

Exploring the adaptive role of core social motives in perceived societal threats

Emiko S. Kashima,¹ Danielle P. Ochoa,² Gandalf Nicolas,³ Getrude C. Ah Gang,⁴ Hongfei Du,⁵ Johannes Klackl,⁶ Nicholas Plusnin,¹ Upekha Pathumi Miriyagalla,¹ Yoshihisa Kashima,⁷ and Susan T. Fiske⁸

¹La Trobe University, Bundoora, Victoria, Australia, ²University of the Philippines Diliman, Quezon City, Philippines, ³Rutgers University, New Brunswick, New Jersey, USA, ⁴University Malaysia Sabah, Sabah, Malaysia, ⁵Beijing Normal University, Zhuhai, China, ⁶University of Salzburg, Salzburg, Austria, ⁷The University of Melbourne, Melbourne, Victoria, Australia, and ⁸Princeton University, Princeton, New Jersey, USA

Societal threats that face the world today seem overpowering, especially for young generations who will need to develop creative solutions. The present study examined the relationships between societal threats and social motives. Social motives function to orient individuals toward the social world and prepare them to engage socially. This adaptive function of social motives may be particularly useful when threats are looming in the environment. We thus expected that perceived societal threats would correlate positively with activation of social motives, especially among individuals with lower self-esteem, who tend to show higher interdependency when threatened. Our cross-cultural samples from Australia, the United States, New Zealand, the Philippines, China (Macao), Malaysia (Sabah), and Austria ($N = 1,269$) showed evidence to support these expectations. Perceived societal threats correlated positively with all social motives (Belong, Understand, Control, Esteem, and Trust); however, the link was most vital for the Control motive, and especially in the United States and China. In line with our expectations, higher perceived societal threats were associated with more robust social motives, especially among those with low self-esteem. Potential mechanisms through which social motives assist adaptation to societal threats and country-specific contents of threats are discussed.

Keywords: control motive, cultural differences, self-esteem, social motives, societal threats.

Humanity has survived constant existential threats over its evolutionary history and has enjoyed a relatively comfortable period recently. Still, humans face a variety of adaptational challenges today. Some arise from the natural environment (e.g., climate change, tsunamis, earthquakes, super typhoons, large-scale bushfires, pathogens) whereas others derive from the human-made environment (e.g., wars, urban ghettos, cultural change, advanced technologies). Some of these adaptational challenges may be *perceived* as *threats to society as a whole* by a particular population. We call them *perceived societal threats*. Although research is advancing about how *actual* societal threat events impact people psychologically and what societal consequences may ensue (e.g., Kobayashi et al., 2019; Intergovernmental Panel on Climate Change, 2014; Okuyama & Inaba, 2017; Riblet et al., 2020), little is known about how *perceived*

societal threats impact individuals and what factors influence their adaptation.

We propose that the perspective of collective action may provide a theoretical lens through which to theorise about psychological reactions to perceived societal threats. That is, people may deal with perceived societal threats by psychologically orienting themselves toward a collective, and getting psychologically ready to participate in collective action. This is because collective action is an effective means to respond to an acute and large-scale societal threat, especially when no individuals can cope with it by themselves. By collective action, we mean multiple individuals' more or less coordinated activities toward shared goals (e.g., Olson, 1965; van Zomeren et al., 2018). In the context of acute societal threats such as natural disasters, this would include controlling the source of the threats, coordinating people's movements (e.g., evacuation), deploying relief goods, and facilitating the community's adaptation to life changes (Arcaya et al., 2020; Masten, 2014). Put simply, a community may come together as a collective to cope effectively with an acute societal threat event such as a large-scale bushfire.

Consistent with this line of reasoning, there is evidence to suggest that in the long-run, human

Correspondence: Emiko Kashima, La Trobe University, Bundoora, Victoria 3086, Australia. E-mail: e.kashima@latrobe.edu.au

Received 27 October 2020; revision 17 May 2021; accepted 19 May 2021.

populations develop a collectivistic cultural adaptation under regular societal threats. For example, in geographical regions where pathogens are prevalent (i.e., high pathogen threat), people have been found to be collectivistic in their values and practices (e.g., Fincher et al., 2008; Schaller et al., 2010; also see Triandis, 2009, on his hypothesis to this effect). More generally, Gelfand et al. (2011) showed that countries that have been under natural (e.g., natural disasters) and human-made (e.g., intergroup conflict, high population density) threats tend to have tight cultures in which strong norms are adhered to and enforced, presumably to facilitate collective action (i.e., cooperation and coordination) to deal with the societal threats.

However, this raises a critical question for our investigation. When an acute societal threat (e.g., a bushfire on the doorstep) is not present but is *perceived to be present in the background* (e.g., climate change), how do people *psychologically* cope with persistent ambient threats that may eventually materialise in a concrete and acute form? We call such societal threats known to exist, but uncertain when it will actually strike, *ambient societal threats*. Answering this question is important because an ambient societal threat may put a population under strain. For instance, a persistent ambient societal threat such as climate change may increase eco-anxiety, as observed recently (e.g., Verplanken et al., 2020). Under these circumstances, we suggest that people may orient toward collective action in a psychological sense. In particular, a social survival perspective (Stevens & Fiske, 1995) suggests that social motives—motives that help people fit better with their ingroup—increase people's chances of survival in adverse circumstances. Groups provide people with essential life support such as resources, information, labour, and protection from harm. Based on this perspective, we propose that social motives should help us understand the process of collective regulation when people are faced with perceived ambient societal threats. We explicate this reasoning next.

Core Social Motives

According to Fiske (2018), social motives are characterised as “making people fit better into groups, thus increasing their chances for survival” (p. 13). Humans are a group-living species whose survival is inherently tied up with individuals and their group's adaption to the natural and human-made environment. Social motives engage people to work together so that they deal with the demands of a situation more effectively than can an individual. Although there are multiple taxonomic frameworks of fundamental motives (e.g., Kenrick et al., 2010; McDougall, 1908), Stevens and Fiske (1995)

proposed the BUCET model, which approaches adaptation to ingroup from the social motive perspective. The core social motives are *Belong*, *Understand*, *Control*, *Esteem* and *Trust*.

The *Belong* motive involves the desire to form and maintain relatedness and connection to other people, which reduces the risk of social isolation. The *Understand* motive aids people to maintain a group's shared interpretation of reality, which they use to communicate and coordinate with each other. The *Control* motive impels people to be effective and competent in their coordination and in maintaining social bonds. The *Esteem* motive prompts individuals to monitor themselves and ensure that they meet the group's expectations and fit in. The *Trust* motive guides individuals to expect positive interactions with others and interdependence, and thereby maintain the group, assist members in need, and increase efficiency in group functioning.

All core motives thus promote cosurvival of individuals and the group. In contexts where societal threats loom large, the thoughts and behaviours encouraged by the core social motives would be especially beneficial. Bonding and social interactions can alleviate anxiety and foster health and well-being (Helm et al., 2020). Furthermore, social coordination enabled by social motives can strengthen the functions of the group and the fabric of society. As such, it seems reasonable to expect that social motives would be stronger when societal threats are perceived as more impactful and less avoidable. Further, when societal threats are perceived as likely, core social motives would be stronger especially among individuals who need the protection of the group more, such as those who perceive the self as powerless, incapable, and vulnerable.

Social Motives and Threats

Is there evidence to suggest that perceived societal threats are associated with increased social motives? We first look at literature on disaster management and coping. Although our focus lies in perceived societal threats rather than actual disasters, the literature may inform us about the relevance of social motives, and this is indeed what we find. Studies conducted in different world regions have reported that social connections and social support are critically important to build resilience in postdisaster communities (Ellis & Abdi, 2017; Jang & Wang, 2009; Kobetz et al., 2013; Madsen & O'Mullan, 2016; Motoyoshi et al., 2008; Tuohy & Stephens, 2016). Shared goals and the sense of common fate can serve as a basis of social support (Ntontis et al., 2018), and making sense of their predicament in the community serves as a protective factor (Jang & Wang, 2009; Jocson & Garcia, 2017). Studies also have reported that collective

efficacy and community participation can alleviate negative psychological impacts of the disaster. Together with trust, they play a critical role in preparedness for future hazards (Paton et al., 2009; Prior & Paton, 2008; Sagala et al., 2009; Wickes et al., 2017).

It also seems likely from several theoretical perspectives that perceived societal threats would especially strengthen the Control motive. First, perceived threats increase subjective uncertainty and anxiety, and decrease the sense of control (Lazarus & Folkman, 1984). Anxiety likely triggers a compensatory control process involving types of information processing and actions that enhance the sense of control (Fiske & Dépret, 1996; Fiske et al., 1996; Kay et al., 2008; Rutjens et al., 2010). The anxiety-to-approach model (Jonas et al., 2014) and reactive approach-motivation theory (McGregor et al., 2010) also predict that the behavioural inhibition system activated by perceived threats will increase subjective uncertainty and anxiety, which will then be downregulated through a resurgence of approach-motivation (e.g., Greenaway et al., 2015). These processes likely occur in social contexts, and for that reason, it was reasonable to expect that not only the Control motive but also other core motives are activated similarly and contribute to social behaviours that unfold.

Indeed, research has suggested that multiple social motives are stimulated by perceived threats. For example, research has shown that ostracism and social exclusion strengthen several social motives such as the Belong, Control, Understand, and Esteem motives, which serve to increase the individual's inclusion in the group (Maner et al., 2007; Williams, 2009). Research on social identities and especially on collective angst has shown that heightened concern for the ingroup's future livelihood (e.g., Jewish people reminded of the Holocaust) trigger ingroup solidarity (Hogg, 2007) and striving for ingroup strengthening behaviours (Wohl et al., 2010). It seems that collective angst generally strengthens social motives, especially the Belong motive. Terror management theory (Pyszczynski et al., 2015) posits that personal existential concerns promote investment in positive self-regard (i.e., the Esteem motive), shared cultural world views (i.e., the Understand motive), and striving for relational intimacy (i.e., the Belong motive; e.g., Hart et al., 2005; Plusnin et al., 2018; Plusnin et al., 2020). From these perspectives, perceived societal threats may stimulate social motives by increasing existential concerns (Helm et al., 2020) and presenting meaning threats.

While a variety of adaptation challenges likely causes perceived societal threats anywhere in the world, *ceteris paribus*, are positive associations between perceived societal threats and social motives similar in all cultures? We suggest that the threat-motive association is likely influenced by prevalent cultural practices in a

population. That is, the cultural practice to engage in collective action to cope with societal threats may be more prevalent in some populations than in others. We suggest that cultural scripts for a collective action likely are more readily available in collectivist than in individualist cultures (e.g., Triandis, 1989). In addition, it is plausible that people are likely to rely on well-learned cultural practices under challenging circumstances. Collective action may be culturally accessible practice in collectivist cultures whereas there may be an inclination toward individual coping strategies in individualistic cultures if individual actions are deemed viable. In line with this reasoning, Grossmann and Varnum (2015) found a swing toward individualism following natural disasters in the United States. This line of reasoning suggests that the activation of social motives—psychological engagement with a collective—in the face of perceived societal threats may be stronger in collectivist cultures than in individualist cultures.

In sum, research in the areas of disaster management and psychological threats has provided evidence to suggest that perceived societal threats might be associated with heightened core social motives. While the disaster management literature has emphasised the importance of the Belong motive, psychological literature especially has emphasised the role of the Control motive, but also that of other core motives. Regardless, past research has rarely examined social motives, broadly as a single construct or different social motives alongside each other. By the same token, cultural differences in the relationship between perceived societal threats and core social motives largely remain unexplored.

Moderator Role of Self-Esteem

It is reasonable to expect individual differences in reactions to perceived societal threats. If perceived societal threats can increase social motives, the impacts might be larger on individuals who require more protection from groups; that is, those who perceive the self as having inadequate personal resources for survival or lack confidence in achieving goals through their own personal agency. Consistent with this view, optimism, self-efficacy, locus of control, attachment style as well as education level, objectively measured competence, and problem-solving abilities have been nominated as factors that may influence threat appraisal (Pinquart & Silbereisen, 2004). The power to fence off threats has also been sought in trait self-control (Gailliot et al., 2006), sense-making abilities (e.g., Taylor, 1983), self-complexity (e.g., Linville, 1987), hardiness (e.g., Wiebe, 1991), secure attachment style (e.g., Bowlby, 1982), intrinsic religiosity (e.g., Jonas & Fischer, 2006), and action orientation (Kuhl, 2000).

Evidence has also been remarkably consistent in highlighting high global self-esteem as a buffer against stresses (Taylor et al., 2003; Tomaka et al., 1999), traumatic experiences (Moksnes et al., 2010), anxiety about pain and death (Greenberg et al., 1992; Pyszczynski et al., 2004; Yanagisawa et al., 2016), social exclusion (DeWall et al., 2011; Leary et al., 1995), perceived discrimination (Corning, 2002), negative personal feedback (Dodgson & Wood, 1998), and self-threatening uncertainty (Schoel et al., 2011). For instance, compared to low self-esteem individuals, those with high self-esteem tend to respond to failure feedback by activating personal strengths and suppressing personal weaknesses (Dodgson & Wood, 1998), respond to reminders of death more by activating neural circuits involved in downregulation of threats as well as greater behavioural self-regulation (Yanagisawa et al., 2016), and respond to social exclusion with lower social pain responses neurally and behaviourally (Onoda et al., 2010). Furthermore, in a recent longitudinal study ($N = 5,195$), adolescents who experienced the 2008 Wenchuan earthquake showed more positive psychological changes and development (e.g., establishing a new path of life) over several years if they had higher self-esteem (Tang et al., 2020). Rosenberg et al. (1995) identified high self-confidence as the primary component of global self-esteem associated with personal well-being.

In contrast, low self-esteem individuals' reactions to threats are likely to be more interdependent. For instance, those with low (vs. high) self-esteem tend to accommodate their critic's negative feedback (Heatherton & Vohs, 2000), accept their view (J. Hayes et al., 2015) and evaluate them more positively (E. S. Kashima et al., 2014), and even retain an unfavourable social identity more (Mussweiler et al., 2000). They also tend to show automatic behavioural mimicry more (Vohs & Heatherton, 2001) and look for evidence that their partner is caring more (Murray et al., 2002), as compared to high self-esteem individuals. As interdependence and social support can effectively reduce impacts of threats and stresses (Plusnin et al., 2018; Uchino et al., 1996), low self-esteem individuals who lack power and control may draw on other people to cope with threats (e.g., Fiske et al., 1996) whereas high self-esteem individuals with a strong sense of personal agency (e.g., Harter, 1978) deal with them self-affirmingly.

Characterising the manner of threat reactions by high self-esteem individuals as autonomous and that of low self-esteem individuals as interdependent may raise a new question: Are there East–West differences in self-esteem moderation of the link between perceived societal threat and social motives? The question is pertinent, given the literature on East–West differences in self-enhancement (e.g., Heine & Hamamura, 2007). Self-

esteem moderation and self-enhancement are conceptually distinct, as the former concerns self-esteem's role as a buffer whereas the latter concerns self-bolstering in social situations generally. However, the two processes may overlap. In the West, where self-enhancement is more frequent, the function of a self-esteem buffer may be more robust than in the East.

Although ample evidence has shown the moderator roles of self-esteem in Asia, involving both behavioural and neural data (e.g., Guan et al., 2020; E. S. Kashima et al., 2004; Onoda et al., 2010; Routledge et al., 2010, Study 5; Shimoda & Okubo, 2019; Yanagisawa et al., 2016), cross-cultural investigations of these roles have been limited. Brockner and Chen (1996) found that high self-esteem individuals' self-bolstering was more robust in the United States than in China when self-construal was ignored; however, when the latter was taken into consideration, this cultural difference was no longer evident. Laurin et al. (2018) examined if self-esteem moderated the effect of priming on goal striving more in individualistic countries, using data from 30 countries. The initial analysis ($N = 2,160$) supported their prediction, but the later analysis ($N = 4,209$) failed to replicate. E. S. Kashima et al. (2004) reported that mortality salience especially impacted those lower in self-esteem both in Australia and Japan. Taken together, cultural differences in self-esteem moderation are still unclear.

Present Study

The present study examined the relationship between perceived societal threats and the strength of social motives. We hypothesised that perceived societal threats should correlate positively with social motives (Hypothesis 1 [H1]), especially among those with lower global self-esteem rather than higher global self-esteem (Hypothesis 2 [H2]). Previous research on psychological threats and especially models of compensatory control (e.g., Jonas et al., 2014; Kay et al., 2008; McGregor et al., 2010) have highlighted the primary role of control among core social motives. We thus explored whether perceived societal threat was associated primarily with the Control motive (Exploratory H1), or more broadly with all core motives, using the newly developed Social Motive Scale (SMS). Based on the evidence that the Belong motive is higher in Eastern cultures than in Western cultures (Kashima et al., 2021), we further explored whether the expected threat–motive association was more robust in the East than in the West, and whether this association was more robustly moderated by self-esteem in the West than in the East (Exploratory Hypotheses 2a & 2b).

The hypotheses were tested in a cross-cultural sample of university students from seven countries: the United

States, Australia, New Zealand, the Philippines, China (Macao), Malaysia (Sabah), and Austria. These countries were selected by convenience, but nonetheless provided an opportunity to test our theory in culturally and linguistically diverse regions of the world. We selected university students as our target, as societal threats are likely to be of greater concerns among the younger generations (Clayton & Karazsia, 2020).

Method

Participants

The initial participants were 1,516 university students (66% females) from Australia ($n = 204$), United States ($n = 199$), New Zealand ($n = 219$), the Philippines ($n = 219$), China (Macao, $n = 233$), Malaysia ($n = 355$), and Austria ($n = 87$), aged between 18 and 30 years ($M = 20.3$, $SD = 2.2$).¹ The Malaysian sample initially comprised 247 participants from Kuala Lumpur and 108 from Sabah (East Malaysia). Due to technical errors, individual difference variables (e.g., personal self-esteem, attachment style, interdependent self-construal) were not assessed in Kuala Lumpur; consequently, only data from Sabah ($n = 108$) were used for Malaysia, reducing the total sample to 1,269 participants (see Table 1 for a summary of demographic compositions). Throughout the article, we refer to the Philippines, China, and Malaysia as the “East,” and to Australia, the United States, New Zealand, and Austria as the “West.”

Ethical Approval

This project was reviewed and approved by the institutional review boards for human subjects at Princeton University, La Trobe University, University of the Philippines Diliman, University of Macau, University of Salzburg, University of Malaysia Sabah, Universiti Putra Malaysia, and Victoria University of Wellington, and conducted accordingly.

Procedure and Materials

An online survey was used. It was composed in English and then translated, using the backtranslation method, to Chinese, German, and Malay by multilingual authors (H. D., J. K., and G. G., respectively). Participants in Sabah were given an option to complete the English or the Malay version of the survey, and 53 (49%) chose the English version. English is the language of instructions in most universities in Malaysia; however, in East Malaysia, multilingual instructions are often used mainly in social sciences. The survey consisted of four parts: (a)

beliefs about the past and the future of society and the self, (b) items of the SMS, (c) individual difference measures, and (d) demographic questions. Parts other than Part 1 have been reported in Kashima et al. (2021), including the measure of self-esteem. Part 1 has been reported in Klackl et al. (unpublished data 2000). There were four belief measures presented to participants in the order shown next. Throughout the survey, there were validation questions such as “Please select ‘more than now’ for this question.” All final respondents had cleared these items. All data were collected in 2016 and 2017.

Biggest societal change.. Participants were first instructed to respond to an open-ended question, “What is the biggest societal change that we are facing now in this country? There are no right or wrong answers to this question. Just write what you think in one sentence (<10 words).” This was included for two reasons: (a), to direct respondents’ attention to their own society before rating perceived societal threat, and (b), to probe if spontaneous responses from respondents shared societal concerns incorporated in the measure of perceived societal threats.

Perceived societal threats.. Participants were asked “How much more or less the future society in the year 2036 would have each attribute, compared to the present society.” They were shown short descriptions about society, including “natural disaster,” “human violence,” “rich people getting richer and poor people getting poorer” (disparity), “clean air and clean water”, “lack of respect for tradition,” “people moving to larger cities” (urbanisation), and “people moving their place of residence (residence instability).” To generate items, we consulted Bain et al. (2013) and Y. Kashima et al. (2009). The presentation order of items was random for each respondent. Ratings were made on a 7-point scale of 1 (*much less than now*), 2 (*less than now*), 3 (*slightly less than now*), 4 (*about the same*), 5 (*slightly more than now*), 6 (*more than now*), and 7 (*much more than now*).

Core social motives.. The scale of core social motives (the SMS; Kashima et al., 2021), based on the BUCET framework (Belong: “I often have a strong need to be around people,” Understand: “I want to feel that I share the same outlook on the world with other people,” Control: “I want to feel that all important matters are currently under control,” Esteem: “I want to feel I am satisfying other’s expectation on me”, and Trust: “I need to feel that other people are basically trustworthy”), involved 20 items. Items were scored on a 7-point scale of 1 (*disagree completely*), 2 (*disagree*), 3 (*disagree slightly*), 4 (*neutral-neither agree nor disagree*), 5 (*agree slightly*), 6 (*agree*), and 7 (*agree completely*).

Table 1
Participant Demographic Characteristics

	AUS	USA	NZ	PHI	CHI	MAL	AUT	All
Age								
18 years	40 19.6%	12 6.0%	150 68.5%	44 20.1%	103 44.2%	1 0.9%	6 6.9%	356 29.1%
19 years	50 24.5%	24 12.1%	47 21.5%	61 27.9%	44 18.9%	1 0.9%	15 17.2%	242 19.1%
20 years	22 10.8%	46 23.1%	6 2.7%	58 26.5%	49 21.0%	21 19.4%	9 10.3%	211 16.6%
21 years	29 14.2%	47 23.6%	1 0.5%	31 14.2%	20 8.6%	15 13.9%	12 13.8%	155 12.2%
22 years	21 10.3%	42 21.1%	1 0.5%	18 8.2%	14 6.0%	30 27.8%	11 12.6%	137 10.8%
23+	42 20.6%	28 14.1%	14 6.4%	7 3.2%	3 1.3%	40 46.1%	34 39.1%	168 7.1%
Females	138 67.6%	101 50.8%	178 81.3%	145 66.2%	154 66.1%	40 37.0%	70 80.5%	826 65.1%
Undergraduate	204 100%	199 100%	218 99.5%	219 100%	232 99.6%	108 100%	72 82.8%	1252 98.7%
Paid work experience	135 66.2%	182 91.5%	188 85.8%	77 35.2%	162 70.1%	86 79.6%	77 88.5%	907 71.6%
Volunteer experience	143 70.1%	168 84.4%	154 70.3%	159 72.6%	177 76.0%	89 82.4%	54 62.1%	944 74.4%
Citizenship status								
Citizen	190 93.1%	194 97.5%	219 100%	219 100%	163 70.0%	108 100%	60 69.0%	1153 90.9%
Permanent resident	14 6.9%	5 2.5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	19 1.5%
Other	0 0.0%	0 0.0%	0 0.0%	0 0.0%	70 30%	0 0.0%	27 31.0%	29 2.3%
SES								
Low-income	17 8.3%	18 9.0%	7 3.2%	8 3.7%	19 8.2%	31 28.7%	3 3.4%	103 8.1%
Lower middle	53 26.0%	49 24.6%	29 13.2%	23 10.5%	62 26.6%	18 16.7%	7 8.0%	241 19.0%
Middle class	89 43.6%	86 43.2%	99 45.2%	126 57.5%	133 57.1%	48 44.4%	45 51.7%	626 49.3%
Upper middle	40 19.6%	44 22.1%	75 34.2%	50 22.8%	18 7.7%	9 8.3%	31 35.6%	267 21.0%
High-income	5 2.5%	2 1.0%	9 4.1%	12 5.5%	1 0.4%	2 1.9%	1 1.1%	32 2.5%
Ethnic background								
African	1 0.49%	6 3.02%						7 0.55%
Indigenous/Maori	4 1.96%	22 11.06%	15 6.85%					41 3.23%
Anglo/Pakiha	69 33.82%	101 50.75%	178 81.28%					348 27.42%
Europeans	82 40.20%	23 11.56%					7 8.05%	112 8.83%
Austrian							56 64.37%	
German							19 21.84%	
Asian/Pacific	28 13.73%	27 13.57%	5 2.28%					60 4.73%

Table 1 (continued)

	AUS	USA	NZ	PHI	CHI	MAL	AUT	All
Filipino				200 91.32%				200 15.76%
Macau					163 69.96%			163 12.84%
Hong Kong					9 3.86%			9 0.71%
Mainland Chinese					59 25.32%			59 4.65%
Malay						21 19.44%		21 1.65%
Chinese Malaysian						7 6.48%		7 0.55%
Indian Malaysian						3 2.78%		3 0.24%
Sabahan						66 61.11%		66 5.20%
Sarawakian						9 8.33%		9 0.71%
Multicultural	20 9.80%	20 10.05%	21 9.59%	19 8.68%	2 0.86%	2 1.85%	5 5.75%	89 7.01%
Mother tongue								
English	182 89.2%	189 95.0%	209 95.4%	32 14.7%	3 1.3%	9 8.3%	0 0.0%	624 49.2%
Chinese	0 0.0%	0 0.0%	0 0.0%	18 8.3%	229 98.3%	0 0.0%	0 0.0%	247 19.5%
German	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	79 90.8%	79 6.2%
Other	22 10.8%	10 5.0%	10 4.6%	168 77.1%	1 0.4%	99 91.7%	8 9.2%	318 25.1%
Total	204	199	219	219	233	108	87	1,269

Note. AUS = Australia; USA = United States; NZ = New Zealand; PHI = Philippines; CHI = China (Macao); MAL = Malaysia (Sabah); AUT = Austria.

The scale was developed and validated in student samples ($N = 1,516$) from the current seven countries (with Malaysian samples drawn from both Kuala Lumpur and Sabah). Psychometric properties of SMS are reported in Kashima et al. (2021).

Briefly, multigroup confirmatory factor analysis supported full scalar invariance of the scale in two between-culture comparisons (Australia & the United States; Australia & Austria), and partial scalar invariance in comparisons of all countries, omitting the Understand motive. This meant that cross-cultural comparisons of means are justified for the Belong, Control, Esteem, and Trust motives in all countries—including China, Malaysia, and the Philippines—and that within-culture comparisons of the means and cross-cultural comparisons of correlations are justified for all five motives. The construct validity of the subscales was further established by demonstrating the expected presence and

absence of correlations with several individual difference variables within each cultural sample.

The subscales had good internal consistency reliability, $\alpha_s = .74-.79$ in the whole sample. The whole scale (average of 20 items) had α_s ranging from .84 to .90 (see Table 2). We exercised caution when comparing this score across cultural groups as the scale involved the Understand subscale, which did not permit comparison of the mean.

Global self-esteem. The Rosenberg Self-esteem Scale (Rosenberg, 1965) was used to measure global self-esteem. Each of 10 items was rated on a 4-point scale of 1 (*strongly disagree*), 2 (*disagree*), 3 (*agree*), and 4 (*strongly agree*). In questionnaires in Chinese, Malay, and German, the previously translated versions of the Rosenberg Self-Esteem Scale were used (Du et al., 2013; Jamil, 2006; von Collani & Herzberg, 2003).

Table 2
Descriptive Statistics of Perceived Societal Threats and Correlation With Social Motives

	Perceived Societal Threats			Total Social Motives			Global Self-Esteem		
	α	M	SD	α	M	SD	α	M	SD
Whole sample	.71	1.01	0.89	.88	5.10	0.74	.88	27.9	5.47
Australia	.63	0.92	0.77	.85	5.09	0.67	.90	26.6	5.86
USA	.66	0.73	0.88	.89	4.93	0.90	.91	29.3	6.48
New Zealand	.58	1.00	0.71	.86	5.13	0.69	.88	27.5	5.25
Philippines	.82	1.19	1.11	.84	5.40	0.63	.87	27.3	5.04
Macao, China	.70	0.96	0.86	.90	5.08	0.68	.83	26.9	3.74
Saba, Malaysia	.75	1.20	0.92	.89	5.20	0.76	.80	29.0	5.15
Austria	.63	1.29	0.71	.86	4.64	0.76	.89	31.4	5.73

Analytic Strategy

Prior to hypothesis testing, we examined the psychometric properties of the measures of perceived societal threats and global self-esteem. First, exploratory factor analyses (EFA) were performed within each sample. If the EFA supported a similar factor structure across samples, multi-group confirmatory factor analysis would follow for global self-esteem, but not for perceived societal threats.

Next, we examined if each item in the measure of perceived societal threat was indeed perceived as an adverse condition on the rise in all groups. Then, the average of relevant perceived societal threat items was correlated with SMS in the whole sample to test H1. This analysis was repeated, using each of five SMS subscales separately to probe whether perceived societal threat was associated primarily with the Control motive (Exploratory Hypothesis 1) or more broadly with all core motives. To adjust for multiple comparisons (e.g., Bonferroni procedure), we adjusted α to .01 (i.e., $.05 \div 5 = 0.01$).

We then enquired whether the relationship was stronger in the East compared to the West (Exploratory H2a), using a moderator model via the PROCESS Macro Version 3.4 for SPSS (A. F. Hayes, 2019). Perceived societal threat was the independent variable (X), the SMS score was the dependent variable (Y), the East vs. West contrast (East/West) was a moderator (M), and gender and age were covariates. The Philippines, China, and Malaysia were coded as 0 and the remaining four countries were coded as 1 for the moderator. The independent variable was centred within the program for all analyses. The interaction between perceived societal threat and the moderator underlined the exploratory hypothesis. The analysis was repeated by using the Control motive as the dependent variable.

Given that SMS subscales achieved only partial scalar invariance, it was important to examine the results separately in each cultural sample before drawing conclusions. Consequently, supplementary analyses were run to

probe the relationship between perceived societal threats and SMS in each cultural sample (using $\alpha = .007$; $.05 \div 7 = 0.0071$), and for the relationship between perceived societal threats and each SMS subscale in each cultural sample (using $\alpha = .001$; $.05 \div 35 = 0.0014$).

To examine the moderator role of global self-esteem (H2), we tested a moderator model using the PROCESS Macro Version 3.4 for SPSS (A. F. Hayes, 2019). Perceived societal threat was the independent variable (X), SMS was the dependent variable (Y), global self-esteem was a moderator (M), and gender and age were covariates. The interaction between perceived societal threat and the moderator underlined the hypothesis. To probe if this model fits primarily for the Control motive (Exploratory H1) or more generally to all core motives, we also ran the analysis with each SMS subscale separately, $\alpha = .01$. We further explored whether the moderator model fit better in the Eastern samples compared to the Western samples (i.e., Exploratory H2b) by adding the East vs. West contrast as a second moderator (M) to the model. A three-way interaction of threat, self-esteem, and East vs. West would underline the exploratory hypothesis. Follow-up supplementary analyses were run to probe self-esteem moderation of threat–SM relationship in each cultural sample (using $\alpha = .007$).

We analysed open-ended responses to the question “What is the biggest societal change that we are facing now in this country?” using topic modelling, known as latent Dirichlet allocation (Blei *et al.*, 2003). Topic modelling aims to uncover latent semantic clusters embedded in the participants’ responses. The model outputs the words that occur within different topics and the distribution of these topics across responses based on word co-occurrences. The topics are then labelled by researchers based on their most frequently co-occurring words. In addition to efficiency, the procedure can reduce researcher biases in topic identification relative to the traditional content analysis (Nicolas *et al.*, 2021). All non-English responses were first translated into English

by the multilingual authors. We will report on the eight topics extracted next and overview their relations to perceived societal threats measured. Full results are found in the Supporting information.

Results

Psychometric Properties of the Scales

Perceived societal threats.. EFA found that the primary factor accounted for between 33% (Australia) and 48% (the Philippines) of the total variance in perceived societal threats. In all samples, eigenvalues suggested the existence of a second factor (using the criterion >1.0) accounting for between 15% (New Zealand) and 21% (Malaysia) of the variance, except for the Filipino sample showing no second factor. Thus, there were differences in factor structure. However, a single-factor solution led all items to load significantly on the primary factor in all countries, except for urbanisation in New Zealand.² The measure of perceived societal threat was constructed by averaging scores on those seven items and then subtracting 4 from the mean so that positive values show increases in threats and that negative values indicate decreases. The α ranged from .58 to .82. It was highest in the Philippines and lowest in New Zealand (see Table 3). Intercorrelations among items differed considerably across cultural samples. More important, in all cultural samples, item means were all higher than the scale midpoint (i.e., given the scoring, midpoint = 0), $p < .001$, suggesting that these societal changes were perceived as likely to rise in the future in all countries.

Global self-esteem.. EFA indicated that the first factor explained at least 50% of variance in Australia, the United States, and Australia, although based on

eigenvalues (>1.0) a second factor could also be extracted in these countries. In New Zealand, the Philippines, and China, the first factor was slightly smaller than 50% (though larger than 40%), and based on eigenvalues, a second factor could be extracted. Only in Malaysia, a three-factor solution was possible with eigenvalues larger than 1. Given these sample differences, cross-cultural invariance testing was not conducted.³ We proceeded to use the scale because coefficient α demonstrated good internal consistency in all samples, ranging from .80 (Malaysia) to the top of .91 (the United States). Caution is warranted, however, when interpreting the results of the later pancultural analysis.

Global self-esteem was highest in Austria, followed by the United States and Malaysia. It was lowest in Australia, followed by China (see Table 2). The Australian mean (26.6) was significantly lower than the Australian university mean of 30.0, $p < .001$, across 141 studies (Hamamura & Septarini, 2017). Self-esteem and perceived societal threats were uncorrelated, except in New Zealand and the Philippines where they were weakly negatively correlated.

Correlation Between SMS and Perceived Societal Threats (H1)

As expected, correlation between SMS and perceived societal threats was positive, $r = .17$, and significant, $p < .001$, in the whole sample. To explore if the correlation was limited primarily to Control, we correlated subscales of SMS with perceived societal threats. The association was indeed more robust for Control, $r = .23$, $p < .001$, than for other subscales. The second strongest correlation emerged with Esteem, $r = .15$, $p < .001$, followed by Belong, $r = .10$, $p < .001$, and then Trust and Understand, $r_s = .08$, $p < .01$.

Table 3
Beliefs About Societal Threats in the Seven Countries

	Whole Sample	Australia	USA	New Zealand	Philippines	China (Macao)	Malaysia (Sabah)	Austria
Natural disaster	1.32	1.27	0.81	1.32	1.62	1.24	1.47	1.98
Lack of clean air and water	1.21	1.07	0.90	1.49	1.54	1.17	1.07	1.61
Disparity	1.06	1.11	0.56	1.30	0.98	1.03	0.97	1.52
Urbanisation	0.99	0.76	0.53	0.67	1.29	1.22	1.31	0.71
Residence instability	0.93	0.73	0.65	0.86	1.26	0.86	1.20	1.39
Lack of respect for traditions	0.91	0.90	1.19	1.06	1.05	0.64	0.89	1.07
Human violence	0.63	0.58	0.49	0.34	0.58	0.53	1.40	0.78
<i>M</i>	1.01	0.92	0.73	1.01	1.19	0.96	1.19	1.29

Note. All means are significantly larger than 0, $p < .001$, which suggests respondents expected that these threats would increase over the following 20 years.

As to whether the relationship was stronger in the East than in the West, no supporting evidence was found: for the total SMS, the Threat \times Culture interaction coefficient = .036, $SE = .046$, $t(1263) = 0.78$, $CI [-0.054, 0.125]$, $p = .43$; and for Control, coefficient = .096, $SE = .061$, $t(1263) = 1.57$, $CI [-0.024, 0.215]$, $p = .12$.⁴ Supplementary analyses further examined each cultural sample. On one hand, the SMS–perceived societal threat link was significant and the strongest in the United States, $r = .254$, $p < .001$, followed by New Zealand, $r = .233$, $p < .001$, and China, $r = .210$, $p < .001$. On the other hand, the Control–perceived societal threat link was significant and the strongest in the United States, $r = .342$, $p < .001$, followed by China, $r = .235$, $p < .001$ (see Table 4). In short, the results did not indicate clear East–West differences.⁵

Self-Esteem Moderation (H2)

A significant self-esteem moderation effect was found when perceived societal threat was regressed on SMS, self-esteem, and their interaction, $t(1263) = -3.98$, $p = .0001$. The pattern of interaction indicated that the higher the perceived threat, the higher the SMS when the level of self-esteem was low ($-1 SD$): simple slope coefficient = .22, $SE = .03$, $t(1263) = 7.09$, $p < .0001$. Conversely, the simple slope was nonsignificant when the level of self-esteem was high ($+1 SD$): coefficient = .04, $SE = .03$, $t(1263) = 1.39$, $p = .16$. The pattern was consistent with the hypothesis. Next, we examined the presence of moderation with each SMS subscale. The Threat \times Self-Esteem interaction was significant for Control, $t(1263) = -3.64$, $p = .0003$,

Esteem, $t(1263) = -3.55$, $p = .0004$, and Trust, $t(1263) = -2.61$, $p = .009$, and the pattern was consistent with expectations. The higher the perceived threat, the higher the Control subscale when the level of self-esteem was low, $ps < .001$, but when the level of self-esteem was high, the trend was weaker though still significant for Control, $p = .002$, but nonsignificant for Esteem, $p = .32$, and Trust, $p = .95$. Taken together, the positive tie between perceived societal threat and social motives was stronger among individuals with lower levels of self-esteem, although the tie with the Control motive was significant even for high self-esteem individuals.

Potential East/West differences in self-esteem moderation was explored. Recall that the threat–SMS relationship did not differ between the East and the West. The new analysis showed a significant Threat \times Self-Esteem two-way interaction, $t(1263) = -2.14$, $p < .0001$, and a significant Threat \times Self-Esteem \times East/West three-way interaction, $t(1263) = -4.26$, $p = .03$. The three-way interaction indicated that the two-way interaction effect was significant and larger in the West, $F(1, 1259) = 22.26$, $p < .0001$, compared to the East where it was nonsignificant, $F(1, 1259) = 1.41$, $p = .23$. Further, when the level of self-esteem was low, the threat–Control tie was stronger in the West (.28), $SE = .04$, $t(1263) = 6.30$, $p < .0001$, than in the East (.15), $SE = .04$, $t(1263) = 3.39$, $p = .0007$; however, when self-esteem was high, it was not significant in both the East and the West, $ps = .14$ and $.83$, respectively. Supplementary analyses were conducted to test the self-esteem moderation in each cultural sample. The results of these analyses clarified that global self-esteem

Table 4

Correlation (r) Between Perceived Societal Threats and Social Motive Scale in the Whole Sample and Each Cultural Sample

	<i>N</i>	Total	Belong	Understand	Control	Esteem	Trust
Whole sample	1,269	.174***	.099***	.079**	.227***	.149***	.082**
Australia	204	.083	.003	.061	.129	.107	.006
USA	199	.254***	.069	.186**	.342***	.232***	.085
New Zealand	219	.233***	.218***	.059	.183**	.193**	.163*
Philippines	219	.064	.016	.082	.154	.082	-.078
Macao, China	233	.210***	.192**	.119	.235***	.114	.141
Saba, Malaysia	108	.169	.066	.101	.246**	.074	.160
Austria	87	.207	.136	-.064	.306**	.210	.176

Notes. We interpreted results by using $p < .001$ as criteria for SMS subscales because a total of 35 correlations (7 Countries \times 5 motives) were tested.

* $p < .01$

** $p < .007$

*** $p < .001$.

Table 5
Relationships Between Social Motives and Societal Threat, and Self-Esteem Moderation

	Societal Threats (<i>X</i>)				Self-Esteem (<i>M</i>)				Threat × Self-Esteem (<i>XM</i>)			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Australia	0.06	.06	1.00	.316	0.04	.08	0.44	.661	−0.20	.10	−2.04	.043
USA	0.20	.07	2.89	.004	0.00	.09	−0.01	.990	−0.35	.10	−3.31	.001
New Zealand	0.15	.06	2.24	.026	−0.09	.09	−1.09	.276	−0.17	.10	−1.69	.093
Philippines	0.03	.04	0.83	.408	−0.07	.09	−0.74	.460	0.01	.08	0.14	.888
China	0.15	.05	2.86	.005	0.12	.12	1.00	.319	−0.33	.14	−2.35	.019
Malaysia	0.13	.07	1.82	.072	−0.17	.15	−1.15	.251	0.14	.15	0.96	.340
Austria	0.20	.11	1.86	.066	−0.22	.14	−1.57	.120	−0.35	.22	−1.60	.114

Note. The bold figures are significant when using a Bonferroni-adjusted $\alpha = .007$ level.

moderated the threat–SMS relationship most strongly and significantly in the United States. (see Table 5).

Contents of Societal Threats Across Societies

We probed the contents of perceived societal threats, first by comparing the ratings across samples. “Natural disaster” scored the highest and “human violence” the lowest in the whole sample, reflecting the trend in Australia, New Zealand, the Philippines, and China. The country that showed the highest overall mean was Austria, somewhat unexpectedly. This may be explained partly by the refugee crisis in Europe that peaked in 2016–2017 (e.g., Zunes, 2017); consistent with this view, “residential instability” was highest in Austria among the seven countries. The Philippines scored second highest overall. Cronbach’s α was highest in this group, implying that all threats were perceived as related in the Philippines. Some samples had lower α s likely because some threats were less expected than others in the society. We next examined if spontaneous responses about “biggest societal change in the country” have captured the societal threats included in our scale to probe the scale’s external validity.

The text responses were analysed with topic modelling to examine latent semantic clusters. Details are reported in the Supporting information. Eight topics were identified and labelled based on the most frequently co-occurring words. The degree to which each respondent’s response reflected each topic was computed, and the sample means were computed. As presented in Figure 1, the patterns across samples revealed both society-specific and more generally shared concerns among young adults.

Topic 1 (*Economic and population growth*) was high specifically in China and tied to income inequality (disparity, which was one of the highest societal threats in the Chinese sample) as “rich,” and “poor” were distinctive

about the topic. Topic 3 (*Rodrigo Duterte*) was highly specific to the Filipino group and reflected concerns with the populist President’s extrajudicial killings of drug users, as indicated by words such as “drugs” and “president”. It chimed in with Topic 5 (*Political leadership*), a concern more widely shared, but the Filipino mean was the highest. We did not include political issues in the perceived societal threats scale. Topic 4 (*Equal rights for LGBT*) was highest in three English-speaking countries and the most prominent topic in the United States sample, who had the lowest overall threat perception. In contrast, more shared across samples (except for the Philippines and China) were Topic 2 (*Gender, race, and politics*), Topic 6 (*Value change*) (potential tie with “lack of respect for traditions,” which was low in the Chinese groups), and Topic 7 (*Social media*), which had a tie to climate change because it included the words “global” and “warming.” Malaysia was especially high on the latter two topics, suggesting that there are large societal differences within Southeast Asia. Finally, Topic 8 (*Culture and justice*) involved “gun” as part of its associated words and was highest in the United States sample. In all, the links between observed topics of social changes and the perceived societal threats questionnaire were evident.

Discussion

The present study examined the psychological link between perceived societal threat and core social motives, and the moderation of this link by global self-esteem. Data revealed that the university students who perceived societal threats to be more on the rise in the following 20 years tended to report stronger core social motives. Consistent with the literature that has highlighted the critical role of the Control motive in threat reactions (e.g., Jonas et al., 2014), the association between Control and perceived societal threat was most robust among all core motives. Further, the strength of

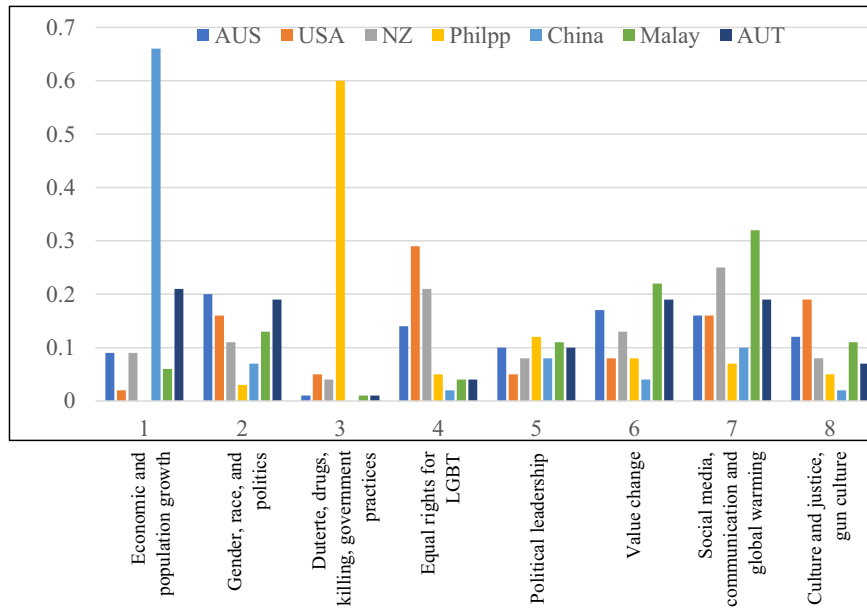


Figure 1 Eight topics of the “biggest social change” in the country, emerging from participants’ responses. AUS = Australia; USA = United States; NZ = New Zealand; PHI = Philippines; China = China (Macao); Malay = Malaysia (Sabah); AUT = Austria.

the associations (both total SMS and Control) did not differ between the East and the West, despite the cross-cultural literature suggesting that a collective action is more likely to be part of cultural scripts in the East than in the West (e.g., Triandis, 1989) and the higher prominence of personal as opposed to collective control in the latter than in the former (e.g., Ji et al., 2001; Sastry & Ross, 1998; Weisz et al., 1984). Instead, countries that showed reliable links were the United States, New Zealand, and China.

Societal threats are so large scale that individuals cannot manage them by themselves. Uncontrollable for each individual as they may be, however, the communities that need to mitigate the damages of acute catastrophes—or for that matter, even longer term ambient threats—must coordinate their activities to manage the threats in some way. Here, individuals’ *social* engagement becomes essential. In particular, the core social motive of Control motivates individuals to be effective and competent in coordinating with others to achieve a collective goal to manage the large-scale societal threat. This motive would be especially beneficial in such contexts. It may be that in the United States, New Zealand, and China, in particular, there are memories of effective collective action, provided by government and communities for instance, during a large-scale calamity in recent times. Those memories may tie perceived increases in societal threats with social motives. Future research should examine this possibility.

We also found support for our hypothesis that global self-esteem moderates the threat–motive link. As expected, it was among young adults with lower self-esteem that the threat–SMS tie was robust. In contrast, this tie was faint for those with higher self-esteem, although the threat–Control tie was significant for those with levels of self-esteem at 1 *SD* above the mean. The present result was consistent with previous research that has reported on the robustness of those with high self-esteem when faced with threats (e.g., McGregor et al., 2007; Rosenberg et al., 1995; Yanagisawa et al., 2016). Interestingly, our results also indicated that the threat–SMS tie among those with low self-esteem was even stronger in the West than in the East, particularly in the United States. Previous studies that manipulated threat have shown that high levels of self-esteem can buffer the impacts of psychological threats in Asian countries as well as North American and other countries in the West (e.g., Brockner & Chen, 1996; Guan et al., 2020; E. S. Kashima et al., 2004; Onoda et al., 2010; Routledge et al., 2010; Yanagisawa et al., 2016). Moreover, evidence to suggest global self-esteem’s moderation effect is more robust in the West than in the East has been mixed (e.g., Brockner & Chen, 1996; E. S. Kashima et al., 2004; Laurin et al., 2018). Our results also indicated that cultural differences were stronger at low rather than at high levels of self-esteem. While high self-esteem individuals failed to show a threat–SMS tie similarly in the West and the East, in the low self-

esteem group, the threat–SMS tie was stronger in the West than in the East.

In the United States sample, where perceived societal threat correlated robustly with at least two core motives (Control and Esteem), perceived societal threat was the lowest and global self-esteem was one of the highest among the seven countries. In contrast, in two samples that found no clear evidence of threat–SMS tie (i.e., Australians and Filipinos), perceived societal threat was higher, and global self-esteem was lower. Nonetheless, in the Chinese sample, where the levels of perceived threat and self-esteem were similar to those in Australia, some evidence of both the threat–SMS tie and the self-esteem moderation was found. One possible explanation for the lack of evidence in Australia may relate to the unusually low level of global self-esteem in the present sample; thus, replication is required.

Implications

The present study is the first to examine the BUCET framework in the context of societal threats. Our theory assumes that social motives provide potential psychological mechanisms through which societal threats are managed; that is, social coordination. As foreseeable but unavoidable, societal threats require resilience to temper them. Stronger social motives, upon a reminder of imminent societal threats, would prepare people for social engagement and assist positive adaptation. Nonetheless, the correlational data reported here only provide limited support for such a theory. Alternatively, higher social motives could increase people's (especially low self-esteem individuals') tendencies to acknowledge rather than deny and suppress the existence and severity of societal threats. Future research will have to clarify this using longitudinal and experimental designs. Reminders of societal threats could generate stronger social motives and/or stronger social motives may lead individuals to accept and face more societal threats.

In addition to the large-scale benefits afforded by cooperation itself, social motives may provide people with psychological benefits such as anxiety reduction and realignment of personal goals. Increased social motives could stop the downward spiral of negative thoughts, anxiety, stress, and negative interpersonal behaviours. Guiding the person's attention to social relations may increase felt security, thereby subsiding threats. Social motives and the social engagement that follows may provide the person with personal goals that are more consistent with collective regulations of societal threats. As Rutter (1993) stated, "Protection does not reside in the psychological chemistry of the moment but rather in the ways in which people deal with life changes and in what they do about their stressful or

disadvantaging circumstances" (p. 630). Social motives may function similarly to other psychological constructs that aid long-term adaptation to life changes, such as possible selves (Markus & Nurius, 1986), personal projects (Little, 1983), and personal striving (Cantor & Kihlstrom, 1987).

We also believe that the protective functions of social motives hinge on society and culture. Social motives can be greatly influenced by successful instances of collective regulation in society. Individuals who witness effective rescue operations and enhanced social connection in communities during a disaster, for instance, may learn the importance of social engagement and its implications in association with their thoughts of societal threats. In contrast, witnessing failed operations and broken community ties, if associated in memory with societal threats, would mean little motivation for social engagement when societal threats are reminded in future. Cultural constructions of the future in the society are also relevant, including future visions laid out by governments, and value priorities and motivational orientations (promotion vs. prevention focuses) emphasised by educational institutions and community groups. Appeals for solidarity, perseverance, and social responsibility and care for the vulnerable may strengthen the Belong and Trust motives whereas emphasis on risk-taking may weaken the Control motive (Hangen et al., 2019).

Limitations and Future Directions

This study measured societal threats as the degree to which the respondents believed specific societal challenges would increase in society 20 years into the future. We used a fixed set of societal challenges for participants to rate, which were selected by the researchers. One limitation of this study is that the actual likelihood of each challenge and its likely impacts in the different countries was not taken into account. Using country-specific sets of societal threats, comparable in their likelihood and impacts across countries, would increase the between-culture comparability of the results.

The use of multiple measures to gauge personal adaptation to threats is also recommended, including future life satisfaction, positive and negative affect, and flourishing, for instance. Furthermore, a broader range of variables that gauge adaptation to threats can be examined, including the sense of life's stability, order, and meaningfulness, and intergroup attitudes, empathy, and prosociality.

In the present study, we specifically used student samples who are expected future leaders in their respective societies. Future research should examine personal adaptation to societal threats in young adults with lower levels of education and socioeconomic status and their

older age cohorts. Future life satisfaction is known to be higher among younger than older adults (Busseri, 2013), and this may relate to the psychological impacts of societal threats. Effects of personalities such as optimism, hardiness, approach/avoidance tendency, and threat sensitivity can be examined if they moderate the path between threats and social motives, or the path between social motives and an outcome variable. It is also important that future research identify sociocultural variables that moderate the path between threats and adaptation, as such knowledge would contribute to developing a resilient society.

Conclusion

We used SMS based on the conceptual framework of core social motives, the BUCET, to examine the relationship between social motives and perceived societal threats. The study found evidence that young adults who perceived societal threats to be on the rise in the future tended to report stronger social motives, including needs to Belong, Understand, Control, Esteem, and Trust, especially for those who were low on self-esteem. The result reinforces the notion that social motives may serve adaptive functions by orienting the individual toward others to bond, share, fit in, and coordinate in contexts of salient societal threats. Our analysis also found cultural differences. The link between perceived societal threats and social motives was most robust in the United States, as was as the evidence for the self-esteem moderation. The study also demonstrates a potential use of the new scale of SMS. We propose that SMS can be used in future research on motivational processes to better understand the process of human adaptation to societal threats.

Conflict of Interest

There is no conflict of interest to declare.

Funding Statement

The authors did not receive any funding for the study.

Author Contributions

E. K. and S. F. contributed to the scale development. E. K., G. G., D. O., H. D., J. K., and G. N. developed the online questionnaire. H. D., J. K., and G. A. G contributed to the translation and back-translation of the questionnaire. E. K., N. P., D. O., H. D., J. K., and U. M. contributed to data analysis. G. N. conducted topic modelling; Y. K. contributed to technical supplement. E. K. wrote the initial draft; N. P. and U. M. made tables and figures. All authors commented on drafts at various stages; N. P. and U. M. assisted with the final manuscript.

Data Availability Statement

Data available on request from the authors.

Materials Availability Statement

The data that support the findings of this study are available upon request from the corresponding author.

Pre-registration Statement

The study was not pre-registered.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website.

End Notes

- 1 Due to delay in data collection, the sample size in Austria was smaller than in other countries. However, using G*Power Version 3.1, we concluded that all samples sizes exceeded the minimum amount of participants ($N = 79$) required to achieve adequate power, based on the following parameters: $1 - \beta = .80$, $\alpha = .05$, and $f^2 = .08$ (i.e., a small/medium effect size).
- 2 We also computed an alternative scale of societal threats for New Zealand by omitting the urbanisation item. This improved the internal consistency to $\alpha = .66$. When this six-item scale was used, results to be reported below did not change.
- 3 One of the global self-esteem items ("I wish I could have more respect for myself") did not cohere with other items in China and Malaysia. Without this item, the alpha would be .86 in China and .84 in Malaysia. Nonetheless, results remained consistent regardless of including or not including his item.
- 4 The remaining motives also showed no East–West differences.
- 5 Also note that perceived societal threats correlated significantly and positively with esteem, $r = .23$, $p < .001$, in the United States, and with Belong, $r = .22$, $p < .001$, in New Zealand.

References

- Arcaya, M., Raker, E. J., & Waters, M. C. (2020). The social consequences of disasters: Individual and community change. *Annual Review of Sociology*, *46*, 22–54. <https://doi.org/10.1146/annurev-soc-121919-054827>
- Bain, P., Hornsey, M., Bongiorno, R., Kashima, Y., & Crimston, D. (2013). Collective futures: How projections about the future of society are related to actions and attitudes supporting social change. *Personality and Social Psychology Bulletin*, *39*(4), 523–539. <https://doi.org/10.1177/0146167213478200>
- Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet allocation. *Journal of Machine Learning Research*, *3*, 993–1022.
- Bowlby, J. (1982). *Attachment and loss: Vol I. Attachment* (2nd ed.). Basic Books.

- Brockner, J., & Chen, Y. R. (1996). The moderating roles of self-esteem and self-construal in reaction to a threat to the self: Evidence from the People's Republic of China and the United States. *Journal of Personality and Social Psychology*, 71(3), 603. <https://doi.org/10.1037/0022-3514.71.3.603>
- Busseri, M. A. (2013). How dispositional optimists and pessimists evaluate their past, present and anticipated future life satisfaction: A lifespan approach. *European Journal of Personality*, 27(2), 185–199. <https://doi.org/10.1002/per.1854>
- Cantor, N., & Kihlstrom, J. F. (1987). *Personality and social intelligence*. Pearson College Division.
- Clayton, S., & Karazsia, B. T. (2020). Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology*, 69, <https://doi.org/10.1016/j.jenvp.2020.101434>. 101434
- Corning, A. F. (2002). Self-esteem as a moderator between perceived discrimination and psychological distress among women. *Journal of Counseling Psychology*, 49(1), 117. <https://doi.org/10.1037/0022-0167.49.1.117>
- DeWall, C. N., Twenge, J. M., Koole, S. L., Baumeister, R. F., Marquez, A., & Reid, M. W. (2011). Automatic emotion regulation after social exclusion: Tuning to positivity. *Emotion*, 11(3), 623–636. <https://doi.org/10.1037/a0023534>
- Dodgson, P. G., & Wood, J. V. (1998). Self-esteem and the cognitive accessibility of strengths and weaknesses after failure. *Journal of Personality and Social Psychology*, 75, 178–197. <https://doi.org/10.1037/0022-3514.75.1.178>
- Du, H., Jonas, E., Klackl, J., Agroskin, D., Hui, E. K. P., & Ma, L. (2013). Cultural influences on terror management: Independent and interdependent self-esteem as anxiety buffers. *Journal of Experimental Social Psychology*, 49, 1002–1011. <https://doi.org/10.1016/j.jesp.2013.06.007>
- Ellis, B. H., & Abdi, S. (2017). Building community resilience to violent extremism through genuine partnerships. *American Psychologist*, 72, 289–300. <https://doi.org/10.1037/amp0000065>
- Fincher, C. L., Thornhill, R., Murray, D. R., & Schaller, M. (2008). Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society B: Biological Sciences*, 275(1640), 1279–1285. <https://doi.org/10.1098/rspb.2008.0094>
- Fiske, S. T. (2018). *Social beings: Core motives in social psychology*. John Wiley & Sons.
- Fiske, S. T., & Dépret, E. (1996). Control, interdependence and power: Understanding social cognition in its social context. *European Review of Social Psychology*, 7(1), 31–61. <https://doi.org/10.1080/14792779443000094>
- Fiske, S. T., Morling, B., & Stevens, L. E. (1996). Controlling self and others: A theory of anxiety, mental control, and social control. *Personality and Social Psychology Bulletin*, 22(2), 115–123. <https://doi.org/10.1177/0146167296222001>
- Gailliot, M. T., Schmeichel, B. J., & Baumeister, R. F. (2006). Self-regulatory processes defend against the threat of death. *Journal of Personality and Social Psychology*, 91, 49–62. <https://doi.org/10.1037/0022-3514.91.1.49>
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliah, A., Ang, S., Arndt, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Ferrer, M., Fischlmayr, I. C., . . . Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, 332(6033), 1100–1104. <https://doi.org/10.1126/science.1197754>
- Greenaway, K. H., Storrs, K. R., Philipp, M. C., Louis, W. R., Hornsey, M. J., & Vohs, K. D. (2015). Loss of control stimulates approach motivation. *Journal of Experimental Social Psychology*, 56, 235–241. <https://doi.org/10.1016/j.jesp.2014.10.009>
- Greenberg, J., Solomon, S., Pyszczynski, T., Rosenblatt, A., Burling, J., Lyon, D., Simon, L., & Pinel, E. (1992). Why do people need self-esteem? *Journal of Personality and Social Psychology*, 63(6), 913–922. <https://doi.org/10.1037/0022-3514.63.6.913>
- Grossmann, I., & Varnum, M. E. (2015). Social structure, infectious diseases, disasters, secularism, and cultural change in America. *Psychological Science*, 26(3), 311–324. <https://doi.org/10.1177/0956797614563765>
- Guan, L., Wu, T., Yang, J., Xie, X., Han, S., & Zhao, Y. (2020). Self-esteem and cultural worldview buffer mortality salience effects on responses to self-face: Distinct neural mediators. *Biological Psychology*, 155, 107944. <https://doi.org/10.1016/j.biopsycho.2020.107944>
- Hamamura, T., & Septarini, B. G. (2017). Culture and self-esteem over time: A cross-temporal meta-analysis among Australians, 1978–2014. *Social Psychological and Personality Science*, 8(8), 904–909. <https://doi.org/10.1177/1948550617698205>
- Hangen, E. J., Elliot, A. J., & Jamieson, J. P. (2019). Highlighting the difference between approach and avoidance motivation enhances the predictive validity of performance-avoidance goal reports. *Motivation and Emotion*, 43(3), 387–399. <https://doi.org/10.1007/s11031-018-9744-9>
- Hart, J., Shaver, P. R., & Goldenberg, J. L. (2005). Attachment, self-esteem, worldviews, and terror management. *Journal of Personality and Social Psychology*, 88(6), 999–1013. <https://doi.org/10.1037/0022-3514.88.6.999>
- Harter, S. (1978). Effectance motivation reconsidered: A developmental model. *Human Development*, 21, 34–64. <https://doi.org/10.1159/000271574>
- Hayes, A. F. (2019). *PROCESS macro for SPSS and SAS*. <http://proccsmacro.org/index.html>
- Hayes, J., Schimel, J., Williams, T. J., Howard, A. L., Webber, D., & Faucher, E. H. (2015). Worldview accommodation: Selectively modifying committed beliefs provides defense against worldview threat. *Self and Identity*, 14(5), 521–548. <https://doi.org/10.1080/15298868.2015.1036919>
- Heatherton, T. F., & Vohs, K. D. (2000). Interpersonal evaluations following threats to self: Role of self-esteem. *Journal of Personality and Social Psychology*, 78, 725–736. <https://doi.org/10.1037/0022-3514.78.4.725>
- Heine, S. J., & Hamamura, T. (2007). In search of East Asian self-enhancement. *Personality and Social Psychology Review*, 11(1), 4–27. <https://doi.org/10.1177/1088868306294587>
- Helm, P. J., Jimenez, T., Bultmann, M., Lifshin, U., Greenberg, J., & Arndt, J. (2020). Existential isolation, loneliness, and attachment in young adults. *Personality and Individual Differences*, 159, 109890. <https://doi.org/10.1016/j.paid.2020.109890>
- Hogg, M. A. (2007). Uncertainty–identity theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 39, pp. 69–126). Academic Press. [https://doi.org/10.1016/S0065-2601\(06\)39002-8](https://doi.org/10.1016/S0065-2601(06)39002-8)
- Intergovernmental Panel on Climate Change. (2014). *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on

- Climate Change [Core Writing Team, R. K. Pachauri & L. A. Meyer (Eds.)]. IPCC, Geneva, Switzerland.
- Jamil, M. B. Y. (2006). Validity and reliability study of Rosenberg Self-esteem Scale in Seremban school children. *Malaysian Journal of Psychiatry, 15*(2), 35–38.
- Jang, L., & Wang, J. (2009). Disaster resilience in a Hakka community in Taiwan. *Journal of Pacific Rim Psychology, 3*, 55–65. <https://doi.org/10.1375/prp.3.2.55>
- Ji, L. J., Nisbett, R. E., & Su, Y. (2001). Culture, change, and prediction. *Psychological Science, 12*(6), 450–456. <https://doi.org/10.1111/1467-9280.00384>
- Jocson, R. M., & Garcia, A. S. (2017). Low-income urban Filipino mothers' experiences with community violence. *International Perspectives in Psychology: Research, Practice, Consultation, 6*(3), 133–151. <https://doi.org/10.1037/ipp0000071>
- Jonas, E., & Fischer, P. (2006). Terror management and religion: Evidence that intrinsic religiousness mitigates worldview defense following mortality salience. *Journal of Personality and Social Psychology, 91*(3), 553–567. <https://doi.org/10.1037/0022-3514.91.3.553>
- Jonas, E., McGregor, I., Klackl, J., Agroskin, D., Fritsche, I., Holbrook, C., Nash, K., Proulx, T., & Quirin, M. (2014). Threat and defence: From anxiety to approach. In *Advances in experimental social psychology* (Vol. 49, pp. 219–286). Academic Press. <https://doi.org/10.1016/B978-0-12-800052-6.00004-4>
- Kashima, E. S., Beatson, R., Kaufmann, L., Branchflower, S., & Marques, M. D. (2014). Mortality salience and cultural cringe. *Journal of Cross-Cultural Psychology, 45*(10), 1534–1548. <https://doi.org/10.1177/0022022114543521>
- Kashima, E. S., Halloran, M., Yuki, M., & Kashima, Y. (2004). The effects of personal and collective mortality salience on individualism: Comparing Australians and Japanese with higher and lower self-esteem. *Journal of Experimental Social Psychology, 40*, 384–392. <https://doi.org/10.1016/j.jesp.2003.07.007>
- Kashima, Y., Bain, P., Haslam, N., Peters, K., Laham, S., Whelan, J., Bastian, B., Loughnan, S., Kaufmann, L., & Fernando, J. (2009). Folk theory of social change. *Asian Journal of Social Psychology, 12*(4), 227–246. <https://doi.org/10.1111/j.1467-839X.2009.01288.x>
- Kashima, E. S., Plusnin, N., Ochoa D.P., Du, H., Klackl, J., Ah Gang, G.C., Gan, S.W., Yaacob, S.N., Wu, S.L., Qumseya, T., Nicolas, G., Fiske, S.T. (2021). Social motives of university students in seven countries: Measurement development and validation. *Asian Journal of Social Psychology*. <http://dx.doi.org/10.1111/ajsp.12482>
- Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology, 95*(1), 18–35. <https://doi.org/10.1037/0022-3514.95.1.18>
- Kenrick, D., Griskevicius, V., Neuberg, S., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science, 5* (3), 292–314. <https://doi.org/10.1177/1745691610369469>
- Kobayashi, T., Yoshida, K., Takebayashi, Y., Goto, A., Kumagai, A., & Murakami, M. (2019). Social identity threats following the Fukushima nuclear accident and its influence on psychological distress. *International Journal of Disaster Risk Reduction, 37*, 101171. <https://doi.org/10.1016/j.ijdr.2019.101171>
- Kobetz, E., Menard, J., Kish, J., Bishop, I., Hazan, G., & Nicolas, G. (2013). Impacts of the 2010 Haitian earthquake in the Diaspora: Findings from Little Haiti, Miami, FL. *Journal of Immigrant and Minority Health, 15*, 442–447. <https://doi.org/10.1007/s10903-012-9635-1>
- Kuhl, J. (2000). A functional-design approach to motivation and self-regulation. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111–169). Academic Press.
- Laurin, K., Kay, A. C., & Landau, M. J. (2018). Structure and goal pursuit: Individual and cultural differences. *Advances in Methods and Practices in Psychological Science, 1*(4), 491–494. <https://doi.org/10.1177/2515245918797130>
- Lazarus, R. L., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology, 68*, 518–530. <https://doi.org/10.1037/0022-3514.68.3.518>
- Linville, P. W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. *Journal of Personality and Social Psychology, 52*, 663–676. <https://doi.org/10.1037/0022-3514.52.4.663>
- Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior, 15*, 273–309. <https://doi.org/10.1177/0013916583153002>
- Madsen, W., & O'Mullan, C. (2016). Perceptions of community resilience after natural disaster in a rural Australian town. *Journal of Community Psychology, 44*, 277–292. <https://doi.org/10.1002/jcop.21764>
- Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate withdrawal or reconnection? *Journal of Personality and Social Psychology, 92*, 42–55. <https://doi.org/10.1037/0022-3514.92.1.42>
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*(9), 954. <https://doi.org/10.1037/0003-066X.41.9.954>
- Masten, A. S. (2014). Global perspectives on resilience in children and youth. *Child Development, 85*(1), 6–20. <https://doi.org/10.1037/0003-066X.41.9.954>
- McDougall, W. (1908). *Introduction to social psychology*. Meuthen.
- McGregor, I., Gailliot, M. T., Vasquez, N. A., & Nash, K. A. (2007). Ideological and personal zeal reactions to threat among people with high self-esteem: Motivated promotion focus. *Personality and Social Psychology Bulletin, 33*(11), 1587–1599. <https://doi.org/10.1177/0146167207306280>
- McGregor, I., Nash, K., Mann, N., & Phillips, C. E. (2010). Anxious uncertainty and reactive approach-motivation (RAM). *Journal of Personality and Social Psychology, 99*(1), 133–147. <https://doi.org/10.1037/a0019701>
- Moksnes, U. K., Moljord, I. E., Espnes, G. A., & Byrne, D. G. (2010). The association between stress and emotional states in adolescents: The role of gender and self-esteem. *Personality and Individual Differences, 49* (5), 430–435. <https://doi.org/10.1016/j.paid.2010.04.012>
- Motoyoshi, T., Takao, K., & Ikeda, S. (2008). Determinants of household- and community-based disaster preparedness. *Japanese Journal of Social Psychology, 23*(3), 209–220. <https://doi.org/10.14966/jssp.KJ00004896217>
- Murray, S. L., Rose, P., Bellavia, G. M., Holmes, J. G., & Kusche, A. G. (2002). When rejection stings: How self-esteem constrains

- relationship-enhancement processes. *Journal of Personality and Social Psychology*, 83, 556–573. <https://doi.org/10.1037/0022-3514.83.3.556>
- Mussweiler, T., Gabriel, S., & Bodenhausen, G. V. (2000). Shifting social identities as a strategy for deflecting threatening social comparisons. *Journal of Personality and Social Psychology*, 79, 398–409. <https://doi.org/10.1037/0022-3514.79.3.398>
- Nicolas, G., Bai, X., & Fiske, S. T. (2021). Comprehensive stereotype content dictionaries using a semi-automated method. *European Journal of Social Psychology*, 51, 178–196. <https://doi.org/10.1002/ejsp.2724>
- Ntontis, E., Drury, J., Amlot, R., Rubin, G. J., & Williams, R. (2018). Emergent social identities in a flood: Implications for community psychosocial resilience. *Journal of Community & Applied Social Psychology*, 28, 3–14. <https://doi.org/10.1002/casp.2329>
- Okuyama, N., & Inaba, Y. (2017). Influence of natural disasters on social engagement and post-disaster well-being: The case of the Great East Japan Earthquake. *Japan and the World Economy*, 44, 1–13. <https://doi.org/10.1016/j.japwor.2017.10.001>
- Olson, M. (1965). *The logic of collective action*. Harvard University Press.
- Onoda, K., Okamoto, Y., Nakashima, K., Nittono, H., Yoshimura, S., Yamawaki, S., Yamaguchi, S., & Ura, M. (2010). Does low self-esteem enhance social pain? The relationship between trait self-esteem and anterior cingulate cortex activation induced by ostracism. *Social Cognitive Affective Neuroscience*, 5(4), 385–391. <https://doi.org/10.1093/scan/nsq002>
- Paton, D., Houghton, B. F., Gregg, C. E., McIvor, D., Johnston, D. M., Burgelt, P., Larin, P., Gill, D. A., Ritchie, L. A., Meinhold, S., & Horan, J. (2009). Managing tsunami risk: Social context influences on preparedness. *Journal of Pacific Rim Psychology*, 3, 27–37. <https://doi.org/10.1375/prp.3.1.27>
- Pinquart, M., & Silbereisen, R. (2004). Human development in times of social change. *International Journal of Behavioral Development*, 28(4), 289–298. <https://doi.org/10.1080/01650250344000406>
- Plusnin, N., Kashima, E. S., & Pepping, C. A. (2020). Romantic intimacy and terror management: Examining the mediating roles of felt security, relational self-esteem, and relational worldview defense. *Journal of Social and Personal Relationships*, 37(12), 2987–3005. <https://doi.org/10.1177/0265407520947820>
- Plusnin, N., Pepping, C. A., & Kashima, E. S. (2018). The role of close relationships in terror management: A systematic review and research agenda. *Personality and Social Psychology Review*, 22(4), 1–40. <https://doi.org/10.1177/1088868317753505>
- Prior, T., & Paton, D. (2008). Understanding the context: The value of community engagement in bushfire risk communication and education. Observations following the East Coast Tasmania bushfires of December 2006. *Australasian Journal of Disaster and Trauma Studies*, 2008(2), 1–15.
- Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin*, 130(3), 435–468. <https://doi.org/10.1037/0033-2909.130.3.435>
- Pyszczynski, T., Solomon, S., & Greenberg, J. (2015). Thirty years of terror management theory. *Advances in Experimental Social Psychology*, 52, 1–70. <https://doi.org/10.1016/bs.aesp.2015.03.001>
- Riblet, N., Stevens, S., Watts, B., & Shiner, B. (2020). A pandemic of body, mind, and spirit: The burden of “social distancing” in rural communities during an era of heightened suicide risk. *Journal of Rural Health*, 37(1), 207–210. <https://doi.org/10.1111/jrh.12456>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: Different concepts, different outcomes. *American Sociological Review*, 60(1), 141–156. <https://doi.org/10.2307/2096350>
- Routledge, C., Ostafin, B., Juhl, J., Sedikides, C., Cathey, C., & Liao, J. (2010). Adjusting to death: The effects of mortality salience and self-esteem on psychological well-being, growth motivation, and maladaptive behavior. *Journal of Personality and Social Psychology*, 99(6), 897–916. <https://doi.org/10.1037/a0021431>
- Rutjens, B. T., van Harreveld, F., & van der Pligt, J. (2010). Yes we can: Belief in progress as compensatory control. *Social Psychological and Personality Science*, 1(3), 246–252. <https://doi.org/10.1177/1948550610361782>
- Rutter, M. (1993). Resilience: Some conceptual considerations. *Journal of Adolescent Health*, 14, 626–631. [https://doi.org/10.1016/1054-139X\(93\)90196-V](https://doi.org/10.1016/1054-139X(93)90196-V)
- Sagala, S., Okada, N., & Paton, D. (2009). Predictors of intention to prepare for volcanic risks in Mt Merapi, Indonesia. *Journal of Pacific Rim Psychology*, 3, 47–54. <https://doi.org/10.1375/prp.3.2.47>
- Sastry, J., & Ross, C. E. (1998). Asian ethnicity and the sense of personal control. *Social Psychology Quarterly*, 101–120. <https://doi.org/10.2307/2787064>
- Schaller, M., Conway, L. G., III, & Peavy, K. M. (2010). Evolutionary processes. In J. F. Dovidio, M. Hewstone, P. Glick, & V. M. Esses (Eds.), *The Sage handbook of prejudice, stereotyping, and discrimination* (pp. 81–96). SAGE Publications.
- Schoel, C., Bluemke, M., Mueller, P., & Stahlberg, D. (2011). When autocratic leaders become an option—Uncertainty and self-esteem predict implicit leadership preferences. *Journal of Personality and Social Psychology*, 101(3), 521–540. <https://doi.org/10.1037/a0023393>
- Shimoda, S., & Okubo, N. (2019). Effects of trait self-esteem and self-evaluation threat on the appraisal of close friends. *Japanese Journal of Psychology*, 90, 80–86. <https://doi.org/10.4992/jjpsy.90.17309>
- Stevens, L. E., & Fiske, S. T. (1995). Motivation and cognition in social life: A social survival perspective. *Social Cognition*, 13(3), 189–214. <https://doi.org/10.1521/soco.1995.13.3.189>
- Tang, W., Wang, Y., Lu, L., Lu, Y., & Xu, J. (2020). Post-traumatic growth among 5195 adolescents at 8.5 years after exposure to the Wenchuan earthquake: Roles of post-traumatic stress disorder and self-esteem. *Journal of Health Psychology*. <https://doi.org/10.1177/1359105320913947>
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161–1173. <https://doi.org/10.1037/0003-066X.38.11.1161>
- Taylor, S. E., Lerner, J. S., Sherman, D. K., Sage, R. M., & McDowell, N. K. (2003). Portrait of the self-enhancer: Well-adjusted and well-liked or maladjusted and friendless? *Journal of Personality and Social Psychology*, 84, 165–176. <https://doi.org/10.1037/0022-3514.84.1.165>
- Tomaka, J., Palacio, R., Schneider, K. T., Colotla, M., Concha, J. B., & Herrald, M. M. (1999). Assertiveness predicts threat and challenge reactions to potential stress among women. *Journal of Personality*

- and *Social Psychology*, 76, 1008–1021. <https://doi.org/10.1037/0022-3514.76.6.1008>
- Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, 96(3), 506–520. <https://doi.org/10.1037/0033-295X.96.3.506>
- Triandis, H. C. (2009). Ecological determinants of cultural variations. In R. S. Wyer, C. Chiu, Y. Hong, & D. Cohen (Eds.), *Understanding culture: Theory, research, and applications* (pp. 189–210). Psychology Press.
- Tuohy, R., & Stephens, C. (2016). Older adults' meanings of preparedness: A New Zealand perspective. *Ageing & Society*, 36, 613–630. <https://doi.org/10.1017/S0144686X14001408>
- Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with an emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119, 488–531. <https://doi.org/10.1037/0033-2909.119.3.488>
- van Zomeren, M., Kutlaca, M., & Turner-Zwinkels, F. (2018). Integrating who “we” are with what “we” (will not) stand for: A further extension of the Social Identity Model of Collective Action. *European Review of Social Psychology*, 29(1), 122–160.
- Verplanken, B., Marks, E., & Dobromir, A. I. (2020). On the nature of eco-anxiety: How constructive or unconstructive is habitual worry about global warming? *Journal of Environmental Psychology*, 72, 101528. <https://doi.org/10.1016/j.jenvp.2020.101528>
- Vohs, K. D., & Heatherton, T. F. (2001). Self-esteem and threats to self: Implications for self-construals and interpersonal perceptions. *Journal of Personality and Social Psychology*, 81, 1103–1118. <https://doi.org/10.1037/0022-3514.81.6.1103>
- von Collani, G., & Herzberg, P. Y. (2003). Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefuehl von Rosenberg [A revised German version of the Rosenberg Self-Esteem Scale]. *Zeitschrift Fuer Differentielle Und Diagnostische Psychologie*, 24(1), 3–7. <https://doi.org/10.1024//0170-1789.24.1.3>
- Weisz, J. R., Rothbaum, F. M., & Blackburn, T. C. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, 39(9), 955–969. <https://doi.org/10.1037/0003-066X.39.9.955>
- Wicks, R., Britt, C., & Broidy, L. (2017). The resilience of neighborhood social processes: A case study of the 2011 Brisbane flood. *Social Science Research*, 62, 96–119. <https://doi.org/10.1016/j.ssresearch.2016.07.006>
- Wiebe, D. J. (1991). Hardiness and stress moderation: A test of proposed mechanisms. *Journal of Personality and Social Psychology*, 60(1), 89. <https://doi.org/10.1037/0022-3514.60.1.89>
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. *Advances in Experimental Social Psychology*, 41, 275–314. [https://doi.org/10.1016/S0065-2601\(08\)00406-1](https://doi.org/10.1016/S0065-2601(08)00406-1)
- Wohl, M. J., Branscombe, N. R., & Reysen, S. (2010). Perceiving your group's future to be in jeopardy: Extinction threat induces collective angst and the desire to strengthen the ingroup. *Personality and Social Psychology Bulletin*, 36(7), 898–910. <https://doi.org/10.1177/0146167210372505>
- Yanagisawa, K., Abe, N., Kashima, E. S., & Nomura, M. (2016). Self-esteem modulates amygdala-ventrolateral prefrontal cortex connectivity in response to mortality threats. *Journal of Experimental Psychology: General*, 145(3), 273. <https://doi.org/10.1037/xge0000121>
- Zunes, S. (2017). Europe's refugee crisis, terrorism, and islamophobia. *Peace Review*, 29(1), 1–6. <https://doi.org/10.1080/10402659.2017.1272275>