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## Fatalism as a traditional cultural belief potentially relevant to trauma sequelae: Measurement equivalence, extent and associations in six countries

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### ABSTRACT

**Background:** Fatalism, known as the propensity to believe that one's destiny is externally determined, has so far been examined selectively, and not yet in a cross-cultural study. Moreover, a general, non-data-based speculation assumes that fatalism occurs to a lesser extent in countries of the Global North than in the Global South.

**Objective:** Fatalism as a global psychological belief seems to have a prima facie validity, but this is to be investigated by measurement equivalence calculations across different countries from different world regions. Furthermore, socio-demographic and cultural geographic associations with fatalism scores will be investigated.

**Method:** A six items fatalism scale was introduced in six large population-based samples from Europe, Africa, and Latin America (total  $n = 6\ 537$ ). Testing of invariance followed standardized procedures for cross-cultural comparisons with a comprehensive parallel analysis. Regression analyses provided information on associations with socio-demography and cultural geography.

**Results:** The fatalism construct divided into accentuated pessimistic and non-judgmental subscores in five of the six countries. The German sample showed the highest fatalism scores compared to almost all other countries. In particular higher age and lower educational attainment determine fatalism scores across countries. An explorative analysis of the associations between PTSD symptoms and fatalism scores for African countries revealed small correlations.

**Discussion:** Fatalism as indicated by its subscores seems not to be an exclusive phenomenon of countries with higher economic and socio-cultural vulnerability. For all countries, sociodemographic groups can be identified in which these parts of a traditional belief system are more pronounced. Only for a subset of the countries examined has it been possible to analyse the associations with trauma. Further elaborated analyses in other samples should follow.

### Fatalismo como una creencia cultural tradicional potencialmente relevante en la equivalencia de medición de secuelas de trauma: Equivalencia de medida, extensión y asociaciones en seis países

**Antecedentes:** El fatalismo, conocido como la propensión a creer que el destino de uno está determinado externamente, hasta ahora ha sido estudiado de forma selectiva, pero no aún en un estudio transcultural. Por otra parte, una especulación general, no basada en datos, asume que el fatalismo ocurre en menor grado en países del hemisferio norte que en los del hemisferio sur.

**Objetivo:** El fatalismo como una creencia psicológica global parece tener a primera vista validez, pero será investigado por cálculos de equivalencias de medición en diferentes países de regiones mundiales diferentes. Asimismo, se estudiarán las asociaciones demográficas y culturales con puntajes de fatalismo.

**Método:** Una escala de seis ítems fue introducida en seis amplias muestras poblacionales de Europa, África, y América Latina (total  $n=6,537$ ). Se realizaron procedimientos estandarizados para comparaciones transculturales con un análisis completo paralelo, seguido de pruebas de invarianza. El análisis de regresión proveyó información en las asociaciones con socio-demografía y geografía cultural.

**Resultados:** El constructo de fatalismo, fue dividido en dos sub-puntuajes acentuados pesimista y no crítico, en cinco de los seis países. La muestra alemana mostró los puntajes más altos de fatalismo comparado con todos los otros países. En particular la edad avanzada y el bajo nivel educacional determinan los puntajes de fatalismo en los países. Un análisis exploratorio de las asociaciones entre síntomas de TEPT y puntajes de fatalismo para países africanos reveló pequeñas correlaciones.

**Discusión:** El fatalismo, al ser indicado por sus sub-puntuajes parece no ser un fenómeno exclusivo de países con alta vulnerabilidad socio-cultural y económica. En todos los países,

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### PALABRAS CLAVE

cultura; perspectiva global; fatalismo; creencias globales; TEPT; valores humanos

### 关键词

文化; 世界观; 宿命论; 全球信仰; 创伤后应激障碍; 人类价值观

### HIGHLIGHTS

- Not all traumatized persons seek or request help but rather remain passive and without expectations which is presumably related to fatalism.
- The study shows that this fatalism can be found in all countries and regions of the world studied.
- Fatalism has many facets, as the present study has shown. In different linguistic and cultural areas, different sub-constructs can be distinguished from each other. All are related to fatalism.

se pueden identificar grupos sociodemográficos en los cuales estos aspectos de un sistema tradicional de creencias son más pronunciados. Sólo fue posible examinar las asociaciones con trauma en un subgrupo de los países. Deberían realizarse futuros análisis detallados en otras muestras.

### 作为传统文化信仰的宿命论可能与创伤后遗症：在六个国家的测量等效性，程度和关联

背景：宿命论指倾向于相信一个人的命运是外在决定的。目前为止只对其进行了部分研究，且尚无跨文化研究。另外，一种并无数据基础普遍假设，南半球国家的宿命论思想程度小于北半球国家。

目的：作为全球心理信念的宿命论似乎具有表面有效性，但这需要通过来自不同世界区域的不同国家的测量等效性的计算来证实。此外，将调查社会人口和文化地理与宿命论得分的关联。

方法：在来自欧洲、非洲和拉丁美洲的6个大人口样本中（总样本  $n=6,537$ ）施测了6题目宿命论量表。等效性测试遵循进行跨文化比较的标准化程序和综合的平行分析。回归分析提供了与社会人口学和文化地理的关联性。

结果：在六个国家中有五个国家的宿命论结构分为强调的悲观和非判断性两个分量表。德国样本表现出比几乎所有其他国家更高的宿命论分数。年龄较大和教育程度较低决定了各国样本的宿命论分数。在非洲国家对 PTSD 症状和宿命论评分之间的关联进行的探索性分析显示出较小相关。

讨论：子分数表明宿命论似乎不是具有较高经济和社会文化脆弱性的国家的独有现象。在所有国家中都可以发现一些社会人口统计学群体具有这种比较明显的传统信仰系统。仅对进行研究的一部分国家才有可能分析其与创伤的关联。对其他样本应进一步进行详细分析。

Essentially, current psychotraumatology provides a broad repertoire of professional interventions for traumatized persons. However, on a global scale, many traumatized persons do not interpret their traumatic memories or other symptoms as something that can be processed or healed, but in fact consider the continuing deterioration of their health to be immutable fate. For example, many people who experienced the Second World War with all its hardships do not self-perceive their experiences as post-traumatic symptoms and instead classify them as normal parts of ordinary life (*‘that’s just life’*, Hiskey & McPherson, 2013).

This non-perception of one’s own affectedness is one possible explanation for the known paradox in the global distribution of trauma-related mental health problems, which describes that in more socio-economically vulnerable or disadvantaged countries prevalences of PTSD are lower than in the more prosperous countries (Dücker & Brewin, 2018). The concept of fatalism offers possible explanations for the fact that individuals and whole societies subjected to higher rates of harm or potentially traumatic events express fewer complaints in this context.

#### 1.1. Definition properties and differentiations

For a long time, fatalism was classified as a ‘mysterious and superstitious’ attitude or belief and was therefore not taken seriously for research purposes (Dennett, 2006). Only its rational counterpart – the control beliefs concept – has long been investigated in psychology, mostly distinguishing

between internal and external locus of control, originally referring to perceived reinforced mechanisms underlying one’s own action (Rotter, 1966). Later, these concepts were expanded and the generalized external control belief or a facet thereof, usually called fatalistic control, was defined more along the lines of what the concept of fatalism is defined today (Lefcourt, 1991).

Fatalism can more generally be defined as the propensity of individuals or groups to believe that their destinies are ruled by an unseen power or are played out inevitably rather than by their will. The concept of fatalism has been closely intertwined to the development of religious and philosophical thought. Thus, it is not surprising that the precise meaning of the term fatalism changes across cultures and historical eras (Solomon, 2003). Some authors have pointed out that different types or valences of the term can be distinguished: notably neutral and pessimistic (Scheier & Bridges, 1995). Neutral or non-judgmental fatalism is thus the belief of not being able to influence, regardless of whether something good, something bad or something indifferent happens. Pessimistic fatalism, on the other hand, is the expectation that nothing good will happen, but that all human impulses will fail sooner or later. As will be described further below, further distinctions of terms have been described in research: determined fate vs. negotiable fate (Au et al., 2011; Bond, 2009); structural vs. cosmological fatalism (Ruiu, 2013); and forward-looking vs. backward-looking fatalism (Safdar, Lewis, Greenglass, & Daneshpour, 2009).

## 1.2. Fatalism as a cultural-psychological construct

Previous studies have shown that human values – more precisely labelled as basic value orientations – have a mediating influence on the occurrence of later trauma consequences (Maercker et al., 2009; Zimmermann et al., 2014). Traditional forms of these value orientations (e.g. conformity, benevolence, customs orientation) increase post-traumatic stress via a cascade of concomitant factors such as lower trauma disclosure and low social acknowledgment as victim or survivor, while modern value orientations (e.g. achievement, hedonism, stimulation) alleviate these strains in a mediated way (Maercker et al., 2009). In the field of cultural psychology, there are a number of other findings on the association between value orientations and PTSD severity. Value orientations that can be regarded as guiding or motivating principles in the life of groups or individuals (Schwartz, 2012; Welzel & Inglehart, 2010). Similarly, basic assumptions about the world have been found to be associated with psychological trauma (Janoff-Bulman, 1989).

Fatalism has been theoretically proposed as a type of global belief system or ‘social axiom’ (Leung et al., 2002). This categorization means that such a belief system develops out of the transaction between a cognitively and emotionally active person and his or her physically constraining or socially structured environment (Hui & Hui, 2009). Describing fatalism in this way seems to be meaningful, because it puts it into a larger matrix of psychological constructs: between basic value orientations on the one hand and the psychologically well-described personality dimensions on the other (Leung & Bond, 2009).

However, so far there are hardly any direct studies on the possible connection between fatalism and trauma consequences, only in the related area of natural hazards research (Baytiyeh & Naja, 2016; McClure, Sutton, & Sibley, 2007). In contrast, there have been many studies on fatalism in recent years in the fields of oncology (Kobayashi & Smith, 2016) and diabetology (Egede & Bonadonna, 2003; Walker et al., 2012).

In addition to a deeper conceptual anchoring, the cultural psychology approach also provides methodological tools for the empirical examination of the concept of fatalism. This involves measurement equivalence for the evaluation of measurement concepts in different cultures (Horn & Mcardle, 1992). Testing measurement invariance thus ensures that the current construct of fatalism can be compared comprehensively or in modified versions across nations or cultures. A qualification is given if a similar model structure exists for all countries. Weak, partially strong or strong grades of equivalence are reached when

further statistical parameters can be reached (i.e. similar factor loadings, intercepts). The fatalism construct – in a broader and a narrower operationalization – had been investigated in Mexico and the US but had not been tested so far for other countries (Esparza, Wiebe, & Quiñones, 2015). Its narrower operationalization will be applied in the current study with its six-item scale.

As with almost all psychological constructs, fatalism cannot be assumed to have a uniform pan-cultural notion. This corresponds to the different facets of fatalism elaborated above in the definition of fatalism, e.g. determined vs negotiable faith. The closely related fate control construct examined by Leung and Bond (2009) also did not show strong invariance in an eleven-country comparison (Leung et al., 2012) (which led to the fact that in the latest version of the social axioms two sub-constructs of fate determinism and fate alterability are examined; Leung et al., 2012).

## 1.3. Extent and predictors of fatalism

Is it reasonable to assume that the magnitude of fatalism differs significantly across different countries? Explicit theoretical models do not yet exist. From research on the rise of the sense of control and individualism over time in modern societies (Twenge, Zhang, & Im, 2004) one can suspect that there is an indirect relationship between the extent of social modernity and fatalism. Theorists, who have argued that modern rationality and fatalism are rather mutually exclusive, have also postulated this indirect relationship (Acevedo, 2005; Dennett, 2015). On the other hand, religious studies scientists suggested that fatalism remains part of the repertoire of explanatory approaches and meaning making for death and life matters in both traditional and modern societies (Green, 2012; Solomon, 2003).

Empirically, there have already been two international studies (unrelated to the trauma topic) in which several countries have examined fatalism with respective measurement constructs. First, the above-mentioned construct within the social axioms research of Fate Control indicated no clear pattern in comparison between countries of the ‘Global South’ (low and middle income countries in Asia, Africa, and Latin America) and the ‘Global North’ (industrialized countries) (Leung et al., 2012). Secondly, in the World Value Survey, a global social science project, fatalism was captured with single items as so-called ‘structural fatalism’ and ‘cosmological fatalism’ (Ruiiu, 2013). Again, there was no clear pattern of mean value differences in comparing countries with higher and lower socioeconomic achievements or little or heightened country vulnerabilities (D’Orlando, Ferrante, & Ruiiu, 2011; Ruiiu, 2013). In the latter studies, the World Value Survey was also analyzed with regard to predictors of fatalism. It was found that the two facets of fatalism



measured there were strongly dependent on sociodemographic variables: income, education, and social class (D'Orlando et al., 2011; Ruiu, 2013). Furthermore, in this World Value Survey study that measured fatalism by single items, all forms of religious affiliations (with the exception of Hinduism) showed elevated types of fatalism compared to non-believers (D'Orlando et al., 2011; Ruiu, 2013). It was not examined whether urban-rural differences were related to the extent of fatalism.

#### 1.4. The present study

The main objective of this international comparative study was to examine a newly developed questionnaire in large population-based samples (Esparza et al., 2015).

Thus, the present study has three primary research questions: First, does the fatalism scale used exhibit measurement equivalence in the very diverse countries studied? If it is only a partial equivalence, are there sub-factors of fatalism that better fulfil this cross-cultural requirement? Second, are there national differences in the extent of fatalism and if so, are these differences between countries of the Global North versus the Global South? Third, which of the sociodemographic, religious affiliation or cultural geographic factors constitute predictors of fatalism?

##### 1.4.1. International trauma questionnaire

The ITQ (Cloitre et al., 2018) is a newly developed short questionnaire that examines PTSD symptoms according to the ICD-11 model of the World Health Organization with two questions each on re-experiencing, avoidance, and sense of threat. It has shown very good psychometric properties in several international studies (Cloitre et al., 2018).

## 2. Methods

### 2.1. Study design and procedure

We set up an informal international consortium amongst the authors to investigate fatalism in different world regions by large population-based data collections, i.e. in Germany, Switzerland, Ghana, Kenya, Nigeria, and Mexico.

#### 2.1.1. Germany and Switzerland

The first author utilized two national household surveys collected with the assistance of demographic consulting companies (USUMA, Berlin, Germany; GFS, Zurich, Switzerland). These surveys fulfilled the ethical guidelines of the European Society for Opinion and Marketing research. The study was approved by the ethics committee of the Medical Faculty of the University of Leipzig (132/18-ek). In both countries,

the sampling procedures included sampling strategies to proportionally represent the different regions in Germany respectively German-speaking Switzerland. Within each regional area, households or individuals were selected using random procedures. Germany: A total of 5316 households were selected and a maximum of four attempts was made to contact the selected member of the household. Finally, 2516 face-to-face interviews were conducted (including further surveys on demographic, health or policy related indicators). Switzerland: 750 adults were interviewed by telephone (Computer Assisted Telephone Interview) from the German-speaking regions of Switzerland (representing approximately 73% of the entire Swiss population of that age group). The random sample of the permanent resident population aged 18 years and older was chosen from the commercial AZ-Direct telephone database. Age groups, gender ratio and spatial distribution served as benchmarks for a representative recruitment. The response rate of the survey was 17%.

#### 2.1.2. Ghana, Kenya and Nigeria

The second author utilized three national household surveys collected with the assistance of demographic consulting company (Consumer Panel Africa [MSI-ACI], Amsterdam, Netherlands). These surveys fulfilled the ethical guidelines of the European Society for Opinion and Marketing Research (ESOMAR). The study was approved by the ethics committee at Ariel University. The African study sample composed of 2524 participants from Nigeria (n = 1006); Kenya (N = 1018) and Ghana (n = 500). The respective response rate for each sample was Nigeria (23%), Kenya (34%), and Ghana (33%). These sub-samples were obtained via an internet panel of 26500 panelists from Nigeria, 20800 from Kenya and 12500 from Ghana. In order to maintain a close proximity of representativeness in terms of age and sex, each sub-sample was drawn from the panel using stratified and random sampling methods in order to obtain a sample that is a close approximation according to the current census in each corresponding country. Following the approval of the ethics committee of the researchers' university, potential participants were invited to participate in the study via email. Each participant signed an electronic informed consent before accessing the questionnaire. Eligibility for participating in the study necessitated a citizenship of one of the aforementioned countries (Nigeria, Kenya, Ghana) and age of 18 and above.

#### 2.1.3. Mexico

A sample of 741 participants was obtained by research assistants from the psychology undergraduate program of the Autonomous University of Ciudad Juarez. The study was approved by the ethics committee of the University in Juarez. Research assistants visited the homes of different areas of the city of Juarez that

were selected randomly to be representative of the population. Research assistants went to the neighborhoods and selected a block and interviewed people from every third house, and if they did not answer, they would go to the next one until someone answered the questionnaires. All participants were Spanish-speaking Mexicans living in the city of Juarez. Participants were 18 years and older. The response rate of the survey was 83%.

## 2.2. Participants

The only general inclusion criteria applied included age range (18–99 years) and the ability to read and understand the respective language. The upper part of Table 1 shows the different sample characteristics.

## 2.3. Measures

### 2.3.1. Fatalism

The 6-item fatalism scale by Esparza et al. (2015) was used. It is the homonymous scale of the more comprehensive ‘Multidimensional Fatalism Measure’ (also including scales e.g. on divine control, luck, internality) by these authors developed

simultaneous in Spanish and English for use in cross-cultural and multilingual research. The development was preceded by a review of the existing fatalism scales from all over the world. Items are presented in Table 2. Response options range from 1 (strongly disagree) to 5 (strongly agree). German translation and back-translation into English were sequentially executed and finalized by consensus discussion between the first and third author for remaining discrepancies. The Esparza et al. (2015) study showed measurement equivalence for the Spanish and English versions; pooled one-week test-retest reliability of the scale was  $r = .71$ . For the external validity they found a pooled correlation with the internal control of the Attributional Style Questionnaire of  $r = -.15$  ( $p < .01$ ).

### 2.3.2. Sociodemographics

Age, gender and civil status are direct specifications. In Switzerland, data on civil status are lacking.

### 2.3.3. Religious affiliation

Data are only available for the largest samples (Germany, Switzerland) but partly with different

**Table 1.** Sample characteristics and fatalism item scores.

	Germany (n = 2439)	Switzerland (n = 750)	Ghana (n = 500)	Kenya (n = 1006)	Nigeria (n = 1017)	Mexico (n = 741)
<b>Age, M (SD)</b>	49.04 (16.87)	49.14 (20.15)	28.96 (7.93)	30.15 (8.72)	32.25 (9.35)	35.66 (12.70)
<b>Gender, female, N (%)</b>	1339 (54.90%)	375 (50.00%)	250 (50.00%)	501 (49.80%)	499 (49.07%)	411 (55.54%)
<b>Education level, N (%)<sup>a</sup></b>						
Low	860 (35.33%)	87 (11.73%)	4 (.80%)	1 (.10%)	1 (.10%)	65 (9.07%)
Middle	1051 (43.18%)	491 (66.17%)	54 (10.80%)	83 (8.25%)	61 (5.99%)	349 (48.68%)
High	513 (21.08%)	164 (22.10%)	442 (88.40%)	922 (91.65%)	955 (93.90%)	303 (42.26%)
Currently in school	10 (0.41%)	NA	NA	NA	NA	NA
<b>Civil status, N (%)</b>						
Married/in a relationship	1072 (44.08%)	NA	228 (45.60%)*	553 (54.97%)*	565 (55.56%)*	487 (65.99%**)
Single	690 (28.37%***)	NA	272 (54.40%)	453 (45.03%)	452 (44.44%)	221 (29.95%***)
Separated/divorced	464 (19.08%)	NA	NA	NA	NA	22 (2.98%)
Widowed	206 (8.47%)	NA	NA	NA	NA	8 (1.08%)
<b>Settlement form, N (%)<sup>b</sup></b>						
Rural	564 (23.12%)	260 (34.67%)	63 (12.60%)	160 (15.90%)	69 (6.78%)	0
Suburban/agglomeration	738 (30.26%)	302 (40.27%)	140 (28.00%)	235 (23.36%)	240 (23.60%)	0
Urban	1137 (46.62%)	188 (25.07%)	297 (59.40%)	611 (60.74%)	708 (69.62%)	741 (100%)
<b>Religious affiliation, N (%)</b>						
None	612 (25.78%)	113 (15.07%)	NA	NA	NA	NA
Christian denomination	1669 (70.30%)	603 (80.40%)	NA	NA	NA	NA
Muslim denomination	54 (2.27%)	NA	NA	NA	NA	NA
Other	39 (1.64%)	34 (4.53%****)	NA	NA	NA	NA
<b>Fatalism item scores, M (SD)</b>						
1) Predetermine	3.12 (1.19)	2.90 (1.16)	3.25 (1.30)	3.62 (1.20)	3.57 (1.27)	3.65 (1.08)
2) No control over negative event	2.95 (1.21)	2.60 (1.27)	2.45 (1.23)	2.78 (1.33)	2.45 (1.29)	2.91 (1.20)
3) Predetermine negative	2.90 (1.24)	2.62 (1.23)	2.85 (1.26)	3.03 (1.32)	2.87 (1.30)	2.67 (1.52)
4) Planning useless	2.85 (1.26)	2.69 (1.22)	2.46 (1.30)	2.77 (1.36)	2.60 (1.36)	2.59 (1.37)
5) Unpredictability	2.84 (1.28)	2.29 (1.20)	2.60 (1.30)	2.83 (1.44)	2.68 (1.37)	2.46 (1.12)
6) Predetermine time death	3.46 (1.22)	3.27 (1.20)	3.22 (1.29)	3.52 (1.33)	3.18 (1.37)	3.48 (1.18)
Cronbach's alpha	.89	.73	.84	.80	.82	.65

Note. NA = Data not applicable. SD = Standard deviation. <sup>a</sup>Educational level categories refer to country-specific classifications. For Germany: Low = no secondary school certificate or grade 8 certificate ('Hauptschulabschluss'), middle = secondary school certificate ('Realschulabschluss'), high: school leaving examination ('Abitur'), university degree or similar. For Switzerland: low = 9 years compulsory school time; middle = (higher) occupational training, vocational school-leaving certificate or similar; high = university degree or similar. For Ghana, Kenya and Nigeria: Low = no formal education or only primary school, middle = secondary school, high: college or university degree. For Mexico: Low = grade 6, middle = grade 9, high = high school, university degree or similar. \*Includes being in a relationship; \*\*includes being unmarried and living together; \*\*\*includes being in a relationship but not married (and not living together for Mexico, respectively). <sup>b</sup>Settlement form categories refer to country-specific classifications. For Switzerland: based on postcodes and its mapping into the official administrative classification system. For Germany: rural = BIK regions 1–4, suburban = BIK regions 5,7,9, urban = BIK regions 6,8,1. For Ghana, Kenya and Nigeria: self-declaration. For Mexico only individuals from major cities participated. \*\*\*\*includes Muslim denominations.

**Table 2.** Items of the fatalism scale with the instruction 'Please answer the following questions based on what you think' from Esparza et al. (2015) and subscale assignments (in Italics).

1. I have learned that what is going to happen will happen. <i>Fatpes</i>
2. If something bad is going to happen to me, it will happen no matter what I do. <i>Fatpes</i>
3. If bad things happen, it is because they were meant to happen. <i>Fatpes</i>
4. There is no sense in planning a lot; if something good is going to happen, it will. <i>Fatn-j</i>
5. Life is very unpredictable, and there is nothing one can do to change the future. <i>Fatn-j</i>
6. People die when it is their time to die and there is not much that can be done about it. <i>Fatpes</i>

groupings, i.e. in Switzerland Muslim denominations were listed as 'other' and not a separate category.

#### 2.3.4. Settlement form

These categories (rural, suburban/agglomeration, urban) refer to country-specific classifications (see notes to Table 1).

#### 2.3.5. International trauma questionnaire

The ITQ (Cloitre et al., 2018) is a newly developed short questionnaire that examines PTSD symptoms according to the ICD-11 model of the World Health Organization with two questions each on re-experiencing, avoidance, and sense of threat. It showed very good psychometric properties in several international studies.

### 2.4. Statistical analyses

Testing of invariance followed standardized procedures and conventions for cross-cultural comparisons (see Boer, Hanke, & He, 2018). In the first step that tested configural invariance, confirmatory factor analyses (CFAs) were conducted separately for each country in order to confirm the latent model structure. When misfit was present, the models were re-structured based on modification indices. In the second step, configural invariance was further tested by evaluation of increasingly restricted models in a multi-group CFA framework. More specifically, a baseline model evaluated configural invariance between countries. Configural invariance implies a similar model structure for all countries, i.e. that model fit is comparable cross-culturally. Weak or metric invariance additionally assumes similar magnitude of factor loadings across countries. Finally, scalar or strong invariance implies similar item intercepts under the conditions of weak invariance. Strong invariance is needed in order to meaningfully compare latent factor means (Meredith, 1993). If strong invariance cannot be established, partial

strong invariance may be tested. Hereby, constraints for similar item intercepts are iteratively released. At least two invariant items of one construct are sufficient for a comparison of latent mean scores (Davidov et al., 2015). For all CFAs, maximum-likelihood estimation with robust test statistic and standard errors was applied to account for non-normal data (Savalei & Bentler, 2005). Since the chi-square test is known to be too in large samples, the following fit indices were applied: Root mean square error of approximation (RMSEA)  $\leq .05$  suggested a good fit (MacCallum, Browne, & Sugawara, 1996). Cutoff values for both Tucker-Lewis index (TLI) and comparative fit index (CFI) had to be  $\geq .9$ . Finally, standardized root-mean square residual (SRMR)  $\leq .08$  was indicative of a good fit (Hu & Bentler, 1999). Regarding measurement invariance testing, differences in CFI and RMSEA were compared between the more restricted and its previous model ( $\Delta$ CFI and  $\Delta$ RMSEA). Conventions suggest  $\Delta$ CFI  $\leq .02$  and  $\Delta$ RMSEA  $\leq .03$  from configural to weak invariance and  $\leq .01$  for both indices from weak to strong invariance (Boer et al., 2018). The effect size Cohen's *d* was calculated by applying the formula described in Choi, Fan, and Hancock (2009). Following standard conventions,  $d = .20$  was considered a small,  $d = .50$  a medium, and  $d = .80$  a large effect, respectively (Cohen, 1988).

In addition, associations between socio-demographic variables and fatalism were investigated separately for each country. A multiple linear regression model was run separately for each fatalism subscale within each country. This sums up to 10 separate regression analyses. All predictors (e.g. age, gender, level of education, religious affiliations, and settlement form) were entered simultaneously. Factor variables were compared to their reference group (e.g. male gender, lowest level of education, being married, urban settlement, and Christian affiliation). Finally, correlational analyses were conducted to investigate bivariate associations between fatalism and overall symptom severity of PTSD as well as symptom clusters according to ICD-11. All analyses were conducted in RStudio.

## 3. Results

### 3.1. Single-group CFAs for all countries

To approach the research question of measurement invariance, CFAs for each country were conducted. However, the one-factor model that had been developed during the initial scale validation did not provide acceptable fit indices except for Mexico. The re-specification of the model according to the modification indices led to a final two-factor solution: Item 1–3 and 6 were

indicators of the first factor, whereas item 5 and 4 provided highest loadings on the second factor. This two-factor solution resulted in acceptable fit in almost all countries (RMSEA between .04-.06, CFI and TLI between .90-.99, and SRMR between .02-.03). Only for Kenya, the model lacked adequacy with RMSEA = .10, CFI = .94, TLI = .88, SRMR = .05). See Table A1 in the Appendix for details. Factor loadings for all items in all countries except Kenya exceeded the minimum value of .4. The two factors were labelled 'pessimistic fatalism' (Fatpes) and 'non-judgmental fatalism' (Fatn-j). However, inter-correlation between latent factors Fatpes and Fatn-j was very high with  $r = .89$  for Germany,  $.71$  for Switzerland,  $.65$  for Mexico,  $.78$  for Ghana, and  $.75$  for Nigeria.

Based on the modification indices, an alternative model was computed for Kenya. The final factor solution included two factors, but with item 6 being allocated to the second factor instead of the first factor. This model provided adequate fit:  $\chi^2(13) = 54.89$ ,  $p < .001$ . CFI was  $.96$ , TLI =  $.93$ , RMSEA =  $.08$  (90% CI =  $.06$ -. $09$ ), and SRMR =  $.04$ . For the subsequent invariance testing, Kenya was excluded.

### 3.2. Invariance testing

Next, multi-group invariance testing was performed. Fit indices demonstrated configural equivalence (RMSEA =  $.06$ , CFI =  $.98$ , TLI =  $.96$ , SRMR =  $.02$ ). Assessing metric invariance, both  $\Delta$ RMSEA =  $.004$  and  $\Delta$ CFI =  $.013$  did not exceed the cut-off values. However, when testing strong invariance, the model resulted in a poor fit and both  $\Delta$ RMSEA and  $\Delta$ CFI were above the threshold. As a consequence, partial strong invariance was tested by releasing equality constraints. More specifically, intercepts of item 1 and subsequently both item 1, and 3 were allowed to vary across countries. For this last model, both  $\Delta$ RMSEA and  $\Delta$ CFI were  $\leq .01$ . Accordingly, the model can be considered as of partially strong equivalence. Details are reported in Table A2 in the appendix.

### 3.3. Latent mean comparisons

Figure 1 indicates the latent mean comparison for the partial strong invariance model (free  $\tau_1$  and  $\tau_3$ ) with Germany serving as reference group. Regarding Fatpes, all countries except Mexico had significant lower values compared to Germany ( $z = -6.87$  for Switzerland,  $z = -10.04$  for Nigeria, and  $z = -7.97$  for Ghana, all  $p < .001$ , and  $z = -.58$  with  $p = .57$  for Mexico). Effect sizes were in the low range for Switzerland and Ghana ( $d = -.36$ , and  $d = -.44$  respectively) and in the medium range for Nigeria ( $d = -.52$ ).

Regarding Fatn-j, latent mean comparison resulted in significant differences for all countries compared to Germany ( $z = -6.64$  for Switzerland,  $z = -7.77$  for Mexico,  $z = -4.32$  for Nigeria, and  $z = -5.28$  for Ghana, respectively, all  $p < .001$ ). Effect sizes for all countries were in the small range (all between  $d = -.20$  (Nigeria) and  $d = -.38$  (Mexico)).

### 3.4. Predictors of fatalism: socio-demography, settlement type, religion

Lastly, associations between socio-demographic variables and fatalism were investigated separately for each country. For these analyses, mean scores for the two sub-scales of fatalism were computed. In order to control for the high to very high correlations between Fatpes and Fatn-j, Fatn-j was included as predictor in the regression model for Fatpes and vice versa. The results are provided in Tables 3 and 4, respectively. The analyses indicated that neither settlement form, nor civil status were associated with ratings of fatalism with two notable exceptions regarding Fatpes but not Fatn-j: First, living in German and Nigerian rural areas was associated with higher levels of reported fatalism (Fatpes for Germany, and Fatn-j for Nigeria). Second, being single in Mexico resulted in marginally significant lower levels of Fatpes compared to being married. In addition, higher levels of education were predictive of lower levels of fatalism almost all countries for both Fatpes and Fatn-j. An exception was the reversed pattern for Fatpes in Ghana.

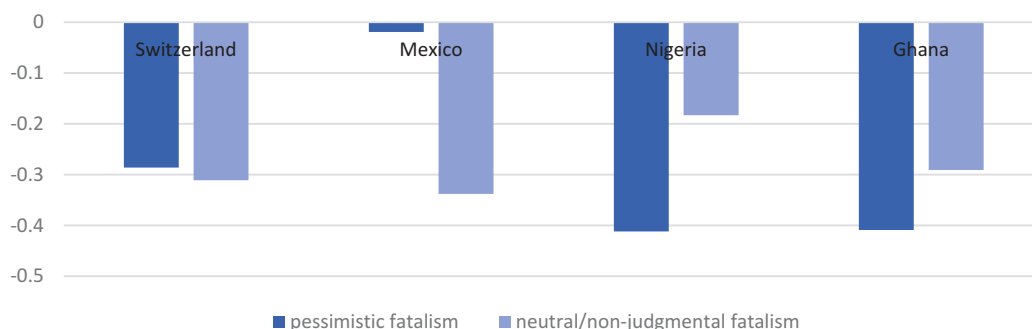


Figure 1. Latent mean score comparison with Germany as reference group.



**Table 3.** Country-specific sociodemographic associations (Beta standard regression coefficients – with Standard Errors in brackets) for the pessimistic fatalism subscale (Fatpes).

	Germany	Switzerland	Ghana	Nigeria	Mexico
<b>Age</b>	.00004 (.001)	<b>-.005 (.001)***</b>	-.01 (.005)	.002 (.003)	-.005 (.003)
<b>Gender: Female</b>	<b>.06 (.03)*</b>	<b>.11 (.06)*</b>	-.11 (.07)	-.06 (.05)	<b>.11 (.06)†</b>
<b>Education level</b> <sup>a,b</sup>					
Middle	-.04 (.03) <sup>a</sup>	-.13 (.09)	see <sup>b</sup>	see <sup>b</sup>	-.13 (.11)
High	<b>-.17 (.04)***</b>	<b>-.36 (.10)***</b>	<b>.24 (.12)*</b>	.16 (.11)	-.09 (.12)
<b>Civil status</b>					
Single	.01 (.04)	NA	.01 (.08)	-.02 (.06)	<b>-.13 (.08)†</b>
Separated/divorced	.03 (.04)	NA	NA	NA	.04 (.19)
Widowed	.003 (.06)	NA	NA	NA	.10 (.28)
<b>Settlement form</b>					
Rural	<b>.08 (.04)*</b>	.03 (.07)	-.03 (.11)	-.15 (.11)	NA
Suburban/ agglomeration	.03 (.03)	.02 (.07)	-.05 (.08)	.05 (.06)	NA
<b>Religious affiliation</b>					
None	<b>-.09 (.03)**</b>	<b>-.15 (.08)†</b>	NA	NA	NA
Muslim Denomination	.02 (.09)	NA	NA	NA	NA
Other	-.06 (.11)	-.04 (.13)	NA	NA	NA

Notes. † .05 < p < .1, \* p < .05, \*\* p < .01, \*\*\* p < .001. References groups were male gender, low/middle levels of education, being married, living in urban settlements, and Christian religious affiliation.

Significant and marginally significant coefficients are printed in bold. <sup>a</sup>For Germany, only n = 10 individuals were still in school. These cases were dropped for the regression analyses. <sup>b</sup>Likewise, cases with low education (n = 1 for Nigeria, and n = 4 for Ghana) were dropped, and education = middle was chosen as reference group instead. All regression analyses were controlled for the other fatalism subscale.

**Table 4.** Country-specific sociodemographic associations (Beta standard regression coefficients – with Standard Errors in brackets) for the non-judgmental fatalism (Fatn-j).

	Germany	Switzerland	Ghana	Nigeria	Mexico
<b>Age</b>	.002 (.001)	<b>.005 (.002)**</b>	-.004 (.006)	<b>-.02 (.004)***</b>	.0006 (.003)
<b>Gender: Female</b>	<b>.06 (.03)†</b>	-.10 (.07)	.20 (.08)	<b>.16 (.07)**</b>	.05 (.07)
<b>Education level</b> <sup>a,b</sup>					
Middle	<b>-.12 (.04)**<sup>a</sup></b>	-.09 (.10)	see <sup>b</sup>	see <sup>b</sup>	<b>-.40 (.14)**</b>
High	<b>-.18 (.05)***<sup>a</sup></b>	<b>-.30 (.12)*</b>	<b>-.53 (.13)***</b>	<b>-.32 (.13)*</b>	<b>-.66 (.14)***</b>
<b>Civil status</b>					
Single	.07 (.04)	NA	-.103 (.09)	-.03 (.07)	.07 (.09)
Separated/divorced	.03 (.04)	NA	NA	NA	-.29 (.23)
Widowed	.06 (.06)	NA	NA	NA	-.21 (.34)
<b>Settlement form</b>					
Rural	.06 (.04)	-.03 (.09)	.11 (.13)	<b>.42 (.12)***</b>	NA
Suburban/ agglomeration	.02 (.04)	-.02 (.08)	.05 (.09)	.01 (.07)	NA
<b>Religious affiliation</b>					
None	.03 (.04)	-.004 (.09)	NA	NA	NA
Muslim Denomination	.10 (.11)	NA	NA	NA	NA
Other	-.02 (.12)	<b>-.39 (.16)*</b>	NA	NA	NA

Notes. identical to those in Table 3.

Regarding gender, females tended to report higher levels of fatalism than males in Switzerland, Mexico (both Fatpes), Germany (Fatpes and Fatn-j), and Nigeria (Fatn-j). For age, mixed effects were found: It was negatively associated with Fatpes in Switzerland and Fatn-j in Nigeria, but positively with Fatn-j in Switzerland. Lastly, individuals with no religious affiliations in Germany (Fatpes) or non-Christian religious affiliation, including Muslim denominations in Switzerland (Fatn-j), reported lower levels of fatalism (Appendix Table A3 provides data for Kenya).

### 3.5. Correlational analyses for three African countries

Bivariate correlations between overall PTSD symptom severity and country-specific ratings of fatalism indicated positive associations in the small range that did not differ for the two subscales. Descriptively, associations were

highest for Nigeria, and lowest for Ghana. However, only in Ghana symptoms of re-experiencing were more strongly related to Fatn-j, and symptoms of avoidance to Fatpes. All correlation coefficients are reported in Table 5.

**Table 5.** Associations between PTSD symptoms and the partially different fatalism scales for Nigeria, Ghana, and Kenya.

	PTSD total	PTSD re-experiencing	PTSD avoidance	PTSD current threat
<b>Ghana</b>				
Fatpes	.18***	.15***	.20***	.12***
Fatn-j	.17***	.20***	.14***	.11*
<b>Nigeria</b>				
Fatpes	.26***	.24***	.20***	.23***
Fatn-j	.27***	.25***	.21***	.23***
<b>Kenya</b>				
Fatcur	.20***	.19***	.17***	.15***
Fatpros	.20***	.18***	.18***	.16***

Note. \*\*\* p < .001; Pearson's product-moment correlation coefficient was calculated. Fatpes = pessimistic fatalism; Fatn-j = non-judgmental fatalism; Fatcur = current fatalism; Fatpros = prospective fatalism

#### 4. Discussion

This survey study of altogether 6'537 persons from six countries intended to firstly provide basic validity and sociodemographic predictor analyses of the fatalism construct. The primary aim was to examine whether the fatalism construct can be examined in a sufficiently stable way across different countries, whether its extent varies across different countries of the Global South or North, and which sociodemographic and socio-cultural factors are related to higher fatalism.

We found that in a joint analysis of the pooled data of all countries except Kenya, the measuring instrument developed simultaneously in Mexico and the US (Esparza et al., 2015) was subdivided into two factors. These sub-factors mirrored the previously discussed distinction of pessimistic fatalism and neutral/non-judgmental fatalism and therefore was given these labels. The first sub-factor pessimistic fatalism with four items contains three items with the term 'happen' (as a noun: incidents) or three in which it is a matter of 'bad events' or 'dying'. In many cultures, '*something happens*' has the connotation of bad surprises that one would rather not have experienced (Reisenzein, 2000). The second sub-factor of non-judgmental (neutral) fatalism, consisting of two items, contains in the same way the needlessness of planning, since as an individual one often has no influence on outcomes.

Only in Kenya was there a different factorization that distinguishes a 'current fatalism' (items 1–3) from a 'prospective fatalism' (items 4–6); both are associated with  $r = .71$  ( $p < .001$ ).

These empirically found sub-factors show that it is indeed difficult, if not impossible, to speak of fatalism as a uniform, pan-cultural phenomenon. From the related control belief research, on the other hand, the difference between a backward- or forward-looking global belief corresponds somewhat to previously described temporal differences in the former construct (Boone, De Brabander, Gerits, & Willeme, 1990). For the fatalism construct as one of five dimensions of the social axiom approach, considerable measurement invariance problems were also reported, so that in its most recent version now fate control decomposes into fate determinism and fate alterability (Leung et al., 2012).

The present study examined how latent mean differences in fatalism subscales were present. Pessimistic fatalism is lower in the two African countries and Switzerland than in Germany, with effect strengths of the difference of up to  $d = -.44$ . For non-judgmental fatalism, Germany has the highest values for all countries, with effect sizes of up to  $d = -.38$ .

Regarding country-specific sociodemographic correlates of the two fatalism scales, the results showed

a mixed pattern, which initially did not show any clear patterns. Previous research on sociodemographic factors showed strong predicting relationships regarding fatalism indicating that social class and education play key roles (D'Orlando et al., 2011; Ruiu, 2013). In our study, the German sample – with the two highest fatalism subscores – has the lowest proportion of higher educated people (26%) compared to the African and Mexican samples (72–94%); only the Swiss sample has a nearly equal proportion of higher educated people (22%). In some countries the proportion of men and younger people also play a role (lower fatalism values) and men and younger people are more strongly represented in African countries than in Germany (and again in Switzerland).

From this comparison of countries, it can nevertheless be concluded that it does not seem to be the case that fatalism values are generally higher in some regions of the world: especially not in the countries of the Global South in comparison with those of the Global North. This inconsistency had already been shown in studies with other measuring methods: the single item measurements of the World Value Survey (D'Orlando et al., 2011; Ruiu, 2013) and the multisite study on fatalistic control in the context of social axiom research (Leung & Bond, 2009; Leung et al., 2012). Possible consequences are discussed below.

With regard to the predictors of the fatalism subscales, age proved to be a predictor across different countries, albeit with different directions: non-judgmental fatalism increases among older Swiss (while it decreases among older Nigerians). A special feature of the Swiss sample is that pessimistic fatalism decreases with age. Female gender is associated with higher fatalism values for at least one of the two sub-factors in five of the countries studied (including Kenya). Speculatively, this gender-related finding may be associated with higher depression levels in women in many countries, which has been found in some studies, e.g. in diabetology (Asuzu, Walker, Williams, & Egede, 2017).

Consistently across all national samples, higher education proved to be a predictor of lower non-judgmental fatalism. For educational attainment and pessimistic fatalism, all non-African countries showed a negative relationship while in Ghana the association was positive. This general pattern – independent of the Ghana result – confirms the findings of the one-item assessment in the World Value Survey (Ruiu, 2013) and has far-reaching social consequences described below.

Settlement forms, as a variable of cultural geography, only for Germany and Nigeria (for different fatalism subscores) showed that life in rural areas goes hand in hand with higher negative fatalism; this may also be due to the fact that people with

lower educational qualifications are more likely to live in rural than in urban areas.

Unfortunately, our study only included religious denomination data for Germany and Switzerland and these furthermore used different categorizations. In Germany and Switzerland pessimistic fatalism was higher among Christians than among non-religious people whereas in Switzerland in addition non-judgmental fatalism was lower among Hindus and Buddhists than among Christians. Previous religious studies with different one-item measured forms of fatalism found the same for Hindus (D'Orlando et al., 2011; Ruiu, 2013). This result once again points out that the cultural narrative, which Hinduism generally associates with fatalism, in a comparison of several countries suddenly becomes relative and even leads to a seemingly paradoxical effect. The comparison between Christian and Hindu faith in relation to fatalism, which has even already been carried out quasi-experimental (Young, Morris, Burrus, Krishnan, & Regmi, 2011), needs to be continued further on this point.

Regarding the correlational analyses, its results confirmed the assumption of a weak positive correlation of the fatalism and PTSD symptom variables. Thus, at least for the three countries studied for which data were available, fatalism, like other traditional cultural dimensions, has been shown to amplify the presence of PTSD (Maercker et al., 2009). This seems to be the case for all facets of fatalism. Of course, a bidirectional relationship must also be taken into consideration, according to which PTSD can also lead to fatalism. Further studies should replicate these results for other countries and elaborate with more complex models of conditional factors.

#### 4.1. Limitations

The present study, which generally assumes a relevance for psychotraumatology, is mainly limited by the fact that its major analyses of the general data set does not involve trauma-related variables. That was because it was planned as a first step to thoroughly test fundamental conditions of the fatalism scale (e.g. measurement equivalence, sociodemographic associations). In addition, there was the logistical effort of recruiting large, population-based samples rather than samples of traumatized persons. These are best prerequisites for the validation of newly used constructs or scales and to prevent methodological biases of overrecruiting vulnerable sections of population. For the future, it would be desirable if there would be longitudinal studies in the aftermath of trauma to investigate the evolution and change of fatalism as a construct.

A further limitation is the partly non-identical categories of sociodemographic variables – as well as the lack of information on some variables in individual countries. These are mainly due to logistical and financial problems in carrying out the study. Due to the high costs involved, the survey parts with the socio-demographic variables could therefore only be carried out in part or in abbreviated form. On the other hand, it should be noted that in some countries the surveys were conducted as face-to-face interviews, which in principle increases the quality of data collection, e.g. compared to online surveys.

In addition, due to the diverse sampling strategies in all countries, socio-demographics between countries were not identical (e.g. varying gender ratios, very high level of education in African countries). For instance, only the German and Swiss samples relied on a representative random sampling approach, which can explain comparably low levels of education. Likewise, very high level of education or primarily urban settlement type in the African and Mexican samples might overestimate average country characteristics. As a further limitation, it cannot be fully excluded that differences in fatalism mean scores between countries arise from systematic differences in these variables.

Also, inter-correlations between 'pessimistic fatalism' and 'non-judgmental fatalism' were in the very high range for all countries. However, since the single-factor models did not fit the data well, the two-factor model was chosen. Nevertheless, there is large conceptual overlap between the two factors, and interpretation must be done with caution.

#### 4.2. Lessons learned and outlook

The interest in the study of fatalism stems from the growing awareness that not all traumatized persons seek or request help but rather remain passive and without expectations. At first sight, this seems to be rather a problem with people from other world regions than the Global North who, for example, come as refugees from the countries of the Global South. If, however, one considers the entire range of the population within the countries of the Global North in an unbiased way, one will find that many trauma survivors do not find access to the support or health care system (Fegert, Rassenhofer, Witt, & Jud, 2015; Glaesmer, 2014; Hiskey & McPherson, 2013). Psychotherapy – including PTSD treatment – in economically developed countries, too, is thus instead reserved for well-educated, well-to-do individuals (e.g. Delgado, Asaria, Ali, & Gilbody, 2016). The results of the present study confirm this trend. If fatalism is examined as a complementary concept for people perceiving it as normal to feel permanently psychologically injured or broken, the study shows that this fatalism can be found in all countries and regions of the world studied. It is

strongly associated with educational attainment in all countries. This strong association probably explains the differences in fatalism between countries. In the present study, this led to the fact that the two fatalism facets in the sample from Germany are highest, which can be explained by the comparatively strong representation of people with little education. The study also showed that in the samples from Africa and Mexico, where higher education was somewhat overrepresented, the fatalisms values were comparatively low.

Psychotraumatology, in our opinion, is well advised to integrate the concept of fatalism into its theories and models, especially those that go beyond the narrower focus on memory disorders and already include social and interpersonal factors (Hobfoll, Dunahoo, & Monnier, 1995; Maercker & Horn, 2013; Vogt, Erbes, & Polusny, 2017). PTSD or complex PTSD are severely impairing and often chronic disorders and therefore it seems no coincidence that both in oncology (Kobayashi & Smith, 2016) and in diabetology (Walker et al., 2012) individual fatalism has been empirically researched intensively for some time, also in order to derive starting points for therapeutic interventions. In disaster risk reduction research, which is close in content to psychotraumatology, fatalistic belief is already a goal of intervention (Baytiyeh & Naja, 2016; McClure et al., 2007).

Fatalism has many facets, as the present study has shown. In different linguistic and cultural areas, different sub-constructs can be distinguished from each other. In the present study, there were two sub-constructs (non-judgmental and pessimistic) in five countries and two others (current vs. prospective) in the sixth country. Other fatalism constructs used in international research differ in further aspects. This plurality of culture-related fatalism concepts should be constructively taken into account in future research.

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## Appendix

Table A1. Single-group CFAs for each country.

	$\chi^2$ (df)	p-value	RMSEA (90% CI)	CFI	TLI	SRMR
<b>Initial one-factor model</b>						
Overall	628.293 (54)	< .001	.101 (.095-.107)	.934	.890	.040
Germany	177.038 (9)	< .001	.089 (.080-.099)	.969	.948	.033
Switzerland	61.966 (9)	< .001	.089 (.071-.107)	.924	.873	.046
Ghana	55.059 (9)	< .001	.101 (.08-.124)	.939	.898	.047
Kenya	166.086 (9)	< .001	.132 (.117-.147)	.874	.791	.064
Nigeria	125.814 (9)	< .001	.113 (.099-.128)	.922	.870	.052
Mexico	37.309 (9)	< .001	.067 (.049-.087)	.804	.674	.047
<b>Final two-factor solution</b>						
Germany	80.698 (8)	< .001	.062 (.052-.073)	.987	.975	.026
Switzerland	27.057 (8)	< .01	.056 (.036-.078)	.972	.948	.029
Ghana	19.558 (8)	< .05	.054 (.027-.081)	.985	.971	.024
Kenya	89.671 (8)	< .001	.101 (.085-.118)	.935	.877	.050
Nigeria	39.442 (8)	< .001	.062 (.046-.079)	.979	.961	.031
Mexico	15.421 (8)	.051	.037 (.001-.063)	.949	.904	.027

Table A2. Multi-group invariance testing based on the two-factor model without Kenya.

	$\chi^2$ (df)	RMSEA (90% CI)	$\Delta$ RMSEA	CFI	$\Delta$ CFI	TLI	SRMR
Configural invariance	190.548 (40)***	.060 (.052-.067)	-	.980	-	.962	.024
Weak (metric) invariance	299.603 (56)***	.064 (.058-.071)	.004	.967	.013	.956	.042
Strong (scale) invariance	864.170 (72)***	.102 (.096-.107)	.038	.893	.074	.889	.067
Partial: $\tau_1$ free	551.877 (68)***	.082 (.076-.088)	.018	.935	.041	.928	.051
Partial: $\tau_1, \tau_3$ free	378.566 (64)***	.068 (.062-.074)	.004	.958	.032	.950	.045
					.010		

Note. \*\*\*  $p < .001$ . Df = degrees of freedom, CI = confidence interval. RMSEA = Root mean square error of approximation, CFI = comparative fit index, TLI = Tucker-Lewis index, SRMR = Standardized root-mean square residual. Configural invariance implies the same model fit, weak invariance same factor loadings, strong invariance same factor loadings and intercepts. In the partial strong invariance model, intercepts of certain items ( $\tau_x$ ) were allowed to vary across countries.

Table A3. Sociodemographic associations for the two fatalism subscales specific for Kenya.

	Kenya	
	Mean Fatalism current (Item 1,2,3)	Mean Fatalism prospective (Item 4,5,6)
$\beta$ (SE), t-value		
Fatcur/Fatpros	<b>.54 (.03), 20.6***</b>	<b>.56 (.03), 20.6***</b>
Age	<b>.01 (.003), 2.8**</b>	<b>.02 (.003), -4.7***</b>
Gender: Female (reference: male)	-.04 (.06), -.6	<b>.16 (.06), 2.8**</b>
Education level: High (reference: middle)	.08 (.10), .7	-.16 (.10), -1.6
Civil status: Not married (reference: married)	.05 (.06), .6	.04 (.06), .6
Settlement form (reference: urban)		
Rural	<b>-.17 (.08), -2.1*</b>	.08 (.08), 1.0
Suburban/agglomeration	.04 (.07), -.6	.07 (.07), 1.0

Note. Fatcur = current fatalism, Fatpros = prospective fatalism,  $\beta$  = standardized regression coefficient, SE = standard error. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Significant and marginally significant coefficients are printed in bold. <sup>a</sup> Since only  $n = 1$  cases were available for low education in Kenya, these were dropped for the regression analysis, and education = middle was chosen as reference group instead.