clustered in groups based on (a) criteria of their face validity and (b) the psychometric procedure of network analysis (Epskamp et al., 2018). When items appeared redundant, we chose the item with the highest ratings for clarity of language and representativeness of the construct and the highest factor loadings. This procedure resulted in a final pool of eight items (Supplemental Material 4, for detailed descriptions of this procedure, Hellmann et al., 2021).

Subsequently, we ran another parallel analysis with these remaining eight items and inspected the scree plot, which again indicated a clear one-factor solution (eigenvalue of 6.26, explaining 78% of the total variance). Table 1 depicts descriptive statistics of all samples and corresponding factor loadings of the EFA for the UK first subsample.

The one-factorial structure was confirmed in the CFA for the UK second subsample, all indices indicated good fit, alongside a non-significant χ^2 -test (Table 2). For the German subsample, the CFI, TLI, and WRMR showed good fit, and the RMSEA acceptable fit (see Supplemental Material 5 for a discussion of suggested modification indices for the German sample, Hellmann et al., 2021). Standardized

factor loadings for both subsamples were good, all $> .89$. Omega total (ω_T) and Cronbach's α indicated excellent internal consistencies for all samples.

Measurement Invariance

Strict invariance across the British second subsample and the German Sample and the two versions of the follow-up sample was established (see Table 3). Scalar longitudinal measurement invariance was given, while Δ RMSEA indicated slight deviations from strict invariance. Still, model fit was good and Δ CFI supported strict invariance.

Nomological Network

At baseline (Wave 1), scores were positively related to all threat types, indicating convergent validity, all $r_s > .30$. The construct was also positively related to fear of crime and right-wing political orientation but not meaningfully to achievement motivation, conscientiousness, and self-esteem, indicating divergent validity. In the follow-up, PRPT scores at baseline predicted fear of crime, nationalism, realistic, symbolic, safety, and terroristic threat, Islamophobia, modern racism, prejudice, political orientation, and the behavioral measures, demonstrating predictive validity. PRPT follow-up scores correlated strongly with PRPT at baseline. Correlations between PRPT and safety, symbolic, and realistic threat ranged from .68 to .88, explaining between 46% and 77% of the variance (see Table 4 for all correlations).

Distinctiveness Analyses

Given the high correlations between the PRPT and the safety threat scale, we tested the distinctiveness of these scales. First, we conducted a CFA with the UK sample comparing a one-factorial solution including the PRPT and the safety subscale as one construct with a two factorial solution that treated these scales as independent. The two-factorial solution yielded a better model fit, at baseline and follow-up (Table 5). Modification indices for the one-factorial solution were suggested to allow covariations between the error variances of the safety threat items.

Second, we ran a network analysis with all threat types from Landmann et al. (2019) to examine whether some item groups (e.g., safety threat/PRPT) cluster together. Figure 1 indicates that items cluster according to their theoretical structure when using this lasso network with regularizations that avoid estimating spurious edges. Specifically, safety threats and PRPT items were not strongly connected. While network analyses are no confirmatory procedure for factorial solutions, this analysis did not indicate strong local

Table 1. Item characteristics

	UK sample (N = 1,000)				German sample (N = 391)			Follow-up (N = 473)		
	M	SD	r	F*	M	SD	r	M	SD	r
1. Migrants pose a threat to the physical well-being of the British people. <i>Migranten stellen eine Bedrohung für das körperliche Wohlbefinden der Deutschen dar.</i>	2.05	1.14	.87	.88	1.60	1.04	.83	2.18	1.19	.90
2. Due to migrants the risk of becoming a victim of violence in the UK has increased. <i>Durch Migranten steigt das Risiko in Deutschland, Opfer von Gewalt zu werden.</i>	2.26	1.20	.91	.93	1.98	1.23	.88	2.36	1.23	.94
3. Due to migrants the risk of sexual assault in the UK has increased. <i>Durch Migranten steigt das Risiko von sexuellen Übergriffen in Deutschland.</i>	2.35	1.25	.86	.84	2.27	1.33	.87	2.38	1.29	.90
4. As a British person, you are no longer safe outside because of migrants. <i>Als Deutsche/r ist man wegen der Migranten draußen nicht mehr alleine sicher.</i>	1.79	0.99	.82	.82	1.57	0.98	.81	2.03	1.12	.90
5. Due to migrants the risk of being attacked in the UK has increased. <i>Durch Migranten steigt das Risiko von Überfällen in Deutschland.</i>	2.25	1.18	.89	.92	2.01	1.22	.87	2.30	1.20	.93
6. The risk as a British person of being beaten up has increased as a result of the immigration of migrants. <i>Das Risiko, als Deutsche/r verprügelt zu werden, ist durch die Zuwanderung von Migranten gestiegen.</i>	2.10	1.13	.88	.90	1.80	1.16	.88	2.19	1.19	.94
7. The risk as a British person of being killed has increased because of migrants. <i>Das Risiko, als Deutsche/r getötet zu werden, ist durch Migranten gestiegen.</i>	2.08	1.12	.86	.90	1.65	1.12	.86	2.16	1.19	.93
8. The risk as a British person of becoming the victim of a knife attack has increased as a result of the immigration of migrants. <i>Das Risiko, als Deutsche/r Opfer eines Messerangriffs zu werden, ist durch die Zuwanderung der Migranten gestiegen.</i>	2.21	1.20	.88	.88	1.92	1.27	.87	2.28	1.25	.92

Note. M = Mean; SD = Standard Deviation; r = Corrected Item-Total Correlation; F* = Factor Loadings Based on the UK First Subsample for EFA with n = 500. Wording of the items in the German sample (italics) was adjusted.

Table 2. Confirmatory factor analysis (CFA) for the second UK subsample (N = 500) and the German sample (N = 391) and the follow-up (N = 473)

	$\chi^2(df)$	p	WRMR	CFI	TLI	RMSEA	RMSEA 90% CI [LL, UL]	ω_T	α
UK	19.16 (20)	.511	0.57	.99	0.99	.06	[.05, .08]	.97	.97
German	38.91 (20)	.007	0.81	.99	0.99	.09	[.07, .11]	.97	.96
Follow-up	15.75 (20)	.732	0.51	.99	0.99	.03	[.00, .07]	.98	.98

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; df = Degrees of Freedom.

associations between threat types when controlling for each other on the more circumscribed item level.

Differential Associations

Table 6 displays associations of the four threat types (PRPT, safety, symbolic, realistic) at baseline simultaneously predicting constructs at Wave 2. Fear of crime was uniquely predicted by safety threats. Classical prejudice, Islamophobia, terroristic threat, and economic-political orientation were predicted by PRPT and symbolic threat. Conditional

prejudices were predicted by realistic and symbolic threats. The behavioral measures were predicted by symbolic (both) and realistic threats (seizing assets). Social and general political orientation were predicted by all threat types.

Discussion

We developed and validated an 8-item scale for the assessment of the perceived realistic physical threat in

Table 3. Measurement invariance between the UK second subsample ($N = 500$), the German sample ($N = 391$), the two versions of the UK sample for the follow-up ($N = 473$), and between the longitudinal UK sample wave and follow-up

	Measurement Invariance				
	$\chi^2(df)$	CFI	RMSEA	ΔCFI	$\Delta RMSEA$
UK vs. Germany					
Configural	58.56 (40)	.998	.078		
Metric	114.17 (47)	.998	.085	.000	.007
Scalar	148.45 (70)	.996	.091	.002	.006
Strict	274.85 (78)	.994	.106	.002	.015
Version 1 vs. Version 2					
Configural	34.55 (40)	.999	.070		
Metric	60.15 (47)	.999	.077	.000	.007
Scalar	57.44 (70)	.999	.060	.000	.013
Strict	83.86 (78)	.999	.065	.000	.005
UK longitudinal					
Configural	81.76 (95)	.999	.048		
Metric	161.54 (102)	.999	.061	.000	.013
Scalar	118.45 (120)	.999	.048	.000	.013
Strict	289.61 (134)	.997	.069	.002	.023

Note. CFI = Scaled Comparative Fit Index; RMSEA = Scaled Root Mean Square Error of Approximation; df = Degrees of Freedom.

both English and German. For both samples, we identified a clear one-factorial structure, good reliabilities, and demonstrated measurement invariance across groups and time, which is critical for cross-national mean comparisons and to draw longitudinal conclusions. The scale can thus be used to investigate mean differences between certain groups (e.g., members of different political parties) or across time (e.g., tailored to political events). Correlations with a range of constructs underline the convergent, divergent, and predictive validity of the PRPT scale. Despite high correlations with other threat scales, we demonstrated that PRPT is conceptually and empirically different from other threat types.

First, factor analyses at both baseline and follow-up in the UK sample revealed that two latent factors are better suited to describe PRPT and safety threat than one common latent factor. In the common factor solution, modification indices indicated that correlations between the error variances of the three safety threat items should be allowed. These results suggest that these scales need different latent traits to explain the variation in the item responses, pointing to distinct yet correlated constructs.

Second, network analysis, a psychometric approach that focuses on associations among items without modeling latent factors, discerned clusters of association that mirrored the hypothesized construct levels. Only items of the same threat types showed meaningful associations among each other.

Third, while correlations were high between PRPT, safety, symbolic, and realistic threat, they were far from

perfect and, thus, do not suggest redundancy. In contrast, the size of the correlations still allows for differential effects of these threat types. Indeed, our follow-up analyses demonstrated such incremental contributions of the different threat types: While safety threat predicted fear of crime and symbolic threat predicted all other relevant constructs, PRPT predicted a different pattern of constructs than did realistic and safety threat. For example, PRPT was related to classical prejudice, while realistic threat was associated with conditional prejudice. Arguably, classical prejudice is a more direct form of prejudice and therefore rather linked to PRPT (one item, e.g., reads “migrants are too dangerous to have in our country”), while conditional prejudice rather includes seeking the value of integrating outgroup members as long as they comply with the resident country’s rules (Anderson, 2018). In line with our preregistered hypothesis, Islamophobia was predicted by PRPT and symbolic threat, likely because Islamophobia contains aspects of unwanted changes to the societal values through Muslims (and Muslim immigrants), and perceived hazard against non-Muslim individuals’ physical integrity (Lee et al., 2009). PRPT and symbolic threat predicted terroristic threat, which concerns apprehensions of damage against the in-group’s society more than against individuals (Uenal, 2016). This may explain why symbolic threat (“they” attack our values) and PRPT (“the physical integrity of our group is threatened”) predicted this construct.

Some of these differences may have been revealed because PRPT refers to threats to the in-group whereas some of the other scales refer to threats to the individual,

Table 4. Convergent, divergent, and predictive validity for the UK and German samples (UK/German)

	<i>r</i>	95% CI	<i>T/z</i>	<i>df</i>	<i>p</i>
Construct					
Symbolic threat	.80/.76	[.78, .83]/[.72, .80]	42.75/23.16	997/389	< .001/< .001
Realistic threat	.76/.68	[.74, .79]/[.62, .73]	37.21/18.24	997/389	< .001/< .001
Safety threat	.87/–	[.85, .88]/–	54.93/–	997/–	< .001/–
Cohesion threat	.70/–	[.67, .73]/–	30.93/–	997/–	< .001/–
Prejudice threat	.33/–	[.27, .38]/–	10.99/–	997/–	< .001/–
Altruistic threat	.43/–	[.38, .48]/–	15.11/–	997/–	< .001/–
Fear of crime (1)	.37/.60	[.31, .42]/[.53, .66]	12.53/14.68	998/389	< .001/< .001
Fear of crime (2)	.39/.56	[.34, .44]/[.49, .62]	13.35/13.27	998/389	< .001/< .001
Political orientation	.50/.50	[.45, .55]/[.43, .58]	18.24/111.53	998/389	< .001/< .001
Divergent validity					
Conscientiousness	.08/.08	[.02, .14]/[–.02, .17]	2.50/1.49	996/389	.013/.137
Hope of success	.02/.01	[–.04, .08]/[–.09, .10]	0.59/0.10	995/389	.553/.923
Fear of failure	–.05/–.04	[–.11, .01]/[–.14, .06]	–1.58/–0.72	995/389	.114/.474
Self-esteem	–.03/.02	[–.09, .03]/[–.08, .12]	–0.94/0.37	995/388	.345/.711
Predictive validity					
Fear of crime (1)	.18/–	[.09, .26]/–	3.89/–	471/–	< .001/–
Fear of crime (2)	.22/–	[.13, .30]/–	4.87/–	471/–	< .001/–
Classical prejudice	.71/–	[.66, .75]/–	21.78/–	471/–	< .001/–
Conditional prejudice	.49/–	[.41, .55]/–	12.05/–	471/–	< .001/–
Islamophobia	.70/–	[.65, .74]/–	21.46/–	470/–	< .001/–
Terroristic threat	.56/–	[.50, .62]/–	14.79/–	471/–	< .001/–
Nationalism	.32/–	[.23, .40]/–	7.27/–	471/–	< .001/–
Modern racism	.70/–	[.65, .74]/–	21.24/–	471/–	< .001/–
Polorsocial	.46/–	[.39, .53]/–	11.22/–	471/–	< .001/–
Polorecon	.39/–	[.31, .46]/–	9.13/–	471/–	< .001/–
Political orientation	.46/–	[.39, .53]/–	11.23/–	471/–	< .001/–
Behavioral measure*					
More investment	1.26	[1.20/1.34]	8.04	248/–	< .001
Seizing assets	0.82	[0.77/0.86]	–7.94	253/–	
Retest					
PRPT	.77/–	[.73, .80]/–	26.03/–	471/–	< .001/–

Note. CI = Confidence Interval; *df* = Degrees of Freedom; Polorsocial = Social-Political Orientation; Polorecon = Economic-Political Orientation; PRPT = Perceived Realistic Physical Threat Scale. Fear of crime: (1) cognitive, (2) affective. *Logistic regression results, coefficients are odds ratios.

Table 5. Confirmatory factor analysis (CFA) comparing one and two factorial solutions for safety threat and PRPT at baseline and Wave 2

	$\chi^2(df)$	WRMR	CFI	TLI	RMSEA	RMSEA 90% CI [LL, UL]
One factor	815.62 (44)	2.87	.99	0.99	.16	[.15, .17]
Two factors	95.56 (43)	0.98	.99	1.00	.08	[.07, .09]
One factor t2	440.07 (44)	2.11	.99	0.99	.15	[.13, .16]
Two factors t2	27.59 (43)	0.53	.99	1.00	.04	[.03, .06]

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; *df* = Degrees of Freedom, t2 = Follow-Up.

which could have evoked different associations. While both approaches to threat assessments have their merits, they also open endeavors for distinct and fine-grained

analyses that aim to provide more insights into threat perceptions and integration-relevant processes (Echterhoff et al., 2020).

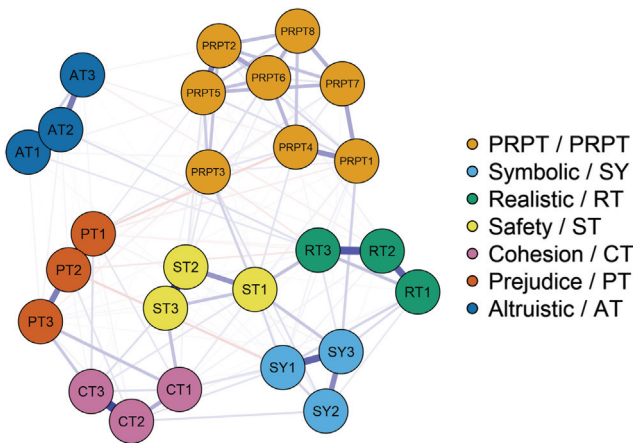


Figure 1. Network analysis for PRPT and threat subscales from Landmann et al. (2019).

Table 6. Differential associations of the four threat types at baseline simultaneously predicting constructs at Wave 2 (for regression coefficients, standard errors, and *p*-values, see Supplemental Material 9: Table S4; Hellmann et al., 2021)

	PRPT	Safety	Realistic	Symbolic
Fear of crime (1)		X		
Fear of crime (2)		X		
Classical prejudice	X			X
Conditional prejudice		X–	X	X
Islamophobia	X			X
Terroristic threat	X			X
Nationalism		X–		X
Modern racism	X		X	X
Polorsocial	X	X–	X	X
Polorecon	X			X
Political orientation	X	X–	X	X
More investment				X
Seizing assets			X	X

Note. PRPT = Perceived Realistic Physical Threat Scale; Polorsocial = Social-Political Orientation; Polorecon = economic-political orientation; X = Significant Effects; – = Negative Effect, likely due to predictors' multicollinearity.

Limitations and Future Directions

Samples were from Western European countries and not representative of their populations. Despite the large sample size, future research should implement the scale in representative samples and contexts outside Western Europe. Furthermore, future studies should include a larger set of sociodemographic factors that allow more nuanced analyses. For instance, socioeconomic factors (e.g., educational level, income) or neighborhood characteristics (e.g., living close to many migrants) are potentially important contextual factors.

Conclusion

The PRPT scale meaningfully complements the existing body of available measures: It allows for the psychometrically sound assessment of perceived realistic physical threat, a key construct for better understanding individual differences in intergroup attitudes.

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