Precarious Manhood Beliefs in 62 Nations

Jennifer K. Bosson[1*], Joseph A. Vandello[1], Paweł Jurek[2], Natasza Kosakowska-Berezecka[2], Michał Olech[2], Tomasz Besta[2], Debroah L. Best[3], Saba Safdar[4], Anna Włodarczyk[5], Magdalena Zawisza-Riley[6], Magdalena Żadkowska[2],
Sami Abuhamdeh[7], Collins Badu Agyemang[8], Gülçin Akbaş[9], Nihan Albayrak-Aydemir[10], Sara Almzayak[11], Soline Ammirati[12], Joel Anderson[13,14], Gulnaz Anjum[15], Amarina Ariyanto[16], John Jamir Benzon R. Aruta[17], Mujeeba Ashraf[18], Aistė Bakaitytė[19], Maja Becker[20], Michael Bender[21,22], Chiara Bertolli[23], Dashamir Bërxulli[24], Chongzeng Bi[25], Katharina Block[26], Mandy Boehnke[27], Renata Bongiorno[28], Janine Bosak[29], Annalisa Casini[30], Qingwei Chen[119], Peilian Chi[121], Vera Cubela Adoric[31], Serena Daalmans[32], Justine Dandy[33], Soledad de Lemus[34], Sandesh Dhakal[35], Ilona Domen[36], Nikolay Dvorianchikov[37], Sonoko Egami[38], Edgardo Etchezahar[39], Sofia Esteves[115], Neto Felix[118], Laura Froehlich[40], Efrain Garcia-Sanchez[41], Alin Gavreliuc[42], Dana Gavreliuc[42], Ángel Gomez[43], Sylvie Graf[44], Hedy Greijdanus[45], Ani Grigoryan[46], Joanna Grzymała-Moszczyńska[47], Keltouma Guerch[48], Marie Gustafsson Sendén[49], Miriam-Linnea Hale[50], Hannah Hämer[51], Mika Hirai[52], Miriam Hoffmann-Harnisch[36], Vera Hoorens[53], Paul B. Hutchings[54], Dorthe Høj Jensen[55], Inga Jasinskaja-Lahti[56], Serdar Karabati[57], Kaltrina Kelmendi[24], Gabriella Kengyel[58], Narine Khachatryan[46], Rawan Ghazzawi[110], Mary Kinahan[59], Teri Kirby[28], Monika Kovács[60], Desiree Kozlowski[61], Vladislav Krivoshchekov[62], Clara Kulich[63], Tai Kurosawa[64], Nhan Thi Lac An[65], Ioana Latu[66], Mary Anne Lauri[67], Abiodun Lawal[68], Junyi Li[69], Jana Lindner[70], Anna Lindqvist[71], Angela T. Maitner[11], Elena Makarova[70], Ana Makashvili[72], Shera Malayeri[73], Tiziana Mancini[74], Claudia Manzi[75], Silvia Mari[76], Sarah E. Martiny[77], Claude-Helene Mayer[78], Vladimir Mihić[79], Jasna Milošević Đorđević[80], Eva Moreno-Bella[34], Silvia Moscatelli[81], Andrew Bryan Moynihan[82], Dominique Muller[12], Erita Narhetali[16], Félix Neto[83], Kimberly Noels[84], Boglárka Nyúl[60], Emma O'Connor[85], Danielle Ochoa[86], Sachiko Ohno[87], Sulaiman Olanrewaju Adebayo[88], Randall Osborne[89], Maria Giuseppina Pacilli[90], Jorge Palacio[91], Snigdha Patnaik[92], Vassilis Pavlopoulos[93], Pablo Pérez de León[94], Ivana Piterová[95], Juliana Porto[51], Angelica Puzio[96], Joanna Pyrkosz-Pacyna[97], Erico Rentería Pérez[98], Emma Renström[99], Sobhie Rosita[100], Tiphaine Rousseaux[20], Michelle Ryan[28], Mario Sainz[101], Marco Salvati[102], Adil Samekin[103], Simon Schindler[104], A. Timur Sevincer[105], Masoumeh Seydi[74], Debra Shepherd[106], Sara Sherbaji[11], Cláudia Simão[107], Dijana Sulejmanović[108], Katie E. Sullivan[54], Mariko Tatsumi[109], Lucy Tavitian-Elmadjian[110], Suparna Jain Thakur[111], Beatriz Torre[87], Ana Torres[112], Claudio V. Torres[51], Beril Türkoğlu[113], Joaquín Ungaretti[39], Timothy Valshtein[97], Colette van Laar[53], Jolanda van der Noll[40], Vadym Vasiutynskyi[114], Christin-Melanie Vauclair[115], Neharika Vohra[116], Marta Walentynowicz[30], Colleen Ward[117], Yaping Yang[120], Vincent Yzerbyt[30], Valeska Zanello[51], Antonella Ludmila Zapata-Calvente[34], Rita Žukauskienė[19]

[1]University of South Florida, USA
[2]University of Gdansk, Poland
[3] Wake Forest University, USA
[4]University of Guelph, Canada
[5]Universidad Católica del Norte, Chile

[6]*Anglia Ruskin University, England, United Kingdom*
[7] *Istanbul Sehir University, Turkey*
[8] *University of Ghana, Ghana*
[9] *Atilim University, Turkey*
[10] *London School of Economics and Political Science, England, United Kingdom*
[11] *American University of Sharjah, United Arab Emirates*
[12] *Université Grenoble Alpes, France*
[13] *Australian Catholic University, Australia*
[14] *La Trobe University, Australia*
[15] *Institute of Business Administration Karachi, Pakistan*
[16] *University of Indonesia, Indonesia*
[17] *De La Salle University, Philippines*
[18] *University of the Punjab, Pakistan*
[19] *Mykolas Romeris University, Lithuania*
[20] *CLLE, Université de Toulouse, CNRS, UT2J, France*
[21] *Tilburg University, Netherlands*
[22] *Gratia Christian College, Hong Kong*
[23] *University of Padova, Italy*
[24] *University of Prishtina, Kosovo*
[25] *Southwest University, China*
[26] *The University of British Columbia, Canada*
[27] *University of Bremen, Germany*
[28] *University of Exeter, England, United Kingdom*
[29] *Dublin City University, Ireland*
[30] *Université Catholique de Louvain, Belgium*
[31] *University of Zadar, Croatia*
[32] *Radboud University Nijmegen, Netherlands*
[33] *Edith Cowan University, Australia*
[34] *University of Granada, Spain*
[35] *Tribhuvan University, Nepal*
[36] *Utrecht University, Luxemburg*
[37] *Moscow State University for Psychology and Education, Russia*
[38] *Hokkaido University of Education, Japan*
[39] *University of Buenos Aires, Argentina*
[40] *FernUniversität in Hagen, Germany*
[41] *University of Granada, Colombia*
[42] *West University of Timisoara, Romania*
[43] *Universidad Nacional de Educación a Distancia, Spain*
[44] *Czech Academy of Sciences, Czech Republic*
[45] *University of Groningen, Netherlands*
[46] *Yerevan State University, Armenia*
[47] *Jagiellonian University, Poland*
[48] *CPGE Centre in Oujda, Morocco*
[49] *Södertörn University, Sweden*
[50] *University of Luxembourg, Luxembourg*
[51] *University of Brasilia, Brazil*
[52] *Yokohama City University, Japan*
[53] *KU Leuven, Belgium*
[54] *University of Wales Trinity Saint David, Wales, United Kingdom*
[55] *Aarhus University, Denmark*

[56] *University of Helsinki, Finland*
[57] *Istanbul Bilgi University, Turkey*
[58] *Pazmany Peter Catholic University, Hungary*
[59] *Technological University Dublin, Ireland*
[60] *Eötvös Loránd University, Hungary*
[61] *Southern Cross University, Australia*
[62] *National Research University Higher School of Economics, Russia*
[63] *University of Geneva, Switzerland*
[64] *Ibaraki Christian University, Japan*
[65] *Vietnam National University, Vietnam*
[66] *Queen's University Belfast, Northern Ireland, United Kingdom*
[67] *University of Malta, Malta*
[68] *Federal University Oye-Ekiti, Nigeria*
[69] *Sichuan Normal University, China*
[70] *Basel University, Switzerland*
[71] *Lunds University, Sweden*
[72] *Ilia State University, Georgia*
[73] *University of Bern, Switzerland*
[74] *University of Parma, Italy*
[75] *Catholic University of Milan, Italy*
[76] *University of Milano-Bicocca, Italy*
[77] *The Arctic University of Norway, Norway*
[78] *University of Johannesburg, South Africa*
[79] *University of Novi Sad, Serbia*
[80] *Faculty of Media and Communication, Serbia*
[81] *University of Bologna, Italy*
[82] *University of Limerick, Ireland*
[83] *Universidade do Porto, Portugal*
[84] *University of Alberta, Canada*
[85] *Portland State University, USA*
[86] *University of the Philippines Diliman, Philippines*
[87] *Shirayuri University, Japan*
[88] *Ekiti State University, Nigeria*
[89] *Texas State University, USA*
[90] *University of Perugia, Italy*
[91] *Universidad del Norte, Colombia*
[92] *Xavier University of Bhubaneswar, India*
[93] *National and Kapodistrian University of Athens, Greece*
[94] *Universidad Católica del Uruguay, Uruguay*
[95] *Slovak Academy of Sciences, Slovak Republic*
[96] *New York University, USA*
[97] *AGH University of Science and Technology, Poland*
[98] *University of Valle, Colombia*
[99] *University of Gothenburg, Sweden*
[100] *Universiteit van Suriname, Suriname*
[101] *University of Monterrey, Mexico*
[102] *Sapienza University of Rome, Italy*
[103] *S. Toraighyrov Pavlodar State University, Kazakhstan*
[104] *University of Kassel, Germany*
[105] *University of Hamburg, Germany*

[106] *Stellenbosch University, South Africa*
[107] *Católica Lisbon School of Business & Economics, Portugal*
[108] *University of Bihac, Bosnia and Herzegovina*
[109] *Osaka Prefecture University, Japan*
[110] *Haigazian University, Lebanon*
[111] *University of Delhi, India*
[112] *Federal University of Paraíba, Brazil*
[113] *Middle East Technical University, Turkey*
[114] *National Academy of Educational Sciences, Ukraine*
[115] *Instituto Universitário de Lisboa, Portugal*
[116] *Indian Institute of Management, India*
[117] *Victoria University of Wellington, New Zealand*
[118]*Faculdade de Psicologia e de Ciências da Educação. Universidade do Porto, Portugal*
[119] *South China Normal University, China*
[120]*Ningbo University, China*
[121]*University of Macau, China*

Author Note

Jennifer K. Bosson https://orcid.org/0000-0003-2566-1078

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Correspondence concerning this article should be addressed to Jennifer Bosson, Psychology Department, the University of South Florida, 4202 E. Fowler Ave., PCD 4118G, Tampa, FL 33620, USA. Email: jbosson@usf.edu.

Abstract

Precarious manhood beliefs portray manhood, relative to womanhood, as a social status that is hard to earn, easy to lose, and proven via public action. Whereas qualitative and ethnographic data suggest that many cultures conceptualize manhood as precarious, quantitative research has yet to demonstrate the cross-cultural consistency of precarious manhood beliefs. Here, we examined the psychometric isomorphism, or measurement invariance, of a brief precarious manhood beliefs scale (the PMB). Using data from university samples in 62 countries across 13 world regions (N=33,417), we examined: (1) the isomorphism of the PMB across individual and country levels; (2) the PMB's distinctness from, and associations with, other cross-culturally validated gender ideologies (e.g., ambivalent sexism and ambivalence toward men; Glick & Fiske, 1996, 1999); and (3) associations of the PMB with country-level indices of gender equality (the GGGI; World Economic Forum, 2019) and human development (the HDI; United Nations Development Programme, 2019). Findings indicate that the PMB is a psychometrically valid and isomorphic index of beliefs about the male gender role that accounts for unique variance in country-level gender equality and human development.

Keywords: psychometric isomorphism; precarious manhood beliefs; ambivalent sexism; ambivalence toward men

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> Among most of the peoples that anthropologists are familiar with, true manhood is a precious and elusive status beyond mere maleness, a hortatory image that men and boys aspire to and that their culture demands of them as a measure of belonging (Gilmore, 1990, p. 17).

In his anthropological study of several nonindustrial and agrarian cultures around the world, Gilmore (1990) described a near-universal tendency for societies to demand, of their male members, a social proof of manhood status. The details of this proof vary across cultures – ranging from demonstrations of sexual prowess to acquisition of material goods, participation in drunken brawls, and painful circumcision rituals, among others – but the underlying theme is the same: Men must demonstrate, through some sort of public action, that they deserve the title of a "real man." Building on these ideas within social psychology, precarious manhood theory posits that even in contemporary, industrialized societies, manhood is widely conceptualized as a social status that is hard to earn, easy to lose, and must be proved repeatedly via action (Vandello et al., 2008). This theory further argues that the precariousness of their gender status leads men, relative to women, to experience higher levels of social anxiety and stronger motivation to compensate, sometimes via risky or aggressive posturing, when their gender status is challenged (Vandello & Bosson, 2013).

Cross-cultural evidence of precarious manhood beliefs is provided by qualitative ethnographic work (e.g., Gilmore, 1990), but the consistency of these beliefs across cultures is not yet established quantitatively. Explicit endorsement of precarious manhood beliefs has been examined in the U.S. (e.g., Vandello et al., 2008), Denmark (DiMuccio et al., 2017), Poland, and Norway (Valved et al., 2020), but we do not know how universally these beliefs are shared. Moreover, the prescriptive gender role norms that define "real manhood" in one culture do not

necessarily transfer to other cultures (Kimmel & Aronson, 2003). Thus, men's susceptibility to gender role violations that threaten their manhood status may differ from nation to nation.

To examine the consistency of precarious manhood beliefs across cultures, the current project examines the isomorphism, or measurement invariance, of a brief (4-item) measure of Precarious Manhood Beliefs (the PMB) in 62 countries representing six continents and 13 world regions. We also ask whether the PMB correlates with other cross-culturally validated gender beliefs, including hostile and benevolent gender ideologies (Glick & Fiske, 1996, 1999). Finally, we ask if the PMB correlates with country-level indicators of gender inequality (the Global Gender Gap Index [GGGI]; World Economic Forum, 2019) and human development (the Human Development Index [HDI]; United Nations Development Programme, 2019). Together, the tests reported here shed light on the meaning, universality, and correlates of precarious manhood beliefs. This project is part of a larger investigation of gender beliefs preregistered in Open Science Framework (OSF; see *blinded for review*).

Precarious Manhood Beliefs

Precarious manhood refers to the notion that men's, relative to women's, gender status is considered elusive, tenuous, and proven through public action (Vandello et al., 2008; Vandello & Bosson, 2013). In some indigenous societies, boys achieve manhood status through rituals involving physical separation and isolation, and painful or dangerous tests of endurance (Gilmore, 1990; Herdt, 2017). Even in the absence of formalized rituals, pressures to prove manhood are common across cultures. In Western, industrialized cultures, young men may undergo informal rites of passage including fraternity or military hazing, gang violence, or bullying within sports teams (e.g., Allan et al., 2019; Hoover & Pollard, 2000; Pershing, 2006). In contrast, the transition from girlhood to womanhood is more commonly viewed as an inevitable biological process, and women's status as "real" women is infrequently challenged (Gilmore, 1990; Vandello et al., 2008).

While researchers have not fully validated a measure of precarious manhood beliefs, some use or modify a 7-item scale from Vandello et al. (2008) to assess individual differences in these beliefs. Findings reveal that men higher in precarious manhood beliefs: are less inclined to confront a stranger who displays sexual prejudice (Kroeper et al., 2014); rate sexist and anti-gay jokes as funnier following a gender threat (O'Connor et al., 2017); and show larger cortisol reactivity (a stress response) following feedback that they lack masculinity (Himmelstein et al., 2019). These results from U.S. samples suggest that precarious manhood beliefs constitute a reliable individual difference with consequences for men's responses to gendered stimuli and feedback. However, these studies do not address the measurement isomorphism, convergent validity, and cross-cultural consistency of the PMB scale. Addressing the first two of these issues is important for validating the PMB's psychometric usefulness, while addressing the third issue can shed light on global differences in precarious manhood beliefs. This goal is important given that male gender role norms may not generalize across cultures (Kimmel et al., 2003).

Measurement Isomorphism

Measurement isomorphism refers to the similarity of a construct's meanings and statistical properties across different levels of data, such as the individual and country levels. When a scale demonstrates isomorphism, this means that its characteristics at the higher level (e.g., the country level) are comparable to its characteristics at the lower level (e.g., the individual level) (Tay et al., 2014). Demonstrating the isomorphism of the PMB is thus an important precursor to examining the universality of precarious manhood beliefs: Only by establishing the PMB's measurement isomorphism we can assume that scores collected at the individual level indicate a property that can be attributed to the country as a whole. Here, we test the configural and metric isomorphism of the PMB. Configural isomorphism is evident when a scale has the same factor structure (i.e., same number of factors, same items per factor) across levels. Metric isomorphism is evident when a scale that shows strong configural isomorphism

also shows equivalent factor loadings across levels. We tested whether the PMB displays acceptable metric isomorphism across the individual and country levels (*Hypothesis 1*).

Links to Cross-Cultural Gender Ideologies

Theories of ambivalent gender ideologies – including ambivalent sexism and ambivalence toward men (Glick & Fiske, 1996, 1999) – posit that gender relations across times and cultures are characterized by a combination of hostile (overtly insulting, angry) and benevolent (subjectively positive but patronizing) ideologies that work together to maintain the unequal gender hierarchy. Ambivalent sexism casts women as manipulative, insubordinate, and incompetent (hostile sexism [HS]), but also as morally pure, warm, and essential to men's happiness (benevolent sexism [BS]). Ambivalence toward men portrays men as arrogant, infantile, and sexually predatory (hostility toward men [HM]), while also competent, protective, and deserving of women's nurturance (benevolence toward men [BM]). Presumably, these ideologies emerge from and reflect the universal gender structures of male dominance (i.e., patriarchy) and heterosexual interdependence (Vescio & Kosakowska-Berezecka, 2020). Hostile resentments and negative stereotypes (of women as insubordinate and men as power-hungry) arise from men's universal dominance over women (Brown 1991; Ortner & Whitehead, 1981; Sidanius & Pratto, 1999). Benevolent idealizations and positive stereotypes (of women as nurturers and men as protector-providers) arise from the gender groups' universal reliance on one another for affection, mating, and coparenting (Miller & Fishkin, 1997).

Joint endorsement of hostile and benevolent gender ideologies is theorized as essential for maintaining the unequal gender hierarchy in which one group subordinates (or is subordinated by) the other, while also depending on the other to meet important goals (Glick & Fiske, 1996, 2001). Indeed, cross-cultural studies indicate that HS and BS are almost universally positively correlated (Glick et al., 2000), as are HM and BM (Glick et al., 2004). Thus, cultures that endorse more hostile beliefs about both women and men also tend to offset these negative

views with more flattering, benevolent beliefs about each gender group, with medium-to-large pair-wise correlations between these ideologies (*r*s = .34 to .69; Glick et al., 2004).

The medium-to-large correlations between hostile and benevolent ideologies about women (HS and BS) and men (HM and BM) indicate that these are four distinct, but overlapping, belief systems. Here, we examine whether precarious manhood beliefs constitute a fifth set of unique, but associated, gender beliefs. Whereas the ambivalent gender ideologies of HS, BS, HM, and BM describe the *contents* of gender stereotypes (i.e., what women, men, and their interpersonal relations are presumably like), precarious manhood beliefs describe the *structure* of the male gender role (i.e., how easy versus difficult it is to achieve "real" man status). Unlike ambivalent gender ideologies, precarious manhood beliefs do not specify men's actual or ideal qualities, nor do they outline the specific standards by which men are evaluated. Instead, these beliefs presumably reveal the extent to which male-male social relations are hierarchically organized and competitive: When men's status (relative to other men) is more variable and stratified, it is relatively difficult to earn a reputation as a "real," i.e., dominant, man (Winegard et al., 2014). Thus, we propose that the PMB measures a unique cultural belief about manhood that is not redundant with hostility and benevolence toward women or men. More specifically, the PMB, HS, BS, HM, and BM should comprise a five-factor gender beliefs model (*Hypothesis 2a*) that shows metric isomorphic across the individual and country levels (*Hypothesis 2b*).

At the same time, precarious manhood beliefs should correlate with ambivalent gender ideologies. At their core, all of these beliefs presumably reveal something about men's social dominance, over women and over other men. Ambivalent (hostile and benevolent) gender ideologies reflect men's dominance over and dependence on women (Glick & Fiske, 1996, 1999), while precarious manhood beliefs reflect the instability of male social hierarchies in men must struggle to demonstrate dominance over other men (Winegard et al., 2014). As such,

ambivalent gender ideologies and precarious manhood beliefs should work together to explain and legitimize existing social hierarchies in which dominant men hold disproportionate power. Consistent with this notion, men sometimes compensate following manhood threats by more fervently embracing hierarchy-enhancing gender ideologies. For instance, after a gender status threat, men increased their endorsement of benevolent sexism and social dominance (Dahl et al., 2015), and withdrew support for gender equitable actions and social movements supporting women (Kosakowska-Berezecka et al., 2016).

Based on this logic, we hypothesized that the PMB would correlate at least moderately positively with HS, BS, HM, and BM, on both the individual and country levels (*Hypothesis 3*)[1]. Partially supporting this logic, unpublished data (N = 258; 48% women) revealed that people higher in PMB also scored higher in HS (r = .19, p = .003) and BS (r = .20, p = .001) (Burnaford et al., 2008). We expected to replicate these patterns and extend them to include ambivalence toward men. Such findings should demonstrate that beliefs about precarious manhood constitute a universal understanding of the male gender role that overlaps with, but is distinct from, other widespread gender ideologies.

Links to Country-Level Gender Inequality and Human Development

Countries differ in the extent to which their male and female residents enjoy gender parity – i.e., equal access to resources, opportunities, and status – versus gender inequity. The Global Gender Gap Index (GGGI) quantifies women's nation-level disadvantages relative to men's in educational attainment, economic opportunity, political empowerment, and health on a scale of 0.00 to 1.00 (World Economic Forum, 2019). Countries with lower GGGIs tend to have more patriarchal social structures and traditional sex-based labor divisions, with larger proportions of men as economic providers, protectors, and decision-makers, and larger proportions of women as homemakers, caretakers, and low-status workers (Wood & Eagly,

[1] Hypotheses are identical to those in the OSF preregistration, but renumbered to increase clarity.

2012; Glick et al., 2000). Thus, men as a group are more dominant, and women as a group more subordinate, in countries with lower GGGIs.

At the country level, we expect to find higher PMB scores in less gender equal countries. There are at least two reasons for this. First, in less gender equal countries, male-male social relations tend to be more hierarchical and competitive, with greater variance in men's power and outcomes (Betzig, 1992; Smuts, 1995). Some scholars posit that dominant men's patriarchal control over women evolved hand-in-hand with their hierarchical control over subordinate males when human societies transitioned from kin-based to class-based social structures (Lerner, 1986). If men's intragroup competition for status, resources, and access to mates is especially fierce in less gender equal countries, then people in such cultures should be more inclined to view manhood as a competitive social status whose achievement is uncertain. Consistent with this assumption, people in more (versus less) gender unequal nations view men as tougher and more power-hungry (Glick et al., 2004), and as better suited for high-status leadership roles (Brandt, 2011). Moreover, young men from the United States (GGGI = .724, rank = 53rd of 153 countries; World Economic Forum, 2019) viewed their own manhood as more precarious than did young men from Denmark (GGGI = .782, rank = 14th) (DiMuccio et al., 2017). Similarly, men from Poland (GGGI = .736, rank = 40th) endorsed precarious manhood beliefs more strongly than men from Norway (GGGI = .842, rank = 2nd), and Polish (but not Norwegian) men reacted with more public discomfort and negative emotions to a masculinity threat (Valved et al., 2020).

Second, by definition, cultures lower in gender equality have more traditional gender roles and beliefs, with stronger prescriptions requiring men to protect and provide (for women, family, and ingroup) (Glick et al., 2000; Wood & Eagly, 2012). As Gilmore (1990) noted, these same male gender prescriptions underlie precarious manhood pressures: Precarious manhood norms prod men to action when the group's survival depends more heavily on men's willingness

to do the difficult, dangerous, and competitive jobs of protecting (e.g., fighting) and providing (e.g., hunting, acquiring resources). Thus, cultures that depend more heavily on men to assume protection and provision roles (i.e., less gender equal cultures) should also be more inclined to view manhood as a risky endeavour with a high likelihood of failure. Moreover, country-level associations of gender equality with precarious manhood beliefs should emerge even when controlling for other associated gender ideologies (i.e., HS, BS, HM, and BM), demonstrating that the links between the PMB and GGGI cannot be explained entirely by relevant third variables (*Hypothesis 4a*).

We also examined links between the PMB and country-level human development. The Human Development Index (HDI) is a country-level indicator of human potential and well-being in terms of life expectancy, economic growth, and access to education (United Nations Development Programme, 2019). Countries with larger HDIs tend to grant their citizens more freedom to meet basic needs (e.g., for food, shelter, health) and more autonomy to choose desirable, self-improving pursuits such as education, work, and community participation. Because human development correlates negatively with sexism (Napier et al., 2010) and gender inequality (Ingelhart & Norris, 2003), we originally planned to covary the HDI in tests of Hypothesis 4a (i.e., the association of country-level PMB and gender equality). However, the HDI and GGGI were strongly correlated (r = 0.60) in the 62 countries included here, so we decided instead to examine country-level associations of PMB with the GGGI and the HDI separately. Thus, we expected countries lower in HDI to score higher in PMB, even when controlling for HS, BS, HM, and BM (*Hypothesis 4b*).

The Present Research

This cross-cultural, quantitative study examines the measurement isomorphism and universality of precarious manhood beliefs, and their associations with other prevalent gender ideologies. Although ethnographic work suggests that manhood may be universally conceived

as precarious (Gilmore, 1990), endorsement of precarious manhood beliefs likely varies across cultures. Moreover, it is important to demonstrate that beliefs about precarious manhood operate similarly when measured at the individual and country levels, and that they are distinct from, but overlap with, other cultural gender ideologies.

Here, we examine these issues as part of a larger pre-registered study (see OSF *blinded for review*). The hypotheses listed here are pre-registered as confirmatory based on initial exploratory tests conducted on a subset (N = 45) of countries (see OSF *blinded for review*). Note that, although we did not pre-register hypotheses before commencing initial data analyses, we did not p-hack. With one exception[2], the only analyses conducted were tests of the pre-registered hypotheses. Based on the logic outlined earlier, hypotheses are as follows:

H1: The PMB will demonstrate acceptable metric isomorphism across the individual and country levels.

H2a and H2b: A five-factor model (with PMB, HS, BS, HM, and BM as separate dimensions) should fit the data better than alternate one-factor and three-factor models (H2a), and this five-factor model should demonstrate acceptable metric isomorphism across the individual and country levels (H2b).

H3: The PMB will correlate at least moderately positively with HS, BS, HM, and BM at the individual and country levels.

H4a and H4b: The PMB will correlate negatively with country-level GGGI (H4a), and with country-level HDI (H4b), when controlling for HS, BS, HM, and BM.

Note that the country samples differed in average age and gender distribution (% male; see Table 1), so we originally planned to treat these two factors as covariates in analyses. Reflecting this plan, all pre-registered hypotheses stated that our effects should emerge when

[2]The only analysis we conducted that was not pre-registered examined the association of PMB with GGGI and HDI separately (instead of testing the PMB-GGGI association controlling for HDI). This was due to the high GGGI-HDI correlation.

controlling for age and gender distribution. However, these variables correlated very weakly with the PMB (age: r = -.10; gender distribution: r = -.05), and their inclusion in analyses substantially reduced model fit, indicating that it was not parsimonious to include them. We thus excluded these variables from analyses reported here; see the online supplement for results that include these covariates.

Method

Participants and Procedure

Data were collected between January 2018 and February 2020 as part of large cross-national project (see OSF *blinded for review*). All participants were undergraduate students in the social sciences who volunteered their time and (in most countries) received no compensation. IRB approval for each sample was obtained from researchers' respective institutions. Informed consent was obtained from all participants, and participants were assured that their data would remain anonymous and confidential. Participants completed a set of scales (see *Measures* below) that measured more variables than those described here (see *blinded for review* for all variables). The order of measures was randomized and data were collected via SurveyMonkey or Qualtrics platforms. In some cases, participants completed the survey with paper and pencil. From the initial sample (N = 34,023), we removed records from 606 individuals (< 2%) who failed more than 1 of 3 attention checks or provided incomplete data for the PMB scale. This yielded a total of N = 33,417 respondents (37% men) from 62 countries. Information on sample composition appears in Table 1.

Measures

Bilingual scholars working in psychology used the back-translation procedure (see van de Vijver & Leung, 1997) to create 29 different language versions of each scale. All items were translated from English to each language, and then back-translated by an independent translator,

unless previously published in the respective language. All scale translations are available at *blinded for review*.

Precarious Manhood Beliefs. We administered a short version of the Precarious Manhood Beliefs scale (PMB; Vandello et al., 2008). Based on an exploratory factor analysis of 7 items from Vandello et al., we selected four items with loadings > .45 that conveyed beliefs that manhood is difficult to earn ("Some boys do not become men no matter how old they get," "Other people often question whether a man is a 'real man'") and easy to lose ("It is fairly easy for a man to lose his status as a man," "Manhood is not assured – it can be lost"). Participants indicated their agreement on scales of 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency reliability (omega) coefficients for the PMB appear in Table 1.

Ambivalent Sexism. We used six items from a short version of the Ambivalent Sexism Inventory (ASI, Glick & Whitehead, 2010; Rollero et al., 2014), which measures Hostile Sexism (HS) and Benevolent Sexism (BS). We selected items from Rollero et al. based on factor loadings (> .50) and ease of translation. HS items were: "Women seek to gain power by getting control over men," "Women exaggerate problems they have at work," and "When women lose to men in a fair competition, they typically complain about being discriminated against." BS items were: "Women should be cherished and protected by men," "Men are incomplete without women," and "Women, compared to men, tend to have superior moral sensibility." Items were rated on scales of 0 (*strongly disagree*) to 5 (*strongly agree*). Internal consistency reliability (omega) coefficients for HS and BS were .77 and .61 across all participants.

Ambivalence toward Men. We used six items from a short version of the Ambivalence toward Men Inventory (AMI, Glick & Whitehead, 2010; Rollero et al., 2014), which measures Hostility toward Men (HM) and Benevolence toward Men (BM). We selected items from Rollero et al. based on factor loadings (> .50) and ease of translation. HM items were: "Men will always fight to have greater control in society than women," "Men act like babies when they are

sick," and "Most men sexually harass women, even if only in subtle ways, once they are in a position of power over them." BM items were: "Men are more willing to put themselves in danger to protect others," "Every woman needs a male partner who will cherish her," and "A woman will never be truly fulfilled in life if she doesn't have a committed, long-term relationship with a man." Items were rated on a scale of 0 (*strongly disagree*) to 5 (*strongly agree*). Internal consistency reliability (omega) coefficients for HM and BM were .64 and .75 across all participants.

Global Gender Gap Index (GGGI). The GGGI captures the magnitude of gender-based disparities within a country (World Economic Forum, 2019) by benchmarking women's disadvantage, relative to men's, in economic, education, health, and political arenas. The overall GGGI reflects a country's progress towards gender parity on a scale of 0 (disparity) to 1 (parity). We used GGGI data compiled for 2020 (see Table 1).

Human Development Index (HDI). The HDI is a composite measure of a country's development, based on life expectancy at birth, access to knowledge (measured by years of schooling), and standard of living (measured by Gross National Income per capita adjusted for the price level of the country) (United Nations Development Programme, 2019). We used HDI data from 2019 (see Table 1).

Results

Reliability of the PMB across Countries

We estimated the internal consistency reliability of the PMB scale in each of the 62 countries using the coefficient omega (McDonald, 1999). While 0.70 is commonly used as a threshold (e.g., Lord & Novick, 1968), omega tends to underestimate internal consistency reliability in scales with fewer than 10 items (Graham, 2006). Thus, we adopted the more liberal criterion of 0.60. As shown in Table 1, the PMB demonstrated acceptable internal consistency reliability in all but 5 countries: Brazil, Japan, Portugal, Uruguay, and Vietnam. Examination of

the wordings of the PMB scale in these countries did not reveal any problems with the items' translations. We thus retained these 5 countries in the analyses reported here, but present all analyses with these 5 countries excluded in the online supplement. Note that all results, conclusions, and interpretations remain identical whether or not we include these 5 countries. We return to this issue in the Discussion.

Factor Structure and Isomorphism of the PMB

Before testing hypotheses, we conducted a confirmatory factor analysis (CFA) on the total sample, ignoring the multilevel structure of the data, to test the factor structure of the PMB. To assess model fit using maximum likelihood estimation we examined the Bayesian information criterion (BIC), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) or standardized root mean square residual (SRMR) for models with low degrees of freedom (i.e., a one-factor PMB model). We applied the commonly used cut-off criteria of these indices to assess model fit (i.e., CFI > .90 and RMSEA/SRMR < .08 indicating acceptable fit; Kline, 2016; lower BIC values indicating better model fit). We used the lavaan package (Rosseel, 2012) in the R environment (R Core Team, 2020) for all analyses.

Given the contents of precarious manhood beliefs, the brevity of the PMB scale (4 items), and results of prior factor analyses reported in Kroeper et al. (2014) and conducted on a subset of the current data (see *blinded for review*), we expected a one-factor PMB model to fit the data well. As shown in Table 2, the one-factor model (Model 1) demonstrated good fit. We created PMB factor scores for each participant based on the CFA output; factor scores can theoretically range from -2.1 to 2.1 ($M = 0$, $SD = 1.00$). Table 1 shows mean PMB scores (and standard deviations) for each country, which ranged from -.78 (Finland) to .80 (Kosovo). Figure 1 shows the geographical distribution of PMB scores by country.

Next, we proceeded to test H1, which states that the PMB will demonstrate acceptable metric isomorphism across the individual and country levels. To test this, we followed the steps

outlined by Tay et al. (2014). First, we established the need for multilevel analyses by estimating the intraclass correlation coefficients (ICCs) for each PMB item. ICCs represent the variance of items attributable to between-group differences, and ICCs above .05 indicate enough variance that a multilevel approach is suitable (Dyer et al., 2005). The ICC values for PMB scale items ranged from .05 (for "It is fairly easy for a man to lose his status as a man") to .12 (for "Some boys do not become men, no matter how old they get").

Second, we established the configural isomorphism of a one-factor PMB model (Table 2, Model 2) across the individual and country levels. To do this, we specified an isomorphic model (with the same number of factors across levels) and assessed its fit. Due to the very low complexity of the single-factor PMB model, we did not compare this model to alternative models (although we specified alternative models in the next steps of our analysis). To assess relative model fit we used the BIC (with lower values indicating better fit), and to determine absolute model fit we used CFI, RMSEA, and SRMR (both within-group [$SRMR_W$] and between-group [$SRMR_B$]). As shown in Table 2, Model 2 had very good fit measures, indicating that the PMB has the same factor structure across levels.

Finally, to test the PMB's metric isomorphism (i.e., equivalence of factor loadings across levels), we constrained the loadings to be equal across levels in a one-factor model (Model 3) and compared its fit to that of Model 2, in which the loadings were not constrained equal. As shown in Table 2, the BIC, CFI, RMSEA, and $SRMR_W$ fit statistics for Model 3 were as good as those for Model 2, but the $SRMR_B$ indicated worse fit for Model 3 than Model 2. We thus tested an alternative model in which we allowed one of the item's loadings (λ_2) to vary across levels (Table 2, Model 4). This model fit the data as well as Model 2. Thus, H1 was supported, with the PMB demonstrating partial strong (rather than strong) metric isomorphism.

Factor Structure and Isomorphism of Gender Ideologies

We propose that the PMB is distinct from ambivalent sexism and ambivalence toward men (Glick & Fiske, 1996, 1999). Thus, H2a states that a five-factor model with PMB, HS, BS, HM, and BM as separate dimensions should fit the data better than alternate one-factor and three-factor models, and H2b states that this five-factor model will demonstrate acceptable metric isomorphism across the individual and country levels. To test this, we first ignored the multilevel structure of the data and used CFAs to fit a one-factor model (Table 3, Model 5) in which all 16 items (from the PMB, HS, BS, HM, and BM) form one dimension; a three-factor model (Table 3, Model 6) in which the PMB items, the ambivalent sexism (HS and BS) items, and the ambivalence toward men (HM and BM) items form separate dimensions; and a five-factor model (Table 3, Model 7) in which the PMB, HS, BS, HM, and BM each forms a separate dimension. Consistent with H2a, the five-factor model (Model 7) fit substantially better than the one-factor model (Model 5) and the three-factor model (Model 6). As shown in Table 3, the BIC value was lower for Model 7 than for Models 5 and 6, and the absolute fit statistics were acceptable for Model 7, whereas they indicated poor fit for Models 5 and 6. Thus, H2a was supported.

Next, we examined whether Model 7 demonstrated good metric isomorphism across levels. First, the ICC values for the HS, BS, HM, and BM items all ranged from .05 to .30, indicating that multilevel analyses are appropriate. We thus established the configural isomorphism of the five-factor gender beliefs model by specifying models with five dimensions at the individual level and different numbers of dimensions at the country level (Model 8 = one-factor, Model 9 = three-factor, Model 10 = five-factor). Table 3 shows the results from fitting the configural isomorphic model (Model 10) and the two non-configural isomorphic models (Model 8 and 9). Model 10 fit the data better (on the $SRMR_B$ criterion) than Model 8, but it fit

similarly to the three-factor Model 9. Given similar fit between Models 9 and 10, we considered the configural isomorphic model (Model 10) superior to Model 9 based on theoretical grounds.

Finally, to test the metric isomorphism of the five-factor model, we constrained the factor loadings to be equal in Model 11. As shown in Table 3, Model 11 fit the data as well as the strong configural isomorphic model (Model 10), in that both models had similar absolute fit statistics (i.e., CFI, RMSEA, $SRMR_W$, $SRMR_B$). Thus, H2b was supported.

Correlations of PMB with Ambivalent Gender Ideologies

H3 states that the PMB will correlate at least moderately positively with HS, BS, HM, and BM at the individual and country levels. As shown in Figure 2, associations of the PMB with the four other gender beliefs were all positive at both levels of analysis. Moreover, whereas one association was small in size (coefficient = .28), the remaining fell into the range of medium or large effects (coefficients = .33 to .71). H3 was thus largely supported.

Correlations of PMB with Country-Level Gender Inequality and Human Development

H4a and H4b state that the PMB will correlate negatively with the GGGI and the HDI. To test these hypotheses, we included the GGGI (Table 3, Model 12) and HDI (Table 3, Model 13) as correlates of the country-level latent PMB factor. These models showed good fit to the data (see Table 3), even when controlling for other gender beliefs (HS, BS, HM, and BM). Figure 2 shows the CFA results for the model with the GGGI as a correlate of the PMB (results look similar in the model with the HDI). As depicted in Figures 3 and 4, and supporting H4a and H4b, countries higher in GGGI and HDI are lower in PMB (-0.52 and -0.47 respectively).

Discussion

Anthropological and qualitative data suggest that cultures around the world – despite differing in values, languages, social structures, and norms – share a common conceptualization of manhood as more precarious than womanhood (DiMuccio et al., 2017; Gilmore, 1990). Here, we used quantitative methods to examine the cross-cultural consistency of precarious manhood

beliefs in 62 nations covering 13 world regions and representing over 33,400 respondents. Specifically, we tested the psychometric isomorphism and gender-relevant correlates of the Precarious Manhood Beliefs (PMB) scale, a brief self-report measure that assesses the notion that manhood is hard to earn and easy to lose.

Our findings can be summarized both statistically and theoretically. Statistically, the PMB demonstrates strong configural isomorphism and partial strong metric isomorphism across the individual and country levels. This means that the scale has similar factor structures, factor loading patterns, and factor loading strengths at both levels of analysis (Tay et al., 2014). Thus, PMB scores collected at the individual level indicate a property that can be attributed to the nation as a whole. Further, a theoretically derived, five-factor model – comprising separate dimensions for precarious manhood beliefs (PMB), and hostile and benevolent gender ideologies about women (HS, BS) and men (HM, BM) – demonstrated psychometric isomorphism across the individual and country levels. Thus, both the PMB and ultra-brief versions of the Ambivalent Sexism Inventory (Glick & Fiske, 1996) and the Ambivalence toward Men Scale (Glick & Fiske, 1999), can be used and interpreted similarly whether the units of analysis are individuals or countries. Finally, precarious manhood beliefs are uniquely associated with national gender equality and human development, even when controlling for hostile and benevolent sexism and hostility and benevolence toward men.

Demonstrating the psychometric isomorphism of the PMB scale has several implications and advantages. As mentioned, aggregated individual scores can be interpreted to reflect a psychological attribute of the country at large. This allows researchers to compare PMB scores across countries, and to correlate country-level PMB with other country-level variables. National PMB scores can also be used as a country property in multilevel analyses, to assess their associations with both lower-level (e.g., individual) and higher-level (e.g., world region) variables. Such scores may be useful in research on the behavior, attitudes, and roles of men in

given cultures, as well as in research on broader cross-cultural social phenomena. Thus, we view the publication of nation-level PMB scores for 62 countries (see Table 1) as a major contribution of this work.

Theoretically, these findings extend the precarious manhood framework in novel ways. Although precarious manhood beliefs and their correlates have been measured quantitatively in several different cultures (e.g., Himmelstein et al., 2019; Valved et al., 2020), this study represents the first systematic, global examination of these beliefs using a standardized scale. The findings reveal, first, that beliefs about the precariousness of manhood constitute a coherent gender ideology that differs meaningfully across cultures. Second, this gender ideology is distinct from other cross-cultural gender ideologies including ambivalent sexism and ambivalence toward men. Whereas ambivalent gender beliefs presumably arise from and reflect the tensions (combined dominance-subordination and mutual interdependence) inherent in the universal gender hierarchy (Glick & Fiske, 1996, 1999), precarious manhood beliefs convey the difficulties of men's competitive struggle for dominance (Gilmore, 1990; Vandello et al., 2008).

Third, these findings begin to illuminate how precarious manhood beliefs and hostile and benevolent gender ideologies work together to uphold patriarchal social structures. Individuals and countries that endorse more hostility and benevolence toward gender groups also view men's gender status as more difficult, tenuous, and rivalrous. We propose that the overlap in these gender ideologies reveals something about the hierarchical arrangement of men's social status within a given culture. To the extent that men hold more intergroup dominance over women – necessitating the hostile and benevolent ideologies that justify and sustain such dominance – they also experience more stratified within-group status and more competitive dominance struggles. These latter male-male dynamics presumably give rise to cultural precarious manhood beliefs, which assist in gender role socialization by preparing boys to face challenges, take risks, and fill protector-provider roles (Gilmore, 1990).

Supporting this logic, countries with less equitable gender hierarchies (i.e., more patriarchal countries) score higher in precarious manhood beliefs. Thus, the more that men outrank women in political power, resource control, and health outcomes in a culture, the more inhabitants of that culture view manhood itself as a social status that must be earned and can easily be lost. Of course, these data are correlational and we cannot know whether unequal gender hierarchies cause increases in precarious manhood beliefs; increases in precarious manhood beliefs cause gender hierarchies; or some third variable causes both of these. One historical account suggests that as humans transitioned from kin-based to class-based social structures, political and social power became concentrated among small groups of high-status, dominant men (Lerner, 1986). Presumably, when humans moved from subsistence economies to economies based on wealth-acquisition and property ownership, dominant men exploitatively controlled both women for their reproduction, and subordinate men for their labor (Betzig, 1993). If so, then perhaps the increasing human tendency toward class-based social structures is a distal third variable from which both precarious manhood beliefs and ambivalent gender ideologies arose.

Finally, countries lower in human development – defined as human potential and well-being – also score higher in precarious manhood beliefs. Thus, precarious manhood beliefs covary with the difficulties and struggles inherent to daily survival within a given country. In countries in which people face more hardships and encounter fewer desirable pursuits, it may be adaptive to valorize boys and men who risk their lives to protect and provide for others. As noted, Gilmore (1990) suggests that precarious manhood beliefs motivate men to reject puerility and participate in society as resourceful, powerful, and dominant adults. To the extent that such participation requires more unpleasant sacrifice and toil, societies must exert stronger social pressures on men to do their part. In this sense, real manhood is "an inducement for high performance in the social struggle for scarce resources" (p. 223). Of course, the link between

precarious manhood beliefs and human development is correlational, and causation thus cannot be determined.

Limitations and Future Research

Although we achieved impressive cross-cultural representation in our sample, our participants were all university students enrolled in social science courses. While using university students helps standardize the samples in terms of age and socioeconomic status, we cannot necessarily generalize our findings to all or most residents of each nation that provided data. Further, we recognize that nations reflect different levels of within-culture variation and do not operate as monolithic wholes. Hence, when possible, we recruited participants from multiple sites within a given country. Going forward, research should examine precarious manhood beliefs within more diverse samples, perhaps with qualitative methods that allow for in-depth analyses of hard-to-reach groups. Within a single country, we might expect to find differences in precarious manhood beliefs as a function of local economic conditions and access to education.

We intentionally used a very brief (4-item) measure of precarious manhood beliefs, to increase the likelihood of widespread volunteer commitments from diverse cultures (recall that this scale was embedded within a larger survey). While our results indicate that this brief measure has adequate psychometric properties, scale reliabilities for the PMB were low in five countries (Brazil, Japan, Portugal, Uruguay, and Vietnam). Though our general conclusions do not change when excluding data from these countries (see online supplement), we urge researchers to use caution when interpreting country-level scores from these five countries. Moreover, the loading for one item (i.e., “Some boys do not become men, no matter how old they get”) did not display metric isomorphism across levels, indicating that this item loads onto the latent PMB variable differently at the individual and country levels. However, this limitation is mitigated in the present study by considering the broader range of gender beliefs.

Note also that national scores on the PMB are not randomly distributed across the globe, but rather show notable geographical clustering. In exploratory cluster analyses of countries (see the online supplement), we found four clusters each for the PMB and gender equality associations and the PMB and human development associations. Regarding the associations of precarious manhood beliefs and gender equality, three country clusters show a linear negative relationship between the two variables. The first cluster includes countries with relatively low GGGI and high PMB (e.g., Iran, Nigeria, Lebanon, Japan); the second cluster includes countries with average levels of both variables (e.g., China, Vietnam, Brazil, Chile); and the third cluster includes countries with high GGGI and low PMB, most of which are Western European (Spain, Germany, France, Switzerland) and Scandinavian (Finland, Sweden, Norway). However, the fourth cluster includes nations with high PMB scores and moderate GGGI. These tend to be Eastern European or former Soviet Republic countries (e.g., Kosovo, Albania, Ukraine, Kazakhstan, Croatia, Russia), as well as countries like South Africa, Suriname, and the Philippines. Very similar classification results emerged when analyzing countries based on precarious manhood beliefs and human development. However, in this case, the "fourth" cluster includes Eastern European and former Soviet Republic countries along with highly economically developed countries such as the UAE and Japan. While we made no predictions about how specific nations or regions would cluster, future research would benefit from examining the cultural norms and values that may give rise to these global variations in beliefs about manhood.

More generally, it will be important in future research to track PMB scores over time, to examine how they change longitudinally with global changes in economic, social, and political conditions. For instance, increases in women's political and social power, especially in countries with higher gender equality, may trigger compensatory zero-sum thinking whereby men view women's gains as directly tied to men's losses (Kosakowska-Berezecka et al., 2020; Ruthig et al., 2017). In turn, increases in men's zero-sum thinking might predict increases in their views of

manhood as a precarious social status requiring active defense. Hence, it might be interesting to analyze how cross-cultural variations in the visibility of gender equality movements predict changes in men's precarious manhood beliefs. Alternatively, nation-level PMB may be an important moderator of the links between gender equality movements and men's zero-sum thinking, as such links may be especially pronounced in countries in which men already view their gender status as tenuous.

Along similar lines, to the extent that cultures conceptualize the male gender role as a precarious social identity, men within those cultures likely experience more frequent challenges to their gender status. In laboratory studies, such gender threats have increased men's aggressive posturing and acts of dominance over women as they seek to re-establish their masculine credentials (Bosson et al., 2009; Dahl et al., 2015; Vescio & Kosakowska-Berezecka, 2020). It might be thus fruitful in future research to analyze the links between nation-level PMB scores and national data on both male-to-male male-to-female violence.

Summary and Conclusions

We found that a short measure of precarious manhood beliefs (the PMB) is psychometrically valid at both the individual and country levels. It can thus be administered cross-culturally and retain its meaning. Similarly, national PMB scores may offer a valuable research tool for examining a wide and diverse range of cultures. The PMB accounts for unique variance in country-level gender equality and human development above and beyond other widely used gender measures.

We began this paper by asking how universally people endorse precarious manhood beliefs. According to Brown (1990), human universals are features of human existence (e.g., culture, language, social customs, behavior) that are evident in every known group of people across time. By this definition, precarious manhood beliefs are not a human universal, insofar as we found wide cross-cultural variation in their endorsement. Across the 62 cultures examined

here, some (e.g., Kosovo, Albania, Iran) embrace the notion that manhood is precarious, while others (e.g., Finland, Germany, Spain) reject this notion. Given this cultural variance, we hope that national scores on the PMB are a valuable source of data for future researchers, much in the same way that Hofstede's (2001) cultural dimensions or Schwarz's (2014) cultural value orientations spurred research on broad cross-cultural psychological differences.

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Table 1. Sample Composition, Descriptive Statistics for the PMB, and Country-Level Indicators (HDI and GGGI) for Each Country.

			Age		PMB (CFA scores)				
Country	***N***	**% men**	***M***	***SD***	***M***	***SD***	***Omega***	**HDI**	**GGGI**
Albania	239	37	22.99	4.90	0.72	1.09	0.77	791	0.769
Argentina	424	47	32.23	12.28	-0.32	1.04	0.63	830	0.746
Armenia	282	45	20.01	1.91	0.05	1.07	0.72	760	0.684
Australia	664	34	29.85	11.19	0.04	1.01	0.74	938	0.731
Belgium	1,951	46	21.59	5.97	-0.30	0.93	0.66	919	0.750
Bosnia	219	42	22.99	5.85	-0.12	1.28	0.89	769	0.712
Brazil	1,150	30	24.04	7.70	-0.03	1.01	0.53	761	0.691
Canada	913	31	19.85	2.90	0.03	0.89	0.69	922	0.772
Chile	237	34	21.76	5.10	-0.06	1.09	0.63	847	0.723
China	600	34	19.48	1.96	0.17	0.78	0.69	758	0.676
Colombia	615	36	21.49	4.95	-0.16	1.02	0.63	761	0.758
Croatia	363	20	23.19	5.80	0.47	0.89	0.68	837	0.720
Czechia	423	68	27.99	8.41	-0.04	1.00	0.75	891	0.706
Denmark	255	39	25.41	4.75	-0.30	0.87	0.66	930	0.782
England	744	38	22.24	7.28	-0.10	0.98	0.75	920	0.767
Finland	314	11	26.46	7.07	-0.78	0.86	0.64	925	0.832
France	422	18	22.26	6.74	-0.41	0.97	0.61	891	0.781
Georgia	197	47	21.74	3.48	0.39	1.17	0.81	786	0.708
Germany	1,864	37	28.21	9.80	-0.49	0.94	0.69	939	0.787
Ghana	329	37	20.20	2.58	0.53	1.12	0.71	596	0.673
Greece	282	27	26.39	9.10	-0.20	0.92	0.71	872	0.701
Hungary	768	17	22.34	4.27	0.41	0.95	0.74	845	0.677
India	388	37	22.16	5.01	-0.01	0.97	0.69	647	0.668
Indonesia	255	42	21.11	4.09	0.18	0.81	0.63	707	0.700
Iran	174	40	29.07	8.18	0.66	0.90	0.65	797	0.584
Ireland	571	46	19.84	3.70	0.10	0.94	0.70	942	0.798
Italy	2,419	33	22.84	5.33	0.07	0.95	0.66	883	0.707
Japan	397	39	21.36	2.95	0.49	0.72	0.49	915	0.652

Kazakhstan	344	43	20.22	3.82	0.52	0.98	0.71	817	0.710
Kosovo	433	37	20.25	3.86	0.80	1.05	0.73	791	0.769
Lebanon	134	27	20.00	1.78	0.42	0.98	0.73	730	0.599
Lithuania	355	28	23.87	6.76	0.19	1.12	0.77	869	0.745
Luxembourg	181	34	24.61	5.43	-0.06	1.11	0.79	909	0.725
Malta	254	34	26.90	10.18	0.23	1.01	0.71	885	0.693
Mexico	343	45	23.69	8.93	-0.18	0.99	0.62	767	0.754
Morocco	294	45	29.05	9.68	0.05	1.04	0.78	676	0.605
Nepal	219	37	22.33	5.86	0.21	0.96	0.68	579	0.680
Netherlands	893	32	20.60	3.25	-0.36	0.89	0.72	934	0.736
New Zealand	216	29	19.01	2.33	0.05	0.85	0.70	921	0.799
Nigeria	461	41	21.12	3.14	0.65	1.06	0.60	534	0.635
Northern Ireland	303	38	22.15	5.59	-0.06	1.01	0.74	920	0.767
Norway	210	42	23.13	4.11	-0.42	0.95	0.73	954	0.842
Pakistan	573	43	22.04	3.73	0.18	0.88	0.65	560	0.564
Philippines	468	47	19.78	2.01	0.26	0.94	0.68	712	0.781
Poland	843	38	22.95	4.68	0.34	1.00	0.71	872	0.736
Portugal	173	18	22.14	4.91	-0.39	0.86	0.55	850	0.744
Romania	253	41	22.83	4.64	0.36	1.03	0.72	816	0.724
Russia	698	31	21.84	6.83	0.41	1.03	0.73	824	0.706
Serbia	720	22	22.24	5.34	0.27	1.12	0.76	799	0.736
Slovakia	622	44	21.95	4.64	0.29	0.98	0.73	857	0.718
South Africa	415	14	20.60	2.48	0.40	0.97	0.67	705	0.780
Spain	1,235	34	25.68	8.72	-0.52	0.95	0.62	893	0.795
Suriname	182	45	22.92	5.73	0.32	1.02	0.74	724	0.707
Sweden	671	48	26.20	7.30	-0.46	0.98	0.64	937	0.820
Switzerland	581	35	23.53	5.36	-0.44	0.94	0.66	946	0.779
Turkey	1,495	31	22.27	3.96	-0.34	1.11	0.71	807	0.635
UAE	510	34	20.00	1.47	0.38	1.00	0.74	866	0.655
Ukraine	285	34	19.15	1.43	0.55	0.94	0.72	750	0.721
Uruguay	187	39	22.57	6.46	-0.32	0.84	0.46	808	0.737
USA	786	30	20.38	4.44	0.15	1.01	0.74	920	0.724
Vietnam	408	25	22.34	5.77	0.17	0.85	0.57	693	0.700

Wales	213	35	30.61	10.42	0.07	1.05	0.73	920	0.767
Total sample	**33,417**	**37**	**23.06**	**6.80**	**0.00**	**1.00**	**0.71**	**-**	**-**

Note. PMB = Precarious Manhood Beliefs Scale; HDI = Human Development Index; GGGI = Global Gender Gap Index.

Table 2. Comparison of Multilevel Factor Analysis Models for Precarious Manhood Beliefs (PMB) Scale.

Model type	Model	Fit statistics				
		BIC	CFI	RMSEA	$SRMR_W$	$SRMR_B$
Ignoring multilevel structure	One-factor (Model 1)	535878	0.97	0.093	0.030	–
Strong configural isomorphism	One-factor (Model 2)	529097	0.96	0.074	0.030	0.022
Strong metric isomorphism	One-factor, all loadings constrained to be equal (Model 3)	529101	0.96	0.057	0.031	0.106
Partial strong metric isomorphism	One-factor, all loadings constrained to be equal, except Item #2 (Model 4)	529088	0.96	0.061	0.030	0.050

Note. N=33,417; BIC=Sample-size adjusted Bayesian Information Criterion; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation; $SRMR_W$=Standardized Root Mean Square Residual within covariance matrix; $SRMR_B$=Standardized Root Mean Square Residual between covariance matrix.

Table 3. Comparison of Multilevel Factor Analysis Models including Precarious Manhood Beliefs, Hostile Sexism, Benevolent Sexism, Hostility toward Men, and Benevolence toward Men.

Model type	**Model**	**Fit statistics**				
		BIC	CFI	RMSEA	$SRMR_W$	$SRMR_B$
Ignoring multilevel structure	One-factor (Model 5)	1913334	0.69	0.116	0.092	–
	Three-factor (Model 6)	1896916	0.80	0.094	0.076	–
	Five-factor (Model 7)	1879171	0.93	0.059	0.047	–
Strong configural	One-factor at L2 (Model 8)	1844422	0.91	0.039	0.047	0.097
isomorphism	Three-factor at L2 (Model 9)	1844354	0.92	0.039	0.047	0.075
	Five-factor at both levels (Model 10)	1844358	0.92	0.040	0.047	0.071
Strong metric isomorphism	Five-factor (Model 11)	1844332	0.92	0.039	0.047	0.077
With covariates at county	Five-factor ~ GGGI (Model 12)	1844186	0.92	0.039	0.047	0.071
level	Five-factor ~ HDI (Model 13)	1845117	0.92	0.038	0.047	0.071

Figure 1. World Map Showing Country-Level Mean PMB Factor Scores

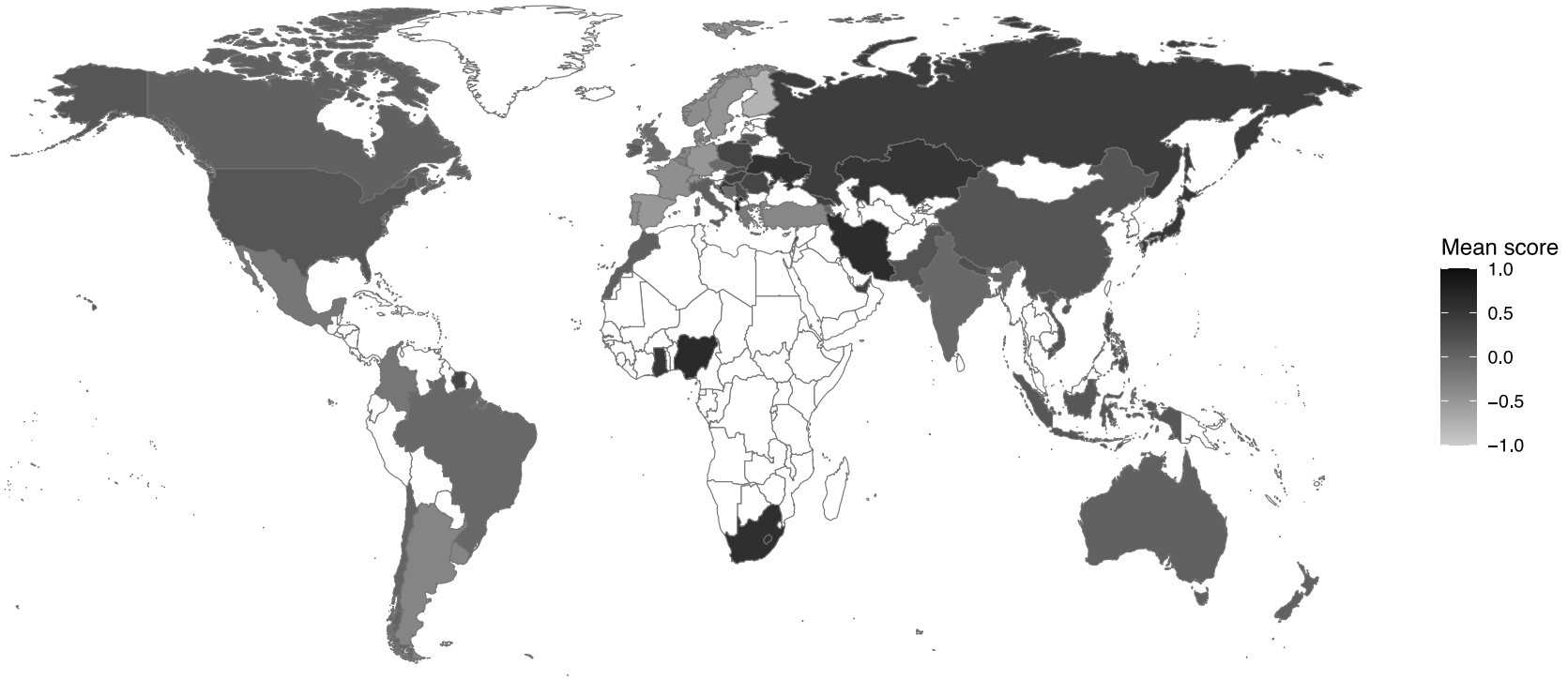


Figure 2. Two-Level CFA Results of the Five-Factor Gender Beliefs Model with Country-Level Gender Equality (GGGI).

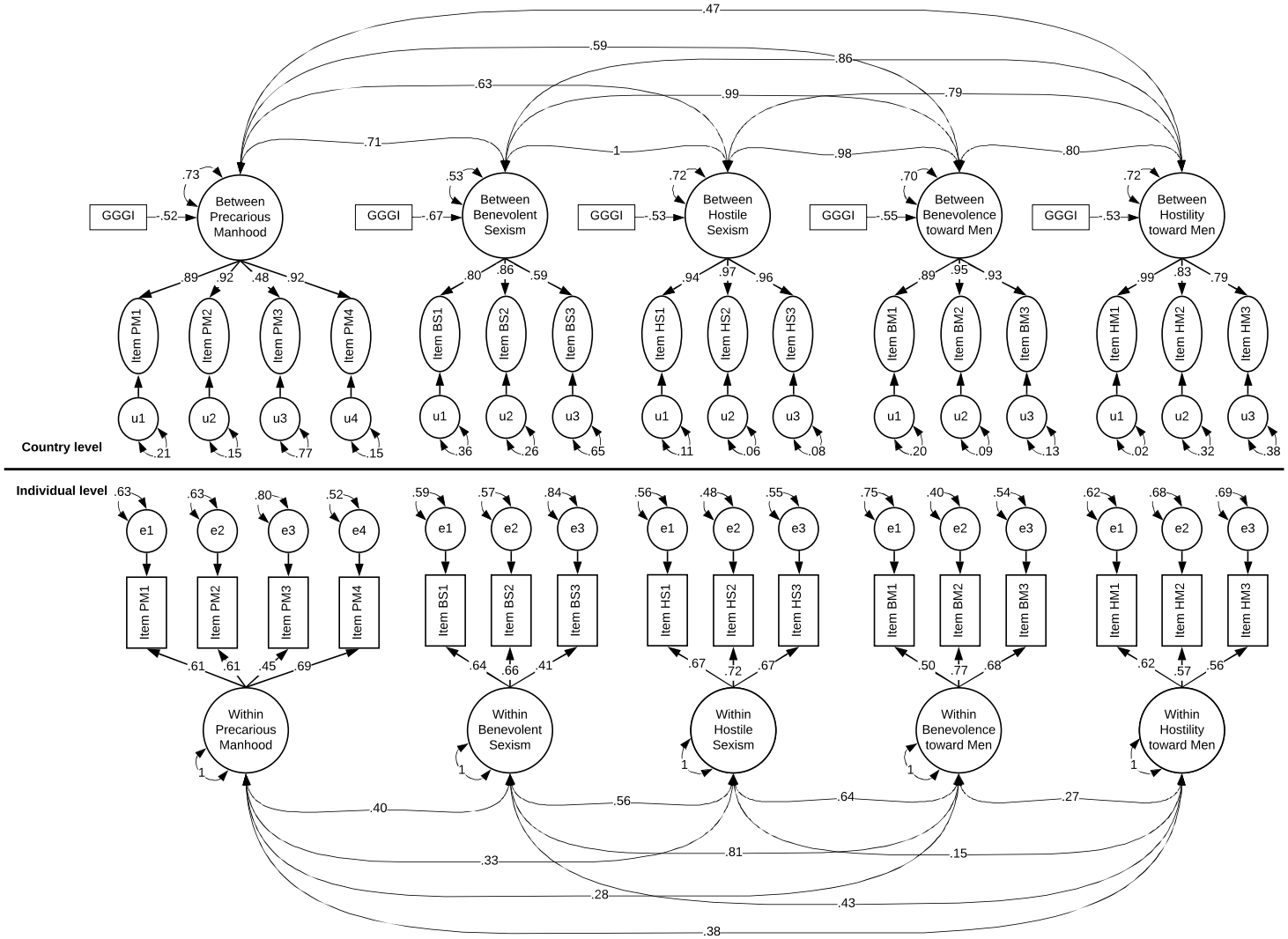


Figure 3. Scatterplot Showing the Association of Country-Level Precarious Manhood Beliefs (PMB) and Gender Equality (GGGI).

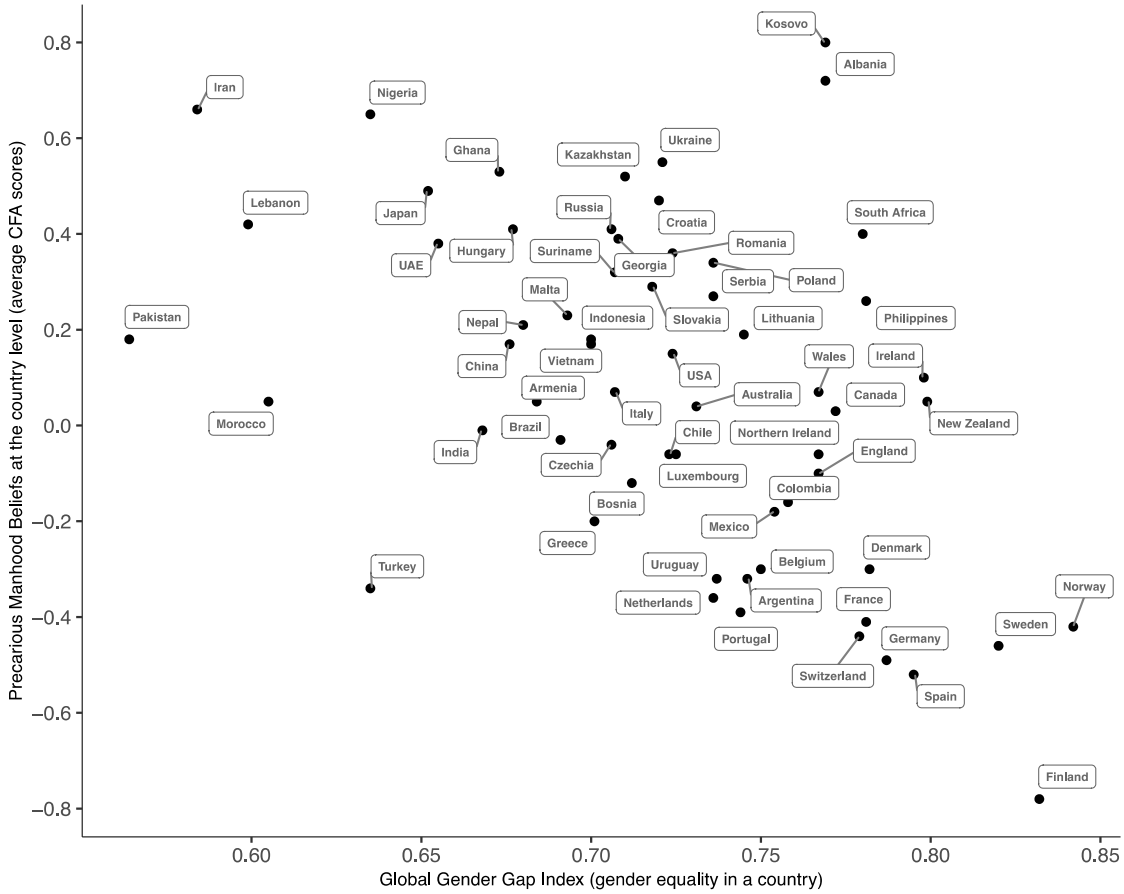


Figure 4. Scatterplot Showing the Association of Country-Level Precarious Manhood Beliefs (PMB) and Human Development (HDI).

