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Desire to have children: validity evidence of an instrument

Desejo de ter filhos: evidências de validade de um instrumento

Deseo de tener hijos: evidencia de validez de un instrumento

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Resumo

O construto desejo de ter filhos pode ser compreendido como uma avaliação subjetiva sobre a intensidade da intenção de ter filhos e sobre as consequências decorrentes do ato de ter filhos. Este estudo teve o objetivo de elaborar um instrumento para mensurar o desejo de ter filhos e buscar suas evidências de validade. Inicialmente, buscaram-se evidências de validade baseadas no conteúdo dos itens elaborados. Após análises de juízes, foram selecionados os itens mais representativos do construto e foi aplicada a escala em uma amostra de 419 adultos. Análises fatoriais exploratórias indicaram a emergência de um único fator subjacente com adequada consistência interna, tal como teoricamente esperado. Os itens apresentaram parâmetros satisfatórios de discriminação e dificuldade, mostrando-se capazes de

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cobrir adequadamente um amplo espectro do construto. Também foram testadas relações entre o desejo de ter filhos e outras variáveis, dentre as quais se destacam a correlação positiva com o número de filhos pretendidos, e a correlação negativa com o tempo pretendido de espera para ter filhos. O instrumento reuniu satisfatórias evidências de validade e pode ser útil tanto em pesquisas quanto em contextos clínicos.

Palavras-chave: construção do teste; validade do teste; reprodução humana; parentalidade; filhos.

Abstract

The desire to have children construct can be understood as a subjective assessment of the intensity of the intention to have children, and of the consequences of having children. This study aimed to elaborate and search for evidence of validity of an instrument to measure the desire to have children. Initially, evidence of validity based on the content of the items was sought. After analysis by experts, the most representative items of the construct were selected and the scale was applied to a sample of 419 adults. Exploratory factor analyses indicated the emergence of a single underlying factor with adequate internal consistency, as theoretically expected. The items showed satisfactory parameters of discrimination and difficulty, and were able to adequately cover a broad spectrum of the construct. Relationships between the desire to have children and other variables were also tested, among which the positive correlation with the number of intended children, and the negative correlation with the expected waiting time for children are highlighted. The instrument has gathered satisfactory evidence of validity, and may be useful in both research and clinical settings.

Keywords: test construction; test validity; human reproduction; parenting; children.

Resumen

El constructo deseo de tener hijos puede ser comprendido como una evaluación subjetiva sobre la intensidad de la intención de tener hijos y sobre las consecuencias que surgen del acto de tener hijos. Este estudio tuvo como objetivo elaborar un instrumento para medir el deseo de tener hijos y buscar evidencias de la validez del mismo. Inicialmente fueron buscadas evidencias de la validez basadas en el contenido de los ítems elaborados. Luego del análisis de jueces, fueron seleccionados los ítems más representativos del constructo y se aplicó la escala a una muestra de 419 adultos. Los análisis factoriales exploratorios indicaron la emergencia de un

único factor subyacente con la adecuada consistencia interna, tal como es teóricamente esperado. Los ítems presentaron parámetros satisfactorios de discriminación y dificultad, mostrándose capaces de abarcar adecuadamente un amplio espectro del constructo. También fueron tanteadas las relaciones entre el deseo de tener hijos y otras variables, dentro de las cuales destacaron la correlación positiva entre el número de hijos esperados y la correlación negativa con respecto del tiempo pretendido para tener hijos. El instrumento reunió evidencias satisfactorias de su validez y puede ser útil tanto en investigación como en contextos clínicos.

Palabras clave: construcción del test; validez del test; reproducción humana; parentalidad; niños.

Introduction

Changes in fertility patterns in recent decades have encouraged studies in various fields of knowledge to understand and predict childbearing (Langdridge et al., 2005). In Brazil, for instance, the fertility rate fell from 2.32 children in 2000 to 1.80 children per woman in 2015 (IBGE, 2018). Some scholars claim that these changes are justified because having children is no longer a requirement to fulfill social ideals (Rocha-Coutinho, 2015). Nowadays, having children is mainly the result of a deliberate choice (the result of a desire), considering that there are several contraceptive methods available to the population (Ajzen & Klobas, 2013; Santos, 2013; Travassos-Rodriguez & Féres-Carneiro, 2013). This study is inserted in this context of seeking to understand the processes involved in this deliberate choice, aiming to build an instrument capable of measuring the desire to have children.

Regardless of the desire, intention and planning to have children, some variables have been identified as associated with conception. For example, the likelihood of having children decreases with the rise of women's age and the increasing number of preceding children; whereas the likelihood increases in married women who are satisfied with the distribution of housework and between the fifth and ninth year of their marital relationship (Mencarini et al., 2015; Schoen et al., 1999). However, in cases where there is no conscious desire, intention or planning, there are greater risks to the health of mothers and babies. Unintended pregnancy has been associated with poorer psychosocial health of mothers and babies, late initiation of prenatal care, lower intention to breastfeed, smoking behavior during pregnancy, premature birth and underweight newborns, and even termination of pregnancy (Brown & Eisenberg, 1995; Crissey,

2005; Joyce et al., 2000; Maxson & Miranda, 2011; Mohllajee et al., 2007; Koreman et al., 2002; Santelli et al., 2009).

Although not every pregnancy is the result of a desire, the intention to have children is considered an important predictor of the act itself (Shoen et al., 1999). Shoen et al. (1999) observed in a sample of US adults that 11% of those who reported no intention to have children became parents; among those who said they entertained a high intention to have children, 60% became parents. This result was very similar to the one found by Mencarini et al. (2015). However, the level of accuracy with which fertility intent predicts the behavior of having children depends on the definitions worked out for this construct and the methods chosen to access it. Studies in this area start from different theoretical perspectives, with emphasis on different components. For example, it is possible to find authors who emphasize the values attributed to children, the explanatory reasons for having them, the desire, the motivations, the intentions or even the attitudes towards having children (Ajzen & Klobas, 2013; Gerson, 1980; Langdridge et al., 2005).

Miller et al. (2004) propose a theoretical model to explain the intention to have children. According to these authors, the individual motivations of the members of a dyad result in behaviors that increase or decrease the likelihood of generating offspring. As a rule, individual aspirations coincide in a couple, resulting in compatible behaviors, such as a joint decision whether or not to use contraceptive methods. Sometimes, however, one member is more motivated to have children than the other; especially in such cases, it becomes relevant to understand how individuals perceive their partner's motivations. A more recent study proposes another dual perspective for the study of parenting intentions (Matias & Fontaine, 2017). According to this theoretical model, the motives of both members of the dyad (couple) predict the joint intention of having children.

Hoffman, Thornton and Manis (1978) can be considered pioneers in the study of the motives involved in having children. They identified a construct that they called "*value of children to parents*". This construct refers to the fulfillment of psychological needs that children may grant their parents, that is, the psychological benefits that parents derive from parenting (Hoffman et al., 1978). In order to investigate the reasons for having children, Langdridge et al. (2005) reformulated the child value to parents scale of Hoffman et al. (1978) and found 11 categories that could discriminate and make good predictions about who intends to have children and who does not. The reasons identified by the authors were: (1) to feel fulfilled in raising a child; (2) to satisfy the mate's desire; (3) to build a family; (4) to comply with the biological impulse; (5) to be able to give the child a

good home; (6) to deem the child a part of the two parents. The reasons for not intending to have children are: (1) the notion that there are other more important things in life; (2) the restriction of liberty; (3) the partner's lack of desire to have children; (4) the interference in one's career; (5) the concern about the overpopulation of the planet.

Other researchers have also turned to the study of motivations for having children (Gerson, 1980, 1983; Rabin, 1965). According to Gerson, motivation is derived from several factors, including the values of the children postulated by Hoffman et al. (1978). The author found that motivation for motherhood and fatherhood was positively correlated with the number of desired children, memories of childhood care, happiness in family life, family size, femininity, and identification with a religious organization. Among younger people, motivation to have children was negatively associated with positive attitudes toward pro-feminist ideas (Gerson, 1980, 1983).

Other factors that may be associated with the decision to have children were reported by Hadley and Hanley (2011). The authors found that a high level of education, professional status and the demand for a comfortable family income are positively associated with the desire to have children. Lampic et al. (2006), on the other hand, found that a stable relationship, the division of responsibilities with the partner and the feeling of being sufficiently mature are equally important aspects in making the decision to have children.

More recently, Ajzen and Klobas (2013) used the Theory of Planned Behavior (TPB) to help understand the psychological processes involved in forming the intention to have children. This intention, according to TPB, is predicted by three factors: perceived behavioral control, attitudes toward having children, and subjective norms. For the above mentioned authors, the attitude towards having children derives from behavioral beliefs regarding the consequences of having a child, and from the subjective evaluations of these consequences. Subjective norms are a function of the social pressures perceived by the individual in relation to having children and their personal motivation to conform to these norms. Perceived behavioral control refers to the individual's confidence in their own control over the act of having a child.

In this model, the more positive the attitude toward having children, the stronger the subjective norms encouraging the act of having children, and the greater the perceived behavioral control, the higher the intention to have children (Ajzen & Klobas, 2013). As a result, the higher the intention to have children, the more likely it is for the actual behavior of having them to occur. However, this

relation between intention and actually having children is moderated by deliberate control over behavior, for example, contraceptive use (Ajzen & Klobas, 2013).

Mencarini et al. (2015) did research to test Ajzen and Klobas' model (2013). The authors verified that some sociodemographic variables interfere with the antecedents of the intention to have children (perceived behavioral control, attitude toward the act of having children, subjective norms), with the actual intention to have children, and with the act of having children (Mencarini et al., 2015). Among the sociodemographic variables, it was evidenced that, although only the number of previous children impact on all antecedents of the intention to have children, the division of domestic work, the age of the woman, and the duration of the marriage are also important predictor variables. As theorized by Ajzen and Klobas, perceived behavioral control, attitude toward reproductive behavior, and subjective norms are antecedents of the fertility intent, and this in turn is an antecedent of the reproductive behavior.

Another commonly used method for investigating intention to have children is retrospective research (Santelli et al., 2009). In these surveys, women are asked, after conception, about their procreating intent before becoming pregnant, and their responses are classified into categories. The commonly used categories are intention and lack of intention to have children. This latter category can be further divided into early pregnancy, when the pregnancy occurs earlier than expected, although the woman wishes to have children in the future; and unwanted pregnancy, when one does not wish to have (more) children, a category which usually includes abortions (Santelli et al., 2009).

Santelli et al. (2009) report that this method of verifying the intention to have children has received numerous criticisms. The authors deem inadequate the categorical conception of the intention to have children, as this would not represent the complexity of the factors involved. They conceive intent as a construct that includes affective and cognitive components as well as a component related to the partner. Furthermore, based on the theory of cognitive dissonance (Festinger, 1962), it can be assumed that retrospective research on intention to have children (after conception) may lead to distorted results, as the intention reported by women before conception may differ sharply from their intention after conception.

Considering the relevance of the subject and in accordance with the above critiques, this study was designed to construct a scale to measure the desire to have children in the Brazilian context. Therefore, it started from a notion of desire to have children that conceives it as a psychological construct capable of encompassing evaluative and affective aspects of the intention and act of having

children. Thus, the construct was defined as a subjective assessment of the intensity of the intention to have children as well as of the consequences of having children. Thus, the greater the intensity of the intention to have children and the more positive the affective charge related to the act of having children, the greater the desire to have them.

Method

Participants

There were 419 participants, with average age of 27.1 years (*SD*=7.84), of which 64% (*n*=268) were women, and the others men (*n*=151). There was no age difference between men and women ($t(417)=0.40$; $p=.69$; $d=0.04$). The education level of the participants ranged from high school to graduate education, with 2% (*n*=8) of the participants having just high school level, 48.4% (*n*=203) having incomplete undergraduate; and 49.6% (*n*=208) complete undergraduate (among this group, 22.9% (*n*=96) reported having complete graduate level and 11.5% (*n*=48) incomplete graduate level). Most participants, 75.4% (*n*=316), declared to be living in Southern Brazil; 9.5% (*n*=40) were in the Southeast Region; 6.7% (*n*=28) in the Northeast Region; 4.1% (*n*=17) in the Central-West Region; 3.1% (*n*=13) in the Northern Region; the rest, 1.2% (*n*=5), were not in the country at the time of data collection.

Most participants, 87.6% (*n*=367), said they had no children. There was no association between the participants' sex and having children, $\chi^2(1, N=419)=0.71$; $p=0.40$; $v=0.04$. Among those who had children, the average number of children was 1.71 (*SD*=1.07). Considering the total sample, the average number of children was 0.21 (*SD*=0.63). None of the participants were pregnant and none had a pregnant partner at the time of data collection.

As for being in a romantic relationship at the time of data collection, 86.2% (*n*=361) of the participants stated that they were involved in a relationship (among this group, 93% (*n*=335), were in a heteroaffective relationship, and 7% (*n*=26), in a homoaffective relationship). The duration of the relationship ranged from 10 days to 41 years (*M*=54.4 months, *SD*=65.5). There was an association between the participants' sex and being in a relationship, such that 61.6% (*n*=93) of men and all the women were in a relationship, Fisher's exact test $p<.001$.

Instruments

An online questionnaire was used, available at an internet address and similar to a pencil and paper questionnaire. The instrument contained sociodemographic questions (sex, age, education); questions about children; questions about relationships; the Factorial Relationship Satisfaction Scale (Wachelke et al., 2004); the Kansas Marital Satisfaction Scale (Schumm et al., 1986); the Desire to Have Children Scale, as developed in this study; and a measure of child care intent. The questions about children asked whether the participants had children (yes or no); how many children; whether they intended to have a child or children; and how they judged the intensity of their will/desire to have children one day on an 11-point scale, such that zero meant no will/desire and 10 meant a great will/desire. Relationship questions asked whether the participants considered themselves in a love relationship (yes or no); and how long they were in this relationship.

Factorial Relationship Satisfaction Scale (Wachelke et al., 2004). This scale measures two dimensions of satisfaction with the love relationship: satisfaction with physical and sexual aspects (five items), and satisfaction with shared interests and behavior (three items). This is an eight-item scale made up of statements that the participants must consider and say how much they agree with them on a five-point scale. Examples of items: "my mate is physically attractive to me"; "my partner and I like to take part in similar activities". The higher the average, the greater the satisfaction in each factor. In this study, the alpha coefficients were .78 for the physical and sexual aspects factor and .74 for the shared interests and behavior factor.

Kansas Marital Satisfaction Scale (Schumm et al., 1986). This scale measures overall satisfaction with love relationships by taking into account just one factor. The Brazilian translation is by Sorokowski et al. (2017). The scale is composed of three affirmative items and the participants must answer how much they agree with each one of them on a five-point scale. The statements are as follows: "I am satisfied with my relationship"; "I am pleased with my partner regarding his/her role in the relationship"; "I am satisfied with my relationship with my partner". The higher the average on the scale, the greater the satisfaction. In this study, the alpha coefficient of the scale was .92.

Desire to Have Children Scale. The construction and validity evidence of this scale are shown in this study. It is a scale designed to measure the intensity of the desire to have children considering a single factor. It is made up of 10 items

comprising statements, and the participants must answer how much they agree with them on a six-point scale. See the Annex.

Child Care Intent Measure. Four photos of children followed by an 11-point scale were used. The participants had to evaluate how much each photo aroused in them the willingness to take care of the children. The zero point of the scale meant "it arouses nothing" and the 10 point meant "it arouses a great deal". The images showed faces of four children: a newborn, a one-year-old child, a three-year-old child, and a six-year-old child. The children were male and had a neutral expression (no smiles or grimaces). The photos were selected from free internet image databases.

Procedures

Elaboration of the items. Two researchers, experienced in the development of psychological instruments and working independently, started from the definition of the construct and elaborated items that could represent it. As many items were elaborated as the researchers could manage to produce. The researchers then compiled together their item lists into a single 30-item list. This list was sent to three judges for evaluation of its representativeness and comprehensibility. The judges, researchers with experience in the elaboration of psychological instruments, indicated whether in their opinion the items concerned the given definition of the construct; whether the statement in the item was understandable or not; and if they had changes to suggest. After this procedure, the items the judges unanimously thought to be representative of the construct were selected, drafting problems were corrected and items with repeated content were eliminated. Later, the researchers reanalyzed the items to remove those that could only be answered by people in a relationship. The final version of the instrument ended up with 10 items, as shown in this study.

Data Collection. Participants were recruited through social networks and through addresses available in the contact list of the researchers. Invitation emails were sent to prospective participants (anyone over the age of 18), and the link to the research was also divulged in social networks. The email messages and those posted on social networks contained a brief description of the study and the internet address of the questionnaire. By accessing the home page of that site, participants could see detailed information about the research, the free and informed consent form, and the question about being willing to participate in the study. Those who agreed to participate were referred to the questionnaire. This

study was developed following all ethical precepts of research with human beings, according to Resolution 466/2012 of the National Health Council.

Analyses. The questionnaire was set up to prevent missing cases on the items of the Desire to Have Children Scale. To verify evidence of validity related to the structure of the construct, two Exploratory Factor Analyses (EFAs) were performed, with two distinct estimation methods. The first EFA used the Principal Axis method through the SPSS program version 23 (IBM, 2015). The second EFA applied the Robust Diagonally Weighted Least Squares (RDWLS) method based on the polychoric correlation matrix, using Factor Software version 10.9.02 (Ferrando & Lorenzo-Seva, 2017). To search for evidence of validity based on relationships with other variables, tests of Spearman correlations and Student's t-tests were performed using SPSS version 23 (IBM, 2015). In software R version 3.5.3 (R Core Team, 2019), the parameters *a* (discrimination / slope) and the parameters *b* (difficulty / threshold) of the items were calculated through the Gradual Response Model (GRM) of the item response theory (Samejima, 1969), using the MIRT Package version 1.30 (Chalmers, 2012). Then, the alpha and omega coefficients were calculated to obtain reliability indicators, using the MBESS R package version 4.6 (Kelley, 2019).

Results

In order to test the structure of the elaborated instrument, a Factor Analysis with the Principal Axis method was performed. Initially, data adequacy to factorization was confirmed, *KMO*=.92 and Bartlett's sphericity test: $\chi^2(45, N=1{,}419)=2105.8$, $p<.001$. The emergence of a single factor with eigenvalue>1 was observed, which explained 50.4% of the data variance. The scree plot also showed the emergence of a single factor. Additionally, a parallel analysis of random eigenvalues was performed, and it was found that the last observed eigenvalue greater than the simulated one was in Factor I (Factor II: observed eigenvalue=.94 and simulated eigenvalue=1.22).

In addition, a factor analysis by Robust Diagonally Weighted Least Squares (RDWLS) method was performed based on the polychoric correlation matrix of the items, and the Hull method (Lorenzo-Seva et al., 2011) was used for retention of factors. The results were very similar to those of the Principal Axis analysis, suggesting a single factor extraction that explained 62.7% of the data variance. Considering the above-mentioned factor retention criteria by Kaiser, Cattell, Horn and Hull respectively, and above all the definition that underlies the con-

struct, it was considered appropriate to extract a factor for the instrument. The items, their respective factor loadings and commonalities can be seen in Table 1. With regard to reliability, both alpha and omega coefficients for the instrument were .91 (95% CI=0.90–0.92), proving to be satisfactory (Nunnally, 1978). Parameters *a* and parameters *b* were computed, as shown in Table 1. Parameters *a* ranged from 1.45 to 5.84, and parameters *b* from –1.13 to 2.15. Figure 1 shows the test information curve.

Table 1 — Factorial Loadings and Communalities from a Principal Axis Factor Analysis, and Discrimination and Threshold Parameters of Items

	Load	h^2	*a*	b_1	b_2	b_3	b_4	b_5
Meu desejo de ter um bebê aumentou nos últimos tempos [My desire to have a baby has increased recently]	.78	.61	2.38	–0.47	0.08	0.45	0.91	1.44
Sinto que algo em mim pede para eu ter filho(s) [I feel that something in me asks me to have child(ren)]	.76	.57	2.84	–0.39	–0.02	0.28	0.65	1.08
A ideia de ter filho(s) é um tema recorrente em meus pensamentos [The idea of having child(ren) is a recurring theme in my thoughts]	.76	.57	2.52	–0.30	0.06	0.37	0.82	1.36
Eu converso com outras pessoas sobre a ideia de ter um bebê [I talk to other people about the idea of having a baby]	.74	.54	2.21	–0.46	0.03	0.39	0.79	1.37
Hoje em dia penso mais em ter filho(s) do que pensava antigamente [Nowadays I think more about having child(ren) than I used to think]	.72	.52	2.42	–0.73	–0.29	0.01	0.36	0.85
Quero ter filho(s) tão logo quanto for possível [I want to have child(ren) as soon as possible]	.72	.53	2.27	0.19	0.55	0.84	1.20	1.61
Quando vejo bebês ou crianças pequenas, isso me desperta vontade de ter um também [When I see babies or young children, it makes me want to have one too]	.70	.49	2.00	–0.87	–0.33	–0.02	0.52	0.98
Se tivesse filho(s) agora, ficaria contente [If I had child(ren) now, I would be happy]	.66	.44	1.71	–0.29	0.21	0.64	1.18	1.68
Acredito que ter uma criança vai me tornar uma pessoa mais realizada [I believe that having a child will make me a more fulfilled person]	.66	.45	1.81	–1.13	–0.66	–0.20	0.33	1.08

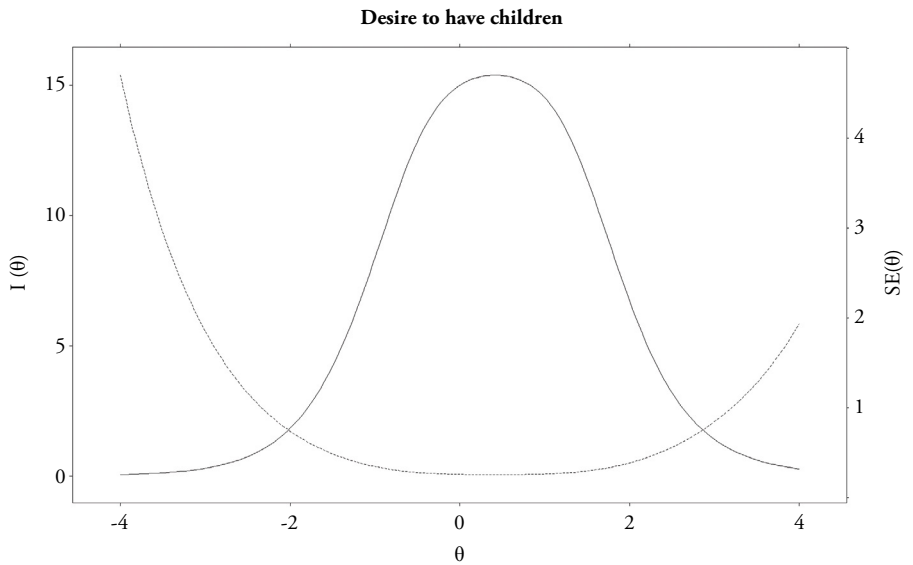
continue...

...continuation

	Load	h^2	*a*	b_1	b_2	b_3	b_4	b_5
Sinto que estou preparado(a) para ter filho(s) [I feel that I am prepared to have children]	.59	.34	1.45	–0.12	0.39	0.89	1.46	2.15
Eigenvalue	5.52							
% explained variance	50.4							
M	2.95							
SD	1.38							
Alpha coefficient	.91							

Notes
a: discrimination parameter.
b: threshold (difficulty) parameter.
Parameters of discrimination and threshold were estimated by the Graded Response Model (Samejima, 1969).

Figure 1 — Test information curve



The solid line represents the test information curve.
The dotted line represents the standard measurement error.

In search of more evidence of validity for the instrument, relationships with other variables were tested. Table 2 shows the results of the Spearman correlation coefficients obtained. We highlight the significant and positive correlations between desire to have children and the number of children that one expects to have throughout life; the intensity of desire to have children one day; how much

children's pictures inspire the desire to take care of them. On the other hand, there is a negative correlation between desire to have children and how long one wants to wait to have children.

Table 2 — Means, Standard Deviations and Spearman's Correlations between Variables

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Desire to have children, *N*=419	2.95	1.38	—													
2. Age, *N*=419	27.1	7.85	.17**	—												
3. Education level§, *N*=419	6.05	1.26	.14**	.65**	—											
4. Number of children one thinks about having, *N*=360	1.71	1.07	.38**	–.30**	–.20**	—										
5. How long one wants to wait until having children (months), *N*=419	7.70	45.2	–.47**	–.68**	–.42**	.01	—									
6. Intensity of the desire to have children one day, *N*=419	7.82	3.23	.64**	–.17**	–.08	.59**	–.19**	—								
7. Current number of children, *N*=401	0.21	0.63	–.10*	.47**	.23**	–.22**	–.43**	–,22**	—							
8. How much care a photo of a newborn inspires, *N*=401	8.74	3.11	.37**	.02	.03	.20**	–.13*	.37**	–.01	—						
9. How much care a photo of a 1-year-old inspires, *N*=400	8.71	2.96	.39**	.05	.02	.21**	–.16**	.37**	.03	.79**	—					
10. How much care a photo of a 3-year-old inspires, *N*=401	8.19	2.90	.35**	.10*	.03	.18**	–.18**	.34**	.04	.58**	.63**	—				
11. How much care a photo of a 6-year-old inspires, *N*=361	6.68	3.29	.31**	.07	.003	.21**	–.18**	.29**	.04	.43**	.49**	.71**	—			
12. Relationship time (months), *N*=361	54.4	65.5	.04	.41**	.22**	–.19**	–.36**	–.08	.35**	–.05	–.01	–.02	–.03	—		
13. Satisfaction with the relationship – physical, *N*=361	4.39	0.68	.09	–.17**	–.13*	.15**	.08	.17**	–.14**	.07	.12*	.10	.15**	–.12*	—	
14. Satisfaction with the relationship – plans, *N*=361	3.99	0.82	.14**	–.07	–.003	.11*	–.03	.18**	–.10*	.12*	.13*	.15**	.12*	–.02	.41**	—
15. Overall satisfaction with the relationship, *N*=361	4.08	1.03	.10*	–.11*	–.06	.09	.01	.15**	–.14**	.03	.05	.04	.07	.04	.46**	.57**

Notes

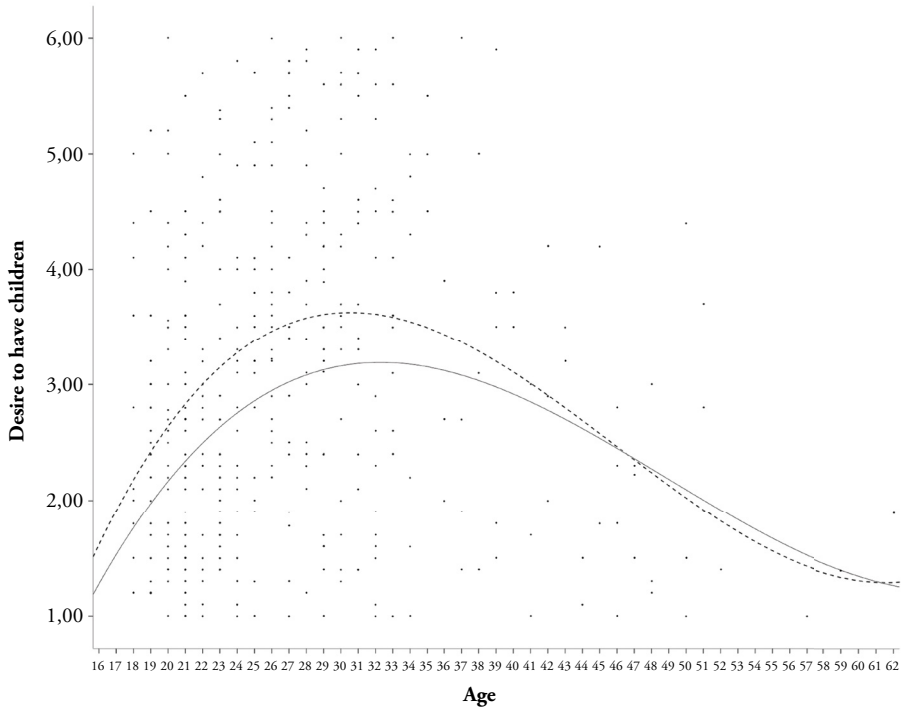
§ Ranging from 4 (high school level) to 8 (graduate level).

* $p<.05$

** $p<.01$

In addition, we sought to characterize the relationship between age and desire to have children, considering that a linear relationship between the variables was not expected. With this in mind, a dispersion graph was elaborated and functions of better fit to the distribution were tested. The best-fit line that was found describes a cubic function, as shown in Figure 2. A tendency to reach the peak of desire to have children stands out in the 26–36 age group for both women and men.

Figure 2 — Scatter plot of desire to have children according to age



The dotted line represents the best data adjustment line for women, R^2=.12
The solid line represents the best data adjustment line for men, R^2=.11

Still looking for evidence of validity for the instrument, we tested its ability to discriminate between people who said they wanted to have children one day and those who said they did not want children. Most participants, 85.9% (*n*=360), said they would like to have children one day, regardless of the number of children they already had. As expected, it was found that people who claimed

they wanted children had higher levels of desire to have children (M=3.16, SD=1.35) than those who said they did not intend to have children (M=1.65, SD=0.62), t(166.9)=14.0, p<.001, d=1.53.

Finally, differences were tested for the desire to have children between men and women, as well as between people who were in a love relationship and those who were not. Women had higher levels of desire to have children (M=3.09; SD=1.42) than men (M=2.70; SD=1.26), t(342.9)=2.87, p=.004, d=0.29. With regard to love relationships, there were no differences in the desire to have children between those who were in such a relationship and those who were not, t(417)=1.49, p=.14, d=0.22. As all women in the sample were in love relationships, it was also tested whether there were differences between men who were in a love relationship and those who were not; no difference was found in the desire to have children between these groups, t(149)=.02, p=.98, d=0.003.

Discussion

The objectives of this study were to elaborate an instrument to assess the desire to have children as well as to seek evidence of its validity. It started from the definition of the construct and elaborated a set of items. Initially, the instrument was subjected to expert analysis. The items unanimously deemed representative of the construct were retained in the final version of the instrument, totaling 10 items, which suggests adequate evidence of validity related to the content (AERA/APA/NCME, 2014). Exploratory factor analyses showed the emergence of a single underlying factor explaining the variance of the data. This result is in accordance with the definition of the construct, which conceives it as one-factor, and highlights the evidence of validity based on the instrument structure (AERA/APA/NCME, 2014).

The internal consistency of the scale was also found to be satisfactory, indicating adequate reliability for the instrument (Nunnally, 1978). The item analyses, according to the item response theory (Samejima, 1969), indicated high and very high parameters a (ranging from 1.45 to 2.84), according to Baker (2001). The parameters b of the items reveal that there was a wide coverage of the desire to have children latent trait (ranging from –1.13 to 2.15). Thus, it can be stated that the items can effectively distinguish the various levels of desire to have children.

In addition, evidence of validity based on relationships with other variables was sought. It was found that the greater the desire to have children, the

greater the number of children that one plans to have throughout life, the greater the intensity of the desire to have children one day and the less one wants to wait to have children. Also, participants were shown images of children of different ages and asked how much each child inspired them as needing care. There was a tendency toward the following pattern: the greater the desire to have children, the more people reported willingness to take care of a newborn and of a one-, three- and six-year-old child. Furthermore, a nonlinear relationship was found between age and desire to have children, and a concave function could be observed: the desire to have children gradually grows from early adulthood to the age of 30, when it begins to decrease. This relationship is expected considering that people tend to seek stability in their careers and intimate relationships before having children, while reaching biological limits for fertility (Mencarini et al., 2015, Toulemon & Testa, 2005).

Further evidence of criterion validity was obtained by testing the instrument's ability to discriminate between groups. As expected, people who claimed they wanted to have children one day had higher scores on desire to have children than those who claimed they did not want to have children. Also in the expected direction, women had a greater desire to have children than men. This result reinforces what has been found in the literature on the subject (Dinku et al., 2018). Gore (2008), for example, found that in a sample of US adults 18% of men aged 40–44 said they did not want children, while only 10% of women in this age group stated the same. These differences have been attributed mainly to the social roles played by each sex. Although there is now a more egalitarian panorama for men and women with regard to family functions, motherhood is still seen as a sign of personal fulfillment for women, while a man's success is more commonly assessed by criteria such as income and career (Gore, 2008). Thus, there would be a social stigma in being a childless woman, which would be less pronounced for men (Gore, 2008).

Contrary to expectations, there was no difference in levels of desire to have children between people who were in a romantic relationship and those who were not. Marital status has been considered an important predictor of the act of having children, as the chances of having children increase when people are in a stable love relationship (Mencarini et al., 2015; Toulemon & Testa, 2005). In recent decades, however, family configurations have undergone transformations. Single-parent arrangements have become much more socially accepted and assisted reproduction techniques more widespread (Bernardi et al., 2018; Pontes et al., 2015). In addition, many couples have opted not to have children (Bernardi et al., 2018). It is possible that having children is increasingly becom-

ing an option, both for people in a love relationship and for single people. However, this data should be interpreted with caution, since few participants stated that they were not in a romantic relationship: about 38% of men and no women. Future studies may again address this issue in more diverse samples.

It is also possible that the duration of a relationship may be a more important variable in understanding the desire to have children than the status of a relationship. This is because people in a recent relationship would have less desire to have children, since they would still be building the foundation of their relationship. Similarly, people who are in a long-term relationship but have gone beyond the reproductive age would also have a lower intention to have children. There is likely to be a peak in the desire to have children when couples reach a certain longevity in their relationship, as it was found for age. This hypothesis is in accordance with the results of the research by Mencarini et al. (2015), for example, which revealed that people are more likely to have children between their fifth and ninth year of relationship. In this sense, other studies may further explore the connection between the relationship duration and the desire to have children, considering different types of relationship configurations.

One of the advantages of the instrument built in this research, compared to previous researches, is to evaluate the intensity of the desire to have children at the present time, differing from studies that used retrospective or prospective methods (Brown & Eisenberg, 1995; Toulemon & Testa, 2005). Although all these forms of measurement have limitations, we believe that the desire to have children, assessed at present and measured on a continuum, may prove to be a more accurate predictor of childbearing behavior. When people are asked to declare whether or not they plan to have children, picturing themselves in the future, they can make predictions that disregard contextual variables, such as how much financial stability they will have achieved (Toulemon & Testa, 2005). When asked about their desire to have children at the present time, on the other hand, people are expected to consider their current living conditions to judge, for example, whether they are prepared to have a child. In this sense, at least with regard to short-term forecasts, the measure presented in this study would be more effective in predicting the act of having children. Longitudinal studies may clarify this issue.

Given what has been previously shown, we believe that the constructed instrument gathered evidence of validity that makes it suitable for the Brazilian context. Other studies should be undertaken in order to extend this evidence of validity, for example, by testing the structure of the instrument through confirmatory analyses and on samples with other characteristics. Most studies in this

area have investigated the desire to have children in developed countries, such as the United States, Italy and France, where contraceptive methods are widely available to the population (Gore, 2008; Régnier-Loilier et al., 2011). In contexts of greater social vulnerability, however, a high frequency of unintended pregnancies is observed (Santelli et al., 2009). An instrument capable of assessing levels of desire to have children may allow one to make predictions about unwanted pregnancies and then develop strategies to prevent the associated health risks for mothers and babies. Finally, we consider that the constructed measurement can be useful in clinical contexts, such as couple therapy, genetic counseling and assisted reproduction, since couples often face dilemmas related to differences in the desire to have children.

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Annex

Escala Desejo de Ter Filhos

Abaixo você vai encontrar uma série de afirmativas. Marque o quanto você concorda com cada uma delas, sendo que quanto MAIS PRÓXIMO do 1, MENOS você CONCORDA com a afirmativa; e quanto MAIS PRÓXIMO do 6, MAIS você CONCORDA com a afirmativa.

	Discordo totalmente 1	2	3	4	5	Concordo totalmente 6
Sinto que algo em mim pede para eu ter filho(s).	1	2	3	4	5	6
Meu desejo de ter um bebê aumentou nos últimos tempos.	1	2	3	4	5	6
Sinto que estou preparado(a) para ter filho(s).	1	2	3	4	5	6
Eu converso com outras pessoas sobre a ideia de ter um bebê.	1	2	3	4	5	6
Se tivesse filho(s) agora, ficaria contente.	1	2	3	4	5	6
Quero ter filho(s) tão logo quanto for possível.	1	2	3	4	5	6
Quando vejo bebês ou crianças pequenas, isso me desperta vontade de ter um também.	1	2	3	4	5	6
A ideia de ter filho(s) é um tema recorrente em meus pensamentos.	1	2	3	4	5	6
Acredito que ter uma criança vai me tornar uma pessoa mais realizada.	1	2	3	4	5	6
Hoje em dia penso mais em ter filho(s) do que pensava antigamente.	1	2	3	4	5	6

Levantamento dos resultados: Calcular a média aritmética das respostas aos 10 itens.

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