

# Reproductive trajectories and social-biological dimensions in parenthood: Portuguese version of the Meaning of Parenthood scale

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## Abstract

**Background:** Public meanings attributed to parenthood may shape individuals' family planning and how involuntary childlessness is supported by governmental policies. This study aimed to evaluate the influence of reproductive trajectories and gender in the meanings attributed to parenthood, and to assess the psychometric characteristics of the Portuguese version of the Meaning of Parenthood (MOP) scale.

**Methods:** The sample comprised 754 participants: 246 young adults without children; 51 fathers and 159 mothers of adolescent children conceived spontaneously; and 149 infertile heterosexual couples. The scale was self-administered. Higher scores indicate attributing greater importance to parenthood to fulfill identity needs at individual, marital and social levels. Psychometric characteristics were analyzed through exploratory factor analysis; Cronbach alpha ( $\alpha$ ) assessed internal consistency.

**Results:** Two dimensions of the MOP scale emerged, with good internal consistency ( $\alpha \geq 0.70$ ): biological (importance of parenthood to fulfill reproductive needs as a biological being); social (importance of parenthood arising from social reproduction). Young adults attributed less importance to parenthood to fulfill both biological and social needs. The biological dimension was valued more than the social dimension in all subsamples; men highly valued the biological dimension compared to women.

**Conclusions:** Family planning needs to focus on a reasonable balance between biological and social dimensions of parenthood. The reinforcement of public policies providing the necessary conditions for human reproduction is essential to reverse declining fertility rates.

**Keywords:** assisted, infertility, parenthood status, psychometrics, reproductive health, reproductive techniques

## Introduction

Parenting a child is an aspiration shared by the majority of men and women since an early age. Notwithstanding, the wish to have

children tends to be reported as more important to women,<sup>1</sup> and nulliparous individuals are more likely to reveal ideal and romanticized views of raising children.<sup>2</sup> Research specifically addressing how socioeconomic factors may shape the meanings attributed to parenthood is scarce, but the existing data point to the search for economic stability as a necessary condition of becoming a parent.<sup>3</sup> At the same time, fertility postponement, and later use of medically assisted reproduction (MAR), has been shown to be most frequent among highly educated, middle-aged women.<sup>4</sup> Thus, the meaning attributed to parenthood may be influenced by sociodemographic and reproductive characteristics and might change during the life span.

Moreover, meanings of parenthood may be shaped by different approaches regarding how genetic links between parents and children are considered a central dimension of kin relationships and of individual's identity.<sup>2,5</sup> The dominance of the geneticization of genealogy<sup>6</sup> and of genetic essentialism<sup>7</sup> has placed biological kinship as a social norm in contemporary western societies.<sup>8</sup> Such a view has been largely intertwined with assumptions about the roles and the bodies of women and men, according to which motherhood is an expected outcome of a woman's biology, and fatherhood demonstrates strength, virility, responsibility, and the ability for genetic continuity.<sup>9,10</sup> Hence, the bodies of those who cannot achieve genetic parenthood are often classified as failed entities.<sup>11</sup> MAR applications, offered both to heterosexual couples and to singles or to same-sex couples and transsexual men and women, steadily offer diverse reproductive options to achieve people's wish to parent.<sup>12</sup> About one-third of patients, however, do not achieve pregnancy or a live birth within 5 years of the start of treatment<sup>13</sup> and many experience difficulties adjusting to their unmet parenthood

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goals.<sup>14,15</sup> Public meanings attributed to parenthood may shape individuals' family planning, and how involuntary childlessness is perceived and supported by governmental policies.

Declining fertility rates and the postponement of parenthood call upon knowledge on the perspectives of women and men about parenthood, in different moments of their reproductive trajectories, which contributes to the development of policies aiming to support people's ability to plan their reproductive lives and eventually deal with the experience of using MAR.<sup>13,16–18</sup> Literature is, however, still scarce on scales to assess meanings of parenthood, and the existing studies focus on infertile populations.<sup>17,19</sup> The Meaning of Parenthood (MOP) scale is one of the scarce specific instruments available,<sup>20</sup> but it has been used in few countries and mostly among infertile men,<sup>20–22</sup> which prevents comparisons between men and women, people with and without an infertility diagnosis, and people with and without children.

Thus, this study aimed to assess the psychometric characteristics of the Portuguese version of the MOP Scale and to compare the meanings of parenthood in 3 samples of men and women characterized by different reproductive trajectories: young adults without children, parents who conceived spontaneously, and couples undergoing in vitro fertilization (IVF).

## Methods

Ethical approval was granted by the Ethics Committee for Health of Centro Hospitalar Universitário de São João and the Portuguese Authority of Data Protection. Written informed consent was obtained from all participants following the principles of the World Medical Association's Declaration of Helsinki. For all the participants, data collection was developed to guarantee data confidentiality and protection.

### Sample and procedure

This cross-sectional study comprises participants retrieved from 3 data sources, reflecting 3 different reproductive trajectories: young adults without children, parents who conceived spontaneously, and couples undergoing IVF.

Concerning young adults without children, data were collected as part of the EPITeen study – Epidemiological Health Investigation of Teenagers in Porto, Portugal.<sup>23</sup> This cohort recruited adolescents born in 1990, enrolled at public and private schools in Porto. For this work, cross-sectional data from the third wave (2011–2013) was analyzed, when the participants were in their early 20s. Data from 246 participants (131 men and 115 women) who completed the MOP Scale and had no children was used.

Data were also analyzed from 51 fathers and 159 mothers with at least 1 spontaneously conceived child, recruited in 2014. Parents were invited to participate in the study at their children's school (1 public school of Porto, Portugal – 7th to the 12th grade), when they attended the end-of-trimester evaluation meeting.

The third sample is composed of 149 heterosexual infertile couples who were participants of a wider project about couples' decisions regarding the disposition of their cryopreserved embryos.<sup>24</sup> Briefly, in 2011 to 2012, all patients undergoing IVF or intracytoplasmic sperm injection in 1 public reproductive medicine centre in Porto, Portugal, were consecutively and systematically invited to participate in the study on the day biological samples were collected to diagnose pregnancy, using the human chorionic gonadotropin test –  $\beta$ hCG, about 15 days

after embryo transfer. About 4 months later, they were invited to complete the MOP scale, sent by mail.

The final sample encompassed 754 adults with complete information on sociodemographic characteristics (sex, age, years of education, household monthly income, and subjective social class) and on all items of the MOP scale. Household monthly income was assessed taking into account the total income of all the members of the household, by month ( $\leq 500\text{€}$ ; 501–1000€; 1001–1500€; 1501–2000€; 2001–2500€;  $>2500\text{€}$ ). These categories were dichotomized in  $\leq 1500\text{€}$  and  $> 1500\text{€}$ . Subjective social class was measured by asking participants to include themselves in one of the following social classes: low, middle-low, middle-high, high, or none of these. The response categories were categorized in: low/middle-low, high/middle-high, and none of these.

### The Portuguese version of the Meaning of Parenthood scale

The MOP scale is a 9-item measure of the personal and social identity needs as a basis for parenthood.<sup>20</sup> The original instrument proposes an evaluation at 3 levels: individual (the extent to which children are perceived as a natural expectation for an adult), marital (the extent to which children are perceived as a natural expectation of marriage), and social (the extent to which conception and impregnation act as a confirmation of sexual identity). Respondents are asked to indicate their level of agreement with statements about the MOP using a 5-point Likert scale (1 = totally disagree and 5 = totally agree). Overall, higher scores indicate attributing higher importance to parenthood to fulfill personal and social identity needs. Although the scale has good factorial validity (3 factors with eigenvalues  $>1$ ), information on the reliability of the scale has not been published.<sup>20</sup>

After obtaining permission from the author of the original MOP scale for its use and validation, a forward-backward procedure was applied to translate the English version of the scale to Portuguese. Two of the authors fluent in both languages produced 2 forward translations, independently, taking into account the conceptual content of the statements. The 2 versions were compared, and a single draft of the questionnaire was produced. Totally blind to the original version, 1 English native speaker back translated the Portuguese version into English. Finally, the translator, the 2 authors and 2 other researchers from the fields of health and social sciences reviewed the translation and the cultural adaptation process. Individual spoken reflections were performed with 4 couples undergoing IVF treatments to test face validity. The statements were clearly understood, and it was easy for the participants to answer the questionnaire. The 9 statements, in their original and Portuguese versions, are shown in Table 1.

### Statistical analyses

Statistical analyses were performed using Stata 11.0 (StataCorp LP, College Station, TX) and the significance level was fixed at .05. Participants' sociodemographic characteristics are presented as counts and proportions for categorical variables; and mean and standard deviation for quantitative variables with approximately symmetrical distributions.

In order to analyze the psychometric characteristics of the MOP scale, an exploratory factor analysis, using principal component analysis with varimax rotation, was carried out according to reproductive trajectories and sex. An item was considered to be disregarded if the factor loading was  $<0.4$ .<sup>25</sup> Afterwards,

**Table 1**  
**Items of the Meaning of Parenthood scale (Portuguese and original translated versions)**

1.	"Os filhos fazem com que um casamento se transforme numa família." (Having children makes a marriage into a family.)
2.	"Faz parte da natureza da mulher querer ter filhos." (It is only natural that a woman should want children.)
3.	"A mulher fica mais desiludida do que o homem por não ter filhos." (The disappointment of not having children is greater for a woman than it is for a man.)
4.	"Faz parte da natureza do homem querer ter filhos." (It is only natural that a man should want children.)
5.	"Ter filhos reforça os laços entre marido e mulher." (Having children makes a stronger bond between husband and wife.)
6.	"É mais difícil para o homem aceitar que é infértil do que para a mulher." (It is more difficult for a man to accept being subfertile than it is for a woman.)
7.	"Ter filhos é a função mais importante do casamento." (Having children is the most important function of marriage.)
8.	"Ser mãe torna a mulher verdadeiramente mulher." (Becoming a mother makes a woman truly female.)
9.	"Até ser pai um homem nunca pode ter a certeza da sua masculinidade." (A man can never be sure about his masculinity until he is a father.)

reliability and internal consistency were analyzed through the calculation of Cronbach alpha ( $\alpha$ ) for the subscales that emerged in the analysis.

The MOP results are presented according to the factors that emerged from the exploratory factor analysis. Within each factor, the scores of all items were summed and then divided by the total number of items, ranging from 1 to 5. Because of the skewed distributions of each factor, results are presented in median values. Comparisons according to reproductive trajectories and sex were conducted using Kruskal-Wallis and Wilcoxon signed rank tests, respectively.

## Results

The characteristics of the study participants are summarized in Table 2. Within each reproductive trajectory, women presented more often 12 or more years of education compared to their opposite-gender counterparts. More than half of the participants had a household monthly income of at least 1500 Euros and

classified themselves as low/middle-low social class. IVF couples are those who most often perceived their subjective social class as low/middle-low.

### *Psychometric characteristics of the Portuguese version of Meaning of Parenthood scale*

An exploratory factor analysis was conducted separately by reproductive trajectories and sex. The analysis of the scree plots supported an aggregation of the items in 2 factors in 4 out of 6 subsamples. Therefore, supported by this analysis, a theoretical criterion was also adopted and the number of factors to extract was then fixed in 2 for all subsamples, accounting for a cumulative explained variance of at least 49.2%. Items 1, 2, 4, and 5 were included in factor 1, and items 3, 6, 7, 8, and 9 were aggregated in factor 2. Although item 7 presented a slightly higher loading for factor 1 than for factor 2 in men from IVF couples, it was decided that it be allocated in factor 2 due to the lower magnitude of the differences between loadings and theoretical criteria (Table 3). Overall, loadings between each item and the underlying factor ranged from 0.410 to 0.888 in factor 1 and from 0.343 to 0.812 in factor 2 (Table 3).

Concerning the reliability analysis, a good internal consistency was observed for factor 1 and factor 2, with Cronbach alpha for both dimensions ranging between 0.70 and 0.85 in all subsamples. Based on the factor loadings and the content of all items within each factor, the 3 dimensions of the original scale (individual, marital, and social) were reorganized within factor 1 and factor 2, which will hereafter be referred to as the biological and social dimensions of the MOP scale, respectively (Fig. 1). Higher scores in the biological dimension indicate attributing higher importance to parenthood to fulfill individual needs as a biological organism, namely the capacity to reproduce. Concerning the social dimension, a higher score represents higher importance given to parenthood that arises from the individual needs of being a member of society.

### *Meanings of parenthood according to reproductive trajectories and sex*

Figure 2 depicts the median scores for the biological and social dimensions of the MOP scale according to reproductive trajectories and sex. A higher importance was attributed to the

**Table 2**  
**Participants' sociodemographic characteristics, according to reproductive trajectories and sex (n=754)**

	Young adults without children		Parents who conceived spontaneously		IVF couples	
	Men n=131	Women n=115	Men n=51	Women n=159	Men n=149	Women n=149
Age, mean (SD)	22.0 (0.4)	22.0 (0.3)	48.8 (6.0)	46.1 (5.2)	35.4 (4.3)	33.6 (3.9)
Education (yr), n (%)						
≤12	60 (45.8)	38 (33.0)	27 (54.0)	47 (29.6)	97 (65.1)	81 (54.4)
>12	71 (54.2)	77 (67.0)	23 (46.0)	112 (70.4)	52 (34.9)	68 (45.6)
Household monthly income (€), n (%)						
≤1500	42 (36.5)	40 (43.5)	15 (33.3)	40 (30.3)	58 (39.7)	58 (39.7)
>1500	73 (63.5)	52 (56.5)	30 (66.7)	92 (69.7)	88 (60.3)	88 (60.3)
Subjective social class, n (%)						
Low/middle-low	66 (51.6)	75 (68.2)	27 (60.0)	59 (43.7)	104 (71.2)	104 (71.2)
High/middle-high	58 (45.3)	34 (30.9)	16 (35.6)	70 (51.8)	32 (21.9)	32 (21.9)
None of these	4 (3.1)	1 (0.9)	2 (4.4)	6 (4.4)	10 (6.9)	10 (6.9)

The total may not add up to 754 due to missing data.  
 IVF = in vitro fertilization, SD = standard deviation.

**Table 3**

Factor loadings for 2 factors extracted from principal component analysis with *varimax* rotation, by reproductive trajectories and sex

Meaning of Parenthood	Factor loadings											
	Young adults without children				Parents who conceived spontaneously				IVF couples			
	Men		Women		Men		Women		Men		Women	
	1	2	1	2	1	2	1	2	1	2	1	2
Item 1	0.567	0.263	0.706	0.086	0.644	0.409	0.604	0.306	0.613	0.327	0.764	0.183
Item 2	0.815	0.039	0.757	0.343	0.871	0.083	0.853	0.191	0.794	-0.004	0.874	0.185
Item 3	0.023	0.343	0.132	0.728	0.139	0.812	0.184	0.588	-0.070	0.686	0.157	0.606
Item 4	0.838	-0.084	0.741	-0.033	0.888	0.149	0.879	-0.027	0.844	-0.228	0.876	0.031
Item 5	0.635	0.210	0.668	0.049	0.790	0.231	0.410	0.401	0.520	0.383	0.679	0.288
Item 6	-0.055	0.583	-0.152	0.718	0.096	0.825	0.038	0.545	-0.049	0.597	0.071	0.564
Item 7	0.393	0.713	0.500	0.541	0.443	0.693	0.232	0.758	0.519	0.455	0.543	0.595
Item 8	0.250	0.767	0.415	0.621	0.357	0.724	0.296	0.697	0.356	0.647	0.432	0.668
Item 9	0.103	0.715	0.078	0.539	0.095	0.619	0.044	0.755	0.292	0.439	0.051	0.750

IVF=in vitro fertilization.

biological dimension of parenthood independent of sex and reproductive trajectory, with median values ranging from 3.3 to 4.3, contrasting with lower scores for the importance of the social dimension that ranged from 2.2 to 2.6 ( $P < .001$  for the comparison of both dimensions within each reproductive trajectory). Also, men had significantly higher scores in the biological dimension when compared to their opposite-sex counterparts ( $P < .050$  for the comparison of both sexes within each reproductive trajectory). Among women, young adults were the ones attributing less importance to parenthood to fulfill biological and social identity needs, although this difference was only significant for the social dimension ( $P = .083$  for the biological dimension,  $P = .005$  for the social dimension). Similar patterns were obtained for men ( $P = .021$  and  $P = .010$  for the biological and social dimensions, respectively).

**Discussion**

The results of this study showed that the Portuguese version of the MOP scale is reliable for evaluating meanings of parenthood in populations with different reproductive trajectories, and it can be administered to both men and women with and without an infertility diagnosis. Moreover, this study proposed a new aggregation of the scale items in 2 dimensions – biological and social, which was consistent across all subsamples. Results

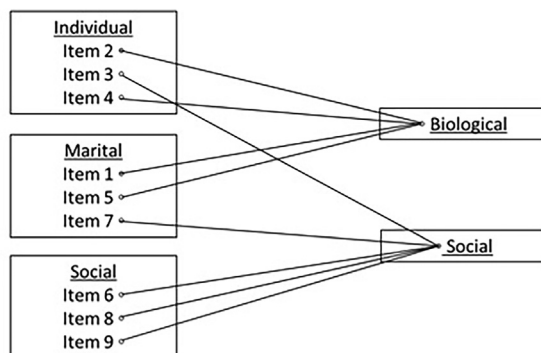
showed that the biological dimension of parenthood was valued more than the social dimension, independent of sex and reproductive trajectory. Lastly, the findings suggested that men attributed a higher importance to the biological dimension than women, and young adults without children were the ones attributing less importance to parenthood to fulfill biological and social identity needs.

The MOP scale presented good psychometric characteristics, supported by Cronbach alphas of at least 0.7 consistently across subsamples, which is more than satisfactory for scales with up to 15 items.<sup>26</sup> Moreover, the scale revealed that it is useful among men and women, and individuals in different reproductive trajectories, being able to detect differences in their perspectives. It is suggested that this tool can be administered to the adult population, being helpful both for research and clinical reproductive care to support family planning and to raise awareness around involuntary childlessness. Being a short and easy-to-administer instrument, the MOP scale is a good option to use in the clinical context. For health professionals providing regular family planning as well as those involved in MAR treatments, having information about patients’ meanings of parenthood may allow them to be sensitive to discuss with them their expectations, helping to deliver interventions that take into account individuals’ needs and values<sup>27</sup> and that promote nonstigmatization in cases in which biological parenthood is not achievable.

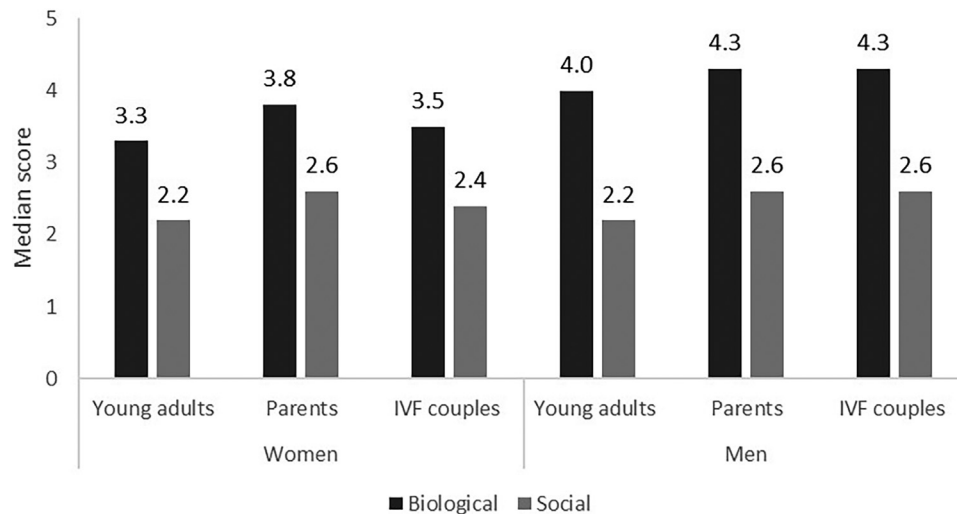
Although tensions between the biological and social constructs of kinship and parenthood have been brought to the fore,<sup>6,7,28</sup> the results of this study are in accordance with literature showing the reproduction of the primacy of genetic relatedness.<sup>5,6,29,30</sup> Infertile couples invoked the following arguments for valuing biological parenthood: to experience a “natural process,” to ensure sovereignty, to protect the relationship with the partner, to procreate the individual’s genes, and to bond with the child.<sup>17,31</sup>

In this study, men attributed a higher importance to the biological dimension than women within each reproductive trajectory. A previous study from the general public also revealed that men placed significantly more importance on the genetic ties than women.<sup>32</sup> This finding contributes to deconstruct the widespread view that motherhood would be more important to the construction of the individual female identity than to the male identity. It also suggests the idea that men can conflate infertility and virility, often assuming the absence of biological reproduction as humiliating and emasculating,<sup>33</sup> in the sense that it represents losing part of their masculinity.<sup>33</sup>

Original MOP Scale (Edelmann, 1994)      MOP Portuguese Version



**Figure 1.** Correspondence between the original version and the dimensions of the Portuguese version of the Meaning of Parenthood scale.



**Figure 2.** Median scores of the biological and social dimensions of the Meaning of Parenthood scale, according to reproductive trajectories and sex.

Lastly, results from this study showed that young adults tended to attribute less importance to both biological and social dimensions of parenthood, when compared to IVF couples and parents who conceived spontaneously, indicating that the meanings of parenthood seem to be influenced by age and the moment when an individual actively plans to be a parent.<sup>34</sup> This undervaluation of the importance of parenthood may be framed in a context where there is a tendency to postpone parenthood in Portugal,<sup>35</sup> reflecting contemporary social norms of delaying marriage,<sup>36</sup> having higher educational goals and attaining economic stability before pregnancy.<sup>5</sup> Knowing that the majority of male and female young adults intend to become a parent in the future, it would be advisable to promote fertility awareness.<sup>1,5</sup>

A limitation of this study relates with its cross-sectional design, which does not allow establishing a causal relationship between reproductive trajectory and meanings of parenthood. A follow-up of this sample of young adults would be relevant to assess possible changes in their meanings of parenthood according to the reproductive trajectory, namely when actively planning to be a parent or after transition into parenthood. This could also be helpful to disentangle possible interactions between age and reproductive trajectories.

Moreover, there is a need to include single parents and same-sex couples in further studies using this scale, taking into account previous evidence showing that the experiences of transition into parenthood among these particular populations may be shaped by cultural tensions between the dominant heterosexual perspectives, and their own norms and expectations.<sup>37,38</sup>

A higher value attributed to the biological dimension of parenthood calls attention to the importance of promoting public awareness about the factors influencing fertility which can, consequently, facilitate biological parenthood. At the same time, the reinforcement of public policies to provide the necessary conditions for human reproduction may contribute to reverse declining fertility rates.

Moreover, the balanced importance attributed to the social dimension of parenthood highlights the need to spread adequate information regarding the different forms of parenthood. Sexual health education should be aimed at promoting discussion based on a conciliation of the geneticization of kinship and a

constructivist approach of the social relationships as a continuum,<sup>39</sup> to better support informed decisions about family planning.

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### Conflicts of interest

The authors declare no competing interests.

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