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EXPLAINING FERTILITY DECISION-MAKING IN ROMANIA

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ABSTRACT

This paper estimates the parity-progression fertility intentions within the Romanian low-fertility context, using the Theory of Planned Behavior (Fishbein & Ajzen, 2010). We analyse how attitudes, subjective norms, and perceived behavioural control are related to fertility intentions among childless and one-child parents. Using data from the 2005 wave of Generation and Gender Survey, we applied a Principal Axis Factor Analysis in order to build measures of the suggested theoretical socio-psychological factors. We run three logistic regression models to understand the determinants of childbearing intentions among the childless and parents. Results show that social pressure is the most influential factor in forming parity-progression intentions, for both childless and one-child parents. Positive attitudes also emerge as an important socio-psychological component in deciding a child. Fertility intentions also vary according to development areas, as proxy for different Romanian cultural contexts.

Classification JEL: J13, J17, J12

Keywords: Fertility intention, TPB, GGS, developmental area.

1. INTRODUCTION

The persistent low fertility rates all over in Europe have called the attention of scholars, policymakers, and society at large. In the last decades, a sharp decrease in Total Fertility Rates (TFRs) has been observed, as well as major changes in family behaviours, such as the

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postponement of marriage and childbirth, the growth of cohabitation, the spread of childbearing within cohabitation, and the growth of childlessness rates (Berrington, 2004; Kreyenfeld & Konietzka, 2017; Lesthaeghe & Surkyn, 1988; Sánchez Gassen & Perelli-Harris, 2015). After 1990s, period Total Fertility Rates (TFRs) have dropped below 1.3, a phenomenon called “lowest-low fertility” (Goldstein et al. 2009), largely explained by postponement of the age at first birth (Sobotka, 2004). Most demographers argue that the postponement is partly a response to economic uncertainty and social changes that some countries in Central, Southern and East Europe have encountered. The path to the lowest-low and low fertility in Eastern Europe differs from the one in Central and Southern Europe, as well as it differs among the Central and Eastern European countries (CEE), which formed the ex-soviet block (Frejka & Gietel-Basten, 2016; Perelli-Harris, 2005; Sobotka, Skirbekk, & Philipov, 2011). This is the case of Romania, an ex-socialist country, which experienced the lowest low fertility in 2002 (1.27, World Bank, 2017) and maintained relative low levels of period fertility in the following years.

Currently, Romania is characterised by a paradox: the age of marriage and of childbirth is still low (even if there has been a shift towards later ages), the fertility is low, but parenthood is highly appreciated. However, the rates of childlessness remain low compared to Western and Northern Europe. This paradox in family formation, which emerged after the collapsed of the Communist regime, is similar to that of Ukraine, Russia, Bulgaria and Hungary, which have received far more attention in explaining the country-specific factors associated with fertility behaviour (Billari et al., 2009; Perelli-Harris, 2005, 2006; Philipov, et al. 2006). Thus, understanding how Romanians decide to have children and what weights more in the first and higher order parity intentions complements the existing research on the ex-soviet block of countries.

Romania is also characterized by regional differences in terms of cultural, economic and social features, which are reflected also in the demographic behaviour. Eight development regions⁴ have been identified, formed by group of counties in the territorial contiguity, which differ on a number of aspects such as GDP per capita, education, life expectancy, values system. For example, the level of education in the West, Center, and North-West is higher than in the North-East; norms and lifestyles from the North-East region differ much from the other development regions such as Centre, West or North-West (Sandu, 2011a). Differences in fertility behaviour are observed at regional level being the mothers' mean age at first birth the

⁴ The development regions of Romania refer to the eight regional divisions created in Romania in 1998 in order to better co-ordinate regional development as the country progressed towards accession to the European Union. The development regions correspond to NUTS-2 level division in EU member states. However, Romania's development regions do not actually have an administrative status and do not have a legislative or executive council or government.

lowest in North-East and South-West (Mureşan et al., 2008).

Several explanations for these differences have been posited. The first explanation is historical (Sandu, 2011b): the different empires' domination in the Romanian history left cultural differences within the country (driven by the influences of the Ottoman Empire for the south regions, the Austro-Hungarian Empire for the North-West, West and Centre, and Russian Empire for the North-East and part of South-East)⁵. The second explanation is related to the collapse of the Soviet industry, which triggered high dismissals of the workforce not able to reintegrate in any other fields of employment. The drastic reduction of the employees increased at the 44% in 2005 compared to 1900, the figures being different in each region. However, while the decreasing trend in the number of employees has continued in the other regions, it has increased in the capital region - the Bucharest-Ilfov area - that has also benefited in a highest degree from national and foreign investments (Lefter & Constantin, 2009). Therefore, from an anthropological and sociological standpoint, the eight Romanian regions are seen as socio-cultural matrices, each one standing for a mental pattern with physical boundaries and well configured social identities, which influence individual expectations and behaviours (Sandu, 2011a).

In this paper, we study fertility decision-making in Romania on the ground of the Theory of Planned Behaviour (Fishbein & Ajzen, 2010). Of concern in this paper are attitudes, perceived social influence and perceived control towards the intention to parenthood (among childless respondents) and the intention to the second order parity (among first-child parents). The 2005 wave of Generation and Gender Survey provides data with respect to fertility intentions and its determinants, containing questions on intentions formulated using the theory of planned behaviour (Vikat et al., 2007). The research questions that guide this study are the following: 1) Do attitudes, subjective norms, perceived behavioural control explain simultaneously the intention to have a/another child?; 2) How is the socio-economic condition of the childless and one-child adults associated with parity-progression fertility intentions?; 3) Do the above relationships hold once controlled for demographic characteristics?

In order to take into account of the cultural differences which are related to the social and demographic behaviours in Romania (Sandu 2011a, 1999), we consider the eight development regions. Thus, this paper further asks: 4) Are development regions relevant for explaining fertility intentions? As none of the empirical research which used the theory of planned behaviour on explaining fertility intention takes into account the regionalization variable, we consider this our original contribution to the empirical validation of Ajzen's and Fishbein's (2005; 2010) theoretical model in Romania.

⁵ It has to be acknowledged that the development regions only broadly match the different "cultural areas" identified by more homogenous historical and cultural criteria (Sandu, 2011a, 1999). Nonetheless, the GGS data has information only about the NUTS-2 level of geographical areas.

The article has the following structure: the next section is dedicated to presenting the fertility culture in Romania. Section 3 offers an overview of the TPB and of the latest research which applied it. Section 4 describes the data, variables, and the methods used and section 5 presents the results of the models. The most relevant results are summarized and discussed in the concluding section.

2. THE CONTEXT OF LOW FERTILITY IN ROMANIA

From 1990 onward, Romania joined in a continuous process of declining fertility rates and increasing life expectancy (Bodogai & Cutler, 2013; Ghețău, 2008; Cornelia Mureșan, 2012). At the country level, the consequences of low fertility, in presence of a prolonged negative net migration, is an increasing aging population and a decreasing population (Sobotka & Freijka, 2008).

The changing Romanian fertility pattern as well as related family formation processes took place in a context of transition from a socialist to a democratic political regime. As other formerly socialist countries, Romania showed a pattern of early childbearing. However, since the socialist regime dissolved, the country experienced a continuous increase of maternal age at birth (Mureșan 2012, pp.157-158, see Table 1, Appendix 2). The most fertile age groups show a sharp postponement of first and second births, and there are only weak signs of fertility recovery at later ages (Mureșan et al., 2008). Nonetheless, compared with other European countries, the mothers' age at first birth is still low.

The employment policies have been and are currently still unbalanced, challenging the work-family/childbearing equilibrium especially for women (Mureșan & Hoem, 2010; Popescu, 2009; Vlăsceanu, 2007). The unsatisfying childcare services and the lack of adequate resources to compensate the cost of a child are also related to low fertility (Bîrciu, et al. 2009; Muresan et al. 2008; Popescu, 2009). Additionally, the rigidity of the Romanian housing market, which restricts the access to homeownership due to high house prices, is among the structural factors which influences the family and fertility behaviour (Mureșan et al. 2008; Sobotka, 2013). In Romania, the family policy issues have received little attention, as the state has been reluctant to release any family policy, especially due to the previous enforced pro-natalist measures⁶.

⁶ The family and reproductive policy during the Communist regime distinguishes Romania from the other ex-socialist countries. In 1957, following the Soviet lead, the abortion was legalised, which lowered the TFR at 1.9, one of the lowest levels in the world at that time, similar to Hungary and Japan (Rotariu, 2006). Romania's 1966 anti-abortion decree and the ban of contraceptives triggered high fertility rates until 1989, when the Communist regime fell (Berelson, 1979).

Another reason for the decline in fertility after 1990 is related to women's higher investment in education and work activity. This might explain the drop of fertility rates among 20-24 years-old women after the fall of Communism (Rotariu, 2006). Hărăguș (2010), using data from the Romanian GGS, underlines the strongly negative association between educational attainment and first birth in cohabitation, this association being much more visible than for first marital births. Among cohabiting women, those with the highest education, with the highest socioeconomic status, and with residence in urban areas tend rather to be childless (Hărăguș, 2008). Therefore, it seems costlier for a higher educated woman to raise a child than for a lower educated woman. Since maternity leave is lower paid than the regular job in Romania, and since childbearing makes the mothers postpone the development of new professional skills, one-child might be a fulfilling family size for the educated group of women. Mureșan (2007) found that in Romania, the university educated women have a lower risk of second births, but among them, those who are more family-oriented have their second birth sooner, and this biases the true extent of the negative effect of education on second births.

In Romania, the availability of childcare is quite limited. Family-type childcare is not a concept strongly developed in Romania, where institutional childcare services are still widespread (institutions like placement centres). The availability of childcare based on the family type model, characterized by services which support families in need are scarce (day-care centers, mother and baby units, alternative services like foster homes; Ministry of Labor, Social Solidarity and family, 2006). Moreover, the grandparents help offering childcare and support for families in need, while caregiver jobs such as nanny or babysitting are neither so spread nor so affordable, especially for the families with low socio-economic status and lone parents for whom the risk of poverty is high (Marin & Șerban, 2008).

Based on value change studies, Romania belongs to the post-soviet countries with a low post-materialistic index (Inglehart, 1985; Inglehart & Welzel, 2005; Thomas Sobotka, 2008b; Voicu, 2008). Despite its very low fertility rates, Romania is a traditional society where family values remain important, and where family offers the greatest satisfaction to individuals. Marriage is seen as trustful institution, and attitudes towards parenthood remain positive, with high proportion of childless women who want at least one-child (Rotariu, 2006; Popescu, 2009). Mureșan (2008; 2010) explains that conservative values co-exist with a small percentage of post-modern values seen at young, urban, working, higher-educated adults, whose attitudes towards childbearing converge on the intention to have only one-child. This suggests that the SDT dimensions could have slowly progressed in Romania, manifesting at an early stage.

Within this puzzling context, it is important to address fertility decision-making and to understand the parity-specific intentions from a socio-psychological perspective. The present paper enlists the theoretical

framework of planned behaviour in the aim of shedding light on how childless and one-child Romanian parents form their fertility intentions.

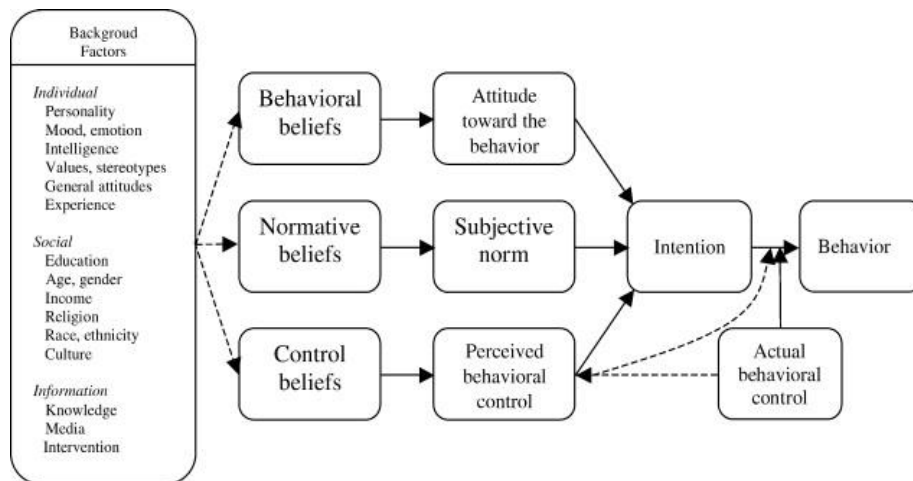
3. THE THEORY OF PLANNED BEHAVIOR AND FERTILITY INTENTIONS

3.1. *Theoretical considerations*

The theory of planned behaviour (TPB) is a social psychological model that allows studying decision making processes which accounts for deliberate behaviours, developed by Ajzen and Fishbein (1974, 2010) and by Ajzen, (1991, 2005, 2011). The scholars consider attitudes, subjective norms and perceived behavioural control as best predictors of any behavioural intention. The model has been tested and validated in numerous studies on various decisions and behaviours; for example, from condom use (Ajzen, et al.1996; Albarracin et al., 2001), health and well-being (Conner et al. 2002), workplace (Greaves, Zibarras, & Stride, 2013) to digital piracy (Yoon, 2010). Since the announcement of the theory, more and more demographers, socio psychologists, and other scholars interested in the fertility behaviour domain applied parts of the theory or the whole theory to better understand reproductive decision-making at the micro-level (Billari et al., 2009; Dommermuth et al., 2011; Ajzen & Klobas, 2013; Jaccard & Davidson, 1975; Miller & Pasta, 1995; Schoen & Tufis, 2003).

In the TPB framework, human behaviour is thought as an outcome of reflective decisions, which are characterized as intentions. A behavioural intention is defined as a plan or a likelihood that the individual will behave in a particular way, in a specific situation, in a given context, at a given time-framework, even if he/she will not do so. As Fishbein and Ajzen (2010, p. 40) underline, "the term intention (...) refers to the subjective probability of performing a behaviour".

The three determinants of intentions (attitudes, subjective norms, perceived control) are considered evaluations towards performing the behaviour and are formed through cognitive and emotive processes. At their turn, these evaluations are influenced by different beliefs people hold (see Scheme 1 below).



SCHEME 1. - *The theory of planned behavior. Schematic presentation (Fishbein and Ajzen, 2010, p. 22)*

The schematic image of the theory of planned behaviour (Scheme 1) contributes to the understanding of how behavioural, normative, and control beliefs influence attitudes, subjective norms and perceived behavioural control, which, in turn, influence intention. The latter ultimately accounts for the actual performance of the behaviour.

Attitudes to the behaviour represents people's internal evaluations that performing a behaviour will have positive or negative outcomes for them. In general, as more positive is one's outcome of performing the behaviour, as favourable is his/her attitude towards the behaviour.

A *subjective norm* is a person's perception of the psychological support or pressure that significant others exert for performing the behaviour. It is called 'subjective' because, on one hand, it is related to the singular perception of the individual and, on the other hand, the perceived norms might not accurately match the actual opinions of other people (or the wider societal norms). In general, as more important referents approve than disapprove a specific behaviour, and as more of them actually perform that behaviour, as more likely are individuals to perceive a greater social pressure towards performing the behaviour.

Perceived behavioural control reflects people's perceptions of being able or not to perform the behaviour. This concept is similar with Bandura's self efficacy concept in the sense that it articulates the people's perceptions of the ease or difficulty of performing the behaviour (Bandura, 1977). A good example to understand better the perceived control component of the Theory of Planned Behaviour is with income: the wealthy might believe that they cannot afford to have a child, while those less wealthy might think they are independent enough over their finances to have a child. Therefore, financial status is not the issue: what matters is the *conviction* of having

financial resources to raise a child. Since it is a perception, it may not reflect reality, just as the case with subjective norms.

Some variables often studied in demographic research (such as income, education, religion and parity) are treated as “*external*” variables in social psychological studies of fertility intentions, being considered external to the cognitive structure associated with making a specific decision (Ajzen, 2005; Billari et al., 2009; Dommermuth et al., 2011). The TPB distinguishes between two types of external variables: background factors and actual behavioural control.

The actual behavioural control refers to the person’s skills and abilities necessary to perform the behaviour, but also to different factors that may enable or disable the individual to act as intended. In the ideal type model, the effect of actual enablers and constraints on intentions is mediated by the perceived behavioural control. In this paper, we take a different approach than in the ideal one. Similar to Dommermuth et al. (2011), we add to the the psychological variables, the objective measures of the socio-economic conditions of individuals in the same regression model. In this way we see if and how the actual behavioural control mediates the effect of psychological variables on the parity-progression intentions.

The background factors are clustered into individual, social and informational categories. Under ideal circumstances, the background factors influence the beliefs people hold, which, in turn, influence the theory’s proximal determinants. However, Ajzen (2005, pp. 135-136; 2011) acknowledges the studies where a set of background factors are considered as direct influences on the intention and behaviour of interest. Some studies of fertility intentions used this simplified approach, proposing some demographic factors as being directly associated with parity decisions (Billari et al., 2009; Dommermuth et al., 2011). Building on previous work, we consider demographic factors such as education, residential area, age, and development regions as having a direct relationship with parity-progression fertility intentions.

3.2 Key research in the field

Several scholars who used the Theory of Planned Behaviour underline the importance of studying the determinants of reproductive intention within the fertility decision-making context. For example, Klobas and Ajzen (2015) examined between-country differences in the effects of attitudes, subjective norms and perceived behavioural control on fertility intention. They demonstrated the importance of the TPB model for understanding fertility intentions, claiming that social psychological factors explain the decision to have a child much better than national contextual differences alone or in combination with individual differences.

Mencarini et al. (2015) used graphical models to study to fertility intention

and outcomes based on the TPB, for the Italian context. The authors' results indicate that fertility realization is independent on attitudes, *Perceived behavioural control* and *Subjective norms*. Instead, the socio-psychological factors were found to influence the previous step (the intention to have a child). It seems that the intentions act as a filter between the primary antecedents of fertility plans and the subsequent behaviour.

Based on the Theory of Planned Behaviour and using GGP for Norway, Dommermuth et al. (2011) investigated the role of attitudes, subjective norms and perceived behavioural control on two different time frames in fertility intention: now compared with within the next three years. They found that subjective norms have a significant effect on the timing of intentions to have a child for both childless people and parents. The more childless and first-parity parents feel that their intention to have a child is supported by their families and friends, the more likely they are to want a child now compared to within the next three years. *Perceived behavioural control* is a significant determinant for both groups: people who consider themselves better able to cope with having child are more likely to intend to have a child now rather than within the next three years. But this effect disappears when the authors controlled for demographic background variables. It seems that for the Norwegian case, the effect of perceived control on the timing of having a child varies considerably with personal circumstances.

In their study of intentions to have a child in Bulgaria, Billari, et al. (2009) found that *Perceived behavioural control* had an effect on the decision to have a second child and subjective norms were more influential for intentions to become a parent. In both intentional contexts (childless vs. parents), normative pressures were low, but statistically significant for women's intentions in comparison with men's intentions.

Inspired by the Second Demographic Transition Theory (SDT) and by the Theory of Planned Behaviour, Moors (2008) focused his research on Germany, adopting a latent class analysis for capturing the attitudes towards motherhood. His research shows that an egalitarian attitude toward family behaviour (which emphasizes the importance of autonomy and independence) decreases the likelihood of motherhood whereas traditional views on family and household issues regarding partnership, marriage, children, and household roles increased the likelihood of motherhood.

It has to be noted that, even if some of these studies focused on the context specific influences on the fertility decision-making, none considered the regional differences in fertility intentions.

3.3 Research questions

As stated in the Introduction the research questions which guide the analysis are the following:

- 1) Do attitudes, subjective norms, perceived behavioural control explain simultaneously the intention to have a/another child?
- 2) How is the socio-economic condition of the childless and one-child adults associated with parity-progression fertility intentions?
- 3) Do the above relationships hold once controlled for demographic characteristics?
- 4) Are development regions relevant for explaining fertility intentions?

Each research question is answered within the context of three parity-specific regression models as defined below.

4. DATA AND METHODS

4.1 Database and sample

We use the Romanian Generation and Gender Survey, 2005 wave to answer to the research questions. GGS takes a life course approach to the most important individual decisions, such as leaving home, partnership formation, marriage, childbearing, retirement, work-family balance, gender relations and intergenerational exchanges. Besides the fertility theme that it captures, the database is chosen because it contains questions on fertility intention formulated using the TPB. In accordance with the theory, the intention and its determinants are measured on the same level of specificity, namely on a time framework of planning the first child within the next three years. Hence, it meets the principle of compatibility criteria that Ajzen and Fishbein (2005, 2012) warns about.

The sample is representative for the Romanian case, consisting of 11,986 cases. Of interest to this research are two groups: the first group consists of 1683 childless men and women, among which 1081 are men and 602 are women. The second group consists of 1521 one-child parents, among which 735 are men and 786 are women. The two subsamples emerged after applying the necessary filters to obtain individuals who do not have any children (for the childless group), or who have only one-child (for the parents group), in all types of unions (married, cohabiting or LAT), all between 18-45 years old. Women who declared that they are already pregnant at the time of the interview are also filtered out from the analysis for both groups. It is likely that Romania will benefit more from this research since the GGS survey is about to become an European infrastructure project, during the next ESFRI roadmap update (Duşa et al., 2014).

4.2 Methods and model specification

Gender and Generation Survey 2005 wave provides measurements of

attitudes, perceived norms as well as perceived behavioural control towards having a child derived from the TPB. Factor analysis (with principal axis algorithm - PAF) is performed with the exploratory aim of identifying the items that load high on the TPB theoretical components for the two sub-samples. The theoretical dimensions that underline the behavioural, normative and perception beliefs toward having the first child and the second child are thus identified. Then, we apply three logistic regression models to examine and compare childbearing intentions among childless and one-child parents. Factor scores calculated with the exploratory factor analysis are introduced in all regression models with the aim to see if and how the socio-psychological factors are related to the childbearing decisions for the two groups, alone and in the presence of selected covariates.

The regression equation in the first regression model is used to predict individuals' intentions just from the set of the Theory of Planned Behaviour latent variables:

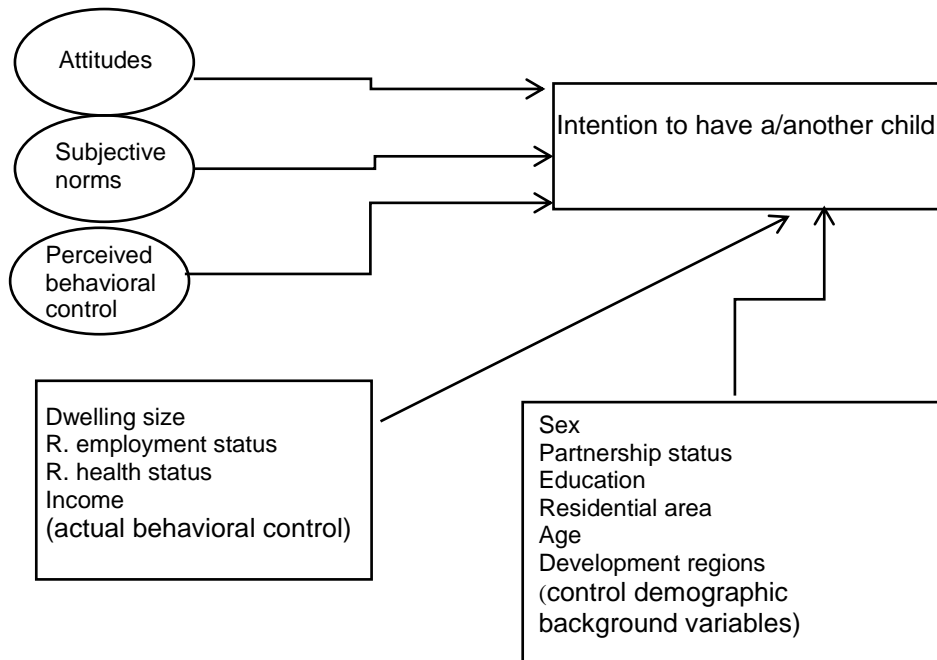
$$P[\textit{Intention}] = \frac{\exp(\eta)}{1 + \exp(\eta)} \quad (1)$$

$$\eta = \beta_1 \textit{Attitude} + \beta_2 \textit{SubjectiveNorm} + \beta_3 \textit{PerceivedControl} \quad (2)$$

The first logistic regression model contains only the socio-psychological variables, defined as in equation (2). In the second model, we add the set of the "actual control variables" measured through the health conditions and socio-economic situation of the respondents (respondent's income, health status, employment status, and dwelling size). Thus, we analyse how the socio-economic conditions of the respondents influence their childbearing decisions and if any of the latent variables change their predictive power as compared with the first logistic regression model. Socio-demographic variables such as partner's status, education, sex, residential area and age have been then added in the third model as control factors. The third regression model is the most complex, since it contains the latent TBP variables, the measures of the socio-economic condition of respondents, and the demographic background variables, showing the influence of each predictor on childbearing intentions, keeping constant all the others.

Eight development regions for Romania are added too in the third regression model with a twofold purpose: first, to analyse the impact of these predictors on the whole model; secondly, to keep under control the respondents' cultural interdependency as each development region is, in its own, a "cultural space", which influence people's decisions and behaviours (Sandu, 1999; 2011b).

Scheme 2 below offers an image of the simplified model proposed in this paper.



SCHEME 2. – *Simplified TPB Model*

4.3 *The dependent variable*

The dependent variable used in this paper is *the intention to have a/another child within the next three years*. The variable “Do you intend to have a/another child during the next three years?” with four level response rate (“definitely yes”, “probably yes”, “probably no”, “definitely no”) is transformed into a dummy variable with the reference category not wanting a child during the next three years (“probably no” and “definitely no” take the value of zero). The same transformation is made for the one-child parent group.

4.4 *The socio-psychological variables*

In GGS, three blocks of questions are used to operationalise attitudes, subjective norms and perceived behavioural control (Vikat et al., 2007). The attitudes towards having a child are measured as respondent’s answers on eleven items using a 5 point Likert response scale (where 1 means “much better” and 5 “much worse”). Respondents are asked to evaluate the anticipated effect on having a child on different outcomes such as “your

financial situation”, “your sexual life”, and so on, and so forth. Each of these items is introduced by the question: “Suppose you will have a(nother) child within the next three years. On a scale from 1 to 5, where 1 means ‘much better’ and 5 means ‘much worse’, would it be better or worse on...” (see Appendix 2, Table 2). Since the PAF identified two distinct latent factors, later called Benefits and Costs, the items for the Benefits factor have been reversed in order to ease their interpretation of possible positive effects on the intention to have the first child.

Subjective norms are measured through three items asking the participants to rate the extent to which they agree that three groups of normative referents – parents, relatives and friends – hold about them having a/another first child. These items are measured on five points response scale, ranging from 1, which means “strongly agree”, to 5, which means, “strongly disagree”. These response scales have also been reversed so as the higher scores would represent higher perceived social pressure; as such, a positive effect corresponds to a positive coefficient in the logistic regression models. All three items were introduced by the following question: “Although you may feel that the decision of whether or not to have a(nother) child is yours, it is likely that others have opinions about what you should do. On a scale from 1 to 5, where 1 means ‘strongly disagree’ and 5 means ‘strongly agree’, to what extent do you agree with these statements?”

The GGS provides nine items to measure the perceived behavioural control. Respondents are asked to what extent their intention to have a/another child depend on the following: financial situation, work, housing conditions, health, having a suitable partner and availability of childcare (see Appendix 2, Table 2). The values on the response scale for these items (1 “not at all”; 2 “a little”; 3 “quite a lot”; 4 “a great deal”) have been reversed for easier interpretation as possible positive effects to overcome constraints on primo-fertility intention in the regression analysis. As Klobas (2010) justifies, perceived control on having a child may be interpreted as respondent’s evaluation that is possible to find a balance between work and childrearing duties, that it is possible to provide space in the dwelling or to move to a new house with enough space for the extended family, that the respondent is able to financially support the child, and so on, and so forth, for each item. The items are introduced by asking: “How much would the decision whether to have a/another child within the next three years depends on the following...?” The principle of compatibility is met for all the three blocks of items as well as for the dependent variable, respecting the same time framework of planning a child within the next three years (Ajzen, 2005).

4.5 The objective measures of control

As mentioned before, the objective measures of control refer to the

person's skills and abilities to perform the behaviour, but also to different factors that may enable or disable the individual to act as intended.

The data available from the Romania GGS includes measures of the respondents' socio-economic situation, such as: dwelling size, employment status, health status and respondent income. Income is self-reported and is measured in the national currency, RON. Dwelling size is measured in number of rooms in the dwelling the respondent lives. The employment status is transformed from a categorical variable into a dummy variable, with the reference category not employed. The same treatment is given to the health status variable: it is recoded as a dummy variable with the reference category bad health. All these objective measured variables are included in the second model of the logistic regression, together with the TBP factors to control for the socio-economic situation of the respondent.

4.6 The demographic background variables

Background demographic variables include age, gender, union status, education, residential area, development regions. All these variables are included together with the factor scores of the TPB latent variables and with the objective measures of the socio-economic situation of the respondent in the third model (the whole model of childbearing intentions).

Age is categorized in groups (18-29, 30-35, 36-45 years old). Union status includes the categories: no partner, living apart together (LAT), married and cohabiting. The respondents' level of education is recoded in two categories as following: secondary (comprising individuals with maximum secondary level of education) and tertiary education (first stage and second stage of tertiary education). The primary level has been merged with the secondary due to the small number of individuals in this category. The development regions are recoded in the logistic regression as seven dummy variables, with one reference category (Bucharest-Ifov).

4.7 Missing data treatment

Income is the variable with the highest number of missing cases among all predictors of childbearing intentions. For this variable, missing cases are assumed to be not at random (NMAR), suggesting that the probability of the missing values depends on some unobserved⁷.

We treat the missing values in two main stages: first, we identify the "real" missing values using income as monthly self-reported average amount and

⁷ We assume that respondents with high income or those with low income are less likely to report income; see Soley-Bori (2013).

as range. We identify the respondents who did not declare their average monthly income, but who declared the range their income belongs to. Thus, for them, we impute the missing values for average income with the median of the income range. For childless, we identify 26% of item non-response, and for the parents we identify 16%. Secondly, we created a dummy variable (considered the treatment variable) where the reference category is the missing values for the self-reported income. We further matched respondents with missing (no income) with respondents with income based on the similarities based on education, sex, residential area, development regions, occupation, health status, employment status. In this way, income is assigned on the bases of similarities between respondents (“twins” respondents)⁸. For childless, we reduced the item non-response from 26% to 11% and for parents from 16% to 10%. Even if these values are still high, we consider them reduced enough to progress to the multivariate regression analysis.

This method is a generalization of the so called the “hot-deck” imputation and has been used in various research (Andridge & Little, 2010; Bankier et al., 2000; D’Agostino & Rubin, 2000; Rubin, 1986). Even if this approach biases estimates of correlations and underestimates standard errors, it preserves the univariate distribution of the data and is one of the most used imputation in social research (Enders, 2010).

5. RESULTS

5.1 Beliefs about childbearing intentions: Factor analysis results

The factor analysis (PAF) is the best way to find the items which act as valid and reliable measures of the latent TPB variables, especially since the scales proposed by GGS to measure the socio-psychological variables had not previously been used in the Romanian context. Since the items are measured on Likert point scales, the exploratory factor analysis is conducted on the matrix of polychoric inter-item correlations, which is a special case for latent variable modelling. The polychoric correlation is preferred to the Pearson product-momentum correlation for the ordered-categorical variables and has been suggested by various scholars (Baglin, 2014; Ekström, 2011; Holgado-Tello et al., 2010; Norman, 1979; Olsson,

⁸ Missing data is hence imputed through propensity score matching with logit distance and caliper set to 0.2. Choosing the caliper distance of 0.2 restricts the set of “untreated” group (those with income) to the 0.2 distance of the propensity score of the “treated” group (those without income). It has been suggested that matching on the logit of the propensity score using caliper width of 0.2 eliminates 99% of the bias of matching and it minimizes the mean squared error of the treated group (Austin, 2011a, 2011b). The same method is applied to impute the missing values for the fertility intention.

1979). We run factor analysis with oblique rotation since in socio-psychological research oblique rotation is preferred and widely used (Costello & Osborne, 2005; Field et al., 2012; Thurstone, 1947). Two factors for the Attitudes component were identified, for both childless and parents, which are named “Benefits” and “Costs”. The “Benefits” factor represents beliefs about the benefits of having a child, while the “Costs”, represents beliefs about the financial or personal losses associated with having a child. The factor correlations of the component Benefits and Costs is 0.33 for the childless individuals and, respectively 0.37 for one-child parents. Since these correlations are rather small, corresponding to approximately 11% and respectively 13%, we account for discriminant validity (Gaskin, 2016). One factor was identified for the perceived behavioural control (PBC) and one for Subjective Norms.

For both groups, validity measures of factor analysis are considered: findings with factor loadings greater than 0.5 and with communalities over 0.4 (Stevens, 2002). The items of each scale are internally consistent as the measure of reliabilities of each factor is high (see Cronbach alpha, Table A4 and A5). Cronbach alpha values for all factors are higher than 0.7, suggesting a high average correlation among the variables in each factor. For both sub-samples, items with complex loadings and low communality (less than 0.3) are excluded from the analysis: evaluations of having a child within the next three years on “your sexual life” and on “your partner/spouse employment opportunities” (designed to capture the Attitudes factor), and the evaluation on “your opportunity to go on parental leave or care leave” (designed to measure the PBC factor). Tables A4 and A5 (Appendix 2) give an overview of the most important beliefs that capture the factors proposed by the TPB for the childless and one-child parents.

5.2 Regression models

The results from the regression models are presented in Table 1. As the intention to have the first child is qualitatively different from the decision to have a second one, we run parity-specific models. The analyses are made step-wise and we present three models: Model I includes only the TPB socio-psychological variables (factor scores are used as predictors). Model II in addition controls for the “objective” measures of control to see if they have any additional effect on childbearing intentions, and Model III includes the demographic background variables. The results are presented as odds ratio.

5.2.1 The effect of attitudes, norms and perceived control on childbearing intentions

To answer to the research question “Do attitudes, subjective norms,

perceived behavioural control explain simultaneously the intention to have a/another child?" we consider particularly the first regression model, but we also discuss the relationship between the socio-psychological variables and fertility intentions in all three regression models, for each group.

TABLE 1. - *Effects of factors from the theory of planned behavior, objective measures of control and background demographic variables for childless and one-child parents*

	Childless people			Parents		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Factors for the Theory of Planned Behaviour						
Benefits	1.60 ***	1.64 ***	1.61 ***	2.40 ***	2.31 ***	2.33 ***
Costs	0.69 ***	0.69 ***	0.61 ***	0.50 ***	0.49 ***	0.48 ***
PBC	1.22 *	1.1	0.99	1.14	1.13	1.17
SN	3.22 ***	2.81 ***	2.47 ***	3.03 ***	3.11 ***	2.81 ***
Dwelling size		0.79 **	0.87		0.92	0.95
Employment status (ref. Not employed)						
Employed		3.28 ***	2.68 ***		0.73	1.06
Health status (ref. Bad health)						
Good health		0.93	0.99		2.18 *	1.80
Income		1	0.99		0.99	0.99
Sex (ref. Male)						
Female			1.63 *			0.69
Partnership status (ref. No partner)						
LAT- Living apart together			1.61 *			0.29
Married			3.73 ***			0.72
Cohabiting			4.25 **			1.40
Education (ref. Tertiary)						
Secondary or less			1.45			0.86
Residential area (ref. Rural)						
Urban			1.26			0.87
Age group (ref. 36-45 years old)						
18-29 years old			1.64			7.57 ***
30-35 years old			2.75 **			3.75 ***
Regions (ref. Bucharest-Ilfov)						

Center			1.23			1.53
North-West			1.07			2.15
West			0.76			0.72
South-West Oltenia			1.21			1.75
South-Muntenia			1.29			0.89
South-East			0.82			1.57
North-East			1.05			2.54*
N	1023	921	921	1039	948	948
AIC	1027.8	887.56	850.23	870.36	785.37	724.83

Note: *p < 0.05, **p < 0.01, ***p < 0.001;
AIC: Akaike Information Criteria
Source: GGS, Romania, 2005, own computations.

We notice that the TPB factors explain simultaneously the childbearing intention only for the childless respondents, in Model 1. Once we introduce the controls for income, housing status, health and economic situation, the association between the perceived control and first child intention loses its significance. This suggests that the perceived ability or control the childless individuals have over their finances, housing conditions, health and their partner's work and health, and availability of childcare (as captured by the factor analysis) are overestimated in comparison with the reality. The perception of managing what is needed to bear a child does not capture the real life situation and is mediated by dwelling size and being employed, since these variables are the ones significant among the "actual enablers or controls" group of variables. The perceived behavioural control remains non-significant also in the third model, in the presence of the demographic background covariates. For one-child parents the perceived behavioural control is not significant in any of the three regression models.

Among the TPB socio-psychological variables, the normative influences have the strongest effect towards the childbearing intentions, for both groups. This confirms the traditional family values of the Romanian society, where societal norms push towards more than one-parity families (Popescu, 2009; Rotariu, 2006). We notice that, on one side of the spectrum, the benefits a child is thought to bring in respondents' lives are positively associated with parity-progression intentions, for all three regression models. On the other side of the spectrum, the costs associated with having a child decrease the likelihood of planning one within the next three years. This association stays significant in all the three logistic regression models, even when objective measures of control and demographic variables are added, suggesting a powerful relationship between the negative beliefs

towards childbearing and the decision not to plan one.

5.2.2 The effects of the objective measures of control. It is not money which plans the stork

Model 2 answers to the research question “How does the socio-economic condition of the respondents influence each parity progression decision-making?”. Employment status plays a significant influence on the decision to become a parent, while it does not matter for the second-order parity decision.

A counter-intuitive finding is that as bigger the dwelling size (measured in number of rooms) as lower the likelihood of intending to become a parent. However, even if it is strange at the first glance, it might be that the childless individuals want to enjoy their freedom and liberty before having a child, especially for respondents who moved from their parental house. Living in big house might give the sense of independence, which might as well be wished to be lived as longer as possible. The dwelling size does not play a significant effect for the second-parity decision.

For parents, better health is associated with the intention to plan the second child, while it is not significant for childless. It might be that good health act as a determinant to plan another child as compared to those who report bad health or illnesses, who might want to wait until their health gets better.

The most counter-intuitive finding is the lack of relationship between income and childbearing intentions. However, this result can be interpreted in the light of the traditional context of values system in Romania as compared with other European countries (a low post-materialistic index; family values offer the greatest satisfaction to individuals; marriage is a trustful institution; attitudes toward parenthood remain positive). In this context, it is sensible that income plays a minor role in influencing attitude of having children.

5.2.3 The effects of demographic control variables

“Do the above relationships hold once controlled for demographic characteristics?”. This research question is answered with the context of the third and most complex logistic regression model (Model 3): once we control for the demographic variables, neither the effects of the main TPB components nor that of the objective behaviour control significantly change. This suggests that the demographic factors do not mediate the relationship between the psychological variables on the parity-progression intentions. The results underline the strong link between the TPB factors and fertility intentions, a finding consistent with other research (Billari et al., 2009; Dommermuth et al., 2011).

Age is the only common predictor of childbearing intentions for both childless and parents. The childless aged between 30-35 years old have the highest likelihood of having a child within the next three years as compared with those in the age category 36-45. For one-child parents, the highest likelihood of planning the second child belongs to the respondents aged between 18-29 years old. This finding also might be counterintuitive, but in the sub-sample of parents, the younger respondents (18-29 years old) are found to express in a high percentage their intention to have a subsequent child (see Appendix 2, Table 3). Childless women as compared with childless men have a higher likelihood of wanting a child within the next three years, whereas gender is not associate with the second childbearing intention.

The partnership status is only significant for the childless adults. Being married is the most important partnership type in the association with primo-fertility decision making, followed by those cohabiting and living-apart together.

The answer to the research question “Are development regions relevant for explaining fertility intentions?” is that none of the development regions influence the intention to have the first child. However, living in the North-East region as compared with living in the Bucharest-Ilfov region increases the likelihood of planning the second child. The result is not surprising, because these two regions have different cultural and socio-economic characteristics: for example, among all the development regions in Romania, North-East region is the one with the highest poverty risk. In 2006, one year after GGS was conducted, the North-East was over four times poorer than Bucharest (World Bank, 2007). The North-East region had between 2009-2013 an average unemployment rate below the national rate (Eurostat). The highest share of the economic sector belongs to the agricultural sector (EU, North-East, 2016). Bucharest, on the other hand, as the city capital, has the GDP per capita higher than the national average, with an economic structure based on services (EU, Bucharest-Ilfov, 2016). Bucharest also has the largest urban conglomerate than anywhere in the country, with a population twice as much educated and wealthy (Voicu, 2008). The average cultural modernity is the highest across country whereas the North-East region belongs to the rather traditionalist value system. Furthermore, the present finding also supports Muresan et al., (2008) research. They found that Bucharest has the lowest rates of transition towards a second birth while women from the North-East are more prone to have a second child than women from the Center region of Romania. At the same time, demographic indicators show that women from North-East and South-West regions of Romania have the highest parities and become mothers earliest comparing with other regions.

Among all the three regression models, the model with the socio-psychological variables and all the other covariates (the whole model) explains best the childbearing decision among both parity intentions,

according to the Akaike Information Criterion (AIC) for model selection (Akaike, 1974).

6. DISCUSSION AND CONCLUSIONS

The present paper enlists the Theory of Planned Behaviour (TPB) with the aim of producing a better understanding of how childless individuals and one-child parents form their childbearing intentions. In this article, we applied a simplified version of TPB on the Romanian case, a former “lowest low fertility” country, which had for almost a decade a rather constant low fertility rate (1.3 children per female between 1995-2005). The main point of the departure from the ideal case is that we considered the actual enablers and constraints and the demographic background factors as controls, which were added to the TPB factors, in a step-wise manner in the modelling. We used data from Generation and Gender Survey, 2005 wave.

We also paid special attention to the regional differences in understanding the fertility intentions. The values, the lifestyle and the economic power differ across the eight development regions in Romania. Therefore, they are considered by sociologists and anthropologists as spatial matrices, which formally and informally define the persons who are divided by it and who cross it, where the social organisation and identities are configured and reinforced (Kearney, 2004; Sandu, 2011a).

The logistic regression models offer valuable insights. First, attitudes, norms and perceived behavioural control are simultaneous determinants of only the primo-fertility intentions, but the effect of the perceived behavioural control disappears when socio-economic measures of the respondents are controlled for. This suggests that the positive perception of independence childless individuals have over their finances, housing conditions, health and partner's characteristics are overestimated in comparison with the reality. The perception of controlling what is needed to bear a child is mediated by the objective measures of housing situation and being employed. There is no simultaneous influence of the TPB factors for the intention to have a second child, since the perceived behavioural control is not associated to the second-order parity intention.

Second, the normative influence (the subjective norms) is the strongest childbearing intention predictor among the two groups. Evidence for Bulgaria, another ex-Soviet country shows that normative pressure is more relevant for intentions to become a parent, rather than for intentions to progress to second births (Billari et. al, 2009). It seems that there might be a pattern for the ex-Soviet countries with respect to the importance of becoming a parent, reflected in the wider societal family norms.

Positive attitudes emerge as the second most relevant association in forming the parity-progression intentions. This is not necessarily the case for other countries, where a strong positive effect on the fertility intentions was

observed only for parents (for Norway: Dommermuth et al., 2011; for Bulgaria: Billari et al., 2009). It might be that within the Romanian traditional society, family values are more important than in other countries and people consider having children as one of the major fulfilments in life, reason why they evaluated them as positive. For the parents group, the decision to plan the subsequent child might be driven by the perceived positive outcomes the first child have brought. For those who assess the child as a negative outcome to their lives, the costs factor decreases the likelihood of planning a child, for both groups, a finding in accordance to the TPB theory (Ajzen, 2011).

With respect to the socio-economic condition of the respondents, employment status plays as an enabler towards the intention to become a parent, while it does not matter for the transition to the second-parity intention. Income, instead, is not a significant predictor of childbearing intentions, once controlled for employment as well as for personal traits, values and attitudes. We can conclude that it is not money which brings the stork. Given the traditional context of the value system Romania still has as compared with other European countries this finding might make sense.

The relevance of the regions in explaining fertility-decision making is limited, but important. Only the North-East region as compared with Bucharest-Ifov region increases the likelihood of planning the second child. The result is not surprising, because these two regions have different socio-demographic characteristics: North-East was in 2006 the poorest region in Romania and has a more conservative value system than Bucharest-Ifov region, whose average cultural modernity is the highest across country. No other significant regional differences in fertility intentions has been found.

To conclude with, one of the most important findings of this study is that the societal pressure is the most influential indicator of parity-progression intentions. Positive attitudes play also a high role for childbearing intentions. Childless females have a higher intensity of planning a child within the next years than childless males. Being employed counts as a predictor just for the childless group, while living in the poorest area of Romania, where unemployment is below the country average and conservative values still exist, increases the likelihood of planning the second child as compared to living in Bucharest-Ifov, the capital area. Planning a child is the strongest among later ages for the childless, which supports the idea that delaying parenthood is a feature which embarked Romania on the journey of late starters of the Second Demographic Transition.

Overall, this study contributes to the existing research on fertility in Romania by investigating the role of primo and second-order fertility intentions from a social psychological perspective. Romanian fertility determinants have begun to be intensively studied (Mureşan et al., 2008; Mureşan & Hoem, 2010; Mureşan, 2012), but not from the specific perspective of this paper, which recognizes the importance of the TPB framework for investigating fertility decision making processes.

Consequently, the present research might be considered among the firsts to consider the fertility reproductive decision-making using TPB. Only recently, Klobas and Ajzen (2015) included Romania in a comparative study on fertility determinants among several European countries, using TPB.

Finally, as none of the researches which used the TPB on explaining fertility intention included the regionalization variable, we consider this a personal contribution to the empirical validation of the theoretical model in Romania.

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APPENDICES

Appendix 1. Lists of abbreviations used in the paper

SDT	– Second Demographic Transition
PBC	– Perceived Behavioral Control/ Perceived Control
PAF	– Principal Axis Factoring
TPB	– Theory of Planned Behavior
TFR	– Total Fertility Rate
GGS	– Generation and Gender Survey
LAT	– Living Apart Together
CRP	– Cohabiting with Residential Partner
SN	– Subjective Norms
KMO	– Kaiser-Meyer-Olkin measure of sampling adequacy
AIC	– Akaike Information Criteria
RMSR	– Root Mean Square of the Residuals

Appendix 2. Data description and factor analysis results

TABLE A.1. - *Descriptive statistics of mean age of childbearing for women and men in Romania*

	1990-1994	2000-2005
Men	26	28.6
Women	23	25.2

Source: Mureşan (2012, p. 158)

TABLE A.2. *Beliefs associated with Attitudes, Perceived Behavioral Control and Subjective Norms as operationalized by GGS, wave 2005, according to the TPB*

Variable	Item no.	Details
Intention (a)		Do you intend to have a/another child during the next three year?
Attitude (b)		If you were able to have a/another child during the next three years, would it be better or worse for
	a627a	the possibility to do what you want
	a627b	your employment opportunities
	a627c	your financial situation
	a627d	your sexual life
	a627e	what people around you think of you
	a627f	the joy and satisfaction you get from life
	a627g	the closeness between you and your partner/spouse
	a627h	your partner/spouse's employment opportunities
	a627i	the care and security you may get in old age
	a627j	certainty in your life
	a627k	closeness between you and your parents
Perceived norm (c)		...other people might think about you having a/another child during the next three years... to what extend do you agree or disagree with these statements
	a629a	Most of your friends think that you should have a/another child
	a629b	Your parents think that you should have a/another child
	a629c	Most of your relatives think you should have a/another child
Perceived control (d)		How much would the decision on whether to have a/another child during the next three year depend on the following?
	a628a	your financial situation
	a628b	your work

a628c	your housing conditions
a628d	your health
a628e	you having a suitable partner
a628f	your partner/spouse's work
a628g	your partner/spouse's health
a628h	availability of childcare
a628i	your opportunity to go on parental leave or care leave

Note: reversed scales for 627f-627k (1 = "much worse", 2 = "worse", 3 = "neither better, nor worse", 4 = "better", 5 = "much better"), reversed scales for 628a-628i (1 = "a great deal", 2 = "quite a lot", 3 = "a little", 4 = "not at all"), reversed scale for 629a-629c (1 = "strongly disagree", 2 = "disagree", 3 = "neither agree or disagree", 4 = "agree", 5 = "strongly agree").
Source: GGS, Romania, 2005.

TABLE A3. - The distribution of age groups by fertility intention within childless and one-child parents

	Childless		One-child parent	
	"Intention to have a/another child within the next three years"			
	"No"	"Yes"	"No"	"Yes"
Age groups				
18-29 years old	618	450	112	167
30-35 years old	87	231	258	207
36-45 years old	129	166	665	107
Total (N)	834	847	1035	481
Total (N)	1521		1683	

Source: GGS, Romania, 2005, own computations.

TABLE A4. - Factor loadings of items for attitudes, subjective norms and perceived behavioral control for childless respondents

	Factor 1 Benefits	Factor 2 Costs	Factor 3 PBC	Factor 4 Subjective Norms
<i>"Suppose you will have a(nother) child during the next three years, would it be worse or better for...?"</i>				
The possibility to do what you want	0.02	0.91		
Your employment opportunities	0.01	0.75		
Your financial situation	-0.12	0.63		
What people around you think of	0.61	-0.13		

Joy and satisfaction you get from life	0.78	-0.09		
The closeness between you and your partner/spouse	0.71	-0.04		
The care and security you may get in old age	0.79	0.12		
Certainty in life	0.82	0.06		
The closeness between you and your parents	0.65	-0.05		
<i>"How much would the decision on whether to have a(nother) child during the next three years depend on the following?"</i>				
Your financial situation			0.79	
Your work			0.77	
Your housing conditions			0.77	
Your health			0.75	
You having a suitable partner			0.70	
Your partner's/spouse's work			0.74	
Your partner's/spouse's health			0.80	
Availability of childcare			0.64	
<i>"Others might think about you having a(nother) child during the next three years, do you disagree or agree with these statements?"</i>				
Most of your friends think that you should have a/another child				0.89
Your parents think that you should have a/another child				0.91
Most of your relatives think that you should have a/another child				0.96
Cronbach alpha	0.84	0.75	0.89	0.94
KMO		0.83	0.87	0.76
RMSR	0.05		0.08	0

Note: Items with communalities less than 0.4 and with factor loadings over 0.5 were retained in the model; RMSR: the root mean square of the residuals; a value less than 0.08 is generally considered a good fit (Hu and Bentler, 1999); KMO: Kaiser-Meyer-Olkin measure of sampling adequacy; values higher than 0.7 are generally considered good, suggesting sample size and data are appropriate for factor analysis.

Source: GGS, Romania, 2005, own computations.

TABLE A5. - *Factor loadings of items for attitudes, subjective norms and perceived behavioral control for one-child respondents*

	Factor 1 Benefits	Factor 2 Costs	Factor 3 PBC	Factor 4 Subjective Norms
<i>"Suppose you will have a(nother) child during the next three years, would it be worse or better for...?"</i>				
The possibility to do what you want	0.02	0.92		
Your employment opportunities	-0.01	0.77		
Your financial situation	-0.16	0.53		

What people around you think of	0.50	-0.19		
Joy and satisfaction you get from life	0.74	-0.09		
The closeness between you and your partner/spouse	0.72	-0.04		
The care and security you may get in old age	0.78	0.11		
Certainty in life	0.83	0.02		
The closeness between you and your parents	0.73	0.00		
<i>"How much would the decision on whether to have a(nother) child during the next three years depend on the following?"</i>				
Your financial situation			0.73	
Your work			0.70	
Your housing conditions			0.71	
Your health			0.81	
You having a suitable partner			0.69	
Your partner's/spouse's work			0.72	
Your partner's/spouse's health			0.81	
Availability of childcare			0.66	
<i>"Others might think about you having a(nother) child during the next three years, do you disagree or agree with these statements?"</i>				
Most of your friends think that you should have a/another child				0.91
Your parents think that you should have a/another child				0.90
Most of your relatives think that you should have a/another child				0.99
Cronbach alpha	0.83	0.74	0.87	0.92
KMO		0.83	0.86	0,74
RMSR	0.04		0.1	0

Note: Items with communalities less than 0.4 and with factor loadings over 0.5 were retained in the model; RMSR: the root mean square of the residuals; a value less than 0.08 is generally considered a good fit (Hu and Bentler, 1999); KMO: Kaiser-Meyer-Olkin measure of sampling adequacy; values higher than 0.7 are generally considered good, suggesting sample size and data are appropriate for factor analysis.

Source: GGS, Romania, 2005, own computations.

Appendix 3. Figures used for the missing data imputation and Principal Axis Factor Analysis

FIGURE A.1. - *The histograms of the density of the propensity scores before and after matching for the childless group*

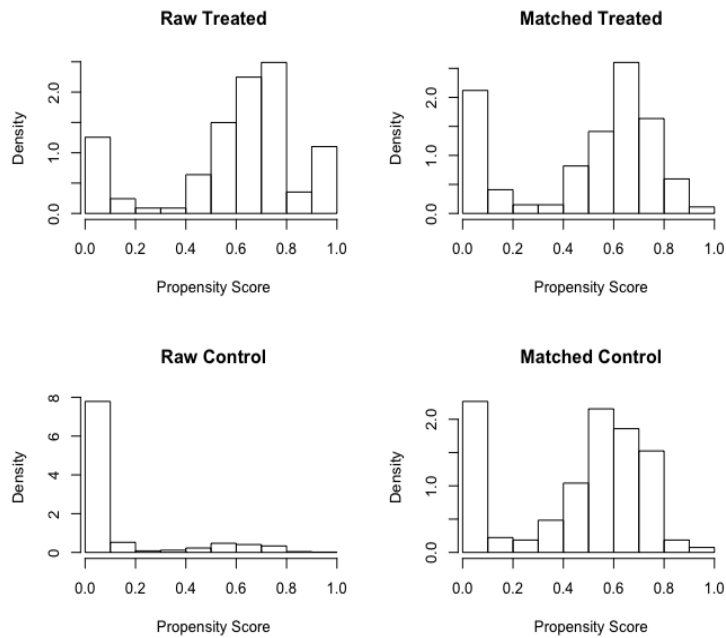


FIGURE A.2. - *The histograms of the density of the propensity scores before and after matching for the one-child parents group*

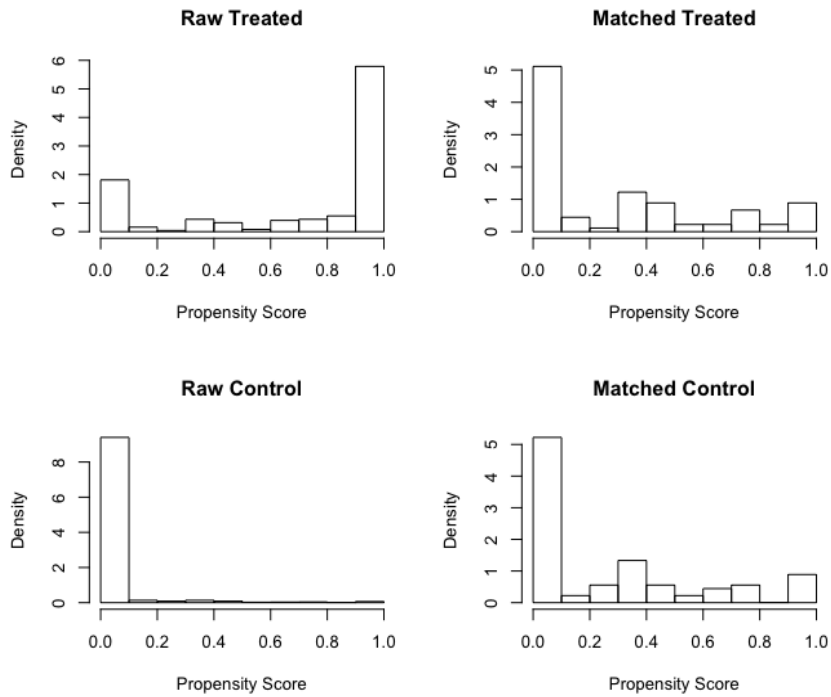
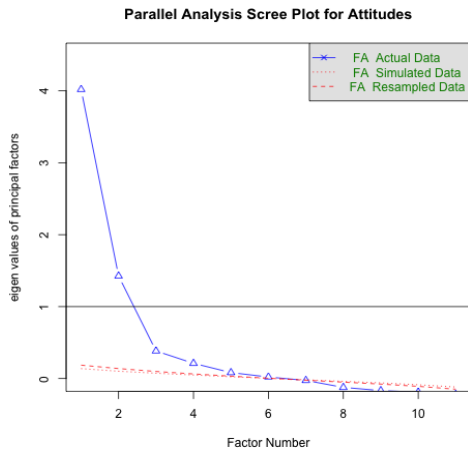
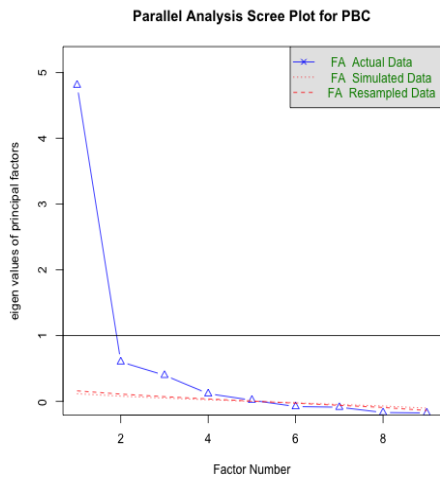


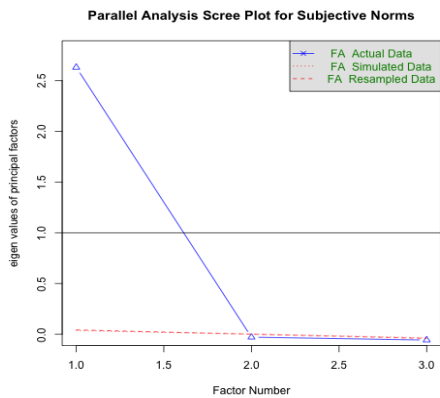
FIGURE A.3. - *Figures from parallel analysis for the factors of Attitudes, Perceived Behavioral Control, and Subjective Norms for the one-child parents*



Notes: "Parallel" analysis is an alternative technique that compares the scree of factors of the observed data with that of a random data matrix of the same size as the original; Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests two factors to be retained. These factors are named in the paper Benefits and Costs, reflecting the positive, respectively the negative evaluation on the outcomes of having a child; Source: GGS, Romania, 2005, own computations.



Notes: Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests one factor to be retained; The factor extracted is named Perceived Behavioral Control.
 Source: GGS, Romania, 2005, own computations.



Note: Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests one factor to be retained; The factor is named Subjective Norms
 Source: GGS, Romania, 2005, own computations.

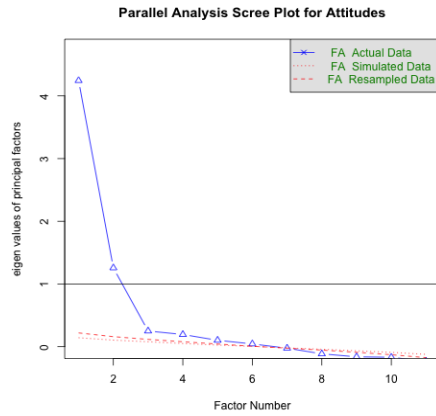
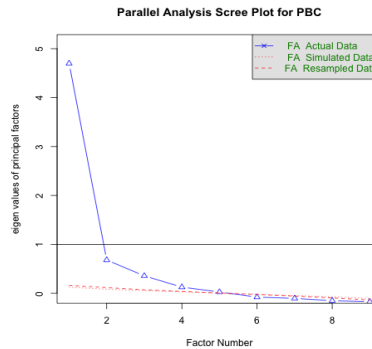
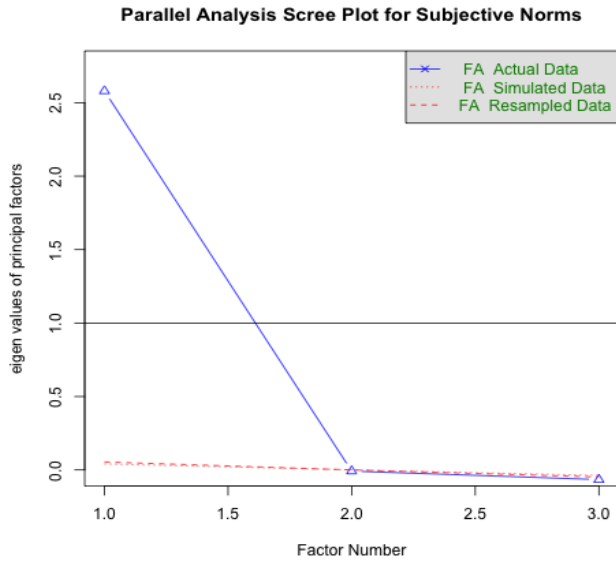


FIGURE A.4. - *Figures from parallel analysis for the factors of Attitudes, Perceived Behavioral Control, and Subjective Norms for the childless*

Notes: "Parallel" analysis is an alternative technique that compares the scree of factors of the observed data with that of a random data matrix of the same size as the original; Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests two factors to be retained. These factors are named in the paper Benefits and Costs, reflecting the positive, respectively the negative evaluation on the outcomes of having a child;
Source: GGS, Romania, 2005 wave, own computations.



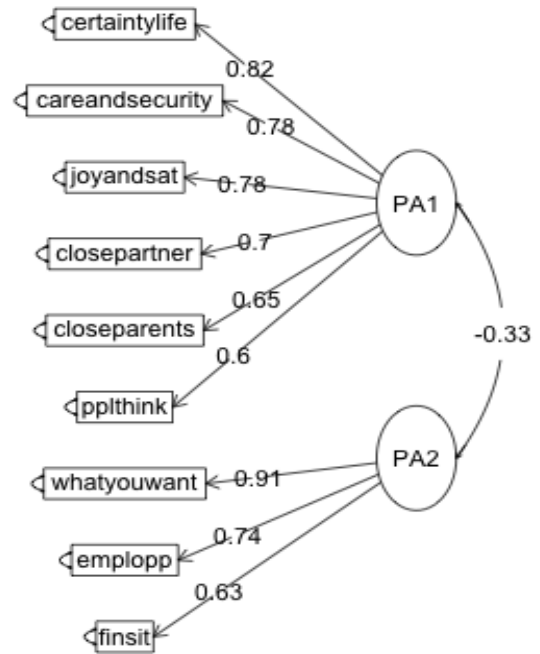
Notes: Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests one factor to be retained. The factor is named PBC
Source: GGS, Romania, 2005 wave, own computations.



Notes: Sharp breaks in the plot suggest the appropriate number of components or factors to extract. The graph illustrates that parallel analysis suggests one factor to be retained. The factor is named Subjective Norms
 Source: GGS, Romania, 2005 wave, own computations.

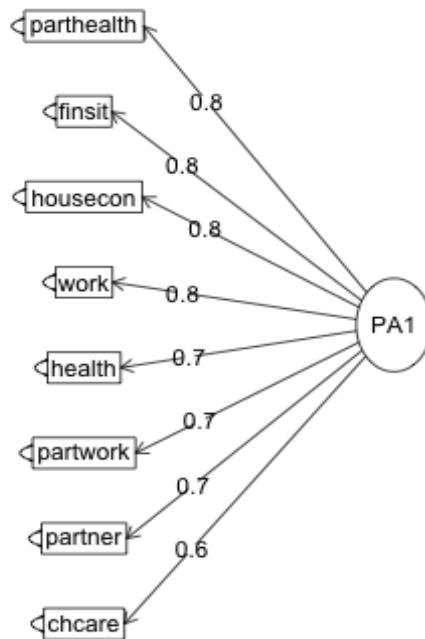
FIGURE A.5. - *Diagrams of factors, for the childless group*

Princial Axis Factor - Attitudes



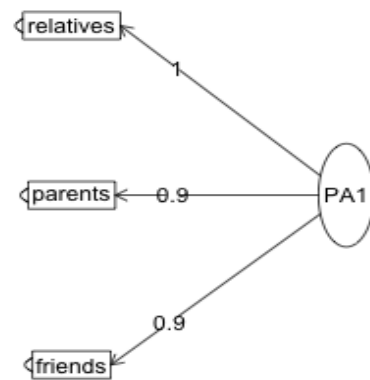
Notes: PA1 is the Benefits factor and the PA2 is the Costs factor.
Source: GGS, Romania, 2005 wave, own computations.

Princial Axis Factor - PBC



Notes: PA1 is the PBC factor.
Source: GGS, Romania, 2005 wave, own computations.

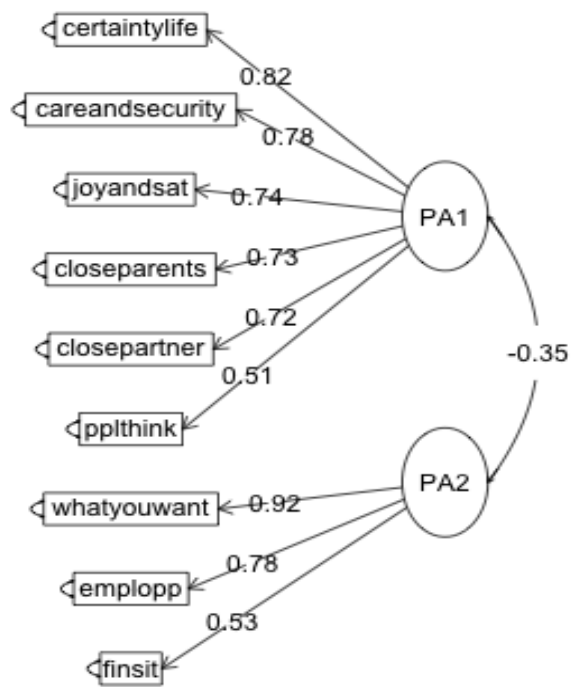
Princial Axis Factor - Subjective Norms



Notes: PA1 is the Subjective Norms factor.
Source: GGS, Romania, 2005 wave, own computations.

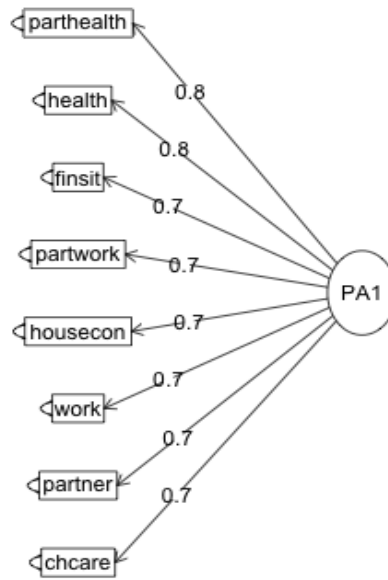
FIGURE A.6. - *Diagrams of factors, for the one-parent group*

Princial Axis Factor - Attitudes



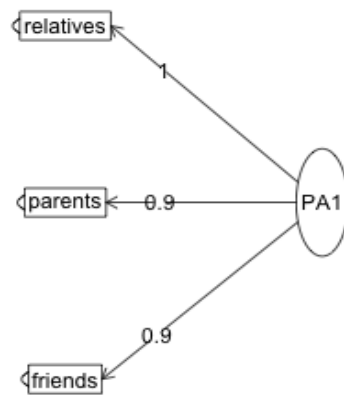
Notes: PA1 is the Benefits factor and the PA2 is the Costs factor.
Source: GGS, Romania, 2005 wave, own computations.

Princial Axis Factor - PBC



Notes: PA1 is the PBC factor.
Source: GGS, Romania, 2005 wave, own computations.

Princial Axis Factor - Subjective Norms



Notes: PA1 is the Subjective Norms factors.
Source: GGS, Romania, 2005 wave, own computations.