Three reasons why parental burnout is more prevalent in individualistic countries : A mediation study in 36 countries

Accepted for publication in *Social Psychiatry and Psychiatric Epidemiology*, May 2023

Corresponding author: Isabelle Roskam, isabelle.roskam@uclouvain.be
ORCID 0000-0002-1449-113
UCLouvain, Department of Psychology, Place Cardinal Mercier 10, B-1348 Louvain-la-Neuve, Belgium

Isabelle Roskam[1] (coordinator and corresponding author), Joyce Aguiar[2], Ege Akgun[3], Andrew F. Arena[4], Gizem Arikan[5], Kaisa Aunola[6], Eliane Besson[7], Wim Beyers[8], Emilie Boujut[9], Maria Elena Brianda[10], Anna Brytek-Matera[11], A. Meltem Budak[12], Noémie Carbonneau[13], Filipa César[2], Bin-Bin Chen[14], Géraldine Dorard[9], Luciana Carla dos Santos Elias[15], Sandra Dunsmuir[16], Natalia Egorova[17], Nicolas Favez[18], Anne-Marie Fontaine[2], Heather Foran[19], Julia Fricke[20], Kaichiro Furutani[21], Myrna Gannagé[7], Maria Gaspar[22], Lucie Godbout[13], Amit Goldenberg[23-24], James J. Gross[24], Maria Ancuta Gurza[25], Mai Helmy[26], Mai Trang Huynh[27], Taishi Kawamoto[28], Ljiljana B. Lazarevic[29], Sarah Le Vigouroux[30], Astrid Lebert-Charron[9], Vanessa Leme[31], Carolyn MacCann[32] , Denisse Manrique-Millones[33], Marisa Matias[2], María Isabel Miranda-Orrego[34], Marina Miscioscia[35], Clara Morgades-Bamba[36], Seyyedeh Fatemeh Mousavi[37], Ana Muntean[38], Sally Olderbak[39], Fatumo Osman[40], Daniela Oyarce-Cadiz[41], Pablo A. Pérez-Díaz[42], Konstantinos V. Petrides[16], Claudia Pineda-Marin[43], Alena Prikhidko[44], Ricardo T. Ricci[45], Fernando Salinas-Quiroz[46], Ainize Sarrionandia[47], Céline Scola[48], Alessandra Simonelli[35], Paola Silva Cabrera[49], Bart Soenens[8], Emma Sorbring[50], Matilda Sorkkila[6], Charlotte Schrooyen[8], Elena Stănculescu[51], Elena Starchenkova[52], Dorota Szczygiel[53], Javier Tapia[54], Thi Minh Thuy Tri[28], Mélissa Tremblay[13], Hedwig van Bakel[55], Lesley Verhofstadt[8], Jaqueline Wendland[9], Saengduean Yotanyamaneewong[56], Moïra Mikolajczak[1]

[1]UCLouvain, Place Cardinal Mercier 10, B-1348 Louvain-la-Neuve, Belgium.
[2]University of Porto, Rua Alfredo Allen, s/n, 4200-135 Porto, Portugal.
[3]Ankara University, Ankara Universitesi Egitim Bilimleri Fakultesi Okul Oncesi Egitimi AD Cebeci 06590 Ankara, Turkey.
[4]University of New South Wales, Hospital Road, Randwick, NSW, 2031, Australia.
[5]Ozyegin University, Nisantepe Mah. Orman Sok. 34794 Cekmekoy, Istanbul, Turkey.
[6]University of Jyväskylä, P.O. BoX 35, 40014 University of Jyväskylä, Finland.
[7]Saint-Joseph University, Campus des sciences humaines, Rue de Damas, B.P. 17-5208, Mar Mikhael, Beyrouth 1104 2020, Lebanon.
[8]Ghent University, Henri Dunantlaan 2, B-9000 Ghent, Belgium.
[9]Université de Paris, Laboratoire de Psychopathologie et Processus de Santé, F-92100 Boulogne-Billancourt, France.
[10]Université de Liège, Place des Orateurs, 2, 4000 Liège, Belgium.
[11]University of Wroclaw, Dawida 1, 50-527 Wroclaw, Poland.
[12]Bahcesehir University, Guney Yerleskesi, Besiktas, Istanbul, Turkey.
[13]Université du Québec à Trois-Rivières, 3351 Bd des Forges, Trois-Rivières, QC G8Z 4M3, Canada.
[14]Fudan University, Handan Road 220, Shanghai, China.
[15]University of São Paulo, Avenida Catão Roxo, 3900, Ribeirão Preto- SP- Brasil.

[16]University College London, 26 Bedford Way, London WC1H 0AP, United Kingdom.
[17]EPSM de l'agglomération lilloise, 1 rue de Lommelet, Saint-André-lez -Lille, 59871, France.
[18]University of Geneva, 40 Boulevard du Pont-d'Arve, 1205 Geneva, Switzerland.
[19]University of Klagenfurt, Universitaetsstr. 65-67, Klagenfurt, Austria 9020.
[20]Charité-Universitätsmedizin Berlin, Luisenstr. 57, 10117, Berlin, Germany.
[21]Hokkai-gakuen University, 4-1-40, Asahimachi, Toyohiraku, Sapporo, Japan.
[22]University of Coimbra, Rua do Colégio Novo, 3000-115 Coimbra, Portugal.
[23]Harvard University, Soldiers Field Boston, MA 02163, USA.
[24]Stanford University, Stanford, CA 94305-2130, USA.
[25]DGASPC Timis, Apateu 21, Timisoara, Romania.
[26]Sultan Qaboos university, Muscat, Oman, Egypt, and Menoufia university, Egypt.
[27]Ho Chi Minh City University of Education, 280 An Dương Vương, District 5, Hồ Chí Minh City, Vietnam.
[28]Chubu University, 1200 Matsumoto-cho, Kasugai, Aichi 487-8501, Japan.
[29]University of Belgrade, Cika Ljubina 18-20, 11000 Belgrade, Serbia.
[30]Université de Nîmes, 5 Rue du Docteur Georges Salan CS 13019, 30021 Nîmes, France.
[31]State University of Rio de Janeiro, Place São Francisco Xavier, 524, B - 10005c F, Maracanã, Rio de Janeiro, Brazil.
[32]The University of Sydney, Brennan MacCallum 449, Manning Road, Camperdown, NSW, 2007, Australia.
[33]Universidad Científica del Sur, Carr. Panamericana Sur 19, Villa EL Salvador 15067, Peru.
[34]Pontificia Universidad Católica del Ecuador, Avenida 12 de Octubre 1076 y Vicente Ramón Roca, 170525 Quito, Ecuador.
[35]University of Padova, Via Venezia 8 - 35131 Padova, Italy.
[36]Universidad Nacional de Educación a Distancia (UNED), Avda Valencia 13, 50005, Zaragoza, Spain.
[37]Alzahra University, North Sheikh Bahaee St., Deh-e Vanak, Tehran, Iran.
[38]West University in Timisoara, Oradea, str. Razboieni, nr.1, Romania.
[39]Institut für Therapieforschung, Leopoldstraße 125, D-80804 Munich, Germany.
[40]Dalarna University, Sweden, Hogskolegatan 2, 791 88 Falun, Sweden.
[41]Universidad Santo Tomás, Avenida Carlos Schorr 255, Talca, Chile.
[42]Austral University of Chile, Institute of Psychology, Los Pinos Avenue, W/N, Puerto Montt, Chile.
[43]Konrad Lorenz University, Cra. 9 Bis #62-43, 110231 Bogotá, Colombia.
[44]Florida International University, 11200 SW 8 Street, Miami, Florida, 33199, USA.
[45]Universidad Nacional de Tucumán, Las Heras 429 7B (400) San Miguel de Tucumán, Argentina
[46]Tufts University, 105 College Avenue, Medford, MA 02155, USA.
[47]University of the Basque Country, Tolosa Hiribidea 70, Donostia-San Sebastian 20018. Gipuzkoa, Basque Country, Spain.
[48]Aix Marseille Univ, 29 avenue Robert Schuman 13621 Aix-en-Provence cedex 01, France.
[49]Universidad de la República, Tristán Narvaja nro. 1674, Uruguay
[50]University West, S-461 32 Trollhättan, Sweden.
[51]University of Bucharest, Panduri Street 90, Bucharest, Romania.
[52]Saint Petersburg State University, Universitetskaya nab. 7/9, Saint Petersburg, Russia.
[53]SWPS University, ul. Polna 16/20, 81-745 Sopot, Poland.
[54]Universidad de Costa Rica, Sede Rodrigo Facio, Universidad de Costa Rica.
[55]Tilburg University, Professor Cobbenhagenlaan 125, 5000 LE Tilburg, The Netherlands.
[56]Chiang Mai University, 239 Huay Kaew Road, Suthep, Chiang Mai 50200, Thailand.

Statements and declarations

Funding

I.R. and M.M. were supported by a Coordinated Research Grant from the Fédération Wallonie-Bruxelles in Belgium (ARC Grant n°19/24-100). This fund did not exert any influence or censorship of any kind on the present work.

Authors' Contribution

Original idea for the study: Isabelle Roskam. Study design: Isabelle Roskam, Moïra Mikolajzac, and Maday Valdés Pacheco. Data collection: All authors. Data management and data analysis: Isabelle Roskam. Writing of the first draft of the paper: Isabelle Roskam and Moïra Mikolajzac. The final draft has been read and approved by all coauthors.

Competing Interests

The authors declare no competing financial interests or funding source that could have influenced the data collection, analysis or conclusions. M.M. and I.R. have now founded a training institute which delivers training on parental burnout to professionals. The institute did not participate in the funding of this study nor did it influence the process, the results or their interpretation in any manner.

Acknowledgment

The authors thank the International Investigation of Parental Burnout (IIPB) Consortium (https://www.burnoutparental.com/international-consortium) for collecting and providing the data on which this study is based.

Availability of data and material

The full protocol, database, and syntaxes are available on OSF https://osf.io/94w7u/?view_only=a6cf12803887476cb5e7f17cfb8b5ca2.

Three reasons why parental burnout is more prevalent in individualistic countries: A 36-country study

Purpose The prevalence of parental burnout, a condition that has severe consequences for both parents and children, varies dramatically across countries and is highest in Western countries characterized by high individualism. **Method** In this study, we examined the mediators of the relationship between individualism measured at the country level and parental burnout measured at the individual level in 36 countries (16,059 parents). **Results** The results revealed three mediating mechanisms, that is, self-discrepancies between socially prescribed and actual parental selves, high agency and self-directed socialization goals, and low parental task sharing, by which individualism leads to an increased risk of burnout among parents. **Conclusion** The results confirm that the three mediators under consideration are all involved, and that mediation was higher for self-discrepancies between socially prescribed and actual parental selves, then parental task sharing, and lastly self-directed socialization goals. The results provide some important indications of how to prevent parental burnout at the societal level in Western countries.

Keywords: exhaustion, culture, individualism, mothers, fathers

Having no energy left to take care of their children, feeling so exhausted in their parental role that sleeping does not allow them to recover, no longer being able to show how much they love their children, feeling zero pleasure in being with them, and feeling ashamed of the parents they have become: this is how thousands of mothers and fathers currently feel around the world [1]. These parents suffer from parental burnout, a condition characterized by physical and emotional exhaustion in parenting, emotional distancing from children, a loss of pleasure and effectiveness as a parent, and contrast with previous parental self, which results from a chronic imbalance between parenting stressors and resources [2, 3].

Over the past fifteen years, parental burnout has received increasing attention around the world [e.g., 4, 5-8]. In spite of this worldwide interest in the topic, the International Investigation of Parental Burnout (IIPB) recently highlighted considerable variations in the prevalence of parental burnout across countries [1]. A prevalence lower than 1% was observed in countries such as Thailand and Cuba, whereas parental burnout affects 5 to 8% of parents in Western countries like the United States, Canada, Poland, France and Belgium.

The significant variations in the prevalence of parental burnout across countries has led researchers to investigate the cultural factors associated with it. They have found that sociodemographic and economic factors contribute only marginally to parental burnout [e.g. 9, 10-12], whereas cultural values and, in particular, individualism explain a significant part of its variation across countries. The individualism of a country corresponds to a particular form of relationship between individuals and the groups to which they belong [13, 14]. In individualist countries, individuals maintain relatively loose ties and put their own needs before those of the group. In contrast, in collectivist countries, individuals are tightly connected and the needs of the group are put before the needs of the individual. Based on his research, Hofstede ranked almost all countries in the world on a relative continuum from 0 (minimum level of individualism) to 100 (maximum level of individualism).

Based on a study of 42 countries around the world, the IIPB showed that the higher the level of individualism in a country, the higher the level of parental burnout reported by parents [1]. However, the mechanisms by which individualism leads to an increased risk of burnout among parents remain unknown. Investigating these mechanisms involves studying the mediators of the relationship between individualism measured at the country level and parental burnout measured at the individual level.

To identify possible mediators explaining why parents are more prone to burn out in individualistic countries, a look at the construct of individualism at the individual level is helpful. Individualistic people are characterized by autonomy and independence, individual achievement and responsibility, self-reliance [15], lack of concern for others [16], motivation for their own needs, goals and preferences, competition [17-19], self-direction, stimulation, power, hedonism [20-22], and perfectionism [23]. The characteristics of individualistic people provide important insights into how individualism can concretely affect the experience of parenting, from which we identified three relevant mediators to test.

First, in line with the individualists' characteristics of independence, individual achievement, and self-reliance, we hypothesized that in individualistic countries, parents carry out their responsibilities towards their children (i.e. earning money, providing food, taking care of their needs, protecting, playing, rearing them, and so on) on their own rather than with others. The African proverb "It takes a village to raise a child" does not apply in individualistic countries because the social fabric is rather loose. This may be a vulnerability factor, because social support is an important resource against parental burnout [9, 24-28]. We therefore hypothesized that carrying all demanding parental responsibilities alone rather than sharing some of the parental tasks with relatives in the social network, would increase the risk of burning out, and that parental task sharing should mediate the link between individualism at the country level and parental burnout.

Second, in line with the individualists' characteristics of autonomy, self-direction, and power, we hypothesized that in individualistic countries, parents pursue culturally consistent socialization goals for their children, particularly agency and self-directed socialization goals [29-31]. In other words, parents prepare their children to be (individualistic) people oriented to the satisfaction of their personal needs and preferences. This prepares their children to integrate into their social group, but at the same time, it means that they are also more self-oriented, more demanding, and less inclined to comply with their parent's wishes. We therefore expected that socialization goals oriented towards the child's agency would make parenting more taxing, and mediate the link between individualism at the country level and parental burnout.

Third, in line with the individualists' characteristics of personal achievement, stimulation and perfectionism, we hypothesized that in individualistic countries, parents are more prone to perceive a gap between the socially prescribed parental self and their actual self. Western countries, characterized by high levels of individualism, are marked by high standards in parenting [32-34], and studies have shown that these standards are internalized by parents, driving them to make constant efforts that make them more vulnerable to parental burnout [35, 36]. In line with this, we expected that self-discrepancies between socially prescribed and actual parental selves would mediate the link between individualism and parental burnout.

In order to test these three mediating effects, we collected data from 16,059 parents in 36 countries across the globe. For each country, we obtained the level of individualism from Hofstede's dimensions of cultural values (retrieved from https://www.hofstede-insights.com/product/compare-countries/) as the most widely used indicators of cross-cultural differences [37, 38]. For each parent, we measured parental task-sharing, agency and self-directed socialization goals, parental self-discrepancies, and parental burnout. Since there is

inter-individual variability in the level of individualism of parents within countries, especially in heterogeneous cultures that tolerate deviations of in-group members from the group values [18, 39], we also assessed individualism at the individual level and introduced it as a control variable in the model.

Method

Participants

A sample of 16,059 parents, composed of 4,419 fathers (M_{age} = 42.38, SD_{age} = 9.83, range: 18-89) and 11,640 mothers (M_{age} = 38.03, SD_{age} = 7.97, range: 18-88) from 36 countries, was drawn from the IIPB database collected between December 2017 and December 2019 (see Procedure below). Among the 42 countries that participated in the IIPB data collection, 36 countries were retained in the present sample because individualism at the country level was not available for Algeria, Burundi, Cameroun, Cuba, Rwanda, and Togo. Parents were eligible to participate if they had at least one child still living at home and were at least 18 years old. The sociodemographic characteristics of the pooled sample and of the sample in each country are detailed in Table 1.

Insert Table 1 about here

Procedure

The data used in this study came from the IIPB, a large international research consortium on parental burnout set up in 2017. This aimed to include the widest possible range of countries in terms of geographical location, cultural values and socio-economic level. These countries were invited to use a common protocol which was translated into 21 different languages using translation/back-translation procedures conducted by the consortium members and coordinated by the first author [for more information about the IIPB Consortium, see 1]. The study was approved by the Institutional Review Board both at UCLouvain and in each country. Ethics approvals in each country are presented in Table S1.

The IIPB data collection was carried out between January 2018 and March 2020. To avoid (self-)selection bias, the survey was presented as a study designed to improve understanding of parental satisfaction and exhaustion around the world, rather than as a study on parental burnout. Participants who gave their informed consent were asked to complete the survey anonymously, but could withdraw at any moment without providing any justification. The presentation of the survey (i.e., paper and pencil, or online) and the data collection procedure (newspaper advertisement, word of mouth, social networks, door-to-door, etc.) differed from country to country according to local practices. The data collection procedure in each country has been summarized in Table S2.

Measures

The common IIPB protocol included several measures addressing different research questions (e.g., comparing the prevalence of parental burnout across countries; exploring parenting cultures and the model of the child around the globe; investigating the relations between maternal burnout and gender egalitarian values at both country and individual levels). Because these questions are too different to be addressed in the same article, only the measures considered in the current study are presented below. The full IIPB protocol is available on Open Science Framework (OSF) at https://osf.io/94w7u/?view_only=a6cf12803887476cb5e7f17cfb8b5ca2.

Individual Level

Sociodemographic characteristics. Participants were first asked about: their gender; their age; their educational level (number of successfully completed school years from the age of 6); their working status (in paid work or not); the family type (two-parent family; single-parent family, step-family; others (e.g. polygamous family, two same-sex parents, multigenerational family)) the number of children living in the household; the age of the youngest and the oldest child; the number of women (e.g. co-wife, grandmother, nanny,

helper, etc.) living in the household/direct entourage and caring for the children on a daily basis (including the participant); the number of men (e.g. grandfather, uncle, etc.) living in the household/direct entourage and caring for the children on a daily basis; the number of hours the participant spent with the children per day (excluding nighttime hours); and the neighborhood profile (disadvantaged; average; prosperous).

Parental burnout. Parental burnout was assessed with the Parental Burnout Assessment [PBA, 40], a 23-item questionnaire assessing the four core symptoms of parental burnout: emotional exhaustion (9 items) (e.g., *I feel completely run down by my role as a parent*), contrast with previous parental self (6 items) (e.g., *I tell myself I'm no longer the parent I used to be*), loss of pleasure in one's parental role (5 items) (e.g., *I don't enjoy being with my children*) and emotional distancing from one's children (3 items) (e.g., *I am no longer able to show my children that I love them*), on a 7-point frequency scale (never (0), a few times a year (1), once a month or less (2), a few times a month (3), once a week (4), a few times a week (5), every day (6)). The parental burnout score was calculated by summing the scores on the 23 items. The higher the score, the more severe the parental burnout symptoms.

Parental task-sharing. Parental task-sharing was measured with 23 items specifically created for the IIPB. They were based on LeVine's conceptual framework of universal parental function [41], encompassing 6 items on task-sharing regarding basic needs (e.g. *Being present during the child(ren)'s meals*), 5 items on task-sharing regarding material subsistence (e.g. *Earning money to pay for food*), and 11 items on task-sharing regarding childrearing (e.g. *Teaching children what is and is not allowed*). The items were briefly introduced as follows: "*Being a parent encompasses a set of tasks and responsibilities. These can be shared among several adults who raise the child(ren) together. For the following tasks and responsibilities, indicate whether you take care of it on your own or together with someone else (e.g. the other parent, grandparents, relatives, brothers and sisters, people you*

trust in your community, ...)." Parents answered the items on a 5-point-scale (me exclusively (0), mainly me (1), half me and half someone else (2), mainly someone else (3), someone else exclusively (4)). The parental task-sharing score was obtained by summing the scores on the 23 items. The higher the score, the more the parent shared his/her parental tasks and responsibilities.

Agency and self-directed socialization goals. Agency socialization goals were measured with the 12 items of the agency and self-direction subscales of the Goals and Values in Adulthood Questionnaire [GVAQ, 42]. A list of long-term goals and values that can be transmitted to child(ren) by parents was provided (e.g. *Thinking for yourself: having your own views even if they differ from those of the others*). Parents were asked to indicate how important they felt it was for their child(ren) to acquire or have each of these values as adults. Parents answered the items on a 6-point-scale (not important (0), somewhat important (1), important (2), very important (3), extremely important (4), the most important (5)). The agency score was obtained by averaging the scores on the 12 items. The higher the score, the more pronounced the agency and self-directed socialization goals.

Parental self-discrepancies. The discrepancy between parental selves was measured using a variation of the S-DS [43]. In the current study, the respondents were first invited to freely name five characteristics that the society in which they were raising their child(ren) considered that an ideal parent should possess (*Indicate in the following boxes five features that an ideal mother/father should have in the view of the society in which you live*). Second, they evaluated the actual/socially prescribed discrepancy through the following item: *As a parent, do you behave the way society expects you to?*, rated on a scale from 0 to 100% ranging from "I don't behave in this way at all" to "I behave exactly in this way", so that higher scores reflected *lower* parental self-discrepancies.

Individualism. Individualism at the individual level was assessed with the 11 independence items (e.g. *I try to do what is best for me, regardless of how that might affect others*) of the Singelis Self-Construal Scale [44]. Parents answered on a 6-point-scale (strongly disagree (1), disagree (2), somewhat disagree (3), neither agree nor disagree (4), somewhat agree (5), agree (6), strongly agree (7)). The individualism score at the individual level was obtained by averaging the scores on the 11 items, so that higher scores reflected higher individualism.

Country Level

Individualism. Individualism at the country level was retrieved from Hofstede's work [45]. Individualism scores ranged between 0 and 100 (retrieved from https://www.hofstede-insights.com/product/compare-countries/). In the present sample, Individualism scores ranged between 8 (Ecuador) and 91 (USA). They are displayed in Table 2 for the 36 countries.

Statistical analyses

Stata17 [46] was used to perform the statistical analyses. The full syntax and dataset are available on OSF at https://osf.io/h5fdx/?view_only=7947a23e5e2b4dd8b5a503064b758e22. Preliminary analyses were conducted in order to test the validity of the measures (i.e., measurement invariance across languages), normality, and correlations between all variables. Details about the preliminary analyses are provided in the supplemental material.

For the main analyses, we estimated a structural path model in which individualism at the country level predicted parental burnout both directly and indirectly through the three mediators, i.e. parental task-sharing, agency socialization goals and parental self-discrepancies, and the control variable, i.e. individualism at the individual level. The model also controlled for the relation between individualism at the country level and individualism at the individual level, as well as for covariances between the three mediators, and between

the three mediators and the control variable, i.e. individualism at the individual level. The maximum likelihood method of estimation was used to estimate the model, with the option mlmv so that we used all the information available without listwise deletion. We then tested the direct, indirect and total effects of individualism at the country level on parental burnout. Since the specific effects of the three mediators were confounded in the indirect effect coefficient, we tested the equality of coefficients to identify if some mediators played a more important role in the model. Finally, we compared the total effect of individualism at the country level on parental burnout through each of the significant mediation processes by multiplying the coefficient of the path between individualism at the country level and the mediator, by the coefficient of the path between the mediator and parental burnout, plus the coefficient of the direct link between individualism at the country level and parental burnout.

Results

The results of the mediation model are presented in Figure 1. They confirmed our hypotheses about the mediation processes. As expected, when individualism at the individual level was controlled for, individualism at the country level predicted lower parental task-sharing, higher agency socialization goals and higher parental self-discrepancies. In turn, low parental task-sharing, high agency socialization goals and high parental self-discrepancies predicted higher parental burnout.

As shown in Figure 1, the standardized estimate of the direct effect of individualism at the country level on parental burnout was .19, $z = 21.66$, $p < .000$. The indirect effect was .05, $z = 16.12$, $p < .000$, and the total effect was .24, $z = 27.01$, $p < .000$. We can deduce that 79% (.19/.24) of the effect of individualism at the country level on parental burnout was direct after controlling for the three mediators and individualism at the individual level, whereas 21% (.05/.24) of the effect was indirect through the three mediators. In other words, after controlling for the three mediators and individualism at the individual level, the majority of

the effect of individualism at the country level on parental burnout was direct. There was a sizeable but smaller percentage of the effect that was indirect. Overall, the mediation model explained 7% of the variance in parental burnout.

With regard to the equality of coefficients between the three mediators and parental burnout, we found a higher effect of parental self-discrepancy compared to parental task-sharing, $\chi^2(1) = 106.65$, $p < .000$, or agency socialization goals, $\chi^2(1) = 518.04$, $p < .000$, as well as a higher effect of parental task-sharing compared to agency socialization goals, $\chi^2(1) = 191.87$, $p < .000$.

In sum, the results of the direct, indirect and total effects, as well as the tests of the equality of coefficients, suggest a hierarchy in the contribution of mediators: the total effect of individualism at the country level on parental burnout was highest through the mediation effect of parental self-discrepancies (-.11*-.22 +.19 = .214), then through the mediation effect of parental task-sharing (-.12*-.11 +.19 = .203), and finally through the mediation effect of agency socialization goals (.11*.05 +.19 = .195).

Discussion

The objective of the current study was to investigate the mechanisms by which individualism leads to an increased risk of burnout among parents. We therefore studied three mediators of the relationship between individualism measured at the country level and parental burnout measured at the individual level. The results confirm that the three mediators under consideration are all involved.

The first and most important mediator was parental self-discrepancy. Parents from individualistic countries are more prone to perceive a gap between the socially prescribed parental self and their actual self. In turn, parents who perceive such a gap are at higher risk of burning out. The standards of parenting that prevail in Western societies seem to be internalized by parents and foster a sense of underachievement in their role as parents [36,

47]. Our results suggest that the expectations of Western societies may be so demanding that some parents might feel that they are never doing enough for their children and that they must constantly try harder to become more perfect parents and have better children, leaving them exhausted and unfulfilled in their parental role [35, 48].

In the order of significance, the second mediator at play was parental task-sharing. The responsibilities that must be assumed and the tasks that must be accomplished as a parent are broad and demanding, especially in societies with high standards of parenting. In individualistic countries, parents feel that these responsibilities belong to the parent alone. They aim to accomplish everything by themselves without asking for help. Parenting responsibilities and tasks are therefore not readily shared with other caregivers. Our results are fully in line with previous research in other fields and samples such as physicians [49, 50] and employees [51], suggesting an association between individualistic cultures that both promote self-reliance and impede help-seeking behavior, and burnout, depression or medication use.

The third mediator involved was agency and self-directed socialization goals. The transmission of the values that prevail in the social group to which one belongs is an important mission for parents as they prepare their children to take their place in their group. Parents raising their children in individualistic countries therefore transmit the values of independence, self-direction and power. From an early age, children from individualistic cultures learn that their needs and desires are primary. They are encouraged to make their own choices and find their own path in life [52]. These self-oriented socialization goals would be associated with a decrease in parental guidance and authority in favor of negotiation and compromise between parent and child when the adult is required to constrain the child's choices and limit individual freedom. Parents should then justify their requests more, rather than impose them, in order to obtain the child's compliance. This would make the parent's

educational task not only more demanding but also more stressful because the parent is never assured of obtaining the child's obedience.

These three mediating mechanisms were responsible for 21% of the effect of country-level individualism on parenting burnout. This percentage matters. However, the mechanisms by which cultural values translate into individual behaviors or symptoms are very complex, and this study indicates that 79% of the effect of country-level individualism on parenting burnout is mediated by other mechanisms that were not measured here. We will return to this point in our discussion of future directions below.

Furthermore, the estimation of the percentage of variance explained in parenting burnout showed that 7% could be attributed to the variables considered in the model. Parental burnout results from multiple factors originating from the social and cultural context on the one hand [about 1/4 of the variance, see 1], and from inter-individual differences on the other hand [about 3/4 of the variance, see 1]. Consideration of other mediating mechanisms could help increase the proportion of variance explained at the societal level. A better understanding of these mechanisms is essential if we are to prevent parental burnout in individualistic societies, where it is reaching worrying levels of prevalence [1]. These levels have further increased during the pandemic [53]. It is not in the interest of Western societies for parents to burn out, given their responsibilities for optimal child development, the need to balance work and parenting responsibilities, the risks to the physical and mental health of burnt-out parents [54], and the risk of increased neglect and violence towards their children [2, 9].

The mechanisms that we have detected in this study provide indications of how to prevent parental burnout at the societal level. In particular, they suggest first that the high standards associated with ideal parenting should be questioned in terms of their relevance and their impact on parents and their children. Second, our results should lead us to reconsider the social support available to parents. Solidarity between parents, and more generally between

adults, is important to ensure that childrearing is the responsibility of the social group or community, and not of the parent alone. Consider extending the concept of co-parenting to include the involvement of the other parent, but also of other caregivers available in the child's environment, could help us to carry the debate forward. Third, our results point to potential derives that may be taken by the rearing of children as it prevails in individualistic societies. Childrearing in this context may lead children to be narcissistic [55, 56], and exclusively focused on the satisfaction of their needs without regard for those of others. The dangers of such tendencies for democratic societies have recently been raised with regard to ego inflation [57] and mixed attitudes toward collective concerns like environmental protection in both Europe and the United States [58, 59] for example.

Limitations and Future Directions

In this study, we tested mediators of the link between country-level individualism and parental burnout. Nevertheless, the higher prevalence of parental burnout in individualistic countries should not hide its prevalence in collectivistic countries too. Mechanisms specific to these cultures should also be explored and tested. It is the researchers from these cultures who must develop hypotheses about the mediators at work. We hope that our study will stimulate researchers to do so in order to move away from exclusively WEIRD (i.e., western, educated, industrialized, rich, democratic) knowledge about parenting.

With regard to the cultural roots of parental burnout in individualistic countries, our study is far from having identified and estimated all the relevant mechanisms. New studies will have to be devoted to these still unexplored mechanisms; some of the possible candidates are briefly outlined below.

As suggested by our results on parental task-sharing, social support is probably a mediator in the relation between individualism at the country level and parental burnout. One limit of the current study is that we only measured social support with regard to parenting

task-sharing. Glazer [60] showed that social support, in a broader sense, varies across cultures. In particular, in the job domain, people from Western countries are more likely to perceive support from their supervisor but less likely to perceive support from their coworkers. Similarly, we would expect that Western parents perceive less social support from those in their social circle (i.e., the other parent, the grand-parents, neighbors or friends), despite the fact that this is an important resource for coping with stress [61, 62]. Its protective effect against parenting stress [63], parental exhaustion [64], and parental burnout [9, 24-28] have now been largely demonstrated. Its effects are potent [9, 65] and it is therefore a very strong mediation candidate.

Another potential mediator that has not been measured here is children's externalizing behavior. By virtue of agency and self-directedness amongst other factors, the prevalence of externalizing behaviors is higher in Western countries than in Asian countries [66] and they have been associated with increased parenting stress and exhaustion [see 67 for a meta-analysis]. They are thus a likely and possibly potent mediator between individualism and parental burnout.

A third possible mediator is parenting role restriction, i.e., the perceived loss of freedom associated with one's parental role. Parenting role restriction is probably higher in individualistic countries because of individualistic parents' focus on their own desires on the one hand, and the sacrifices needed to raise a child, which stand in the way of parents' self-realization, on the other hand. The fact that parenting role restriction has been shown to be strongly associated with parental burnout [12] as well as to be associated with parental regrets in Western countries [68] makes it a very likely candidate mediator.

As the above-mentioned examples show, there are many other candidate mediators and these should ideally be tested in multiple and sequential mediation models. It is likely that agency and self-directedness goals reduce the strength of discipline, thus increasing

externalizing behaviors, which may in turn eventually increase parental burnout. Future studies that go deeper into the complex mediating pathways between individualism and parental burnout are thus needed, and it is our hope that the current study will stimulate such research efforts. These are crucially needed to determine the best targets to prevent parental burnout.

References

1. Roskam, I, J Aguiar, E Akgun, et al. (2021) Parental Burnout Around the Globe: a 42-Country Study. Affective Science 2:58-79. 10.1007/s42761-020-00028-4
2. Mikolajczak, M, JJ GrossI Roskam (2019) Parental Burnout: What Is It, and Why Does It Matter? Clinical Psychological Science 7:1319-29. 10.1177/2167702619858430
3. Mikolajczak, M, JJ GrossI Roskam (2021) Beyond Job Burnout: Parental Burnout! Trends Cogn. Sci. 25:333-36. 10.1016/j.tics.2021.01.012
4. Wang, W, S Wang, S Chen, et al. (2022) Parental burnout and job burnout in working couples: An actor-partner interdependence model. J. Fam. Psychol. 36:704-12. 10.1037/fam0000953
5. Kerr, ML, KA Fanning, T Huynh, et al. (2021) Parents' Self-Reported Psychological Impacts of COVID-19: Associations With Parental Burnout, Child Behavior, and Income. J. Pediatr. Psychol. 46:1162-71. 10.1093/jpepsy/jsab089
6. Lin, G-XD Szczygieł (2022) Basic Personal Values and Parental Burnout: a Brief Report. Affective Science. 10.1007/s42761-022-00103-y
7. Manrique-Millones, D, GM Vasin, S Dominguez-Lara, et al. (2022) Parental Burnout Assessment (PBA) in Different Hispanic Countries: An Exploratory Structural Equation Modeling Approach. Front. Psychol. 13. 10.3389/fpsyg.2022.827014
8. Sodi, T, LB Kpassagou, O Hatta, et al. (2020) Parenting and parental burnout in Africa. New Dir. Child Adolesc. Dev. 2020:101-17. https://doi.org/10.1002/cad.20386
9. Szczygieł, D, M Sekulowicz, P Kwiatkowski, et al. (2020) Validation of the Polish version of the Parental Burnout Assessment (PBA). New Dir. Child Adolesc. Dev. 2020:137-58. https://doi.org/10.1002/cad.20385
10. Vigouroux, SLC Scola (2018) Differences in Parental Burnout: Influence of Demographic Factors and Personality of Parents and Children. Front. Psychol. 9. 10.3389/fpsyg.2018.00887
11. Kwiatkowski, PM Sekulowicz (2017) Examining the Relationship of Individual Resources and Burnout in Mothers of Children with Disabilities. Int. J. Spec. Educ. 32:823-41.
12. Mikolajczak, M, M-E Raes, H Avalosse, et al. (2018) Exhausted parents: Sociodemographic, child-related, parent-related, parenting and family-functioning correlates of parental burnout. Journal of Child and Family Studies 27:602-14. https://doi.org/10.1007/s10826-017-0892-4

13. Hofstede, G (1980) Culture and Organizations. International Studies of Management & Organization 10:15-41. 10.1080/00208825.1980.11656300
14. Hofstede, G. in Contemporary issues in cross-cultural psychology. 4-20 (Swets & Zeitlinger Publishers, 1991).
15. Ho, DY-FC-Y Chiu (1994) Component ideas of individualism, collectivism, and social organization: An application in the study of Chinese culture. (eds) Individualism and collectivism: Theory, method, and applications. Sage Publications, Inc, Thousand Oaks, CA, US, 137-56
16. Hui, CHHC Triandis (1986) Individualism-Collectivism: A Study of Cross-Cultural Researchers. J. Cross Cult. Psychol. 17:225-48. 10.1177/0022002186017002006
17. Triandis, H (1995) Individualism and Collectivism. Westview Press, Boulder, CO
18. Triandis, HC (1989) The self and social behavior in differing cultural contexts. Psychol. Rev. 96:506-20. https://doi.org/10.1037/0033-295X.96.3.506
19. Triandis, HC, C McCusker, H Betancourt, et al. (1993) An Etic-Emic Analysis of Individualism and Collectivism. J. Cross Cult. Psychol. 24:366-83. 10.1177/0022022193243006
20. Schwartz, SH (1990) Individualism-collectivism: Critique and proposed refinements. J. Cross Cult. Psychol. 21:139-57. 10.1177/0022022190212001
21. Schwartz, SH (1992) Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. (eds) Advances in experimental social psychology, Vol. 25. Academic Press, San Diego, CA, US, 1-65
22. Schwartz, SH (1994) Are There Universal Aspects in the Structure and Contents of Human Values? Journal of Social Issues 50:19-45. https://doi.org/10.1111/j.1540-4560.1994.tb01196.x
23. Curran, TAP Hill (2019) Perfectionism Is Increasing Over Time: A Meta-Analysis of Birth Cohort Differences From 1989 to 2016. Psychol. Bull. 145:410-29. 10.1037/bul0000138
24. Weiss, MJ (2002) Hardiness and social support as predictors of stress in mothers of typical children, children with autism, and children with mental retardation. Autism 6:115-30. 10.1177/1362361302006001009
25. Ardic, A (2020) Relationship between Parental Burnout Level and Perceived Social Support Levels of Parents of Children with Autism Spectrum Disorder. International Journal of Educational Methodology 6:533-43.
26. Lindström, C, J AmanA Lindhal-Norberg (2011) Parental burnout in relation to sociodemographic, psychosocial and personality factors as well as disease duration and glycaemic control in children with Type 1 diabetes mellitus. Acta Paediatr. 100:1011-17. 10.1111/j.1651-2227.2011.02155.x
27. Yamoah, J (2021) The Role of Social Support in Mitigating Parental Burnout for Mothers of Children with Medical Complexity [Doctoral dissertation]. Southeastern University
28. Lebert-Charron, A, J Wendland, S Vivier-Prioul, et al. (2021) Does Perceived Partner Support Have an Impact on Mothers' Mental Health and Parental Burnout? Marriage & Family Review 1-21. 10.1080/01494929.2021.1986766
29. Tamis-LeMonda, CS (2003) Cultural Perspectives on the 'Whats?' and 'Whys?' of Parenting. Hum. Dev. 46:319-27.
30. Keller, H, B Lamm, M Abels, et al. (2006) Cultural Models, Socialization Goals, and Parenting Ethnotheories: A Multicultural Analysis. J. Cross Cult. Psychol. 37:155-72. 10.1177/0022022105284494
31. Li, Y, P CostanzoM Putallaz (2010) Maternal Socialization Goals, Parenting Styles, and Social-Emotional Adjustment Among Chinese and European American Young

Adults: Testing a Mediation Model. The Journal of genetic psychology 171:330-62. 10.1080/00221325.2010.505969
32. Nelson, MK (2010) Parenting out of Control: Anxious Parents in Uncertain Times. New York University Press, New York
33. Faircloth, C (2014) Intensive parenting and the expansion of parenting. In: E Lee, J Bristow, C FairclothJ Macvarish (eds) Parenting culture studies. Palgrave Macmillan, London, 25-50
34. Hays, S (1996) The Cultural Contradictions of Motherhood. Yale University Press, New Haven
35. Lin, G-X, L Hansotte, D Szczygieł, et al. (2021) Parenting with a smile: Display rules, regulatory effort, and parental burnout. Journal of Social and Personal Relationships 38:2701-21. 10.1177/02654075211019124
36. Meeussen, LC Van Laar (2018) Feeling Pressure to Be a Perfect Mother Relates to Parental Burnout and Career Ambitions. Front. Psychol. 9. 10.3389/fpsyg.2018.02113
37. Bleidorn, W, RC Arslan, JJ Denissen, et al. (2016) Age and gender differences in self-esteem—A cross-cultural window. J. Pers. Soc. Psychol. 11:396.
38. Taras, V, BL KirkmanP Steel (2010) Examining the impact of culture's consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. J. Appl. Psychol. 95:405.
39. Uz, I (2014) The Index of Cultural Tightness and Looseness Among 68 Countries. J. Cross Cult. Psychol. 46:319-35. 10.1177/0022022114563611
40. Roskam, I, ME BriandaM Mikolajczak (2018) A Step Forward in the Conceptualization and Measurement of Parental Burnout: The Parental Burnout Assessment (PBA). Front. Psychol. 9. 10.3389/fpsyg.2018.00758
41. LeVine, RA (1977) Childrearing as cultural adaptation. In: PH Leiderman, SR TulkinAH Rosenfeld (eds) Culture and infancy. Academic Press, New York, 14-27
42. Suizzo, M-A (2002) French parents' cultural models and childrearing beliefs. International Journal of Behavioral Development 26:297-307.
43. Philippot, P, V Dethier, C Baeyens, et al. (2018) Validation of the Self-Discrepancies Scale (S-DS). A tool to investigate the self in clinical and research settings. Eur. Rev. Appl. Psychol. 68:69-77. 10.1016/j.erap.2018.04.001
44. Singelis, TM (1994) The Measurement of Independent and Interdependent Self-Construals. Personality and Social Psychology Bulletin 20:580-91. 10.1177/0146167294205014
45. Hofstede, G (2001) Culture's consequences: Comparing values, behaviors, institutions and organizations across nations. Sage publications, London
46. StataCorp. (StataCorp LLC, College Station, TX, 2021).
47. Sorkkila, MK Aunola (2020) Risk Factors for Parental Burnout among Finnish Parents: The Role of Socially Prescribed Perfectionism. Journal of Child and Family Studies 29:648-59. 10.1007/s10826-019-01607-1
48. Lin, G-X, D SzczygiełK Piotrowski (2022) Child-oriented perfectionism and parental burnout: The moderating role of parents' emotional intelligence. Pers. Individ. Dif. 198:111805. https://doi.org/10.1016/j.paid.2022.111805
49. Lund, S, A-L D'Angelo, R Busch, et al. (2022) With a Little Help From My Friends: The Negating Impact of Social Community and Mentorship on Burnout. J. Surg. Res. 278:190-95. https://doi.org/10.1016/j.jss.2022.04.062
50. Rangel, EL, M Castillo-Angeles, M Kisat, et al. (2020) Lack of Routine Healthcare among Resident Physicians in New England. J. Am. Coll. Surg. 230:885-92. 10.1016/j.jamcollsurg.2019.11.005

51. Littman-Ovadia, H, L OrenS Lavy (2013) Attachment and Autonomy in the Workplace: New Insights. Journal of career assessment 21:502-18. 10.1177/1069072712475282
52. Van Petegem, S, M VansteenkisteW Beyers (2013) The Jingle–Jangle Fallacy in Adolescent Autonomy in the Family: In Search of an Underlying Structure. J. Youth Adolesc. 42:994-1014. 10.1007/s10964-012-9847-7
53. van Bakel, HJA, C Bastiaansen, R Hall, et al. (2022) Parental Burnout Across the Globe During the COVID-19 Pandemic. International Perspectives in Psychology 11:141-52. 10.1027/2157-3891/a000050
54. Mikolajczak, M, ME Brianda, H Avalosse, et al. (2018) Consequences of parental burnout: Its specific effect on child neglect and violence. Child Abuse Negl. 80:134-45. 10.1016/j.chiabu.2018.03.025
55. Eberly-Lewis, MB, M Vera-HughesTM Coetzee (2018) Parenting and Adolescent Grandiose Narcissism: Mediation through Independent Self-Construal and Need for Positive Approval. The Journal of Genetic Psychology 179:207-18. 10.1080/00221325.2018.1472549
56. Yılmaz, H (2020) Possible result of extreme parenting: Power of helicopter parenting attitude to predict ego inflation. Pegem Journal of Education and Instruction 10:523-54. 10.14527/pegegog.2020.018
57. Dupont, S, M MikolajczakI Roskam (2022) The Cult of the Child: A Critical Examination of Its Consequences on Parents, Teachers and Children. Social Sciences 11:141.
58. Gray, SG, KT Raimi, R Wilson, et al. (2019) Will Millennials save the world? The effect of age and generational differences on environmental concern. J. Environ. Manage. 242:394-402. 10.1016/j.jenvman.2019.04.071
59. VanHeuvelen, TN Summers (2019) Divergent roads: A cross-national intercohort analysis of affluence and environmental concern. Soc. Sci. Res. 82:72-91. 10.1016/j.ssresearch.2019.04.001
60. Glazer, S (2006) Social support across cultures. Elsevier Science, Amsterdam
61. Schwarzer, RA Leppin (1989) Social support and health: A meta-analysis. Psychol. Health 3:1-15. 10.1080/08870448908400361
62. Thoits, PA (1995) Stress, coping, and social support processes: where are we? What next? J. Health Soc. Behav. Spec No:53-79.
63. Masarik, ASRD Conger (2017) Stress and child development: A review of the Family Stress Model. 85-90. 10.1016/j.copsyc.2016.05.008
64. Gillis, AI Roskam (2019) Daily exhaustion and support in parenting: Impact on the quality of the parent–child relationship. Journal of Child and Family Studies 28:2007-16. 10.1007/s10826-019-01428-2
65. Lin, G-X, A Goldenberg, G Arikan, et al. (in press) Reappraisal, Social Support, and Parental Burnout. . British Journal of Clinical Psychology.
66. Crijnen, AA, TM AchenbachFC Verhulst (1999) Problems reported by parents of children in multiple cultures: the Child Behavior Checklist syndrome constructs. Am. J. Psychiatry 156:569-74. 10.1176/ajp.156.4.569
67. Barroso, NE, L Mendez, PA Graziano, et al. (2018) Parenting stress through the lens of different clinical groups: A systematic review & meta-analysis. Journal of abnormal child psychology 46:449-61.
68. Moore, JJS Abetz (2019) What Do Parents Regret About Having Children? Communicating Regrets Online. Journal of family issues 40:390-412. 10.1177/0192513X18811388

Table 1. Sociodemographic Characteristics: Sample Size and Mean Age, Educational Level, Working Status, Family Types, Number of Children in the Household, Age of the Youngest Child, Age of the Oldest Child, Number of Women Caring for Children, Number of Men Caring for Children, Hours Spent With Children per Day, Neighborhood Profiles (Standard Deviations are in Parentheses).

						Family types										Neighborhood profiles		
	Sample size	Sex (%Mothers)	Age	Educational level	Working status (% paid work)	Two parent family	Single parent family	Step-family	Other	Number of children in the household	Age of the youngest child	Age of the oldest child	Number of women caring for children	Number of men caring for children	Hours with children	% disadvantaged	% average	% prosperous
Argentina	177	66.67	50.35 (10.27)	11.95 (3.68)	87.6	65.0	13.6	9.6	11.9	4.83 (2.85)	14.01 (8.03)	21.66 (10.45)	2.83 (2.39)	2.40 (1.43)	7.12 (5.64)	2.3	72.9	24.9
Australia	212	51.42	44.79 (10.60)	13.17 (2.78)	56.6	69.3	17.9	7.6	5.2	1.75 (0.86)	9.73 (7.45)	14.28 (9.18)	0.99 (0.49)	0.92 (0.55)	6.49 (3.82)	5.7	74.1	20.3
Austria	185	89.19	33.81 (6.47)	13.27 (3.08)	70.8	86.5	6.5	3.8	3.2	1.58 (.82)	2.50 (3.96)	4.52 (5.69)	1.08 (0.37)	0.96 (0.39)	10.46 (4.98)	2.7	69.2	28.1
Belgium	1,681	86.38	38.49 (7.36)	16.56 (2.61)	91.0	79.2	10.7	7.9	2.1	2.10 (1.05)	5.37 (5.69)	8.88 (7.10)	1.19 (0.67)	0.98 (0.54)	5.65 (3.36)	3.2	47.4	49.4
Brazil	300	63.33	42.11 (8.84)	15.90 (4.23)	77.9	90.9	3.0	4.1	2.0	1.53 (0.75)	8.99 (7.51)	11.07 (7.93)	1.91 (0.56)	1.02 (0.48)	5.71 (4.57)	14.6	66.4	19.0
Canada	279	92.11	34.08 (6.66)	15.89 (2.80)	84.2	81.2	9.0	8.6	1.1	2.12 (0.86)	3.81 (4.79)	7.04 (5.82)	1.05 (0.69)	0.98 (0.51)	8.90 (6.70)	7.5	60.6	31.9
Chile	431	85.61	36.57 (6.56)	17.93 (3.36)	76.3	72.4	11.1	8.1	8.4	1.80 (1.33)	4.85 (5.44)	8.24 (7.33)	1.51 (0.80)	0.99 (0.57)	10.54 (7.45)	2.55	59.6	37.8
China	721	55.48	38.91 (4.18)	10.27 (2.87)	91.4	82.9	3.7	2.2	11.1	1.49 (0.59)	10.95 (3.98)	14.19 (3.29)	1.78 (0.95)	1.62 (0.86)	3.85 (2.59)	5.3	89.7	5.0
Colombia	95	74.74	-	-	84.2	63.2	23.2	4.2	9.5	1.57 (0.72)	8.32 (7.22)	12.28 (8.58)	1.57 (0.95)	0.98 (0.77)	7.59 (6.02)	3.2	63.2	33.7
Costa Rica	245	59.59	37.76 (8.02)	16,39 (4,48)	84.5	75.4	7.0	7.0	10.7	1.53 (0.70)	6,01 (6.17)	9.05 (8.31)	1.50 (0.82)	1.16 (0.71)	9.38 (6.28)	4.5	64.9	30.6
Ecuador	146	69.86	32.45 (7.51)	17,21 (3,03)	85.6	65.1	11.6	6.9	16.4	1.63 (0.74)	5.02 (4.34)	8.23 (6.68)	1.97 (1.05)	1.39 (0.89)	7.58 (4.92)	2.7	7.6	26.7
Egypt	267	56.18	47.99 (6.74)	11.30 (3.54)	1.50	79.0	12.7	0.8	7.5	3.00 (1.38)	13.96 (6.41)	23.19 (7.02)	1.34 (.98)	1.05 (1.10)	8.33 (3.51)	16.1	62.9	21.0
Finland	1,729	90.69	36.46 (6.49)	17.69 (3.40)	75.5	78.7	8.8	9.7	2.9	2.25 (1.29)	4.08 (4.15)	7.52 (5.32)	0.92 (0.38)	0.87 (0.43)	7.72 (3.72)	0.0	99.9	0.1
France	1,356	81.34	38.09 (8.39)	15.00 (2.82)	83.0	76.0	11.6	10.1	2.4	1.86 (0.85)	5.94 (5.81)	9.67 (7.64)	1.38 (1.18)	0.97 (0.69)	8.32 (5.22)	3.0	57.0	40.0

Germany	202	69.31	35.73	13.55	73.8	72.3	13.4	8.9	5.5	1.72	5.00	8.02	1.01	0.90	7.32	5.0	74.3	10.8
			(7.87)	(4.86)						(0.88)	(4.88)	(6.76)	(0.49)	(0.53)	(4.15)			
Iran	446	50.22	40.28	13.72	67.7	85.4	10.1	2.9	1.6	1.74	9.22	13.90	1.08	1.00	5.84	11.8	59.5	28.7
			(8.70)	(3.46)						(0.76)	(7.35)	(9.17)	(0.41)	(0.31)	(3.49)			
Italy	350	71.43	43.53	14.99	85.7	87.4	4.9	4.6	3.1	1.74	9.15	12.48	1.13	1.02	7.30	2.0	74.9	23.1
			(8.97)	(3.93)						(0.74)	(7.48)	(8.86)	(0.52)	(0.39)	(5.21)			
Japan	500	50.00	54.36	14.29	59.6	80.1	7.4	1.2	10.8	1.56	21.40	23.22	1.08	0.92	4.80	1.6	83.0	15.4
			(14.65)	(2.49)						(0.73)	(14.80)	(14.36)	(0.47)	(0.48)	(4.15)			
Lebanon	201	67.16	37.44	16.17	67.7	93.6	5.0	1.0	0.5	2.18	6.71	10.52	1.22	1.00	7.45	6.5	69.7	23.9
			(8.43)	(3.67)						(1.02)	(5.86)	(8.02)	(0.49)	(0.28)	(3.11)			
Netherlands	216	71.76	37.70	16.35	93.5	89.4	4.6	3.7	2.3	1.76	4.69	6.79	1.50	1.14	6.42	2.3	53.2	44.4
			(8.00)	(2.39)						(.80)	(5.70)	(6.91)	(1.04)	(.62)	(3.06)			
Pakistan	228	43.86	50.35	11.95	40.7	75.5	8.8	2.0	13.7	4.83	14.01	21.70	2.83	2.40	7.12	29.4	57.5	13.1
			(10.27)	(3.68)						(2.85)	(8.03)	(10.46)	(2.39)	(1.43)	(5.64)			
Peru	311	70.10	40.20	14.89	84.6	65.6	14.8	8.0	11.6	1.95	8.29	13.22	1.86	1.35	8.37	6.4	65.9	27.7
			(10.70)	(4.79)						(1.05)	(7.73)	(9.98)	(1.14)	(1.05)	(5.59)			
Poland	457	71.12	34.89	17.53	75.5	86.4	5.0	3.5	5.0	1.71	4.04	6.44	1.20	0.98	7.97	4.4	76.2	19.5
			(6.60)	(3.51)						(0.93)	(4.50)	(5.78)	(0.84)	(0.62)	(4.83)			
Portugal	407	50.37	41.85	14.85	92.8	88.8	3.3	6.3	1.8	1.66	8.36	11.14	0.99	0.88	4.86	1.2	62.9	35.9
			(8.12)	(3.84)						(0.71)	(7.48)	(8.12)	(0.44)	(0.41)	(2.85)			
Romania	344	62.50	37.15	16.78	90.7	91.6	3.2	2.6	2.6	1.56	4.42	7.02	1.43	1.10	7.32	2.6	26.7	70.6
			(5.58)	(2.86)						(0.62)	(4.05)	(5.17)	(0.73)	(0.61)	(6.17)			
Russia	364	72.25	34.43	14.49	83.5	78.3	6.6	9.1	6.0	1.72	4.05	8.02	1.26	1.04	7.66	0.6	59.9	39.6
			(6.71)	(4.15)						(0.83)	(3.88)	(6.26)	(0.63)	(0.53)	(5.24)			
Serbia	228	77.19	38.10	14.90	86.0	92.5	4.0	3.5	0.0	1.63	4.49	6.82	1.14	1.03	7.67	2.6	48.3	49.1
			(5.70)	(5.16)						(0.69)	(4;67)	(5.63)	(0.63)	(0.53)	(4.58)			
Spain	693	76.62	40.95	15.14	82.2	80.6	8.3	6.3	4.8	1.72	7.09	9.99	1.42	1.14	8.89	6.4	78.5	15.1
			(8.13)	(4.11)						(0.76)	(6.89)	(8.37)	(0.94)	(0.70)	(6.44)			
Sweden	796	92.96	40.66	15.35	87.3	73.2	12.2	9.3	5.3	2.15	6.49	11.17	1.00	0.98	6;42	4.8	75.1	20.1
			(5.04)	(3.16)						(0.94)	(4.84)	(6.16)	(0.55)	(0.57)	(3.14)			
Switzerland	419	64.68	40?18	16.43	92.1	81.6	10.7	6.9	0.7	1.96	6.02	8.96	1.10	0.94	6.67	0.3	49.6	50.1
			(6.86)	(3.58)						(0.81)	(5.53)	(6.30)	(0.54)	(0.46)	(4.15)			
Thailand	393	51.65	43.04	3.3	97.2	69.8	2.1	1.3	26.9	1.82	9.24	12.49	1.82	1.48	5.95	1.0	51.6	47.4
			(5.99)	(1.03)						(0.72)	(3.76)	(4.92)	(0.99)	(0.83)	(3.66)			
Turkey	450	58.78	36.79	13.67	74.7	86.6	6.3	0.5	6.7	1.66	4.03	5.54	1.15	0.99	6.67	4.7	73.1	22.2
			(6.51)	(3.56)						(.64)	(3.29)	(5.93)	(0.52)	(0.42)	(3.79)			
UK	271	60.15	39.15	15.41	83.4	89.3	7.4	2.6	0.7	1.72	6.29	9.32	1.01	0.95	6.59	4.4	52.1	43.5
			(8.53)	(3.33)						(0.73)	(6.34)	(7.92)	(0.25)	(0.40)	(3.88)			
Uruguay	297	62.96	35.10	12.86	90.0	77.8	9.8	5.4	7.1	1.63	3.26	6.13	1.42	1.06	11.82	2.7	73.1	24.2
			(6.39)	(4.78)						(0.72)	(1.82)	(5.09)	(0.75)	(0.55)	(5;37)			
USA	401	69.08	38.18	15.40	76.3	72.3	16.5	5.7	5.5	1.93	6.43	10.53	1.12	0.93	7.61	9.5	68.8	21.7
			(9.03)	(3.52)						(1.01)	(5.71)	(7.42)	(0.79)	(0.72)	(5.14)			
Vietnam	261	54.79	36.92	14.16	95.7	77.7	2.0	0.4	20.0	1.73	5.12	8.12	1.47	1.20	4.60	5.4	72.9	24.9
			(7.52)	(4.19)						(1.01)	(5.07)	(7.41)	(0.82)	(0.71)	(2.85)			
Pooled Sample	16,059	72.48	39.22 (8.74)	15.02 (4.30)	80.6	79.57	8.79	6.08	5.6	1.91 (1.04)	6.81 (7.00)	10.33 (8.29)	1.27 (0.84)	1.05 (0.66)	7.15 (4.82)	4.3	67.4	28.3

Table 2. Individualism Score (at Country Level), Mean Level of Parental Burnout**,** Parental Task Sharing, Agency Socialization Goals, Parental Self-Discrepancy, and Individualism Score (at Individual Level) for Each Country (Standard Deviations are in Parentheses).

	Individualism Score (at Country Level)	Parental Burnout	Parental Task Sharing	Agency Socialization Goals	Parental Self-Discrepancy	Individualism Score (at Individual Level)
Argentina	46	20.50 (20.85)	59.44 (14.94)	4.56 (.75)	57.98 (25.85)	5.06 (.86)
Australia	90	24.57 (25.07)	58.10 (14.90)	4.59 (.82)	69.67 (22.17)	4.98 (.69)
Austria	55	21.58 (19.41)	60.03 (9.68)	4.79 (.61)	56.38 (21.02)	4.70 (.74)
Belgium	75	36.77 (31.13)	57.79 (13.93)	4.73 (.71)	59.04 (20.75)	4.72 (.75)
Brazil	38	16.02 (19.34)	61.62 (15.42)	-	68.27 (27.51)	4.78 (.75)
Canada	80	32.82 (29.48)	56.51 (15.12)	4.49 (.69)	64.08 (20.27)	4.85 (.76)
Chile	23	28.99 (25.70)	59.72 (11.48)	4.93 (.68)	55.91 (24.99)	5.27 (.67)
China	20	10.83 (17.95)	61.79 (12.45)	4.00 (.98)	70.64 (19.44)	4.48 (.75)
Colombia	13	17.95 (19.71)	52.91 (13.61)	4.90 (.79)	65.38 (25.55)	5.34 (.65)
Costa Rica	15	24.34 (25.21)	64.73 (10.89)	5.27 (.62)	59.21 (27.98)	5.46 (.65)
Ecuador	8	19.47 (19.97)	60.23 (12.01)	4.92 (.88)	57.58 (26.66)	5.43 (.81)
Egypt	25	33.43 (24.00)	61.81 (10.02)	4.32 (.89)	82.45 (15.65)	-
Finland	63	31.96 (27.38)	58.59 (11.39)	4.73 (.66)	63.03 (21.90)	4.68 (.68)
France	71	29.24 (28.23)	53.24 (19.25)	4.49 (.72)	56.27 (23.65)	4.79 (.70)
Germany	67	25.06 (21.71)	57.99 (13.90)	4.82 (.72)	57.50 (26.22)	4.63 (.67)
Iran	41	15.49 (21.06)	57.78 (15.01)	5.03 (.85)	81.68 (19.83)	5.16 (.78)
Italy	76	16.08 (17.03)	62.29 (10.65)	4.73 (.79)	54.60 (26.37)	4.60 (.70)
Japan	46	12.76 (22.63)	63.78 (14.51)	3.54 (.92)	56.04 (23.79)	4.51 (.64)
Lebanon	40	19.47 (26.71)	67.11 (6.79)	4.45 (1.08)	81.91 (16.29)	5.22 (.60)
Pakistan	14	17.70 (14.78)	55.69 (15.03)	3.77 (.87)	3.37 (1.29)	3.90 (.86)
Peru	16	18.43 (18.31)	59.90 (14.87)	4.38 (.91)	70.97 (24.83)	4.80 (.86)
Poland	60	39.41 (30.46)	63.24 (30.46)	4.71 (.76)	59.06 (23.79)	4.76 (.68)
Portugal	27	17.06 (20.70)	62.53 (9.27)	-	66.23 (28.19)	4.92 (.62)
Romania	30	22.26 (25.72)	64.39 (9.71)	4.84 (.90)	60.93 (25.87)	4.74 (.67)
Russia	39	26.93 (29.32)	59.58 (11.01)	4.28 (.85)	55.18 (26.77)	4.60 (.68)
Serbia	25	18.90 (18.97)	61.11 (12.46)	3.88 (.59)	65.54 (25.45)	4.94 (.65)
Spain	51	22.64 (25.28)	60.23 (12.84)	4.85 (.74)	62.83 (32.16)	4.62 (.57)
Sweden	71	20.26 (21.97)	55.35 (17.28)	4.36 (.67)	59.99 (23.69)	4.76 (.72)
Switzerland	68	31.80 (28.05)	60.14 (11.88)	4.57 (.70)	56.55 (23.05)	4.75 (.76)
Thailand	20	5.74 (9.17)	62.15 (11.19)	4.69 (.88)	80.71 (13.34)	4.92 (.64)
Netherlands	80	19.17 (21.35)	60.35 (17.61)	4.52 (.66)	64.22 (21.42)	4.90 (.67)
Turkey	37	12.1 (13.87)	60.55 (15.04)	5.24 (.78)	78.56 (21.27)	5.23 (.74)
UK	89	28.01 (24.68)	61.30 (10.88)	4.48 (.74)	60.90 (21.49)	4.66 (.70)
Uruguay	36	12.03 (13.62)	63.86 (9.71)	4.59 (.82)	78.56 (16.10)	4.87 (.94)
USA	89	32.41 (32.92)	56.02 (16.85)	4.70 (.89)	64.88 (24.78)	5.00 (.83)
Vietnam	20	12.16 (16.40)	63.22 (9.72)	3.02 (.99)	67.39 (27.09)	3.57 (.81)
Pooled sample	-	24.61 (26.35)	59.30 (14.03)	4.55 (.89)	63.48 (25.04)	4.78 (.79)

Note. Data about agency socialization goals were not collected in Brazil and Portugal. Data about individualism (in individual level) were not collected in Egypt.

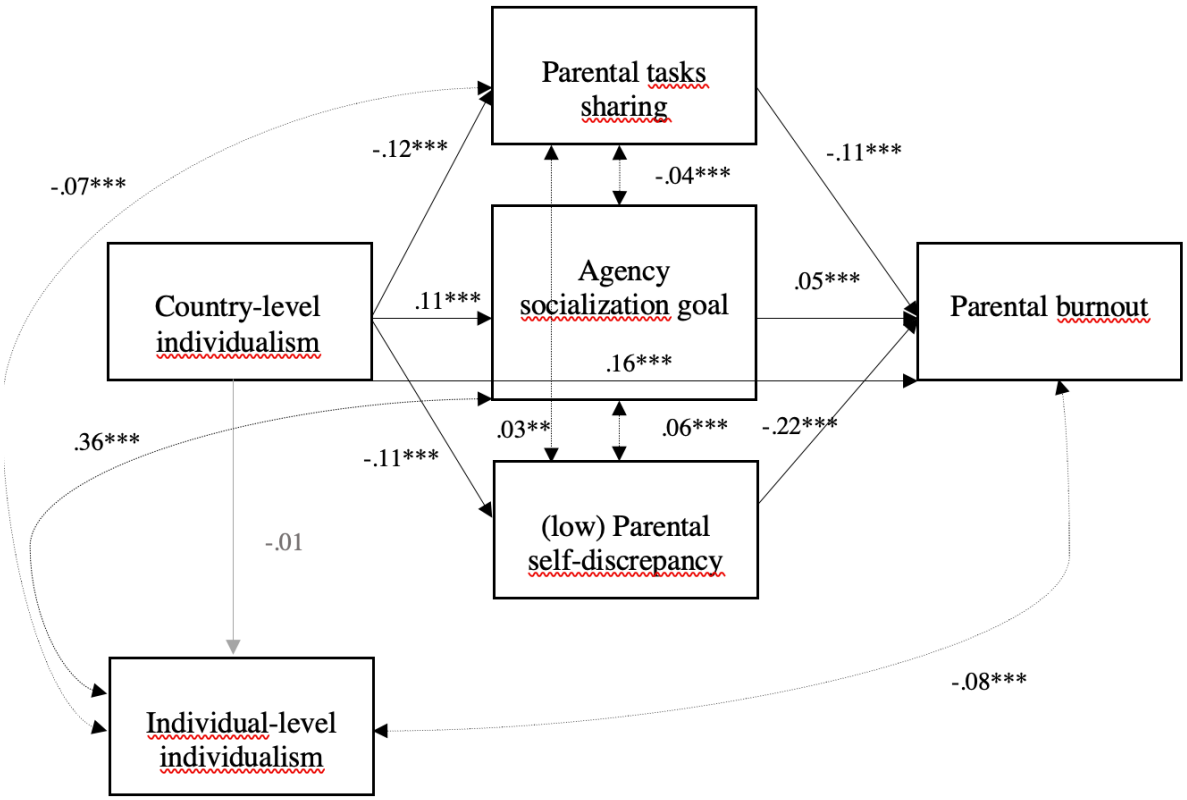
Table 3. Correlations between Individualism (at Country Level), Parental Burnout**,** Parental Task Sharing, Agency Socialization Goals, Parental Self-Discrepancy, and Individualism (at Individual Level).

	(2)	(3)	(4)	(5)	(6)
(1) Individualism (at country level)	.21***	-.12***	.10***	-.11***	-.01
(2) Parental burnout	-	-.14***	.06***	-.25***	-.07***
(3) Parental task-sharing		-	-.05***	.05***	-.06***
(4) Agency socialization goals			-	.03***	.35***
(5) Parental self-discrepancies				-	.09***
(6) Individualism (at individual level)					-

*** $p < .001$

Figure 1.

Mediation Model Testing Three Mediation Processes in the Relation Between Individualism at Country-Level and Parental Burnout at Individual Level



Supplemental Material

Three reasons why parental burnout is more prevalent in individualistic countries: A 36-country study

Social Psychiatry and Psychiatric Epidemiology

Isabelle Roskam*, the International Investigation of Parental Burnout (IIPB), and Moïra Mikolajczak

*Corresponding author: Isabelle Roskam, isabelle.roskam@uclouvain.be
ORCID 0000-0002-1449-113
UCLouvain, Department of Psychology, Place Cardinal Mercier 10, B-1348 Louvain-la-Neuve, Belgium

Content

Preliminary analyses and results

Preliminary analyses We first removed participants who did not meet the inclusion criteria, particularly those without children still living at home and participants younger than 18 years. Second, to estimate the validity of the measures used in the current study, we computed CFAs in the pooled sample using maximum likelihood (ML) and the Satorra-Bentler correction, i.e. Stata option vce(sbentler) in Stata to account for deviations from normality [1]. We further tested the invariance of the measures used in the current study, across the 21 languages. First, the configural invariance, implying the same pattern of latent constructs and observed items, with all parameters allowed to vary across groups, was tested. Next, metric equivalence where the factor loadings were constrained to be equal across groups was tested. This level of invariance corresponded to the minimum level to be reached in this study, in which the main SEM analysis was interested in the regression coefficients between variables and not in the comparisons of the average levels of these variables between groups, which would require scalar invariance. Note that the validity of the PBA across languages had already been demonstrated in the IIPB seminal paper [2], and this demonstration was not repeated here. Several goodness-of-fit indices were used to determine the acceptability of the models: chi-square statistics, the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). For CFI, values close to 0.90 or greater are acceptable to good. RMSEA should preferably be less than or equal to 0.08 [3]. For measurement invariance across a large number of groups (> 20), change in $\chi 2$ was reported and a criterion of a change in CFI of -.02, paired with a change in RMSEA of .02, was used [4, 5]. Finally, we appraised the reliability by computing the Cronbach's alphas of the measures used in the current study, in the 21 languages.

We then checked whether the variables were normally distributed based on the criteria proposed by [6] and [7], who recommended skewness and kurtosis values of less than |2.0|

and |7.0| respectively. When the conditions of normality were not fully met, the transformation to be applied was determined with the ladder and qladder Stata commands. Finally, bivariate correlations between all variables of interest were computed.

Preliminary results The CFAs performed in the pooled sample returned acceptable to good fits to the data for the measures of parental task-sharing, S-Bχ2(220) = 9369.24, RMSEA = .054, CFI = .936, agency socialization goals, S-Bχ2(51) = 4323.49, RMSEA = .080, CFI = .936, and individualism at the individual level, S-Bχ2(40) = 1708.400, RMSEA = .053, CFI = .913. With regard to measurement invariance across languages, the model fit indices showed that the expected metric invariance was achieved for the measure of parental task-sharing, $\Delta\chi$2(400) = 3133.68, ΔRMSEA = .001, ΔCFI = .011, and agency socialization goals, $\Delta\chi$2(209) = 708.06, ΔRMSEA = .006, ΔCFI = .005. We achieved partial measurement invariance for individualism at the individual level, $\Delta\chi$2(200) = 1068.03, ΔRMSEA = .011, ΔCFI = .035. The results did not make it possible to fully accept or reject invariance, since the difference in RMSEA was good, i.e. ΔRMSEA = .011, and the difference in CFI was higher than expected, i.e. ΔCFI = .035. Since individualism at the individual level was used here as a control variable, partial measurement invariance was considered to be acceptable, but the coefficients for IIS needed to be interpreted with caution.

With regard to the reliability of the measures, Cronbach's alpha for the measure of parental burnout was high in the pooled sample, α = .96, and ranged from .88 to .97 across the 21 languages. Cronbach's alpha for the measure of parental task-sharing was high in the pooled sample, α = .91, and ranged from .84 to .95 across the 21 languages. Cronbach's alpha for the measure of agency socialization goals was high in the pooled sample, α = .95, and ranged from .84 to .95 across the 21 languages. Cronbach's alpha for the measure of individualism at the individual level was acceptable in the pooled sample, α = .71, and ranged from .46 to .85 across the 21 languages. Cronbach's alpha was below the threshold of .70 for

11 languages: it lay between .61 and .69 for 10 languages and was especially low in the Basque version, i.e. .46.

Skewness and kurtosis values showed that the criteria for normality were met for parental burnout (1.74 and 6.00 for skewness and kurtosis respectively), agency socialization goals (.79 and 3.08 respectively), and individualism at the individual level (-.32 and 3.73 respectively), but not for parental task-sharing (-1.70 and 7.26 respectively) and parental self-discrepancies (-.26 and 9.90 respectively). For these two variables, the kurtosis values were over the threshold. We applied a square transformation to parental task-sharing and a square root transformation to parental self-discrepancies that returned acceptable values for both skewness and kurtosis criteria. Since the maximum likelihood method of estimation is fairly robust even with some violation of normality [8], we performed the subsequent analyses twice, with and without the transformed variables. Because the results were strictly similar, we present the results obtained on raw data in order to ease the interpretation of the coefficients.

The bivariate correlations are presented in Table 3. As expected, individualism at the country level was associated with higher parental burnout, lower parental task-sharing, higher agency socialization goals, and higher parental self-discrepancies. However, the correlation between individualism at the country and at the individual levels was found to be negative (though close to zero and therefore non-significant). A null correlation could reflect a high degree of heterogeneity around the norm especially in the most individualistic countries. In these countries, tolerance of differences may allow individuals to deviate from the norm, creating variation in participants' responses, with some adhering individually to individualistic values and others deviating from the norm in their country.

With regard to the relations between the three mediators, we noted a medium association of $r = .35$ between individualism at the individual level and agency socialization

goals, whereas the bivariate associations between the other mediators were low. The relations between parental burnout and the three mediators were in the expected direction. Higher parental burnout was associated with lower parental task-sharing, higher agency socialization goals, and higher parental self-discrepancies. However, the association between parental burnout and individualism at the individual level was negative.

Table S1. Ethics Approval in Each Country

	Name of the Ethics committee	Reference number
Argentina	Not requested	
Australia	The University of Sydney Human Research	2019/062
Austria	Research Ethics at the University of Klagenfurt	2019-014
Belgium	Psychological Sciences Research Institute	2017/24
	Faculty of Psychology and Educational Sciences, Ghent University	2018/20/Charlotte Schrooyen
Brazil	Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto	CAAE: 12579119.5.0000.5407
	Universidade de São Paulo	CAAE: 99681118.-0.5504, 3.022.455
	Universidade do Estado do Rio de Janeiro – UERJ	CAAE: 97550818.3.0000.5282
Canada	Comité d'éthique de la recherche avec des êtres humains, Décanat de la recherche et de la création de l'Université du Québec à Trois-Rivières	CER-18-242-07.07
Chile	Universidad Autonoma de Chile-Ethics Committee	71-18
China	Not requested	
Colombia	Not requested	
Costa Rica	Comité Ético Científico de la Universidad de Costa Rica, Rodrigo Facio Campus, San Pedro, San José	VI-1071-2018
Ecuador	Not requested	
Egypt	Psychology department Faculty of Arts Menoufia university	No reference number provided by the Ethics committee
Finland	University of Jyväskylä	No reference number provided by the Ethics committee
France	Comité d'éthique pour les recherches comportementales et en santé (CERCES), Université de Paris	2018 - 29
Germany	Universität Ulm Ethikkommission	21/19
Iran	Not requested	
Italy	Psychological Research of the University of Padova	2527/2018, 94A4CED55F19F317187A28C382244070
Japan	Experimental Research on Human Subject	420-4
	Graduate School of Arts and Sciences/College of Arts and Sciences, The University of Tokyo	
Lebanon	Université Saint-Joseph, Beyrouth (USJ)	2017-168
Netherlands	School of Social and Behavioral Sciences of Tilburg University	EC-2018.13
Pakistan	Not requested	

Peru	Not requested	
Poland	SWPS University of Social Sciences and Humanities, Faculty in Sopot	WKE/S 8/II/37
Portugal	Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto	2017/12-12
Romania	University of Bucharest, Reg.No.CEC: 02/12.01.2018	
Russia	Health et Humane Services IRB00003875St.PetersburgStateUniversity IRB#1 — Behavioral	81
Serbia	Department of Psychology, Faculty of Philosophy, University of Belgrade	#2018-016
Spain	University of the Basque Country, M10/2017/209 Comité de Ética de la Investigación de la Universidad Nacional de Educación a Distancia (UNED, ESPAÑA)	6-2018
Sweden	The regional ethic-committee in Gothenburg	DNR 1010-18
Switzerland	Ethical Committe from the State of Vaud	2018-00186
Thailand	Chiang Mai University Research Ethic Committee, CMUREC	61/046
Turkey	Bahcesehir University	18.01.2018, 20021704-604.01.01-125
UK	University College London (UCL) Division of Psychology and Language Sciences	CEHP/EP/2018/0004
Uruguay	Ethics Committee of the Faculty of Psychology of the University of the Republic	No reference number provided by the Ethics committee
USA	Stanford University IRB Administrative Panel on Human Subjects in Non-Medical Research Rosary Santicruz David BA, Sime Luketa RA, #: IRB Parental burnout 44889; Florida International University IRB	IRB2-eProtocol 44889 #Registration 349 IRB-18-0472
Vietnam	Ho Chi Minh City, Vietnam, Association of Educational Psychology of Ho Chi Minh City (AEPH)	No reference number provided by the Ethics committee

Table S2. Data Collection Procedure in Each Country[1]

	Translation and back-translation[2]	Survey Language	Sampling Procedure	Location of Data Collection[3]	Survey Type[4] (% Online)	Response Rate (%)	Attrition Rate (%)[5]	Period of Data Collection
Argentina	Yes	Spanish	Snowball and convenience	San Miguel de Tucumán	100	Not applicable[6]	29	December 2018-March 2019
Australia	Not applicable[7]	English	Snowball	New South Wales, Victoria, Queensland, Western Australia, South Australia, Tasmania, Australian Capital Territory	100	Not applicable	45.6	May 2019
Austria	Yes	German	Snowball and convenience	Undefined	100	Not applicable	50.8	February-May 2019
Belgium	Yes (Dutch version)-Not applicable (French version)	French Dutch	Snowball	Flanders and Wallonia	100	Not applicable	26	February-June 2018
Brazil	Yes	Portuguese	Snowball and convenience	São Paulo and Rio de Janeiro states: Amazonas, Ceará, Mato Grosso do Sul, Minas Gerais, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, São Paulo, Sergipe	65.1	Not applicable	Not available	November 2018-March 2019
Canada	Not applicable	French	Snowball	Ontario, Manitoba, Saskatchewan, Alberta, Québec, territoires du Nord-Ouest	100	Not applicable	55	May-December 2018
Chile	Yes	Spanish	Snowball and convenience	Santiago, Los Lagos (Puerto Montt), Del Maule (Talca)	100	Not applicable	56	February-October 2018
China	Yes	Chinese	Convenience	Zhejiang	100	77	16	January 2018
Colombia	Yes	Spanish	Snowball and convenience	Undefined	100	Not applicable	Not available	December 2017-April 2018
Costa Rica	Yes	Spanish	Snowball and convenience	San José, San Ramon, Heredia, Cartago, Alajuela	94	Not applicable	88	March-June 2018
Ecuador	Yes	Spanish	Convenience	Quito, Latacunga, Ibarra Otavalo, Saquisilí, Salcedo, El corazón,	100	Not applicable	40	March-September

				Guaranda, Tulcán, Cuenca, Guayaquil, Portoviejo, Esmeraldas, Lago Agrio/Sucumbíos, Puyo				2018
Egypt	Yes	Arabic	Snowball and convenience	Menoufia regions- 10 cites; Shebin el kom, Sadat, Menoufa, Bagour, Ashmon, Quessna, Shodaa, sir elayan, Tala, and birkt-elsaba	0	90	10	February-March 2020
Finland	Yes	Finnish	Snowball and convenience	Hyvinkää, Posio, Jyväskylä	86.3	99.4	Not available	February-April 2018
France	Not applicable	French	Snowball and convenience	Provence-Alpes-Côte d'Azur, Ile-de-France	100	Not applicable	33	January-July 2018
Germany	Yes	German	Convenience	Ulm, Baden-Württemberg	100	20	49	May-November 2019
Iran	Yes	Persan	Convenience	Tehran	0	Not available	3	August-September 2018
Italy	Yes	Italian	Snowball and convenience	Padova	98	Not applicable	28	March-December 2018
Japan	Yes	Japanese	Quota sampling (by a research company)	The 47 prefectures in Japan	100	Not applicable	34	July 2018
Lebanon	Yes	French Arabic	Stratified	Mont Liban, Beyrouth, Liban North, Liban South, Nabatieh, Beqaa	100	46	Not available	August-September 2018
Netherlands	Yes	Dutch	Snowball and convenience	Tilburg	100	Not applicable	28	March 2018-February 2019
Pakistan	Yes	Urdu	Convenience	Lahore	0	98	0	July 2018
Peru	Yes	Spanish	Convenience	Lima, Arequipa, Cajamarca, San Martin, La Libertad, Lambayeque	46	Not available	19	February-May 2018
Poland	Yes	Polish	Snowball and convenience	Warsaw	85	Not available	1	February-June 2018
Portugal	Yes	Portuguese	Snowball and convenience	Coimbra, Porto	81	50 (for paper pencil version)	22	April-December 2018
Romania	Yes	Romanian	Convenience	Bucharest, Timisoara	86	Not available	51	December 2017-May

Russia	Yes	Russian	Snowball and convenience	Undefined	100	Not applicable	<1	2018 April-December 2018
Serbia	Yes	Serbian	Snowball and convenience	Belgrade	100	Not applicable	22	November 2018-June 2019
Spain	Yes	Spanish	Snowball and convenience	Spain (undefined) and Basque Country (Galdakao and Igorre, Azpeitia and Errenteria, Vitoria-Gasteiz, Leitza)	68	15	23.4	February - September 2018
Sweden	Yes	Swedish	Snowball	Undefined	100	Not applicable	27	March-May 2019
Switzerland	Not applicable	French	Snowball and convenience	Canton of Vaud	100	Not applicable	44	May-October 2018
Thailand	Yes	Thai	Convenience	Chiand Mai	0	Not available	0	July-September 2018
Turkey	Yes	Turkish	Convenience	Ankara, Istanbul	0	63	5	April-June 2018
UK	Not applicable	English	Snowball and convenience	England, Scotland, Wales and Northern Ireland	100	Not applicable	41	October 2018-March 2019
Uruguay	Yes	Spanish	Snowball and convenience	Montevideo	0	0	0	October 2018
USA	Not applicable	English	Convenience and quota	Stanford, Florida	100	Not applicable	Not available	March 2018-September 2019
Vietnam	Yes	Vietnamese	Snowball and convenience	Ho Chi Minh City, Thanh Hoa, Cam Ranh province, Lam Dong, Mekong Delta area	12.5	Not applicable	11	March-May 2018

[1] More information about the data collection procedure in each country is available upon request to the first author. [2] Translation and back-translations were made once for each language. The questionnaire was translated in a concerted manner by countries using the same version. For example, Spanish-speaking countries coordinated the Spanish translation. Some minor adjustments could however be made by each country. [3] Location is larger for countries where online survey was used because it has been spread all over the country. The location that is mentioned is where the sampling and data collection started. [4] Survey Type: Online vs. Paper-Pencil. [5] Percentage of participants who

did not complete the survey completely. [6] For online surveys, the response rate is impossible to estimate. [7] The French and English version of the IIPB survey were already available for use.

References

1. Kline, RB (2015) Principles and practice of structural equation modeling (4th edition). Guilford publications, New York
2. Roskam, I, J Aguiar, E Akgun, et al. (2021) Parental Burnout Around the Globe: a 42-Country Study. Affective Science 2:58-79. 10.1007/s42761-020-00028-4
3. Hu, LPM Bentler (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling 6:1-55. 10.1080/10705519909540118
4. Cheung, GWRB Rensvold (2002) Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance. Structural Equation Modeling: A Multidisciplinary Journal 9:233-55. 10.1207/S15328007SEM0902_5
5. Rutkowski, LD Svetina (2014) Assessing the hypothesis of measurement invariance in the context of large-scale international surveys. Educ. Psychol. Meas. 74:31-57. 10.1177/0013164413498257
6. Hair, JF, WC Black, BJ Babin, et al. (2010) Multivariate Data Analysis: A Global Perspective. Pearson Education International, New Jersey
7. Byrne, BM (2010) Structural equation modeling with AMOS: Basic concepts, applications and programming. 2nd Ed. Routledge Taylor & Francis Group, New York
8. Acock, AC (2013) Discovering structural equation modeling using Stata. StataCorp LP, College Station, Texas