Received: 8 February 2022 | Accepted: 8 November 2023

DOI: 10.1111/bjso.12700

the british psychological society
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REGISTERED REPORT STAGE 2

Dressing up social psychology: Empirically investigating the psychological functions of clothing using the example of symbolic protection

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Funding information
Deutsche Forschungsgemeinschaft, Grant/Award Number: KA 5005-1/1; Deutsche Gesellschaft für Psychologie; Dr. Hans Riegel-Stiftung; COVID-19 Emergency Fund; Studienstiftung des Deutschen Volkes; Kone Foundation

Abstract

Clothing behaviour remains an understudied research area within social psychology. Through the present research, we aim to anchor attire as an empirical research subject by investigating the psychological properties of one of its functionalities, namely, to provide protection. We argue that attire's undisputed role in shielding humans from environmental hazards may extend to the psychological level and protect them from the incorporeal consequences of existential threats symbolically. In this Registered Report, a mixed-methods approach links an ecologically valid field study of self-presentation in social media posts during Russia's war on Ukraine (Study 1; $N = 248$) with supraliminal priming of mortality salience in an online experiment (Study 2; $N = 248$). Across both studies, we expect that mortality concerns let people accentuate the physically protective attributes of clothing (e.g. more layers of clothing) and resort to more in-group prototypical dress styles (i.e. more gender-stereotypical). Findings show that people adjust their clothing preferences in response to existential threats, favouring in-group prototypical clothing (more gender-typical for both women and men in Study 1) and physically protective attire (higher in women and lower in men in Study 2) during high (vs. low) levels of existential threat. By positioning clothing as a research area within social psychology, our goal is to stimulate a wave of research on its profound role for humankind. Furthermore, we provide a dynamic and robust methodological approach to researching terror management theory.

KEYWORDS
clothing, dress style, gender stereotypes, mixed-methods, mortality, terror management theory, war

THEORETICAL-EMPIRICAL BACKGROUND

Most individuals spend less than 20 min naked per day (Promaulayko, 2012) and even dress in situations where it could be expendable—for example, when they sleep (e.g. nightwear), have sexual intercourse (e.g. fetish wear) or bury someone deceased (e.g. clothing the dead body). In addition to its omnipresence, attire is socially loaded: social group memberships and roles are vestimentarily coded (e.g. flight attendants in airline-specific attire), crucial life events are intertwined with specific attire (e.g. weddings) and social norms mirror in clothing (e.g. covering private parts for modesty). Ultimately, clothing behaviour should constitute a crucial research area in social psychology.

Despite impactful writings on the psychology of dress (e.g. Davis, 1992), an upsurge of empirical social-psychological investigations failed to materialize. We aim to highlight attire as a research subject by investigating one of its psychological benefits. Based on clothing's primary function to protect from ecological influences (e.g. the cold), we examine whether this protective function extends to the psychological level: Might clothing offer a symbolic shield against incorporeal consequences resulting from existential threats producing mortality concerns?

Regarding real-life existential threats (e.g. the COVID-19 pandemic), *The Guardian* proclaimed the emergence of 'dystopia core' fashion (i.e. tougher, more utilitarian), protecting humans against the dangers of the outside world (Elan, 2022). Our research aims to empirically investigate this idea, offering practical implications for contexts where individuals become vulnerable. Considering a military confrontation between two countries, the symbolic protection of clothing (highlighting nationality through flag-like badges) could contribute to soldiers' subjective sense of security, even if they only wear a uniform (and not an additional bulletproof vest). Moreover, our research could be applied to health care settings for patients enduring life-threatening health interventions. Modifying aspects of exposing patient gowns (e.g. thicker fabrics) could be sensible, as vestimentary alterations should increase psychological well-being and, thus, accelerate a physical recovery (Lamers et al., 2012).

In two studies, we examine how attire buffers the psychological impact of existential threats and propose two mechanisms: (a) accentuating physically protective clothing features (e.g. wearing more clothing layers); and (b) strengthening one's in-group prototypicality via attire (e.g. dressing more gender-typical). In both studies, Russia's war on Ukraine serves as an exemplary existential threat. Applying a mixed-methods approach, we compare individuals' attire between more and less threatening intervals based on full-body social media posts using visual content analysis (Study 1) and experimentally investigate the effect of mortality concerns on dress style preferences (Study 2).

A psychology of clothing

In *The Principles of Psychology*, William James (1890) referred to clothing's psychological value: humans appropriate their attire and begin to identify with it (Watson, 2004). During the twentieth century, several writings on the psychology of clothing emerged, theorizing about attire's interrelationship with modesty (Flügel, 1933), social class (Simmel, 1957) or the self and identity (Davis, 1992).

Since then, few researchers have conducted *basic* empirical research on attire. Studies have examined garments' impact on cognitive processing (e.g. wearing formal attire caused abstract construal; Slepian et al., 2015) or demonstrated an embodiment of stereotypes attached to clothing (e.g. wearing a lab coat labelled as a doctor's coat vs. painter's coat enhanced sustained attention; Adam & Galinsky, 2012). However, contemporary social psychologists utilize attire primarily as a methodological vehicle to

approach social phenomena or show an applied research focus (Johnson et al., 2014). Researchers have used clothing to manipulate social information within person perception (e.g. status; Oh et al., 2020), norm violation (Bellezza et al., 2014) or body image and self-objectification (Martins et al., 2007). Hence, many questions about the fundamental roles of dress remain unanswered—for example, how the functionalities of garments (e.g. protection) extend to the psychological level. Before we explore how clothing works as a symbolic shield, we embed this function in the broader context of attire's (social-) psychological roles.

(Social) psychological functions of clothing

Already single clothing items (e.g. the hijab) signify various social information: a wearer's gender, religion and values (e.g. female, Muslim, modesty/progressiveness). According to the social identity approach (Tajfel & Turner, 1979; Turner et al., 1987), social groups offer identification potential to people to construct themselves in different situations. People use attire to visualize their group identifications in the form of in-group normative dress styles (e.g. the 'punk' look). Such normative dress styles stem from the shared knowledge of how members of specific groups signal their group belongings. People continuously engage in self-stereotyping (Sinclair & Huntsinger, 2007), with in-group normative dress styles working as an example of this. Because our outward appearance is shaped by attire, our inner identity becomes woven into the garments we wear, communicating group memberships via visual cues (cf. Goffman, 1959).

From an intergroup perspective, social identification is twofold: affirming a certain group membership while rejecting others (Tajfel & Turner, 1979). People use apparel to mark and uphold group boundaries (e.g. gender-typical clothing). While autonomous and slight deviations from normative dress forms can be perceived positively (e.g. wearing a red tie to a black tie event; Bellezza et al., 2014), violating dress norms of crucial social categories is sanctioned to sustain intergroup boundaries (e.g. transgender students being expelled for not wearing gender-normative school uniforms matching their biological sex; Harris, 2010).

Furthermore, attire permits people to move between or imitate social groups (Keblusek et al., 2017). Individuals may manage their impressions via clothing (e.g. a counterfeit designer bag attesting to higher status) or engage in social mobility by adopting the dress styles of a desired social group (Giles, 2016). In a related vein, symbolic self-completion theory (Wicklund & Gollwitzer, 2013) states that people stress group-revealing attire when they have not attained full in-group acceptance or their in-group status becomes threatened.

Symbolic protection of clothing

Humankind began to dress over 170,000 years ago (Toups et al., 2011). Moving from Africa's forests to the savannah, they lost most of their body hair to prevent overheating (Carstensen, 2013). However, they were confronted with a colder climate once they migrated to Asia and Europe, requiring them to cover their bodies for warmth. Before physical clothing, humans adorned their bodies using organic material (Jablonski, 2008). Body ornamentation was used to communicate individuals' group membership (Iliopoulos, 2020), a probable source of security from other (hostile) collectives. Hence, clothing behaviour developed to protect humans by physically shielding their bodies from environmental influences *and* visualizing their group membership. We expect that clothing's historically rooted functionality of protection expands to the psychological level, averting the incorporeal consequences of existential threats, namely mortality concerns/death anxiety.

Death anxiety—humans' most primal fear—appears as 'the worm at the core' (Solomon et al., 2015), transdiagnostic across many mental conditions (e.g. depression, post-traumatic stress disorder, social anxiety, eating disorders; Goldenberg et al., 2005; Iverach et al., 2014; Menzies & Menzies, 2018; Strachan et al., 2007). Testing clothing as a symbolic shield based on death anxiety allows us to maximize effects

and generalize to other forms of anxiety. If clothing does not provide symbolic protection against death anxiety, this function may also not hold for less primal forms of fear.

From a social-psychological viewpoint, terror management theory (TMT; Greenberg et al., 1986; see also meaning maintenance model; Heine et al., 2006) offers a framework for understanding how humans are equipped to deal with mortality concerns psychologically. Generally, TMT postulates that death awareness is uniquely human, conflicting with humans' drive for self-preservation. Simultaneously, the capacity for higher-level cognition enables people to manage the resulting death anxiety by rendering their lives abstract and symbolic (e.g. embracing cultural worldviews; see Becker, 1973, 1975).

Interlacing TMT with a clothing psychological viewpoint reveals why clothing behaviour should relate to the attenuation of death anxiety. Clothing allows humans to circumvent the aspect of the self most closely tied to death, namely the biological body (i.e. the body problem; Goldenberg et al., 2000). By dressing the body, humans conceal their corporeality—a chronic reminder of the mortal self—thereby managing otherwise persistent mortality concerns. Furthermore, humans regulate the body according to cultural and social standards through in-group prototypical clothing. They transcend their biological reality by melding with cultural standards that manifest in clothing, turning them into abstract symbols. Thus, group-specific clothing elevates humans from creatures to symbolic entities and partly strips people of their individuality (i.e. de-personalization), which may alleviate mortality anxiety (Wisman et al., 2015).

According to TMT, mortality concerns operate on the conscious and preconscious levels, producing increased mental accessibility of death-related representations (i.e. mortality salience; henceforth MS). TMT's dual-defence structure illustrates how people confront mortality concerns on both levels. *Proximal defences* become activated regarding conscious mortality concerns. Then, death-related anxiety is assuaged through actions directed at minimizing the threat (e.g. pushing the consequences of smoking into the future; Pyszczynski et al., 2021). As such, proximal defences are immediate, conscious efforts to refuse one's vulnerability and directly counteract mortality concerns (Kosloff et al., 2019). Therefore, stressing clothing's physically protective features in response to existential threats should be conceptualized as a relatively proximal defence.

Yet, death-related cognition continues to linger outside of conscious awareness. Humans confront preconscious mortality concerns passively via *distal defences*, including worldview validation (e.g. Arrowood et al., 2017; Greenberg et al., 1993), self-esteem seeking (e.g. Greenberg et al., 2010; Pyszczynski et al., 2004) and strengthening interpersonal relationships (e.g. Florian et al., 2002; Mikulincer et al., 2003). As distal defences are 'symbolic efforts to promote a personal sense of cosmic heroism and continuance' (Kosloff et al., 2019, p. 33) without direct, logical connection to the hazard, increasing one's in-group prototypicality via clothing should operate as a distal defence. By adorning oneself with the symbolic emblems of one's in-group, humans transform from helpless individuals into parts of their in-group, relishing (symbolic) herd protection.

In sum, interweaving the evolution of clothing as a protective means with TMT's empirical canon, we claim that as soon as the psyche is under existential attack, attire may be turned into a 'defence armour' by its wearer to assuage death anxiety. Specifically, clothing may provide symbolic protection from existential threats that increase MS by physically shielding the material body from external influences and increasing one's in-group prototypicality through group normative dress styles.

THE PRESENT RESEARCH

Across two studies, we investigate whether clothing buffers existential threats psychologically. We propose a twofold process: In response to existential threats, people stress physically protective clothing (proximal defence), and dress style preferences start to cohere more strongly with group stereotypes to increase in-group prototypicality (distal defence).

In both studies, we examine dress-style preferences following existential threats. While in Study 1, we tackle dress style preferences by focusing on actual clothing behaviour visually communicated in

full-body social media posts, in Study 2, we consider dress style preferences by concentrating on behavioural intentions. In both studies, Russia's war on Ukraine is used as an exemplary existential threat. In Study 1, we vary the time intervals of social media posting (i.e. before vs. after the onset of the war); in Study 2, we experimentally prime mortality concerns supraliminally (i.e. reading a news article about a war-related topic that is perceived as highly existentially threatening vs. a topic that is perceived as not or at least significantly less threatening). Additionally, Study 2 tests potential covariates (e.g. individual experiences due to the war).

While changes in people's appearance following death reminders could be observable based on various group memberships (e.g. nationality), both studies assume gender identification as a reference group for death anxiety. Infants learn the concept of social categorization based on gender (not age or ethnicity; Ruble et al., 2004), which should, therefore, be a salient group identification in the face of death (producing a form of regression; Arndt et al., 2002). Moreover, vestimentary codes connoting other group memberships (e.g. nationality) have not been thoroughly described in the literature, complicating hypothesis generation in Study 1. Finally, gender is particularly pronounced during wartime (i.e. traditional gender division, in that women are allowed to flee the country while men are required to stay and fight).

Interweaving a quasi-experimental field investigation (Study 1) with an online experiment (Study 2) offers a complementary approach to investigating the psychologically protective role of clothing. While Study 1 aims to show the effect of mortality concerns on dress style preferences under ecologically valid conditions, we increase the internal validity of the present research in Study 2. Moreover, we present one of the first registered reports using TMT, advancing transparent and replicable research practices within the TMT paradigm. Access the registered protocol via https://doi.org/10.17605/OSF.IO/4YUZ6.

STUDY 1

In Study 1, we examine actual changes in clothing behaviour following the existential threat posed by Russia's war on Ukraine. The Russian invasion of Ukraine (24 February 2022) triggered existential anxiety worldwide, mainly because of its unpredictable course (Tapper, 2022). When Russia's President Vladimir Putin ordered nuclear weapons to be on high alert (27 February 2022), it produced a global state of horror and fear (Roth et al., 2022). The war in Ukraine has already shown tangible consequences in Europe (e.g. economic strains), and its countries dread a nuclear escalation of the war (e.g. surge in residential bunker buildings; Cerullo, 2022). As global media continuously cover the topic, we argue that it produced heightened MS in people.

Therefore, we compare actual clothing behaviour between a phase of non-acute death threat (the week before the onset of the war) and a phase of acute death threat (the week after the onset of the war) within the capitals of three European countries (the UK, Germany and Poland). We examine how individuals have modified their online self-presentation, particularly their clothing, in response to this existential threat by subjecting full-body social media posts to visual content analysis. Visual content analysis, a standardized, objective and empirical method for the systematic analysis of image contents (Bell, 2001), allows us to uncover changes in clothing features related to physical protection and gender prototypicality.

We hypothesize that people accentuate clothing's physically protective attributes (i.e. more layers of clothing) under acute death threat compared to non-acute death threat, independent of gender (H1). We also predict that women and men presented themselves as more gender-stereotypical (according to attributes listed in Table 1) under acute death threats than non-acute death threats (H2). We expect significant differences for some but not all attributes listed in Table 1, which would be too strong of a hypothesis. Skin exposure and fabric transparency are gendered but also relate to physical protection. Demonstrating how these characteristics vary for women between both measurement intervals appears diagnostic for understanding which of the proposed mechanisms can be ascribed to greater relevance. Women should expose less skin and wear less transparent fabrics during acute versus non-acute death

TABLE 1 Gender-stereotypical aspects of self-presentation.

Attribute	Femininity	Masculinity	Reference
Vertical Perspective	Worm's-eye view	Bird's-eye view	Döring et al. (2016); Goffman (1979)
Posture (body, arms, legs)	Contained	Protruding	Döring et al. (2016)
Body hair	Little	High	Toerien et al. (2005)
Facial hair	Little	High	Saxton et al. (2015)
Self-touch	High	Little	Döring et al. (2016)
Skin exposure	High	Little	Kang (1997)
Gaze	Withdrawn	Engaging	Döring et al. (2016)
Smile	High	Little	LaFrance et al. (2003)
Sexualizing body regions	High	Little	Döring et al. (2016); Moor (2010)
Hair length	Long	Short	Huxley et al. (2014)
Make-up/nail polish	High	Little	Bernard et al. (2020)
Tattoos	Little	High	Galbarczyk and Ziomkiewicz (2017)
Jewellery/piercings	High	Little	Lindemuth et al. (2011)
Clothing fit	Tight	Loose	Moor (2010)
Clothing print	Little	High	Koca and Koç (2016)
Clothing branding	Little	High	Koca and Koç (2016)
Transparency	High	Little	Moor (2010)
Colour preference	Blue and red contrast	Blue contrast	Cunningham and Macrae (2011); Hurlbert and Ling (2007)
Colour brightness	Bright	Dark	Sebastián-Enesco and Semin (2020)

threats (proximal defence of increased physically protective clothing; H3a) or expose more skin and wear more transparent fabrics (distal defence of increased gender-prototypical clothing; H3b).

Methods

Sample size

We used G*Power (Faul et al., 2007) for an a priori power calculation. Although Burke et al. (2010) suggested TMT research to show medium mean effect sizes ($r = .35$), the robustness of these effects remains questionable (see Yen & Cheng, 2013). We follow Rodríguez-Ferreiro et al.'s (2019) replication of Goldenberg et al. (2001), recommending an effect size of $r = .22$. For testing a 2 (measurement interval: the week before vs. after war) × 2 (perceived target gender: female vs. male) between image design on continuous dependent variables, we require $N = 248$ images to detect medium effect sizes ($f = .23$) with high test power ($1 - \beta = .95$) and $\alpha = .05$.

Data sampling

Including 40 images for testing intra- and inter-coder reliability, we drew a sample of 288 full-body images using Instagram's and Facebook's geotag function (i.e. providing posts tagged with a specific geographical location). For each cell resulting from the combination of measurement interval (the week before vs. after war), perceived target gender (female vs. male) and the capitals of three countries (UK, Germany and Poland), 24 images were collected. Images were sourced by a research assistant unfamiliar with the aim of the study to avoid confirmation bias.

TABLE 2 Stratification approach to sampling.

	Stratum	Description
1	Country's capital	Poland (Warsaw); Germany (Berlin); UK (London)
2	Directions	North; South; West; East
3	Parks	Warsaw parks: Park Praski; Park Arkadia; Pole Mokotowskie; Park Skaryszewski
		Berlin parks: Mauerpark; Görlitzer Park; Großer Tiergarten; Volkspark Friedrichshain
		London parks: Regent's Park; Crystal Palace Park; Hyde Park; London Fields

Note: Each park was accessed via Instagram's and Facebook's geotag function per year, and every tenth picture showing a female or male full-body image was included until the preferred sample size is reached.

Inclusion criteria

An equal number of frontal full-body images of targets perceived as either female or male in everyday clothing were included. The perceived age of the targets fell within the age group of millennials (i.e. 20–40 years old; Berkup, 2014). We did not include social media influencers (image received >200 likes). We only included images taken in daylight, considered only one image of a person per measurement time point and did not include pairwise photos (i.e. images from the same person uploaded before and after the onset of the war). Targets occupied at least 75.0% of the vertical length of the image, and the picture resolution was high enough to perceive even minor details (e.g. brand logos on shoes). Finally, only images from public profiles were used to avoid ethical issues.

Stratification approach

We aimed to approach a random sample of images. Therefore, we employed a stratification approach to image sampling (see Table 2).

Geographical location

We focused on three European countries: the UK, Germany and Poland. The countries were situated on the same latitude but showed different geographical proximity to Ukraine. This allowed us to explore whether the expected effects were pronounced with increased geographical proximity. We concentrated on the countries' capitals (London, Berlin and Warsaw), as capitals shared distinct characteristics (e.g. larger populations, advanced infrastructure), making them more comparable. However, we dissected the capitals, sourcing one park per direction to account for socioeconomic differences within capitals. All three countries have a parliamentary democracy and show a relatively similar climate.

Measurement time points

We drew an equal number of images from the week before (T1: 14 February 2022–20 February 2022) and the week after the onset of the war (T2: 28 February 2022–06 March 2022). As Vladimir Putin placed nuclear weapons on high alert in late February 2022, we anticipated that MS should have been at its highest at the beginning of March. We omitted the week around the declaration of war to ensure the distinctiveness of both intervals. Additionally, we performed a Google Trends analysis on the term 'nuclear war' ('Atomkrieg' in German, 'wojna atomowa' in Polish). Results indicated peak search interest for the terms during T2 compared to T1, suggesting that the salience of the threat of a nuclear escalation changed significantly between the measurement intervals (for a detailed description of the results, see Online Supplement B). Minimizing the gap between the measurement intervals allowed us to keep weather influences stable; seasonal differences were not expected.

Covariates

For each day of picture posting, we assessed covariates that might have influenced clothing styles. These included weather-related variables for each country (i.e. average felt temperature, average humidity, average sun hours and average wind force). Furthermore, we investigated geographical proximity to Ukraine as a potential moderator.

Measurement of variables

Coding approach

We coded 42 attributes related to self-presentation per image to quantify physical appearance-related characteristics in full-body images. The attributes stemmed from pre-validated findings of gender-stereotypical ways of self-presentation (see Table 1) and a coding scheme for the analysis of physical appearance (cf. Gruber & Kachel, 2023). Hence, attributes beyond Table 1 were coded (e.g. fabric pattern).

We carried out a computer-assisted visual content analysis. The attributes' coding was manually executed using a data matrix for SPSS, including all coded attributes in a pre-scaled format. Moreover, several attributes were measured using the image analysis software *ImageJ* (Version 1.53k; National Institutes of Health, 2021), such as the projection surface (in pixels) of exposed skin or the projection surface of potentially visible tattoos relative to the total projection surface of a target person, including their attire.

Depending on their continuity or variability across different body areas (i.e. head, upper body, legs and feet), the attributes were categorized into 3 units of analysis (UoA): the pictorial UoA, the body UoA and the clothing UoA. Table 3 illustrates all coded attributes per UoA. A coding sheet can be found in Appendix A.

Procedure

Images were opened via ImageJ, and the picture size was maximized to 100.0%, assuring standardized coding. All attributes were coded starting at the pictorial UoA, followed by the body UoA and ending with the clothing UoA (for a coding sheet including the exact order of coding, see Appendix A). The pictures were coded in a quiet environment, and the coding cycle ended without breaks once it started. ImageJ was used for surface determination required for certain features (e.g. skin exposure).

Inter-coder and Intra-coder reliability

We assessed intra- and inter-coder reliability based on a random subsample of 40 images. The primary coder coded the subsample for a second time, and a secondary coder coded it once. Only attributes with good inter- and intra-coder reliability entered the confirmatory data analysis. For a description of reliability computations per scale type and corresponding exclusion criteria, see Online Supplement C.

Data analysis

First, we screened all continuous and ordinal variables for outliers by calculating their interquartile range (IQR). Values outside of this range will be regarded as outliers. However, to uphold the ecological validity of our variables, we aimed to keep them in the data set unless they strongly distort sample statistics. Additionally, we checked the distributions of continuous variables via normality tests (e.g. Shapiro–Wilk) and visual inspections (e.g. quantile–quantile-plots). There was no missing value analysis, as the data were coded manually.

Confirmatory data analysis depended on the scaling of the coded attributes (i.e. count, ordinal, multinomial and continuous). All attributes were analysed as dependent variables; the characteristics of existential threat (the week before vs. after war) and perceived target gender (female vs. male) were treated as categorical independent variables. For instance, we tested differences in count data

TABLE 3 Coded attributes per unit of analysis.

Unit of analysis	Coded attributes	
Pictorial[a]	Year of image production	Facial hair
	Target gender	Hair length
	Vertical perspective	Hairstyle
	Horizontal perspective	Hair colour
	Projection surface of total body surface	Hair colourization
	Body posture	Make-up usage
	Arm posture	Nail polish
	Leg posture	Number of piercings
	Gaze	Type of piercings
	Self-touch	Projection surface of tattoos
	Smile	Type of tattoo
	Projection surface of skin exposure	Glasses
	Body hair	Sexualization of body region
Body[b]	Body area	Number of jewellery pieces
	Number of layers per body area	Type of jewellery
Clothing[c]	Type of clothing item	Clothing item print
	Clothing item gender-typicality	Clothing item branding
	Clothing item fit	Fabric pattern
	Clothing item style	Pattern distribution
	Clothing item colour	Fabric texture
	Colour brightness	Fabric transparency

[a]Attributes were coded once and copied for the following units of analysis.

[b]Attributes were coded separately for each body area (i.e. head, upper body, lower body, feet). The coding from the pictorial unit of analysis was copied.

[c]Attributes were coded for each layer of clothing per body area. The coding from the pictorial and the body units of analysis were copied.

(e.g. count of pieces) using Poisson regression. Only when the main effects of or interaction effects with existential threats occurred at $p < .05$ were they analysed in more detail. For interaction effects, we applied simple-effects tests and focused on differences between phases of existential threat (holding gender constant). Before calculating inferential statistics, test assumptions were tested. We controlled for weather-related covariates and assessed geographical proximity to Ukraine as a moderator on an exploratory basis.

Results

We screened variables for outliers. No cases had to be excluded. For confirmatory findings, see Table 4. For explorative analyses (effects of existential threat on remaining attributes, moderation by nationality and weather influences), see Online Supplement A.

Physically protective clothing

There was no main effect of existential threat on the number of clothing layers: Targets did not prefer wearing more layers of clothing under high (vs. low) existential threat, $\chi^2(1) = .19$, $p = .666$. Thus, H1

TABLE 4 Inter- and intra-coder reliability analysis, frequencies of coding options per attribute and findings of confirmatory data analysis.

Attribute	Inter-coder reliability	Intra-coder reliability	$M_{Reliability}$	Frequencies per coding option	Model	Test statistics		
						Existential threat	Target gender	Existential threat × target gender
Physically protective attribute								
Number of clothing layers	$\kappa = .98$	$\kappa = 1.00$	$\kappa = .99$	n/a	PR	$\chi^2(1) = .19$	$\chi^2(1) = .87$	$\chi^2(1) = .38$
Gender-typical attributes								
Clothing item gender-typicality	$\kappa = .93$	$\kappa = .96$	$\kappa = .95$	No clothing item (1.6%); feminine (23.2%); unisex (47.1%); masculine (14.9%); not identifiable (7.3%)	MLR	$\chi^2(1) = 12.55^{***}$	$\chi^2(1) = 319.51^{***}$	$\chi^2(1) = 23.30^{***}$
Clothing item colour brightness	$\kappa = .98$	$\kappa = .99$	$\kappa = .99$	No clothing item (1.6%); dark (40.4%); medium (16.2%); bright (35.5%); not identifiable (0.5%)	OLR	$\chi^2(1) = 1.37$	$\chi^2(1) = 13.32^{***}$	$\chi^2(1) = 5.36^{*}$
Clothing item colour	$\kappa = .98$	$\kappa = .99$	$\kappa = .99$	No clothing item (1.7%); feminine-stereotyped colours (red, pink, purple, multicoloured; 9.9%); neutral colours (black, grey, white, yellow, orange, green, beige, brown; 70.2%); masculine-stereotyped colour (blue; 17.6%); not identifiable (0.5%)	MLR	$\chi^2(1) = .28$	$\chi^2(1) = 1.67$	$\chi^2(1) = 8.55^{**}$
Clothing fit	$\kappa = .96$	$\kappa = .99$	$\kappa = .98$	No clothing item (1.6%); tight fitting (22.8%); neutral fitting (54.6%); oversized fitting (8.8%); not identifiable (6.4%)	OLR	$\chi^2(1) = .27$	$\chi^2(1) = .14$	$\chi^2(1) = .18$
Clothing print	$\kappa = .98$	$\kappa = 1.00$	$\kappa = .99$	No clothing item (1.6%); no print (80.7%); print (3.5%); not identifiable (8.3%)	BLR	$\chi^2(1) = 2.71$	$\chi^2(1) = 9.87^{**}$	$\chi^2(1) = 2.34$
Clothing branding	$\kappa = .95$	$\kappa = 1.00$	$\kappa = .98$	No clothing item (1.6%); no logo (69.7%); logo (14.6%); not identifiable (8.3%)	BLR	$\chi^2(1) = 5.20^{*}$	$\chi^2(1) = 73.39^{***}$	$\chi^2(1) = 4.13^{*}$
Number of pieces of jewellery	$\kappa = .97$	$\kappa = 1.00$	$\kappa = .99$	n/a	PR	$\chi^2(1) = 1.98$	$\chi^2(1) = 17.21^{***}$	$\chi^2(1) = 6.57^{*}$
Vertical perspective	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	Worm's-eye perspective (16.1%); eye-level (77.8%); bird's-eye perspective (4.0%); not identifiable (2.0%)	OLR	$\chi^2(1) = 20.04^{***}$	$\chi^2(1) = 2.78$	$\chi^2(1) = 0.05$
Body posture	$\kappa = .72$	$\kappa = 1.00$	$\kappa = .86$	Contained (8.9%); indifferent (74.6%); protruding (14.5%); not identifiable (2.0%)	OLR	$\chi^2(1) = 1.59$	$\chi^2(1) = .62$	$\chi^2(1) = .84$

TABLE 4 (Continued)

Attribute	Inter-coder reliability	Intra-coder reliability	$M_{Reliability}$	Frequencies per coding option	Model	Test statistics		
						Existential threat	Target gender	Existential threat × target gender
Arm posture	$\kappa = .82$	$\kappa = 1.00$	$\kappa = .91$	Contained (5.6%); indifferent (50.4%); protruding (41.9%); not identifiable (2.0%)	OLR	$\chi^2(1) = 1.66$	$\chi^2(1) = 1.50$	$\chi^2(1) = .16$
Leg posture	$\kappa = .68$	$\kappa = 1.00$	$\kappa = .84$	Contained (6.0%); indifferent (52.4%); protruding (39.5%); not identifiable (2.0%)	OLR	$\chi^2(1) = 2.27$	$\chi^2(1) = 3.43$	$\chi^2(1) = 3.16$
Gaze	$\kappa = .95$	$\kappa = 1.00$	$\kappa = .98$	Averted (28.2%); directed at perceiver (47.2%); not identifiable (24.6%)	BLR	$\chi^2(1) = .88$	$\chi^2(1) = .72$	$\chi^2(1) = 1.48$
Self-touch	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No self-touch (46.4%); with one hand (27.0%); with both hands (21.0%); hands touching each other (5.6%)	MLR	$\chi^2(1) = 1.09$	$\chi^2(1) = 13.09^{***}$	$\chi^2(1) = .86$
Smile	$\kappa = .84$	$\kappa = 1.00$	$\kappa = .92$	No smile (37.1%); smile with closed mouth (21.8%); smile with showing teeth (41.1%)	OLR	$\chi^2(1) = .45$	$\chi^2(1) = 4.41^{*}$	$\chi^2(1) = .27$
Body hair	$\kappa = .98$	$\kappa = .99$	$\kappa = .99$	No body hair (39.5%); light (9.7%); strong (4.0%); not identifiable (46.8%)	OLR	$\chi^2(1) < .001$	$\chi^2(1) = 81.78^{***}$	$\chi^2(1) < .001$
Beard growth	$\kappa = .88$	$\kappa = 1.00$	$\kappa = .94$	No beard (65.3%); five o'clock shadow (1.2%); light beard (3.6%); 3-day beard (12.9%); full beard (13.7%); moustache (2.0%); chin beard (1.2%)	MLR	$\chi^2(1) < .001$	$\chi^2(1) = 167.61^{***}$	$\chi^2(1) < .001$
Hair length	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No hair (0.0%); <1 cm (3.2%); leaving ears free (17.3%); ear length (14.5%); chin length (9.7%); shoulder length (5.2%); back length (36.6%); hip length (1.2%); not identifiable (12.5%)	OLR	$\chi^2(1) = 21.54^{***}$	$\chi^2(1) = 183.96^{***}$	$\chi^2(1) = .02$
Make-up usage	—[a]	—[a]	—[a]	No make-up (68.5%); light make-up (15.3%); strong make-up (16.1%)	OLR	$\chi^2(1) = 3.70$	$\chi^2(1) = 111.73^{***}$	$\chi^2(1) = .001$
Nail polish	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No nail polish (65.3%); black or white nail polish (3.6%); colourful nail polish (6.5%); not identifiable (24.6%)	MLR	$\chi^2(1) = 4.02^{*}$	$\chi^2(1) = 23.04^{***}$	$\chi^2(1) = 1.05$

(Continues)

TABLE 4 (Continued)

Attribute	Inter-coder reliability	Intra-coder reliability	$M_{Reliability}$	Frequencies per coding option	Model	Test statistics: Existential threat	Test statistics: Target gender	Test statistics: Existential threat × target gender
Physically protective and gender-typical attributes								
Skin exposure[b]	ICC = .99	ICC = 1.00	ICC = 1.00	n/a	ANOVA	$F(1,244) = 0.24$	$F(1,244) = 0.27$	$F(1,244) = 6.18$*
Textile transparency	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No clothing item (1.6%); opaque (82.0%); slightly transparent (1.4%); (almost) transparent (0.3%); not identifiable (8.9%)	OLR	$\chi^2(1) = .36$	$\chi^2(1) = 1.29$	$\chi^2(1) = 1.27$
Remaining attributes[c]								
Fabric texture	$\kappa = .99$	$\kappa = 1.00$	$\kappa = 1.00$	No clothing item (1.6%); smooth (68.8%); coarse (14.9%); other texture (0.0%); not identifiable (8.9%)	OLR	$\chi^2(1) = 1.22$	$\chi^2(1) = .12$	$\chi^2(1) = 2.65$
Fabric pattern	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No clothing item (1.7%); no pattern (81.4%); horizontal stripes, vertical stripes (2.5%); check (2.1%); dots, diamond, animal, other patterns, combination of several patterns (1.5%); not identifiable (4.6%)	MLR	$\chi^2(1) = 4.45$*	$\chi^2(1) = 4.29$*	$\chi^2(1) = 4.21$*
Pattern distribution	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No clothing item (1.6%); no pattern (76.5%); partial (1.8%); holistic (9.7%); not identifiable (4.5%)	MLR	$\chi^2(1) = 10.51$**	$\chi^2(1) = 2.41$	$\chi^2(1) = 13.19$***
Clothing style	$\kappa = .96$	$\kappa = .99$	$\kappa = .98$	No clothing item (1.6%); formal (11.5%); casual (66.5%); sportive (8.3%); not identifiable (6.3%)	MLR	$\chi^2(1) = 2.54$	$\chi^2(1) = 6.02$*	$\chi^2(1) = 7.31$**
Type of jewellery	$\kappa = .97$	$\kappa = 1.00$	$\kappa = .99$	No jewellery (76.9%); necklace (4.1%); bracelet (3.0%); watch (3.0%); ring (3.6%); brooch (0.0%); festival bracelet (0.0%); anklet (0.0%); other jewellery (0.1%); combination of several pieces of jewellery (3.5%)	MLR	$\chi^2(1) = 3.45$	$\chi^2(1) = 13.21$***	$\chi^2(1) = 3.10$
Size of total body surface[b]	ICC = 1.00	ICC = 1.00	ICC = 1.00	n/a	ANOVA	$F(1,244) = 2.40$	$F(1,244) = .42$	$F(1,244) = .05$
Horizontal perspective	$\kappa = .97$	$\kappa = .98$	$\kappa = .99$	Left-hand side (21.4%); frontal (51.6%); right-hand side (25.0%); not identifiable (2.0%)	MLR	$\chi^2(1) = 2.03$	$\chi^2(1) = 3.48$	$\chi^2(1) = 5.80$*

TABLE 4 (Continued)

Attribute	Inter-coder reliability	Intra-coder reliability	$M_{Reliability}$	Frequencies per coding option	Model	Test statistics: Existential threat	Test statistics: Target gender	Test statistics: Existential threat × target gender
Accentuation of sexualized body region	—[a]	—[a]	—[a]	No accentuation (92.3%); accentuation (7.7%)	BLR	$\chi^2(1) = 1.33$	$\chi^2(1) = 21.05$***	$\chi^2(1) = 1.33$
Glasses	$\kappa = .97$	$\kappa = 1.00$	$\kappa = .99$	No glasses (60.1%); medical glasses (8.9%); sunglasses (31.0%)	MLR	$\chi^2(1) = .16$	$\chi^2(1) = 3.39$	$\chi^2(1) = 1.31$
Size of relative tattoo surface[b]	ICC = .99	ICC = 1.00	ICC = 1.00	n/a	ANOVA	$F(1,244) = 0.72$	$F(1,244) = 1.07$	$F(1,244) = 1.11$
Type of tattoo	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No tattoo (92.3%); facial (0.0%); upper body (5.6%); lower body (1.2%); combination of several tattoos (0.8%)	MLR	$\chi^2(1) = .40$	$\chi^2(1) = .03$	$\chi^2(1) = .03$
Number of piercings	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	n/a	PR	$\chi^2(1) = 998.95$***	$\chi^2(1) = 6.50$*	$\chi^2(1) = 921.17$***
Hair colourization	$\kappa = .94$	$\kappa = 1.00$	$\kappa = .97$	No hair (0.0%); natural (72.2%); colourized (15.3%); not identifiable (12.5%)	BLR	$\chi^2(1) = 6.41$*	$\chi^2(1) = 24.58$***	$\chi^2(1) = 5.91$*
Hair colour	$\kappa = .98$	$\kappa = 1.00$	$\kappa = .99$	No hair (0.0%); white or grey (4.0%); blond (20.6%); brown (37.5%); black (23.8%); red or copper (1.6%); multicoloured (1.6%); not identifiable (10.9%)	MLR	$\chi^2(1) = .40$	$\chi^2(1) = 2.55$	$\chi^2(1) = .05$
Hair style	$\kappa = 1.00$	$\kappa = 1.00$	$\kappa = 1.00$	No hair (0.0%); buzz cut (2.8%); pixie cut (2.4%); short cut (28.2%); undercut or side cut without styling product (1.2%); undercut or side cut with styling product (0.4%); bob (4.0%); long hair (33.1%); braids (1.6%); Afro look (0.4%); ponytail, bun or updo (12.5%); other hairstyle (0.4%); not identifiable (12.9%)	MLR	$\chi^2(1) = 2.42$	$\chi^2(1) = 168.81$	$\chi^2(1) = .04$

Abbreviations: ANOVA, analysis of variance; BLR, binomial logistic regression; MLR, multinomial logistic regression; OLR, ordinal logistic regression; PR, poisson regression.

[a]No κ statistic was computed because the variables showed no within-variance for both primary and secondary coders.

[b]Data on the continuous dependent variables skin exposure, size of total body surface and size of relative tattoo surface deviated from normal distributions according to normality tests. Log data transformation did not improve normal distributions. Based on the general robustness of ANOVA against violations of normality (Schmider et al., 2010), we continued using parametric tests.

[c]Refer to Online Supplement A for in-depth descriptions of significant main effects and interaction effects with existential threats for the remaining attributes that were not included in the confirmatory analysis.

*$p < .05$. **$p < .01$. ***$p < .001$.

(preference for more clothing layers under high vs. low existential threat, independent of gender) was not supported.

Gender-typical clothing

We predicted that people present themselves more gender-prototypically (see Table 1) under high (vs. low) existential threat (H2). To adequately test H2, we focused on the interaction effects of existential threat and target gender and reported only significant ones; all other main effects of and interaction effects with existential threat, $p > .05$.

Item gender-typicality

A main effect of existential threat on item gender-typicality, $\chi^2(1) = 12.55$, $p < .001$, was qualified by an interaction with target gender, $\chi^2(1) = 23.30$, $p < .001$. In line with H2, women preferred feminine over unisex clothing items, $\chi^2(1) = 18.27$, $p < .001$, OR = 2.35, 95% CI [1.59, 3.47], while men preferred unisex over feminine items, $\chi^2(1) = 7392.98$, $p < .001$, OR = 566357769.40, 95% CI [37701587.50, 85078920.80], during high (vs. low) existential threat.

Colour brightness

An interaction effect of existential threat and target gender on colour brightness emerged, $\chi^2(1) = 5.36$, $p = .021$. Men preferred darker hues during high (vs. low) existential threat, $\chi^2(1) = 6.21$, $p = .013$, OR = .66, 95% CI [0.47, 0.91]; no significant difference for women, $\chi^2(1) = .64$, $p = .425$. Thus, findings support H2 for men.

Colour

Singularities in the data matrix occurred. We recoded item colour into a feminine-stereotyped category (red, violet, pink, multicoloured), a masculine-stereotyped category (blue) and a gender-neutral category (remaining options) (Cunningham & Macrae, 2011). An interaction between existential threat and target gender on clothing item colour occurred, $\chi^2(1) = 8.55$, $p = .003$. In line with H2, during high (vs. low) existential threat, women preferred feminine-stereotyped over neutral, $\chi^2(1) = 19.08$, $p < .001$, OR = 3.99, 95% CI [2.15, 7.44] and masculine-stereotyped colours, $\chi^2(1) = 19.68$, $p < .001$, OR = 1.37, 95% CI [0.81, 2.30]; men preferred masculine-stereotyped, $\chi^2(1) = 11.69$, $p = .001$, OR = 4.64, 95% CI [1.93, 11.18] and neutral, $\chi^2(1) = 9.87$, $p = .002$, OR = 3.67, 95% CI [1.63, 8.27] over feminine-stereotyped colours.

Branding

A main effect of existential threat on clothing branding, $\chi^2(1) = 5.20$, $p = .023$, was qualified by an interaction with target gender, $\chi^2(1) = 4.13$, $p = .042$. Women were inclined to display no logos than logos on clothing during high (vs. low) existential threat, $\chi^2(1) = 5.40$, $p = .020$, OR = 2.68, 95% CI [1.17, 6.17]; no effect for men, $\chi^2(1) = .07$, $p = .795$. This finding supports H2 for women.

Pieces of jewellery

We found an interaction between existential threat and target gender on the number of pieces of jewellery, $\chi^2(1) = 6.57$, $p = .010$. Men wore pieces of jewellery less likely during high (vs. low) existential threat, $\chi^2(1) = 5.87$, $p = .015$, OR = .55, 95% CI [0.34, 0.89]; no effect for women, $\chi^2(1) = .94$, $p = .333$. This finding supports H2 for men.

Physically protective and gender-typical attributes

During a high (vs. low) existential threat, we expected women to expose less skin and wear less transparent fabrics (H3a) or expose more skin and wear more transparent fabrics (H3b). An interaction

between existential threat and target gender on skin exposure occurred, $F(1,244) = 6.18$, $p = .014$, $\eta^2 = .03$. Women exposed more skin during high ($M = .22$, $SE = .13$) than low ($M = .12$, $SE = .10$) existential threat, $F(1,122) = 21.43$, $p < .001$, $\eta^2 = .15$; no effect for men, $F(1,122) = 1.11$, $p = .294$, $\eta^2 = .009$. Therefore, we found no support for H3a but H3b: Women opted for increased gender-prototypical clothing during high (vs. low) existential threats.

Discussion

Results indicate that people use clothing to gain symbolic protection during high existential threats by turning towards gender-prototypical, not physically protective clothing. Individuals varied gendered clothing features during a threatening phase of Russia's war on Ukraine, such as colour shade, brightness and pieces of jewellery. Women and men differed in varying these features; colour brightness and amount of worn jewellery only varied for men. Skin coverage—gendered and physically protective—varies for women. Women exposed more skin during high threats. This suggests in-group prototypical clothing as the more relevant vestimentary defence. Emphasizing appearance-related in-group similarity and between group differences following existential threats aligns with TMT. Individuals aim for intra-group homogeneity and intergroup heterogeneity under MS (e.g. gender; Walsh & Smith, 2007). Furthermore, women may self-objectify to cope with existential threats (Morris et al., 2014) by exposing more skin, signalling vulnerability.

Explorative analyses (see Online Supplement A) hint at an increased demand for symbolic vestimentary defence with increased proximity to threats (Ukraine as a war zone). During high existential threat, only Polish and German but not British men preferred gender-typical clothing; exclusively Polish men showed a decreased preference for wearing jewellery. This could be interpreted as a chronic activation of existential threat as (the psychological) distance towards its locus decreases.

STUDY 2

Study 2 examines the effect of existential threats on dress style preferences using an online experiment. We increased MS by priming mortality concerns supraliminally (reading a news article about Russia's war on Ukraine that produces high levels of existential threat) and compared this to a control condition (reading a news article about the war that produces significantly lower levels of existential threat). A pre-test on the perceived existential threat of news articles was conducted.

Whereas measuring the effects of mortality priming directly after its presentation allows investigating proximal defences, studying distal defences demands the inclusion of a delay task post-priming (death-related thoughts become highly mentally accessible but remain outside of awareness; Greenberg et al., 1990). Therefore, we targeted proximal (i.e. preference for physically protective dress styles) and distal (i.e. preference for gender-prototypical dress styles) defences by varying the positioning of a delay task in the experimental procedure (before or after mortality priming). For the dependent measurement, participants engaged in a clothing choice: They indicated their momentary dress style preference by choosing one of two dress styles across multiple sets of pairwise images, varying (a) the physical protectiveness of clothing (two clothing layers vs. one clothing layer), (b) the gender-prototypicality of clothing (tight−/oversized fitting vs. loose fitting) and (c) skin exposure as a clothing feature that is associated with protectiveness and gender-prototypicality (high vs. low skin exposure) within image pairs. While varying one clothing feature within image pairs, the other features were held constant within but fully balanced between image pairs.

We predict that participants primed for mortality concerns should prefer physically protective (two than one layer; H1) and gender-prototypical dress styles (tight fitting for women and oversized fitting for men than loose fitting; H2) more often than participants not primed for mortality concerns. For skin exposure, which combines physically protective and gender-prototypical dress styles, we expect

women primed for mortality concerns to prefer dress styles that expose little skin (according to the assumption of increased physically protective clothing; H3a) or dress styles that reveal more skin (according to the assumption of increased gender-prototypical clothing; H3b) compared to women not primed with mortality concerns. Comparing both delay task conditions for those participants primed with mortality concerns, participants engaging in a delay task post-priming should prefer gender-prototypical dress styles more often (H4) and physically protective dress styles less often (H5) than participants engaging in a delay task before priming. Comparing both dress style preferences for those participants primed with mortality concerns, participants engaging in a delay task post-priming should prefer gender-prototypical dress styles more often than physically protective dress styles (H6), and vice versa for participants engaging in a delay task before priming (H7).

Study 2 included possible covariates on an exploratory basis (gender conformity, fashion clothing involvement, personal experiences due to war). First, people who perceive themselves as gender-(non)-conforming could show differentiated clothing behaviour under MS, as gender-typical men take a more self-oriented approach to clothing, while gender-typical women show an other-oriented stance on clothing (Cox & Dittmar, 1995). Additionally, individuals whose self-esteem is not contingent on fashion-related sources might not utilize clothing as symbolic protection in response to MS as strongly (see Taubman-Ben-Ari et al., 1999). Finally, individual differences concerning personal experiences due to the war may impact the extent to which people feel threatened by reading an article about the war. Study 2 is in line with the Declaration of Helsinki and received approval from the Technical University of Berlin's (on behalf of the Universiy of the Arts Berlin) Institutional Review Board. We appended the participant information sheet and debriefing form in Online Supplements D and E for ethical considerations.

Methods

Sample and design

We recruited participants through the crowdsourcing platform Prolific. Inclusion criteria increased comparability to Study 1: Individuals from the UK, Germany and Poland who self-identified as female or male and indicated an age between 20 and 40 years (targeting the generational group of millennials; Berkup, 2014) were invited to participate. We provided three versions of the study (in English, German and Polish), allowing participants to partake in their native language.

We used an experimental approach to test the effect of mortality concerns and delay tasks on dress style preferences. Therefore, we foresaw the application of a mixed designs with 2 (mortality concerns: high vs. low) × 2 (delay task: present vs. absent) × 2 (dress style preference: physical protectiveness vs. gender prototypicality) factors, with the first two factors being varied between participants and the last factor being varied within participants. Participants were randomly assigned via an algorithm (ensuring double blindness) to one of the four between participants conditions.

We used G*Power (Faul et al., 2007) to estimate the sample size using a priori power analysis based on an effect size estimate of $r = .22$ (see Study 1). We required $N = 248$ participants to detect medium effect sizes ($f = .23$) with high test power ($1 - \beta = .95$) and $a = .05$ to test the aforementioned model. Aiming for an equal distribution of participants across cells for the combination of gender (female, male) and country of residence (UK, Germany, Poland), we needed to include 11 participants per cell. Therefore, we required analysable data from $N = 264$ participants. We aimed at recruiting $N = 300$ participants, expecting an attrition rate of 10.0%.

Measures and procedure

Using a cover story, participants were reminded about how drastic life events (e.g. the COVID-19 pandemic) impact consumer behaviour (e.g. hoarding toilet paper). Participants were told that

this study examines how Russia's war on Ukraine may have influenced people's fashion shopping behaviour.

Fashion clothing involvement

After consenting and providing demographic information, participants filled out a short form (Manchiraju & Damhorst, 2016) of the Fashion Clothing Involvement (FCI) Scale (O'Cass, 2004), measuring the centrality of fashion in their lives. The scale includes 18 items across four dimensions: five items for product involvement (e.g. 'Fashion is a significant part of my life.'), five items for purchase decision (e.g. 'I attach great importance to purchasing fashion products.'), four items for consumption involvement (e.g. 'I like to think about wearing fashion products.') and four items for advertisement involvement (e.g. 'I pay a lot of attention to ads for fashion products.'). Participants rated their FCI by indicating the extent to which a statement reflects themselves on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An overall mean indicated participants' FCI, with higher scores representing higher FCI. In addition to controlling for possible confounds, this scale strengthened the cover story.

Gender conformity

Next, participants completed the Traditional Masculinity and Femininity Scale (TMF; Kachel et al., 2016), assessing gender conformity and making gender a salient reference category under MS. The TMF measures the cross-domain gender-role self-concept (i.e. self-ascribed masculinity/femininity) with six items such as 'Traditionally, my behaviour would be considered as…' rated on a 7-point scale ranging from 1 (*not at all feminine/masculine*) to 7 (*totally feminine/masculine*). Women were presented with a scale assessing femininity, and men filled in a masculinity scale. A higher mean indicates an individual's gender-role self-concept to be more gender-conforming.

Personal experiences due to war

Next, we assessed changes in participants' lives due to the war on emotional, cognitive and behavioural levels. An 11-point scale ranging from −5 (*strongly decreased*) over 0 (*no change*) to +5 (*strongly increased*) was used; the beginning of the war served as the reference ('Ever since the onset of Russia's war on Ukraine, …'). Three items represented each level. Regarding the emotional domain, participants responded to the items '…feelings of helplessness…', '…feelings of threat…' and '…feelings of fear…'. Concerning the cognitive domain, participants responded to the items '…negative thoughts…', '…rumination…' and '…worries…'. For the behavioural domain, participants responded to the items '…my media news consumption', '…my consumption of hot water and electricity…' and '…my purchases of scarce goods, such as groceries, oil, or coal…'. Items were presented in a randomized order and aggregated into an overall mean score in case of sufficient reliability (Cronbach's $\alpha \geq .70$).

Mortality prime

Subsequently, participants were randomly assigned to one of two conditions (MS: high vs. low). We triggered mortality concerns for participants in the experimental condition by letting them read a news article about Russia's war on Ukraine with content that was perceived as highly existentially threatening. Participants in the control condition read an article about the war that was perceived as significantly less existentially threatening compared to the article in the experimental condition. To ensure the distinctiveness of both articles concerning perceived existential threats, a pre-test was conducted (see Online Supplement F). Considering the main study, participants answered one content-related item about the article in both conditions to ensure attention. They also jotted down their feelings and thoughts about the article (min. 80 words).

Manipulation check

To assess the effectiveness of priming, we determined the 20 most frequently occurring words in participants' writing using a word frequency analysis (Klackl & Jonas, 2019). If more death-related

words appeared in participants' writing in the experimental condition than in the control condition, our manipulation could be deemed effective. Moreover, we checked whether participants responded correctly to the content question and excluded participants who failed the attention check item.

Delay task

Interposing a delay period (usually 2–6 min) between mortality priming and dependent measures allows researchers to shift proximal to distal processing in participants (used in 93% of MS studies; see Burke et al., 2010 for a meta-analysis). In the current study, participants were randomly assigned to one of two delay task conditions (present vs. absent). Participants in the delay task present condition engaged in the delay task directly following the MS-priming. In contrast, participants in the delay task absent condition completed the task before the MS manipulation. The task presented participants with several fashion-related words (to strengthen the cover story, e.g. clothing). Participants had to think of a suitable synonym (e.g. garments). All participants engaged in this delay task for 5 min. Expecting individual differences regarding how easily participants experienced the task, participants were automatically presented with new words until the 5 min were over.

Dress style preference

Participants now engaged in a clothing choice task, representing the dependent variable of dress style preference. Participants were asked to indicate their momentary dress style preferences across several trials by choosing one of two dress styles ('Considering both dress style options, which one would you prefer wearing right now?') provided as image pairs.

Proximal (increased physically protective clothing) and distal defence (increased gender-prototypical clothing) were captured. Increased preference for physically protective clothing was manipulated by varying the number of clothing layers (one layer vs. two layers) *within* image pairs. A preference for increased gender-prototypical clothing was captured by varying the fit of clothing items (tight/oversized fitting vs. loose fitting) *within* image pairs. We varied a third clothing feature *within* image pairs, namely, skin exposure (high vs. low skin exposure), a clothing feature that captures both physical protectiveness and gender prototypicality. Importantly, when varying one clothing feature (e.g. clothing layers) within image pairs, all other features (clothing fit, skin exposure) were kept constant within image pairs but fully balanced out *between* image pairs. Female participants only rated dress styles for women; male participants only rated dress styles for men. Overall, participants were presented with 12 image pairs in random order. Only clothing for the upper body was used as stimulus material because certain clothing features (e.g. layers) were not feasible to vary for lower body attire (e.g. trousers). See Online Supplement H for a detailed description of the stimulus set, its generation and the relevant pre-testing. The preliminary stimulus set can be found in Online Supplement G.

For each image pair, clothing choices were pre-scored (1 = two layers of clothing/gender-prototypical clothing fit/high skin exposure; 0 = one clothing layer/less gender-prototypical clothing fit/low skin exposure). A percentage score indicated participants' dress style preference towards physically protective and gender-prototypical clothing features. Concerning the clothing feature of skin exposure, women could have either displayed an increased preference for low skin exposure (according to the assumption of enhancing physically protective attributes) or high skin exposure (according to the assumption of increasing gender prototypicality). Thus, for women, results regarding skin exposure may reveal which of the proposed mechanisms can be ascribed to greater relevance.

State affect

We assessed affect-regulatory processes after participants engaged in the dependent measurement using either an assessment of state affect or existential threat perception (for a description of both scales, see Online Supplement F). We based our selection of measurement on the results of the pre-study on news articles where both scales were used. This allowed us to cross-validate the existential threat perception scale against the state affect scale and choose the one scale that showed better validity and reliability.

In the end, participants were thanked, debriefed and asked for their consent for data use again, considering the study's purpose. Participation took approximately 20 min and was financially compensated relative to the country-specific minimum hourly wage.

Data exclusion

Data from participants who gave informed consent, self-reported to be cis-gender women and men born between 1980 and 2001 who resided in the UK, Germany or Poland, correctly responded to the attention check, and produced negligible missings (not affecting the central measures such as dress style choices) were included in further analyses. We conducted a missing value analysis and excluded cases with a systematic pattern of missing values (Tabachnick & Fidell, 2013). Finally, we screened all measured variables for outliers and excluded them (data points falling outside the range of ±2 SD).

Analysis plan

We assessed internal consistency (i.e. Cronbach's α) for the FCI scale, the TMF scale, emotions assessing state affect (or existential threat perception if results of the pre-study on news articles suggested its superiority) and items assessing personal experiences due to the war. We only used measurements with an internal consistency of Cronbach's $\alpha \geq .70$. Based on item response analysis, we excluded items if internal consistency could be stabilized above .70. We assessed the data distributions of our central variables using normality tests (e.g. Shapiro–Wilk) and visual inspections (e.g. quantile–quantile-plots). Finally, we measured the intercorrelations between these variables to detect strong associations before confirmatory analysis.

We checked the effectiveness of the priming of mortality concerns via word frequency analysis (TM package; Feinerer & Hornik, 2018) based on participants' written records about the article they read. We analysed differences in state effects. For each emotion, *t*-tests compared the experimental group to the control group. If we used the existential threat perception measurement instead, we would analyse the differences between the experimental and control groups via ANOVA.

We pre-registered to test all seven hypotheses using a 2 (MS-priming) × 2 (delay task) × 2 (dress style preference) mixed ANOVA. We further tested for the influence of different covariates via ANCOVA. FCI and gender conformity were categorically tested as covariates because both variables appear to be closely linked to the dependent measurement of gender-typical dress choices. We examined participants' experiences with the war as a confounding in the case of significant differences in the perceived existential threat of news articles between participants from different countries in the pre-study (see Online Supplement F). For each statistical test, related assumptions were tested. Upon in-principal acceptance, this research was finalized within 4 months (see Table 5).

Participants

Overall, $N = 297$ individuals participated, ranging in age from 20 to 41 years ($M = 28.25$, $SD = 5.84$). Regarding gender, 138 participants described themselves as women, 149 as men, six as neither women nor men, two preferred not to categorize their gender and two preferred not to provide this information. Considering nationality, 100 participants were Polish, 98 German and 99 British.

Participants from all pre-studies were screened out. Data from 73 participants were excluded from analyses for failed attention checks ($n_{\text{HighMS}} = 38$; $n_{\text{LowMS}} = 25$) and not self-identifying as woman or man ($n = 10$). Missing values and critical outliers were absent. Confirmatory analysis was based on $N = 224$ participants (almost equally distributed across cells for the combination of gender and nationality; see Table 6).

TABLE 5 Anticipated timeline upon Stage 1 in-principle acceptance.

Study	Month following IPA	Task
Content analysis	First	• Sourcing of images from Instagram and Facebook • Inter- and intra-rater reliability coding • Calculation of inter-rater reliability • Calculation of intra-rater reliability
	Second	• Coding of remaining images
	Third	• Data analysis • Writing of results and discussion section
Experiment	First	• Finalizing generation of image pool for dependent measurement of dress style • Pre-study on illustrations • Pre-study on news articles
	Second	• Programming of the online experiment • Recruitment of participants via a crowdsourcing platform • Data collection
	Third	• Data analysis • Writing of sample description, results and –discussion section
Overall paper	Fourth	• Writing of general discussion • Layout and checklist • Submitting final manuscript for Stage 2 review

TABLE 6 Cell distribution for the combination of gender and nationality.

Nationality	Women	Men	Total
Poland	38	40	78
Germany	33	49	82
United Kingdom	32	32	64
Total	102	120	224

Note: Participants who described their gender as neither woman nor man or did not provide information were not represented.

Results

Preliminary analysis

Personal experiences due to the war were not included as a covariate based on insignificant differences in the perceived existential threat of news articles between participants from different countries in the pre-test (see Online Supplement F).[1] The FCI, TMF and existential threat perception (ETP) scales showed high internal consistency (Cronbach's $\alpha > .90$). Intercorrelations with clothing preferences were explored (see Table 7): Participants preferred more clothing layers, the higher ETP ($r = .18$, $p = .007$), and the lower FCI ($r = -.14$, $p = .034$); they preferred higher skin coverage, the lower FCI ($r = -.14$, $p = .036$); and they preferred a more gender-typical clothing fit, the higher FCI ($r = .22$, $p = .023$).

Word frequency analysis on participants' written records (see Appendix B: Table B1) showed that 'war' was frequently used in both conditions (across languages), while no death-related words emerged overall. However, only in the high MS-priming condition, participants used threat-related words, e.g. 'crimes' ($n = 12$), 'sad' ($n = 13$), 'hope' ($n = 14$) in English, 'strach' (fear, $n = 6$), 'Ofiar' (victims, $n = 7$), 'zbrodnie' (crimes, $n = 11$) in Polish, 'Gewalt' (violence, $n = 6$), 'Verbrechen' (atrocities,

[1]Also, personal experiences due to the war did not differ significantly between Polish, German and British participants, $F(2,221) = .24$, $p = .789$, $\eta_p^2 = .002$.

TABLE 7 Internal consistencies, intercorrelations, descriptive statistics and normality tests among central study variables and covariates.

	Variable	1	2	3	4	5	6[a]	*M*	*SD*	Cronbach's *α*	*W*[b]
1	FCI		.07/−.05	(.22*/.12)	(−.10/−.10)	(−.15/−.08)	n/a	3.30	1.47	.98	.96*
2	TMF	−.02		(.30**/.14)	(−.21*/.10)	(−.04/−.04)	n/a	5.05	1.20	.95	.96**
3	ETP	.15*	−.02		(.34**/.02)	(.18/.03)	n/a	3.04	1.59	.94	.93
4	Clothing layers preference	−.14*	.01	.18*		(.03/.06)	n/a	.41	.25	n/a	.90**
5	Skin coverage preference	−.14*	−.00	.11	.05		n/a	.70	.31	n/a	.83**
6[a]	Gender-typical Fit preference	.22*	.11	−.01	−.12	−.28**		.69	.31	n/a	.85**

Note: Correlation coefficients represent correlations based on overall scales. Coefficients in brackets represent correlations for women/men separately.

[a]Due to the absence of significant differences in gender-typicality ratings between clothing options for men in the pre-study on stimuli (refer to Online Supplement H), this variable is based on data from participants describing their gender as women only.

[b]The data on the central study variables appeared to deviate from normal distributions according to normality tests. Log data transformation did not improve normal distributions. Based on the general robustness of ANOVA against violations of normality (Schmider et al., 2010), we continued using parametric tests.

*$p < .05$ (two-tailed). **$p < .001$ (two-tailed).

TABLE 8 Findings of confirmatory data analysis in Study 2.

Effect	Clothing layers preference		Skin coverage preference		Gender-prototypical clothing fit preference[a]	
	$F(1,214)$	η_p^2	$F(1,214)$	η_p^2	$F(1,97)$	η_p^2
Main effects						
MS-priming	.003	<.001	.03	<.001	.21	.002
Delay	1.26	.006	2.68	.01	1.44	.02
Gender	12.95***	.06	2.91	.01	n/a	n/a
FCI[b]	3.04	.01	3.84	.02	5.16*	.05
TMF[b]	.07	<.001	.25	.001	.66	.007
Interaction effects						
MS-priming × delay	.11	.001	.52	.002	.26	.003
MS-priming × gender	8.33**	.04	.002	<.001	n/a	n/a
Delay × gender	.14	.001	1.72	.01	n/a	n/a
MS-priming × delay × gender	2.90	.09	2.32	.01	n/a	n/a

Note: Homogeneity of variances can be assumed for clothing layer preference, $F(7,216) = 1.16$, $p = .327$; skin coverage preference, $F(7,216) = 1.95$, $p = .063$; and gender-prototypicality of clothing fit preference, $F(3,99) = 0.94$, $p = .426$.

[a]Due to the absence of valid data on preference for gender-prototypical clothing for men in the pre-test on stimuli (see Online Supplement H), the analysis was based on data from women only. The main effects of and interaction effects with gender could hence not be reported.

[b]Entered as covariates across all analyses simultaneously.

*$p < .05$. **$p < .01$. ***$p < .001$.

$n = 7$), 'schrecklich' (horrific, $n = 8$) in German. Associations to threat were absent in the low MS-priming condition: 'care' ($n = 14$), 'housing' ($n = 30$), 'refugees' ($n = 70$) in English, 'Pomocy' (assistance, $n = 12$), 'Pracy' (employment, $n = 13$), 'Kraju' (nation, $n = 13$) in Polish or 'soziale' (social, $n = 7$), 'Bildung' (education, $n = 8$), 'Gefühle' (feelings, $n = 10$) in German. This suggests the manipulation's success.

Confirmatory analysis

We pre-registered to test all hypotheses using 2 (MS-priming) × 2 (delay task) × 2 (dress style preference) mixed ANOVAs. As dress style preferences were not varied dichotomously (skin exposure as a third level), H3a-b refers to female participants and valid stimuli on clothing fit preference are not available for men (see Online Supplement H), we conducted 2 (MS-priming) × 2 (delay task) × 2 (gender) AN(C)OVAs using clothing layers and skin coverage preference as separate dependent variables; FCI and gender conformity were added as covariates.[2] For clothing fit preference, data were available for women only; we used a 2 (MS-priming) × 2 (delay task) AN(C)OVA. For an overview of the results, see Table 8. For explorative analyses (moderation of nationality), see Online Supplement A.

For clothing layer preference, a main effect of gender, $F(1,214) = 12.95$, $p < .001$, $\eta_p^2 = .06$, was qualified by an interaction with MS-priming, $F(1,214) = 8.33$, $p = .004$, $\eta_p^2 = .04$. Women in the high (vs. low) MS-priming condition preferred more clothing layers ($M_{\text{HighMS}} = .39$, $SE = .03$; $M_{\text{LowMS}} = .30$, $SE = .03$; $p = .035$). Men in the high (vs. low) MS-priming condition preferred fewer clothing layers

[2]Post-hoc power analysis demonstrated that with 224 participants, a high power $1 - \beta = .93$ was achieved to detect medium effect sizes ($f = .23$) with a standard alpha error rate ($\alpha = .05$) in a 2 (MS-priming: high vs. low) × 2 (delay task: before vs. after MS-priming) × 2 (gender: woman vs. man) between participants model.

($M_{\text{HighMS}} = .41$, $SE = .03$; $M_{\text{LowMS}} = .50$, $SE = .03$; $p = .032$). These findings support H1 for women but not men.

For skin coverage preference, neither the main effects of the MS-priming or delay task nor an interaction between the two occurred. H3 was not supported.

Considering clothing fit preference, neither the main effects of the MS-priming or delay task nor an interaction between the two emerged. H2 was not supported for women; no conclusions can be made for men.

Overall, no main effects of or interaction effects with delay tasks on either dependent variable emerged. H4-7 were not supported.[3]

To test affect-regulatory processes post-clothing choice task, differences in existential threat perception between the high and low MS-priming conditions were assessed. As expected, no difference between the groups ($M_{\text{HighMS}} = 3.25$, $SE = 1.57$; $M_{\text{LowMS}} = 2.83$, $SE = 1.59$) in existential threat perception emerged; $F(1,222) = 3.83$, $p = .052$, $\eta_p^2 = .05$. As existential threat perception in the high MS-condition approached that in the low MS-condition, the clothing choice task post-priming might have alleviated higher anxiety levels in the high MS-condition.

Discussion

Findings partially support increased physically protective clothing following existential threats. As expected, women primed with high existential threats preferred more layers; higher perceived existential threats were correlated with wearing more layers overall. Unexpectedly, men displayed the opposite pattern, suggesting a gendered distinction in clothing layer preference (although we included stimuli varying more vs. fewer clothing layers within image pairs without differences in perceived gender-typicality). Similar to how women and men react to stressors distinctly (Verma et al., 2011), with men responding more aggressively (fight) than women (flight) (Lee & Harley, 2012), we found a similar pattern regarding vestimentary existential threat management. Women may 'flee' as their bodies disappear beneath more clothing layers. Men may 'fight,' opting for fewer layers and signalling agency to face the challenge directly.

A preference for greater/lesser skin coverage or gender-typical clothing fit did not surface as strategies to mitigate existential anxiety. Yet, no inferences about preferences for gender-typical clothing fit can be drawn for men, as two pre-tests did not indicate valid stimuli for men.

To categorize clothing preferences as distal or proximal defences according to TMT, we manipulated the presence of a delay task relative to the prime. It did not impact dress-style preferences. Physically protective and gender-typical clothing cannot be classified as proximal or distal defences.

GENERAL DISCUSSION

In this registered report, we used TMT to explore whether clothing offers psychological protection. We investigated whether attire symbolically shields from existential threats through increased physically protective and in-group prototypical clothing. By analysing social media posts during periods of high and low threat related to Russia's war on Ukraine (Study 1) and conducting an experiment where participants selected clothing after exposure to highly or less threatening articles about the war (Study 2), we found that people adjust their clothing preferences in response to varying levels of threats, regarding in-group prototypical and physically protective clothing.

[3]We explored multilevel modelling based on the potential clustering of data within nationality. For all dependent variables, random intercept models with nationality as level-2 identifiers showed insignificance of variance estimates for the intercepts of level-2 predictors ($p > .05$) and ICCs > .05 (Heck et al., 2013). This does not suggest clustering of the data by nationality.

While people varied their clothing choices following existential threats, the patterns differed between both studies. Study 1 indicated increased in-group prototypical clothing (e.g. colour shade, brightness, jewellery pieces) following existential threats. Correspondingly, skin exposure (physically protective and gendered) increased during high threat for women, pointing towards in-group prototypical but not physically protective clothing. These findings replicate and extend clothing psychological research using the COVID-19 pandemic as another naturalistic threat (Gruber & Kachel, 2023): Visual content analysis of social media posts showed people to favour more gender-typical clothing during acute pandemic phases (e.g. high rates of infections and deaths). Furthermore, Bardey et al. (2023) demonstrated how COVID-19 lockdowns promoted women to invest more time in exploring their involvement with fashion and beauty and select a wider palette of more vivid colours. Preferring in-group prototypical attire following existential threats aligns with TMT: Individuals experiencing high MS engage in (self)-stereotyping (Schimel et al., 1999) and favour in-group similarity and outgroup differences (Arndt et al., 2002; Walsh & Smith, 2007).

At first glance, experimental evidence (Study 2) does not support the importance of in-group prototypical clothing following existential threats: Not preference for gender-typical clothing, but the number of layers as a physically protective feature varied in response to existential threats. Although outfits varying in layers should not be perceived as more feminine or masculine (only image pairs without gender-typicality differences, as determined by two pre-tests, were included), there was a gender difference in layer selection during high existential threat: women preferred more, men fewer layers.

Hence, women and men may employ divergent strategies to cope with existential threats (Burke et al., 2010; Russac et al., 2007). Per TMT, individuals' physical bodies—subject to death—are chronic mortality reminders (Goldenberg et al., 2009), necessitating clothing for concealment and regulation. Accordingly, women's menstruating and childbearing bodies are closer to nature and may demand stricter regulation (Morris et al., 2014), underlining women's preference for more layers following existential threats compared to men. Moreover, women are stereotyped as high in communion and low in agency (Abele & Wojciszke, 2013; Fiske et al., 2002), aligning with the different social roles women and men need to fulfil in society (Eagly & Wood, 2016). This corresponds to gender differences in threat sensitivity (women tend to be more sensitive to stressors; Burani & Nelson, 2020) and behavioural coping (men respond to stressors more aggressively; Lee & Harley, 2012). Men may lean towards fewer layers to materialize agency following existential threats. The interrelatedness of physically protective and gender-prototypical clothing should be examined in future research to further clarify our findings.

(Geographical) proximity to the threat moderated symbolic protection through clothing. While in-group prototypicality of clothing varied more strongly with increased proximity to the locus of the existential threat (e.g. men's reduced preference for jewellery during high existential threats was notable among Polish men in Study 1), physically protective clothing features varied at higher distances from the threat (Study 2). This may hint at disparities in cognitive processing, in that reduced psychological distance tends to evoke concrete rather than abstract processing (Trope & Liberman, 2010). Modifying the in-group prototypicality of clothing in response to an existential threat may arise from a concrete construal of the threat, while altering the physically protective attributes of clothing may result from more abstract representation of the threat. This warrants exploration in future research.

Additionally, inconsistent findings may have arisen from two limitations. In Study 1, we cannot ensure the image posting date to equate images' production dates. This questions images' validity for high (vs. low) existential threat phases. For future visual content analyses, time-stamped records may be used to investigate (historical) threats or images should be taken by experimenters. This may also address the challenge of clearly distinguishing proximal from distal defences based on findings from Study 1. While we aimed to exert as much 'experimental' control as possible in Study 1, by ensuring distinct measurement intervals (high vs. low existential threat) through Google Trends Analysis, controlling for weather-related and geographical covariates (e.g. felt temperature, nationality) and complementing Study 1 with an experiment in Study 2, future field studies may disentangle proximal from distal defences. In Study 2, a manipulation check (word frequency analysis) did not reveal explicit death- but threat-related words in the experimental condition, suggesting a

more general form of threat induction. Future research should distinguish between threats triggering death anxiety versus other forms of anxiety (e.g. social anxiety) and use other representations of existential threats (e.g. natural disasters).

Using a registered report enhances transparency and credibility, especially for TMT research, which has been critiqued due to failed replications (e.g. Rodríguez-Ferreiro et al., 2019; Sætrevik & Sjåstad, 2019; Schindler et al., 2021) and the presence of publication bias (Chen et al., 2023; Yen & Cheng, 2013). By demonstrating clothing as terror management, applying a mixed-methods approach and adhering to open science principles, we advance both TMT theory and methodology. Specifically, we integrated a visual content analysis with an online experiment. Through triangulation, our research achieved high ecological and internal validity. We ensured interrelatedness between both studies, consistently using Russia's war on Ukraine as the representation of an existential threat and keeping sample characteristics stable (e.g. nationalities, age group).

Only a few peer-reviewed studies examined Russia's war on Ukraine (mostly from other disciplines, e.g. trauma research). To our knowledge, this is the first social-psychological investigation of the war. While TMT has often been linked to real-life threats (e.g. the COVID-19 pandemic; Pyszczynski et al., 2021), our research is the first to apply it to the war. Practically, findings may suggest that soldiers derive not only physical protection from uniforms but also psychological security through in-group prototypicality. On that note, it might be worth to investigating how in-group prototypical clothing acts as a form of defence related to axes of social differentiation other than gender. Research might examine whether individuals align their clothing more with nationality (e.g. traditional costumes, national brands) during high-threat situations, as indicated by anecdotal evidence post-9/11 (Brillson, 2013; Givhan, 2002).

CONCLUSION

While theoretical contributions to clothing psychology emerged in the 20th century, empirical research is scarce (see Johnson et al., 2014), including its antecedents and affective and behavioural consequences across various domains within (social) psychology (e.g. person perception; but see Hester & Hehman, 2023). By demonstrating that clothing may offer symbolic protection from the psychological consequences of existential threats via in-group prototypical clothing, we contribute to reviving clothing as a psychological research subject.

AUTHOR CONTRIBUTIONS

Robert Gruber: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; validation; visualization; writing – original draft; writing – review and editing. **Michael Häfner:** Supervision; writing – review and editing. **Sven Kachel:** Conceptualization; funding acquisition; methodology; supervision; writing – review and editing.

ACKNOWLEDGEMENTS

We acknowledge the assistance of Sandra Ettl as a secondary coder for inter-coder reliability assessment in Study 1, Anne Sawall for graphically illustrating the stimuli used in Study 2, Romy Hentszel for translating all materials into Polish for Study 2 and both pre-studies and Fliss Bage for proofreading the manuscript for Stage 1 submission. We remember Prof. Francesco Foroni, our initial managing editor, who sadly passed away during the submission process and are grateful for Prof. McKeown Jones, who seamlessly took over as managing editor. Finally, we are grateful to both reviewers for their continued time invested to thoroughly evaluate both Stages 1 and 2 versions of this Registered Report. Open Access funding enabled and organized by Projekt DEAL.

FUNDING INFORMATION

This research is funded by a research grant from Dr Hans Riegel-Stiftung awarded to Robert Gruber and Sven Kachel, an excellence Ph.D. scholarship from the German Academic Scholarship Foundation awarded to Robert Gruber, a research grant from the Social Psychology Section of the German Psychological Association awarded to Robert Gruber and Sven Kachel and a research grant from the German Research Foundation (KA 5005-1/1) and a post-doc scholarship from the Kone Foundation awarded to Sven Kachel.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of Study 1, Study 2, and all pre-studies are openly available via https://doi.org/10.17605/OSF.IO/4YUZ6.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Gruber, R., Häfner, M., & Kachel, S. (2024). Dressing up social psychology: Empirically investigating the psychological functions of clothing using the example of symbolic protection. *British Journal of Social Psychology*, *63*, 1003–1035. https://doi.org/10.1111/bjso.12700

APPENDIX A

CODING SHEET

Unit of analysis	Coding order	Attributes	Codes per attribute	Scaling
Pictorial	1	Time of image production	1 = week before the war; 2 = week after the war	Nominal
	2	Target gender	1 = female; 2 = male	Nominal
	3	Vertical perspective	−1 = worm's-eye view; 0 = eye-level; 1 = bird's-eye view	Ordinal
	4	Horizontal perspective	−1 = left-hand side; 0 = frontal; 1 = right-hand side	Ordinal
	5	Size of total body surface	ImageJ calculation	Continuous
	6	Body posture	−1 = contained; 0 = indifferent; 1 = protruding	Nominal
	7	Arm posture	−1 = contained; 0 = indifferent; 1 = protruding	Nominal
	8	Leg posture	−1 = contained; 0 = indifferent; 1 = protruding	Nominal
	9	Gaze	0 = averted; 1 = directed at perceiver; 999 = not identifiable	Nominal
	10	Self-touch	0 = none; 1 = with one hand; 2 = with both hands; 3 = hands touching each other	Nominal
	11	Smile	0 = none; 1 = smile with closed mouth; 2 = smile showing teeth	Nominal
	12	Skin exposure	ImageJ calculation	Continuous
	13	Body hair	0 = none; 1 = light; 2 = strong; 999 = not identifiable	Ordinal
	14	Beard growth	0 = no beard; 1 = five o'clock shadow; 2 = light beard; 3 = three-day beard; 4 = full beard; 5 = moustache; 6 = chin beard	Nominal
	15	Hair length	0 = no hair; 1 ≤ 1 cm; 2 = leaving ears free; 3 = ear length; 4 = chin length; 5 = shoulder length; 6 = back length; 7 = hip length; 999 = not identifiable	Ordinal
	16	Hairstyle	0 = no hair; 1 = buzz cut; 2 = pixie cut; 3 = short cut; 4 = undercut or side cut without styling product; 5 = undercut or side cut with styling product; 6 = bob; 7 = long hair; 8 = braids; 9 = Afro look; 10 = ponytail, bun or updo; 11 = other hairstyle; 999 = non-identifiable	Nominal
	17	Hair colour	0 = no hair; 1 = white or grey; 2 = blonde; 3 = brown; 4 = black; 5 = red or copper; 6 = multicoloured; 999 = not identifiable	Nominal
	18	Hair colourization	0 = no hair; 1 = natural, 2 = colourized; 999 = not identifiable	Nominal
	19	Make-up usage	0 = none; 1 = light; 2 = strong	Ordinal
	20	Nail polish	0 = no nail polish; 1 = black or white nail polish; 2 = colourful nail polish; 999 = not identifiable	Nominal
	21	Number of piercings	Count of visible piercings	Count
	22	Type of piercings	0 = none; 1 = ear; 2 = lip; 3 = nose; 4 = other piercings; 5 = combination of several piercings	Nominal
	23	Size of relative tattoo surface	ImageJ calculation	Continuous
	24	Type of tattoo	0 = none; 1 = facial; 2 = upper body; 3 = lower body; 4 = combination of several tattoos	Nominal
	25	Glasses	0 = none; 1 = medical glasses; 2 = sunglasses	Nominal
	26	Sexualization of body region	0 = no sexualization; 1 = sexualization	Nominal

Unit of analysis	Coding order	Attributes	Codes per attribute	Scaling
Body	27	Body area	1 = head; 2 = upper body; 3 = lower body; 4 = feet	Nominal
	28	Number of layers per body area	Count of visible layers	Count
	29	Number of jewellery pieces	Count of visible jewellery pieces	Count
	30	Type of jewellery	0 = none; 1 = necklace; 2 = bracelet; 3 = watch; 4 = ring; 5 = brooch; 6 = festival bracelet; 7 = anklet; 8 = other jewellery; 9 = combination of several pieces of jewellery	Nominal
Clothing	31	To be coded layer number	1 = layer one; 2 = layer two; 3 = layer three	Nominal
	32	Type of clothing item	0 = no clothing item; 111 = beanie; 112 = cap; 120 = hat; 130 = hijab; 140 = bandana; 150 = hairband; 200 = neckwear; 210 = scarf, 220 = neckerchief; 230 = tie or cravat; 240 = bow tie; 310 = bra; 320 = sleeveless; 330 = short sleeves; 340 = long sleeves; 350 = hoodie; 360 = blouse; 370 = shirt; 380 = jacket; 381 = blazer; 382 = cardigan; 383 = puffer coat; 390 = wool coat; 410 = trousers; 411 = underwear; 412 = tights; 413 = jeans; 414 = chino trousers; 415 = suit trousers; 416 = other trousers; 417 = sweatpants; 418 = leggings; 419 = shorts; 420 = skirt; 421 = miniskirt; 422 = knee-length skirt; 423 = maxi-skirt; 510 = dress; 520 = jumpsuit; 610 = socks; 620 = shoes; 621 = flip-flops; 622 = sandals; 623 = slippers; 624 = sneakers; 625 = trainers; 626 = formal shoes; 627 = ballet flats; 628 = high-heeled shoes; 629 = boots; 999 = not identifiable	Nominal
	33	Item gender-typicality	0 = no clothing item; 1 = feminine; 2 = unisex; 3 = masculine; 999 = not identifiable	Nominal
	34	Clothing fit	0 = no clothing item; 1 = tight; 2 = loose; 3 = oversized; 999 = not identifiable	Ordinal
	35	Clothing style	0 = no clothing item; 1 = formal; 2 = casual; 3 = sportive; 999 = not identifiable	Nominal
	36	Clothing colour	0 = no clothing item; 1 = black; 2 = grey; 3 = white; 4 = red; 5 = pink; 6 = purple; 7 = yellow; 8 = orange; 9 = blue; 10 = green; 11 = beige; 12 = brown; 13 = gold; 14 = silver; 15 = multicoloured; 999 = not identifiable	Nominal
	37	Colour brightness	0 = no clothing item; 1 = dark; 2 = medium; 3 = bright; 999 = not identifiable	Ordinal
	38	Clothing print	0 = no clothing item; 1 = none; 2 = block print	Nominal
	39	Clothing branding	0 = no clothing item; 1 = none; 2 = branded	Nominal
	40	Fabric pattern	0 = no clothing item; 1 = none; 2 = horizontal stripes; 3 = vertical stripes; 4 = dots; 5 = check; 6 = diamond; 7 = animal; 8 = other patterns; 9 = combination of several patterns; 999 = not identifiable	Nominal
	41	Pattern distribution	0 = no clothing item; 1 = no pattern; 2 = partial; 3 = holistic; 999 = not identifiable	Nominal
	42	Fabric texture	0 = no clothing item; 1 = smooth; 2 = coarse; 3 = other texture; 999 = not identifiable	Nominal

APPENDIX B

WORD FREQUENCY ANALYSIS IN STUDY 2

TABLE B1 Word frequencies of participants' writings in response to reading a news article.

High existential threat condition						Low existential threat condition					
Polish	n_{Pol}	**German**	n_{Ger}	**English**	n_{Eng}	**Polish**	n_{Pol}	**German**	n_{Ger}	**English**	n_{Eng}
Artykuł (article)	26	Menschen (people)	41	War	62	Uchodźców (refugees)	42	Flüchtlinge (refugees)	39	Refugees	70
Wojny (war)	22	Krieg (war)	32	People	57	Ukrainy (Ukraine)	37	Menschen (people)	35	Ukraine	43
Ludzie (people)	20	Artikel (article)	32	Feel	57	Artykuł (article)	36	Artikel (article)	29	Countries	41
Ukrainie (Ukraine)	15	Ukraine (Ukraine)	19	Article	28	Temat (subject)	18	Situation (situation)	22	People	39
Zbrodnie (crimes)	11	Taten (actions)	15	Ukraine	27	Ludzi (people)	18	Ukrainischen (Ukrainian)	15	Feel	35
Rosja (Russia)	10	Russland (Russia)	14	Russian	23	Uchodźcy (refugees)	15	Krieg (war)	14	Article	31
Wydarzeń (events)	9	Vorstellen (imagine)	12	Think	21	Ukrainie (Ukraine)	14	Finde (find)	12	War	30
Rosjanie (Russians)	9	Hoffe (hope)	12	Innocent	20	Problemy (problems)	14	Europa (Europe)	12	Housing	30
Ofiar (victims)	7	Zeit (time)	11	Russia	17	Krajów (countries)	14	Gut (good)	11	Situation	23
Nadzieję (hope)	7	Wütend (angry)	11	World	17	Pracy (work/ employment)	13	Gefühle (feelings)	10	Help	23
Dzieje (happenings)	7	Bucha (Bucha)	10	Way	15	Pomocy (assistance)	13	Ländern (countries)	9	Think	20
Dzieci (Children)	7	Soldaten (soldiers)	9	Things	15	Państwa (country)	13	Gedanken (thoughts)	9	Ukrainian	19
Wydarzenia (events)	6	Russisch (Russian)	9	Hope	14	Sytuacji (situation)	12	Deutschland (Germany)	9	Country	19
Wieku (age/era)	6	Leben (life)	9	Soldiers	13	Sytuacja (situation)	12	Recht (right)	8	Need	16
Uczucia (feelings)	6	Fühle (feel)	9	Families	13	pomoc (help)	12	Helfen (help)	8	Europe	15
Sytuacja (situation)	6	Schrecklich (horrific)	8	Sad	13	Kraju (nation)	12	Denke (think)	8	Term	14
Strach (fear)	6	Gewalt (violence)	8	Help	12	Sposób (way/manner)	11	Bildung (education)	8	Support	14
Smutek (sadness)	6	Verbrechen (atrocities)	7	Crimes	12	Wojny (wars)	10	Soziale (social)	7	Care	14
Rzeczy (things)	6	Traurig (sad)	7	Civilians	12	Wiele (many)	10	Große (big)	7	Long	13
Rodzin (families)	6	Schwer (hard)	7	Happened	12	Napisany (written)	10	Bevölkerung (population)	7	Russia	12

Note: Words are sorted by number of occurrences. Results are based on a minimum of 80 words written by each participant. Stop words (e.g. 'a', 'the', 'is', 'are') were excluded.