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*Research Article*

**On the structural value of children and its  
implication on intended fertility in Bulgaria**

**Christoph Bühler**

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## **On the structural value of children and its implication on intended fertility in Bulgaria**

**Christoph Bühler<sup>1</sup>**

### **Abstract**

Personal networks are receiving increasing recognition as structural determinants of fertility. However, the network perspective also helps to explain personal motivations for having children. Using theories of interpersonal exchange, social capital, and the value of children, it is argued in this article that children can substantively improve their parents' social networks. Individuals perceive this potential advantageous development as a structural benefit and consider this value in their reproductive decisions. This argument is empirically explored with data from Bulgaria, collected in 2002. The results document the presence of structural evaluations among subjectively perceived child-related benefits. Moreover, structural evaluations matter for the reproductive decision-making of Bulgarian citizens. Women's fertility intentions are supported by the prospect that a child will bring their parents and relatives closer or will improve their security at old age. Males' intentions are closely associated with the expectation that a child will provide support when they are old.

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## 1. Introduction

The assessment of fertility as an outcome of purposeful decision-making has become a widely used model of individual reproduction. One initial position of this concept is that individuals decide and act because of their perceptions of the current situation and their expectations of the future (Turchi 1975). These perceptions and expectations can be integrated into theories of decision-making by representing them as subjective fertility-related costs and benefits (Hollerbach 1983, Bulatao and Arnold 1977). Consequently, individuals decide to have a first or another child when they assume that the expected benefits provided by the child outweigh its expected costs to a maximum or satisfying extent (Fawcett 1978, Townes *et al.* 1977).

Various socioeconomic and psychological approaches address the particular costs and benefits of having children and show their significance for reproductive intentions and behavior. The theory of the Value of Children, however, aims to consider all positive and negative incentives that matter in fertility-related decision-making (Fawcett 1978). Although the theory has its roots in psychology, it incorporates a broad variety of economic, social, and cultural dimensions. It, therefore, offers an integrative view of the motivational determinants of fertility, considering both the personality of the individual actor and the structures of the social environment (Nauck 2005, Hoffman and Hoffman 1973). By placing particular emphasis on values, i.e., the benefits individuals expect to receive from a child, the theory makes a substantial contribution to the understanding of the processes of declining fertility and to explanations of why people in modern societies still want to have children (Nauck 2007, Hoffman 1987, Hoffman and Manis 1979, Arnold *et al.* 1975).

A central aspect of the values supplied by children is the fact that they emerge from interpersonal relationships. Parents receive joy, satisfaction, support, or old age security because of their direct relationships with their children. Moreover, children change their parents' relationships with relatives or other members of the social environment. This may improve their parents' social status or simplify their access to supportive resources. However, the relational character of child-induced benefits does not only specify the structural preconditions of the value of children. It also helps in understanding individuals' motivations for having a first or another child. These rest, among other things, on the expectation that children alter their parents' social networks in an advantageous way. People are aware of these benefits and they may purposefully intend to be provided with them through the birth of a child.

The article specifies and discusses in its first part the theoretical foundations of child-related structural evaluations by bringing together the theories of the Value of Children, social networks, and social capital. Starting from a dynamic association between network structure and individual action, it argues that fertility outcomes lead to intended or unintended changes in individual social networks and exchange relation-

ships. These changes underpin both the provision of child-related benefits and the individuals' positive structural evaluations of having children.

In its empirical section, the article explores the relevance of the structural value of children to reproductive decision-making by analyzing its association with the fertility intentions of Bulgarian citizens. This exploration is meaningful. To our knowledge, an explicit investigation of individuals' evaluations of children as a means to improve their social networks has, up to now, only been undertaken using data from the United States (Schoen and Tufis 2003, Schoen *et al.* 1997). Therefore, results from other countries are helpful in determining whether these evaluations are specific to the society of the United States or whether they are also present in different social settings.

These considerations lead to the following structure of the article. The subsequent section develops the theoretical foundations of the structural value of children. It also gives a justification for the analyses of fertility intentions by arguing that child-related evaluations primarily matter for the formulation of reproductive goals. Section 3 reports briefly the Bulgarian data, its sample, and the variables used in the analyses. Section 4 presents, first, the results of the descriptive analyses about the respondents' fertility intentions and their child-related structural evaluations and, second, discusses the impacts of these values on the individual intentions to have a first or second child. Section 5 provides a concluding discussion.

## **2. Theoretical considerations**

### **2.1 The structural value of children**

The theory of the Value of Children intends to understand fertility as an outcome of purposeful decision-making by referring to parental needs being met by children (Bulatao and Arnold 1977, Hoffman and Hoffman 1973). It, therefore, places a special emphasis on benefits in order to explain why people intend to have a first or another child. Children may satisfy a broad variety of their parents' psychological and economic needs (Hoffman and Hoffman 1973). They give adult status to and enhance the social identity of the parents. They expand the Self of the mother and father and they are a visible expression of the fulfillment of cultural moral orders. They strengthen ties within the family, give their parents the opportunity for change and new experiences, increase the power and influence of one or both of their parents, enlarge their parents' prestige and status, and generate income for their parents' households.

The subsequent sections will show that central elements of these child-related values rest on interpersonal relationships. This will be done with the help of three theoretical arguments. First, the theory of social networks argues that individual behavior and events, like the birth of a child, induce changes in individuals' social networks. Second,

according to exchange theory, changes in social networks also alter the exchange processes an individual is embedded in. These changes are the basis for the provision of child-related benefits. Third, the theory of social capital shows that individuals personally invest in personal relationships in order to influence the related exchange processes. Thus, individuals are motivated to have children because they expect that these children may change their social networks in an advantageous way, i.e., that they induce the provision of child-related benefits.

### **2.1.1 Social networks and reproductive behavior: A mutual relationship**

Personal relationships and the structures of social networks are receiving increasing recognition in studies on reproduction. Research in this field perceives fertility-related intentions or behavior to be significantly influenced by the social networks that individuals are embedded in (see, for example, Bernardi, Keim, and von der Lippe 2007, Bühler and Fratzak 2007, Philipov, Spéder, and Billari 2006, Bühler and Philipov 2005, Bühler and Kohler 2004, Bernardi 2003, Casterline 2001, Kohler 2001, Kohler, Behrman, and Watkins 2001, Montgomery and Casterline 1996). However, general theories of action propose that the link between networks and behavior is of mutual causality (Schweizer 1996, Leydesdorff 1991, Burt 1982). On the one hand, social networks influence behavior by shaping individual preferences and opportunities for action. On the other hand, this behavior itself causes intended or unintended alterations to networks, for example, by changing their size and composition or by modifying the characteristics of the relationships between network partners.

This link of mutual causality is observable, in particular, in the context of demographic events. From a structural point of view, marriage rests on social networks that, for example, give two actors the opportunity to meet or provide the material resources needed for marriage. However, being married leads to significant changes in the networks of the marriage partners. It does not only add a husband or wife to their personal networks, but also establishes relationships with the partner's family members and friends (van der Poel 1993, Hurlbert and Acock 1990, Fischer 1982). Personal relationships are a significant cause of migration (Palloni *et al.* 2001, Haug 2000), but to migrate entails both a waning and a loss of personal relationships at the former place of residence and access to new social circles at the new place of living.

A similar situation applies to fertility. Social networks influence reproduction, but having a child also changes parents' social networks. The child becomes a new and highly significant network member and it alters its parents' personal relationships and social environments. It affects the nature of the tie between mother and father, their relationships with relatives, friends, or neighbors, and changes the parents' status in the local community or society (Schoen *et al.* 1997, Hoffman and Hoffman 1973). Moreover, as individuals build their social networks within their spheres of living (Feld

1981), children modify the social circles of their parents. Playgrounds, kindergartens, or schools provide access to people whom they probably would not have met otherwise.

### **2.1.2 The structural value of children**

A child changes parents' social networks and personal relationships. Due to these transformations, parents' access to information, goods, and services alters as well, as does their status and social recognition. To explain this consequence of having a child, one has to step back to a general characterization of personal relationships as processes of interpersonal exchange.

Individuals intend to profit from their activities. Thus, they start or maintain personal relationships under the expectation of gaining utility from them (Coleman 1990) and they are motivated to spend resources on these relationships to secure access to the benefits provided by the relationship partners. If the relationship partners pursue the same motivation, processes of mutual exchange emerge. Interpersonal relationships are, therefore, made up of and characterized by the direct or indirect reciprocal exchange of, for example, information, goods, services, emotions, affection, or recognition (Heady 2007, Diewald 1991, Befu 1977, Emerson 1976, Ekeh 1974, Mitchell 1973).

Consequently, in changing the social networks of their parents, children also alter the exchange relationships that constitute these networks and that are the basis for the provision of child-related benefits. Children are direct exchange partners to their parents. The central aspects of child-related intrinsic and material benefits – as they are addressed in the theory of the Value of Children – rest on the idea of direct exchange. In rearing, educating, and feeding a child, parents spend substantial amounts of time, money, energy, and mental resources in the expectation to receive love, affection, fun, satisfaction, support at old age, or material transfers from their children (Hollstein and Bria 1998, Lee and Willis 1997, Cox 1987). Some of the intrinsic values, like fun, satisfaction, or aspects of self-enrichment and development, are primarily generated by the parents themselves. However, they would not arise without a relationship of interaction and exchange with the child. Moreover, due to the very close and highly emotional character of the ties between parents and their children, parents are involved in exchange processes they would not experience in other relationships.

One additional quality of these exchange relations is the postponement of reciprocity. Intergenerational transfers are characterized by long-term imbalances between the value of resources and efforts spent by the parents and the value of goods and services provided by the child. However, parents benefit from this situation. They receive joy and satisfaction from observing how their transfers support their child in growing and flourishing (Becker 1993) and they create an insurance value, as the child feels obliged to establish reciprocity in the long run by supporting its parents in the event of illness or accidents, or by taking care of them when they are old (Nauck 2005).

As reciprocal exchange is a universal element of interpersonal relationships, it also characterizes the relationships between family members (Schulz 1996, Ishii-Kuntz and Seccombe 1989, Nye 1979, Edwards 1969). Consequently, the birth of a child induces changes in these exchange processes as well. There are the intergenerational relationships between the child's parents and its grandparents. The grandparents can become motivated to establish a closer relationship with their grandchild and its parents and to support the growing family. In addition, parents can benefit from their relationships with other family members and kin. Due to their ascribed nature, these relationships enable the generation of stable systems of interpersonal exchange, characterized by norms of indirect postponed reciprocity and the commitment of mutual assistance (Gouldner 1960). Therefore, family members feel obliged to provide support and the parents do not have to repay the members immediately for the assistance they receive.

Finally, children are beneficial in that they change the position and the roles of their parents in the local community. There is empirical evidence from traditional societies that the situation of parenthood, or of being a mother or father of a large family, changes the recognition and evaluation of the parents by the social environment. The new status may provide parents with power in the family or local community or with a social or economic advantage due to an increase in the prestige of the mother and/or father (Hoffman and Hoffman 1973). Parents and their families also gain advantages through their children's marriages as these strengthen the parental status as well and create new opportunities for interpersonal exchange with the members of the family-in-law or with members of the local community (Heady 2007, Levi-Strauss 1993). It is questionable, however, to what extent these considerations apply to modern societies. Here, the status of parenthood is very much legally defined, as it gives parents and their children access to transfer payments, social insurance services, or tax advantages (Nauck and Klaus 2007).

According to the arguments presented above, the important aspects of the provision of child-related benefits rest on alterations in the parents' personal networks and the exchange relationships that are induced by the birth of a child. This fact will subsequently be addressed by the term 'structural value' of children. In referring to this structural attribute, the term illustrates that the parents' access to child-related advantages is not automatically given. Not just the benefits that are directly provided by the child, but also the satisfaction of intrinsic values, depend, among other things, on the quality of the tie between the child and its parents. Moreover, child-induced benefits from the family or the social environment rest on network structures that create opportunities for parental status enhancement, the generation of prestige, or growing influence.

Of course, all these explanations give a one-sided picture of the expected consequences of having a child, as they address exclusively the structural benefits of fertility. However, there is ample evidence from the empirical literature that children may also deteriorate individual networks. In many cases, mothers feel more responsible for their children as fathers do and, consequently, they adjust their personal relationships closer

to the needs of their children (Campbell 1988, Fischer and Oliker 1983, Wellman 1986). This reduces contacts with friends and acquaintances and increases the number and intensities of relationships with kin and families with children (Kaufmann *et al.* 1989). Moreover, if women have to stop or to reduce employment in order to care for their children, they are at risk to weaken or to lose their occupational relations and ties at the work place. Fathers, however, who feel responsible for a growing family, tend to invest more time in employment and occupational relationships (Fischer and Oliker 1983), which may cause tensions between the partners.

However, the subsequent sections will continue to concentrate on the structural value of children. Over the last decades, demographic research has provided deep insights on the costs of children and their impact on declining fertility. Compared to this, there is only limited knowledge about the benefits of children. This knowledge has to be improved, as expected benefits are essential for understanding individuals' motivations for having a first or another child (Nauck 2007, Hechter, Hyojoung, and Bear 2005).

### **2.1.3 The purposeful utilization of the structural value of children**

The structural value of children is not a new concept in the literature on fertility, although it was not addressed directly until now. As argued in the previous section, the great variety of values the theory of the Value of Children deals with already considers benefits that emerge from the structural changes in the parents' social relationships. However, a more recent approach discusses the structural value of children explicitly under the theoretical perspective of social capital (Astone *et al.* 1999, Schoen *et al.* 1997). Following a network perspective, this approach perceives social capital as emerging from the goods and services an individual has access to through his or her personal relationships (Bourdieu 1983, Flap 2002, Lin 2001, Coleman 1990). Consequently, children contribute to their parents' social capital as they provide goods and services directly and as they change their parents' social networks, which give indirect access to resources located with other network members. As social capital is grounded in interpersonal relationships and as it is accumulated through the processes of reciprocal exchange (Bühler 2007, Astone *et al.* 1999, Coleman 1990, Bourdieu 1983), child-related social capital is a direct expression of the structural value of children.

However, the value of social capital depends substantially on the desires and goals an individual pursues. If an individual has, for example, a couple of relationships with influential people in different companies, these relationships might be very valuable in finding a better job. However, if he or she needs assistance in arranging childcare, these relationships might be useless. Thus, social capital emerges as an unintended by-product of existing relationships and group memberships (Puttnam 1993, Coleman 1988) or as an outcome of purposeful investments in existing or new relationships (Hof-

ferth, Boisjoly, and Duncan 1999). Related to fertility, the latter argument addresses the possibility that parents purposefully utilize their children as a means to alter the structures of their social networks in order to improve their access to resources. More generally speaking, individuals can be aware of the structural value of children and the expectation of advantageous changes in their personal relationships can be a substantive argument in favor of having a child.

This conclusion helps in understanding particular, subjective evaluations as they are expressed by individuals when they are asked about the benefits of a child. These evaluations are not associated with a concrete intrinsic or material profit, but with a general prospect of an improving social environment. For example, Afro-American adolescents who live in precarious social circumstances repeatedly report the expectation that having a child will stabilize their living situations and motivate members of their social networks to provide support (Geronimus 2003, Schoen and Tufis 2003, Friedman, Hechter, and Kanazawa 1994, McCue *et al.* 1991). Schoen *et al.* (1997) show that the perception of children as a means to improve one's personal relationships in various ways had a strong impact on the fertility motivations of American adults in the 1980s. Of course, individuals are hardly likely to evaluate the abstract changes in their social networks. More probably, they consider the expected, but unspecified, benefits due to these alterations. Individuals assume that child-induced modifications of their personal relationships generally improve their personal situations, but they cannot specify these expected advantages in detail.

The subsequent empirical analyses will address the structural value of children in this context. They explore the extent to which individuals associate the birth of a child with a possible improvement in their social environments and the degree to which these evaluations have an impact on their intended fertility. The analyses address Bulgaria. This country has been chosen because of the availability of appropriate quantitative data and the fact that Bulgaria – like other Central and Eastern European countries – has a long tradition of network-based exchange relationships of help and support (Sik 1995). These relationships were essential in overcoming the shortage of goods and services during socialism and they became a central strategy for coping with economic and social uncertainties, poverty, rising prices, or the shortage of money that emerge during the transition processes (O'Brien, Wegren, and Patsiorskovky 2005, O'Brien *et al.* 1996, Borén 2003, Pickup and White 2003, Salmi 2003, Brown and Kulcsar 2001, Lokshin and Yemtsov 2001, Ashwin 1998, Sik 1988).

## 2.2 Fertility intentions

The empirical analyses will investigate the significance of the structural value of children to individual fertility intentions. Under the general perspective that fertility is primarily an outcome of decision-making and purposeful behavior in modern societies, the focus on

intended fertility, as opposed to observed fertility, is supported by two general arguments. First, there is evidence from sociological and psychological research that values and the evaluation of the consequences of different courses of action stimulate behavior in a cognitive and motivational way, but they do not determine behavior directly (Hitlin and Piliavin 2004, Schwartz 1994, Feather 1995). This holds also for child-related evaluations (Miller 1994). Values become influential within the process of reproductive decision-making and behavior at a particular stage (Miller 1986, Miller and Pasta 1996, 1993). The process of reproductive decision-making starts with fertility-related motivations that shape particular desires, which are again translated into reproductive intentions. Intentions mark the stage at which individuals decide about a reproductive goal and about the means to reach it. These decisions are transferred to proceptive or contraceptive activities that finally lead in dependence of situational forces to desired or undesired outcomes. Because motivations and desires influence fertility-related activities only indirectly via intentions, the process can be summarized analytically in two parts. One part is an intentional one that covers the developments of the internal states of motivation, desire, and intention. The other is a behavioral one that draws attention to the instrumental activities to realize an intended reproductive goal. In addition to biological and cultural dispositions as well as individual traits, subjective evaluations of children form a central aspect of the intentional part of this process (Miller 1995, Miller and Pasta 1993).<sup>2</sup>

Second, the separation between fertility-related decision-making and instrumental behavior helps in understanding the observed levels of fertility as expressions of intentions and of situational forces, which hinder, slow down, or promote the pursuance of an intended reproductive goal (Bongaarts 2001, 1990, Morgan 2003, Quesnel-Vallée and Morgan 2003, Schoen *et al.* 1999). Consequently, knowledge about the determinants of intended fertility will help to improve the understanding of observed fertility and the significance of intervening situational forces in the process.

### 3. Data and variables

#### 3.1 Data

The empirical analyses use data from the first wave of the Bulgarian panel survey ‘The Impact of Social Capital and Coping Strategies on Reproductive and Marital Behavior’ (Philipov *et al.* 2007), which was carried out under the responsibility of the Max Planck Institute for Demographic Research and the Bulgarian Academy of Sciences. The first wave took place in the summer of 2002 and the second was undertaken in the autumn of 2005. As the study focuses on the events of leaving the parental home, marriage, and

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<sup>2</sup> See, however, Nauck (2007) and Liefbroer (2005) for analyses addressing a direct influence of child-related values on reproductive outcomes.

fertility, the survey's population is restricted to the age cohorts in which these events normally take place in Bulgaria. Thus, female respondents are aged between 18 and 34. Male respondents are in the same age range if they are unmarried and do not live together with a partner. The age range of married or cohabiting males is 18 to 66. This is because the corresponding spouse or partner was automatically interviewed with each married or cohabiting female respondent. The sample was realized in collaboration with the Bulgarian National Statistical Office. Of the 10,009 individuals that were successfully interviewed, 5,765 were married or cohabiting and 4,244 were single, divorced, or widowed at the time of the interview.

A sub-population of the respondents will subsequently be analyzed. Ethnic Turks and Roma form a substantive part of the Bulgarian population. Consequently, Turkish and Roma respondents, represent 9.7% and 7.1% of the realized sample. Explorative analyses have shown that fertility behavior and its determinants differ significantly between the respondents with a Turkish, Roma, and Bulgarian ethnic background. Analyses separated by ethnic groups would solve this problem, but they are beyond the scope of this article.<sup>3</sup> Therefore, 8,093 respondents of Bulgarian ethnicity are considered. Moreover, all of the respondents who knew for certain to be infertile, who were pregnant, or whose partner was pregnant at the time of the interview are not taken into account. Due to these restrictions, the subsequent analyses start with a population of 3,495 female respondents and 3,961 male respondents.

### **3.2 Fertility intentions**

Individuals formulate fertility-related intentions because of their desires and considerations of environmental and situational circumstances. Consequently, intentions may change when the determining circumstances are changing. This does not mean that individuals completely alter their motivations and desires, but that they make new decisions and formulate new or modified intentions. Thus, information about long-term fertility intentions, i.e., whether an individual ever intends to have a first or another child, provides a general estimate for future fertility, but its accuracy to predict individual reproductive behavior is limited. Fertility intentions that are related to a short time horizon, and that are subsequently used as dependent variables, promise to reflect reproductive decisions in a more reliable way (Billari and Philipov 2005).

In the questionnaire, these short-term intentions were covered by the question of whether a respondent "intends to have a first or another child within the next two years". Respondents could choose between the answer categories "definitely yes", "probably yes", "probably not", and "definitely not".

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<sup>3</sup> See Koytcheva (2006) for detailed analyses of the differences in demographic behavior between individuals of Turkish, Roma, or Bulgarian ethnicity.

### **3.3 The structural value of children**

The questionnaire did not address the structural value of children directly or covered all dimensions of positive and negative incentives as they are embraced by the theory of the Value of Children. However, it covers respondents' attitudes to having a first or another child against the background of the theory of Purposeful Behavior (see Billari and Philipov 2005). The related questions mentioned a variety of basic child-related benefits and costs that also provide information about the structural evaluations of fertility.

The attitudes were measured by confronting the respondents with a hypothetical situation: "If you would have a child during the next two years, irrespective of whether you really wish to have a child or not, to what extent do you agree that this would ...?" Then the interviewer read out a statement that mentioned a particular child-related benefit or cost and the respondent was asked to evaluate this statement by expressing his or her degree of agreement or disagreement (see Appendix A for the documentation of the statements used in the questionnaire). Three statements cover aspects of the structural value of children: an expected increase in closeness with the partner, growing closeness with parents and relatives, and greater security at old age. The first two statements focus on the structural value of children directly by mentioning possible improvements of relationships. The value of old age security addresses the child as a source of resources, which is an expression of the direct exchange relationship between the parents and the child.

The analyses will highlight the results for these three statements. However, they will also consider some costs attributed to the birth of a child. This is done to evaluate in the multivariate analyses the importance of the structural benefits of children under the control of child-related costs. Although these costs are introduced for the purpose of control, their distributions and associations with the respondents' reproductive planning show interesting results and, therefore, they will be briefly reported.<sup>4</sup> The statements about costs address economic difficulties arising from having a child, negative consequences for a respondent's working career and/or higher education, and reduced time for personal interests or contacts with friends. The latter statement considers the fact that children can also deteriorate parents' social networks.

The respondents' evaluations of child-related costs and benefits are measured on an ordinal scale, which is considered in the subsequent descriptive analyses. For the multivariate analyses, however, the evaluations are summarized by two binary variables. The first covers all respondents who "completely or rather agree" to a particular

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<sup>4</sup> Because the analyses concentrate on the structural value of children and some child-related costs, the results in the multivariate analyses have to be interpreted in terms of association but not of causality. The latter would only be possible, if the analyses control for all child-related costs and benefits as they are specified by the theory of the Value of Children.

statement, the second includes all respondents who “neither agree nor disagree”. The reference category consists of the replies “rather disagree” or “completely disagree”.

### 3.4 Control variables

The multivariate analyses consider some basic characteristics of the respondents and their households primarily for the purposes of control. Four metric variables cover the respondent’s age, the number of his or her siblings, the duration of the relationship (only considered for childless married or cohabiting respondents), and the age of the first child. Two binary variables provide information on whether the respondent has completed tertiary education or whether he or she intends to start on an educational program within the next two years. The fact that the respondent received an income from labor during the last three months before the interview is represented in the same way. A further dummy variable reports the respondent’s degree of self-evaluated religiousness, i.e., whether he or she calls himself or herself “a religious person”. Two variables characterize a respondent’s household: the logarithm of its equivalence income, expressed by the household members’ per capita incomes weighted by the age structure of the household, and a dummy variable that controls for differences in fertility intentions between urban and rural areas.<sup>5</sup>

## 4. Empirical results

The empirical results will be separately presented by the respondents’ parity, gender, and marital status. According to marital status, three groups are considered: single respondents, respondents with an intimate friend, and respondents living in a marriage or cohabitation. Although the number of consensual unions is increasing in Bulgaria (Hoem *et al.* 2007, Koytcheva 2006), they only partly form a real alternative to being married. There is a long tradition of cohabitation as a prelude to marriage. Many couples that intend to marry move in together in one of their parents’ houses. However, they turn their cohabitation only into a marriage, if economic or other practical circumstances allow them to do so (Hoem *et al.* 2007: 6). This pattern is still to be observed. Consequently, the analyses are not separated by cohabiting and married respondents.

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<sup>5</sup> Information about a household’s income is covered by an ordinal scaled variable with the following categories: ‘up to 100 Leva’, ‘101 to 200 Leva’, ‘201 to 300 Leva’, ‘301 to 400 Leva’, ‘401 to 600 Leva’, ‘601 to 800 Leva’, ‘801 to 1,000 Leva’, and ‘1,001 Leva or more’. To calculate the equivalence income, the value of the center of each income interval is taken. A value of 1,200 Leva is set for the highest income category. The household size is weighted according to the modified OECD scale (Dennis and Guio 2004). The first adult is weighted with the factor 1.0. Every additional household member who is older than 13 years receives a weight of 0.5. If he or she is aged 13 or younger, a weight of 0.3 is set.

The division by marital status takes place, because respondents might evaluate the structural values of children systematically different according to their conjugal situation. For example, married or cohabiting individuals probably evaluate the item that a child “would increase the closeness between you and your partner” in dependence from the quality of their current partnership. Single, respondents, however, have to evaluate this item much more hypothetically, because they do not have a partner. A similar argument holds for respondents with an intimate friend. Their partnership has a status that is different from that of married or cohabiting couples, which might, for example, systematically influence their evaluation that a child would increase the closeness to parents and relatives.

Each group of respondents that is defined by marital status is additionally separated by gender and parity. However, as most of the interviewees without a partner or with an intimate friend do not have a child, only childless respondents are considered in these groups.<sup>6</sup>

The empirical results are presented in two steps. First, distributions of fertility intentions as well as of child-related benefits and costs are discussed in order to develop an impression of the respondents’ general willingness to have a first or another child within the next two years and to assess the relevance of the structural value of children. Second, results from regression analyses are reported estimating the association of structural evaluations with the intention to have a first or second child. Due to the ordinal character of the dependent variable, these analyses are performed by ordinal logit regressions.

#### 4.1 Fertility intentions

Before the breakdown of Socialism in 1989, fertility in Bulgaria was characterized by almost universal parenthood, high rates of two-child families, and a stable fertility rate at around replacement level (Shkolnikov *et al.* 2004). These characteristics changed significantly during the transition period. The Total Fertility Rate declined from 1.90 in 1989 to 1.09 in 1997 and increased slightly to a level of 1.29 in 2004 (Max Planck Institute for Demographic Research 2007). Two-child families became less prevalent and the overall decline in fertility was very much the result of a significant reduction in the number of second order births (Philipov and Kohler 2001, Spielauer 2005). However, the aspect of almost universal parenthood remained, i.e., living in a partnership, either married or in cohabitation, is directly associated with having at least one child.

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<sup>6</sup> Thus, 77 cases are additionally excluded from the analyses.

**Table 1: Intentions of female and male respondents to have a first or another child within the next two years by marital status and parity**

**a) Female respondents**

Intention to have a/another child within the next two years	Marital status					
	Single		Intimate friend		Marriage or cohabitation	
	Parity	Parity	Parity	Parity	Parity	Parity
	0	0	0	1	2	3 or more
Definitely yes	4.3	10.7	36.1	10.1	1.0	2.4
Probably yes	21.0	22.2	32.4	25.5	2.7	2.4
Probably not	33.6	32.0	16.2	31.5	16.4	7.1
Definitely not	41.2	35.0	15.3	32.9	79.9	88.1
Total	100.1	99.9	100.0	100.0	100.0	100.0
N	515	540	216	1,095	603	42
	$\chi^2$ (3) = 17.568		Gamma = -0.722			
	Sign. = 0.001		$\chi^2$ (9) = 633.600			
			Sign. = 0.000			

**b) Male respondents**

Intention to have a/another child within the next two years	Marital status					
	Single		Intimate friend		Marriage or cohabitation	
	Parity	Parity	Parity	Parity	Parity	Parity
	0	0	0	1	2	3 or more
Definitely yes	3.9	6.1	33.8	9.7	1.1	--
Probably yes	15.8	18.1	33.3	29.8	4.4	1.7
Probably not	34.0	35.7	18.3	35.1	26.6	23.7
Definitely not	46.4	40.0	14.6	25.4	67.9	74.6
Total	100.1	99.9	100.0	100.0	100.0	100.0
N	1,091	557	219	1,020	616	59
	$\chi^2$ (3) = 8.982		Gamma = -0.671			
	Sign. = 0.030		$\chi^2$ (9) = 585.119			
			Sign. = 0.000			

The intentions of female and male respondents to have a first or another child reflect these developments (see Table 1). More than two-thirds of the childless female (68.5%) and male (67.1%) respondents who are married or cohabiting either definitely or probably want to have a first child within the next two years. However, these intentions significantly decline with parity. Only around one-third of the female and male respondents with one child (35.6% and 39.5% respectively) aspires to have a second child and there is only a minority among the respondents with two or more children that intends to have an additional child within a two-years period.

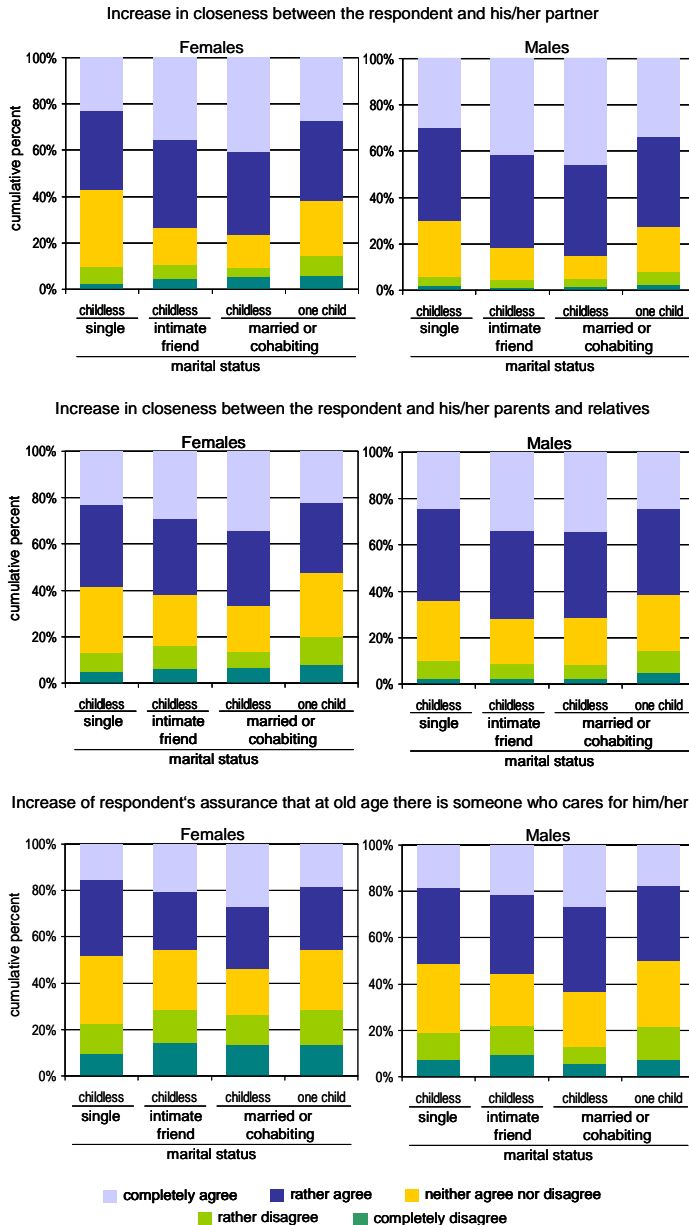
The results also document, that a partnership and the character of that partnership are prerequisites for positive fertility intentions. A comparison of the replies among the childless respondents shows a continuous increase in the number of interviewees who definitely or probably intend to have a first child within the next two years. Among the single female respondents, only 25.3% plan to have a first child. This share increases to 32.7% for female respondents with an intimate friend and to 68.5% for married or cohabiting women. Men show a similar pattern, although their intentions to have a first child become more intense as a consequence of living together with a partner in a marriage or cohabitation.

The results in Table 1 have an effect on the subsequent analyses. As the overall number of married or cohabiting respondents with three or more children is very small and as the distributions of the fertility intentions of female and male respondents with two children are very skewed, i.e., only small numbers of these respondents definitely or probably intend to have a third child within the next two years, the estimates will concentrate on the groups of respondents who are childless or who have one child.

## **4.2 The perceived structural benefits of children**

Figure 1 presents the distributions of the respondents' agreements and disagreements to the statements addressing the structural value of children. Married or cohabiting females and males associate the birth of a first child with the expectation of greater closeness with the partner. 76.4% of the female and 84.9% of the male respondents completely agree or rather agree with the related statement (see Appendix B.1 for percents and case numbers). The prospect of a better relationship with the partner is very much associated with a first child, as the share of positive evaluations according to a second child is significantly smaller. The results also document that for women the benefit of a better partnership is particularly related to the presence of a partner. Among the female respondents with an intimate friend, 57.2% expect this kind of benefit due to a first child, but only 37.7% of the single female respondents.

**Figure 1: Expected benefits of having a child by gender, marital status, and parity**



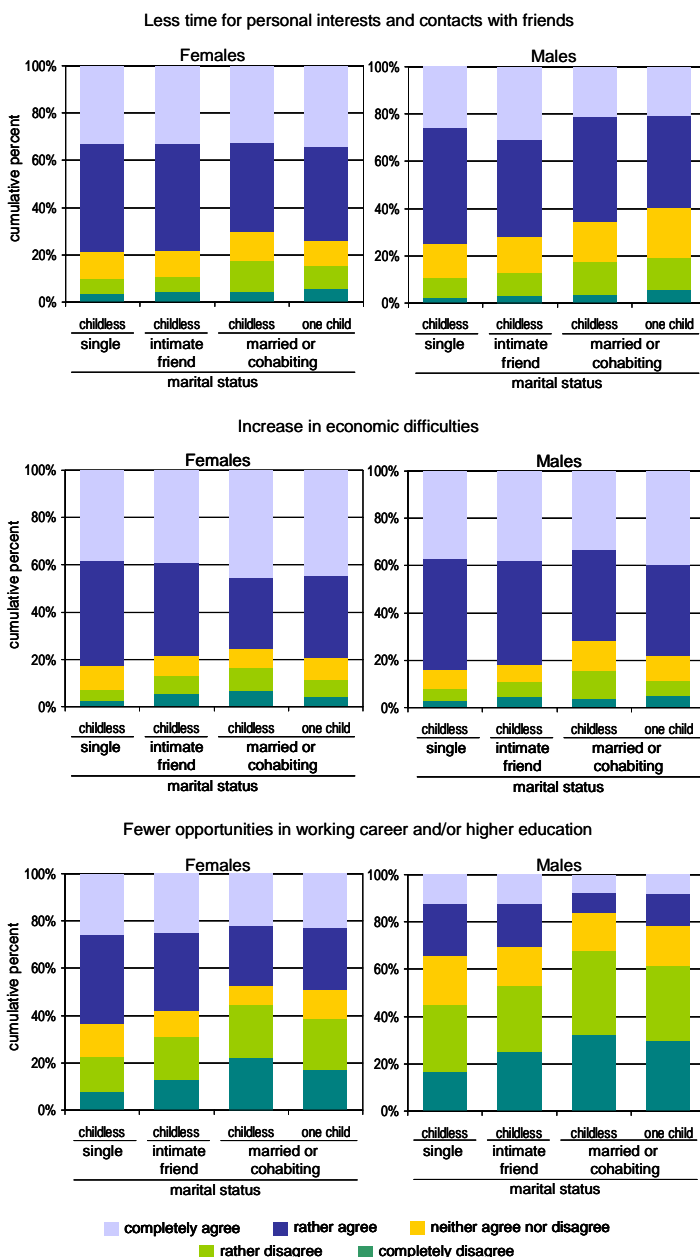
Many respondents also indicate the prospect that a first child would bring their parents and relatives closer. However, the frequency of this expectation is lower than the expectation of an improved relationship with the partner. Again, this benefit is primarily associated with the first child, but the differences between the childless respondents, according to their marital status, are less pronounced. The prospect of security at old age is the structural benefit of lowest relevance. Compared to the other expected benefits, many respondents completely or rather disagree with the statement that a first or second child will improve their security at old age. However, hope of receiving this kind of benefit is again attached to the first child by married or cohabiting females and males, but it becomes significantly less important for the second child. Thus, this result does not support insights from other countries where the expectation of old age security is primarily associated with children of higher parity (Bulatao 1981).

### **4.3 The perceived costs of children**

Figure 2 reports the distributions of agreements and disagreements related to the statements that address the expected costs of having children. As the first two graphs document, the majority of female and male respondents expect to be confronted with a deterioration of their networks because of the birth of a first or second child. Respondents who are single or who have an intimate friend particularly suppose that a first child will reduce their time for personal interests and contacts with friends. Married or cohabiting respondents show gender specific evaluations. Women tend to expect this kind of cost more often than men do. This holds especially for respondents with one child. Here, 74.3% of all women compared to 60.0% of all men completely or rather agree with the related statement.

As expected, most of the respondents are aware of the economic costs of having a first or second child and evaluate this circumstance as an increase in economic difficulties. The high shares of women and men who definitely envisage economic problems are remarkable. Gender-specific costs are to be observed in the context of decreasing chances for an employment career and/or higher education. Independent of marital status and parity, female respondents much more frequently associate reduced opportunities in the educational and occupational spheres with the birth of a child than do male respondents.

**Figure 2: Expected costs of having a child by gender, marital status, and parity**



#### 4.4 Multivariate analyses

According to the results of the descriptive analyses, a large number of respondents expects that the birth of a first or second child will improve their social environments. However, do these prospects promote the respondents' intentions to have a child within the next two years? The subsequent multivariate analyses, reported in Tables 2 and 3, aim to provide an answer to this question (see Appendix C for descriptions of the variables used in the multivariate analyses). Table 2 lists the estimates for the respondents who are single or who have an intimate friend; Table 3 presents the results for the married or cohabiting female and male respondents.<sup>7</sup>

Although large proportions of single childless female and male respondents perceive the birth of a first child with structural benefits, only the evaluations of single female respondents are significantly associated with their intentions to have a first child (see Table 2). If these women completely or rather agree with the statement that a first child will increase their closeness with parents and relatives or that it would increase their security at old age, then they intend to have this child in the next two years with a higher probability than do respondents who do not perceive these kinds of values. For female and male respondents with an intimate friend, a different pattern of results has to be observed. Here, the expectation of an increasing closeness with the partner is the only relevant benefit. For male respondents, this evaluation has a significant positive association with their willingness to have a first child within a two years period. For female respondents the coefficient is significantly negative. This is a contradictory result as it states that women are not willing to realize a benefit they expect to receive from their first child. However, one has to consider that the dependent variable is about the willingness to have this child within the next two years. Thus, these respondents may intend to postpone its birth, because they perhaps do not need to be supported by a child in order to improve their relationship with the friend or because they do not associate their current intimate relationship with the prospect of parenthood.

Looking at the perceived costs of having a first child, the expectations of less time for personal interests and contacts with friends do not show any association with the fertility intentions of males and females. Among single males, however, expected economic difficulties or decreasing career perspectives are a serious argument for not intending to have a first child within the next two years. This evaluation changes significantly, once an intimate partner is present, perhaps because the burden is now distributed between two persons. However, if females with an intimate friend perceive that a first child would increase their economic difficulties, then they intend to postpone the birth of this child.

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<sup>7</sup> Subsequently, only the effects of the subjectively expected benefits and costs of children are reported. See Philipov, Spéder, and Billari (2006) for a discussion of the influences of socioeconomic characteristics on fertility intentions in Bulgaria.

Among the childless married or cohabiting female and male respondents who associate the birth of a first child with the expectation of increasing closeness with the partner or with their parents and relatives, only the latter evaluation is significantly related to their intentions to have this child within a two years period (see Table 3). For female respondents, the prospect of increasing closeness with the partner is not correlated with their reproductive planning, and for men this perception is an argument to postpone the birth of this child probably. However, males' fertility intentions increase, if they evaluate a first child as a means to improve their security at old age.

The expected structural benefit of increasing security at old age very much characterizes respondents' motivations to have a second child, as it is significantly associated with both the females' and males' intentions of having this child within the next two years. Contrary to the childless respondents, the expectation that a second child will bring the partner closer is now a serious argument for female respondents to have this child, but it does not touch the males' intentions in any significant way.

Of the expected costs of having a first child, the prospect of decreasing time for personal interests and contacts with friends is not a serious motivation for female and male respondents for not having this child soon. However, the expectation of increasing economic difficulties is negatively associated with the women's intentions. This is not the case for male respondents. Possible negative impacts on working careers and/or higher education are significant arguments for female respondents to postpone the birth of a first child. Thus, women who perceive a clash between parenthood and their educational or occupational situations tend to give priority to their occupational career.

Looking at the associations between the expected costs and the intentions to have a second child, the estimates show that the prospect of a worsening economic situation is a serious argument for both females and males to postpone the birth of this child or to stop childbearing. These results support insights from other studies on Bulgaria documenting the high sensitivity between individual economic situations and intentions to have a second child (Bühler 2005, Bühler and Philipov 2005, Philipov, Spéder, and Billari 2006). Although only a relatively small fraction of male respondents perceives the birth of a second child with decreasing opportunities in their working careers and/or higher education (see Figure 2), this prospect is negatively correlated with their willingness to have this child in a two years period.

**Table 2: Determinants of intentions to have a first child within the next two years: childless respondents who are single or have an intimate friend (ordinal logit regression)**

	Parity							
	Single				With an intimate friend			
	Females		Males		Females		Males	
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
<b>Perceived benefits</b>								
Increasing closeness with partner								
completely/rather agree	-0.036	0.385	0.272	0.338	-0.593*	0.342	0.999*	0.533
neither agree nor disagree	-0.221	0.397	0.211	0.345	-1.627***	0.398	0.260	0.590
Increasing closeness with parents and relatives								
completely/rather agree	0.898**	0.357	0.117	0.283	0.406	0.303	-0.146	0.378
neither agree nor disagree	0.864**	0.375	0.385	0.288	0.594	0.329	0.358	0.420
Increasing old age security								
completely/rather agree	0.523**	0.259	0.245	0.183	0.135	0.221	0.345	0.240
neither agree nor disagree	-0.026	0.275	0.160	0.196	0.171	0.250	-0.283	0.281
<b>Perceived costs</b>								
Decreasing time for personal interests and friends								
completely/rather agree	-0.129	0.334	0.315	0.219	-0.170	0.308	0.018	0.286
neither agree nor disagree	0.517	0.408	0.168	0.271	0.156	0.380	-0.183	0.362
Increasing economic difficulties								
completely/rather agree	0.435	0.404	-0.540**	0.260	-0.674**	0.274	0.015	0.324
neither agree nor disagree	-0.021	0.489	-0.260	0.344	-0.385	0.385	0.060	0.470
Decreasing career perspectives								
completely/rather agree	0.171	0.249	-0.566***	0.165	0.012	0.213	-0.016	0.219
neither agree nor disagree	0.525*	0.306	-0.266	0.178	-0.158	0.318	-0.004	0.264
<b>Respondent's characteristics</b>								
Age	0.908***	0.269	0.656***	0.191	0.599**	0.278	0.408	0.293
Age squared	-0.016***	0.005	-0.010***	0.004	-0.009*	0.005	-0.005	0.006
Siblings	0.179	0.123	0.045	0.102	0.096	0.176	-0.104	0.162
Tertiary education	0.151	0.240	0.153	0.231	-0.028	0.224	-0.357	0.287
Intention to start education	0.034	0.215	-0.149	0.187	0.068	0.217	-0.266	0.242
Income from labor	0.194	0.212	0.262	0.155	-0.110	0.212	-0.013	0.220
Religiousness	-0.133	0.192	0.141	0.136	-0.147	0.185	0.017	0.187
<b>Household's characteristics</b>								
Equivalence income (log)	-0.057	0.145	-0.248**	0.109	-0.362**	0.160	-0.440***	0.144
Countryside	-0.569	0.303	-0.345*	0.176	-0.423	0.280	-0.351	0.278
Cut points								
1	12.980	3.427	8.978	2.446	6.154	3.478	5.897	3.746
2	14.678	3.445	10.749	2.452	7.670	3.487	7.625	3.752
3	16.824	3.457	12.680	2.457	9.398	3.492	9.305	3.749
LL	-488.193		-930.736		-554.842		-512.575	
$\chi^2$ (df)	96.51 (21)		172.24 (21)		86.73 (21)		84.43 (21)	
N	440		889		457		454	

Unstandardized coefficients, standard errors, and levels of significance are reported.  
Levels of significance \* < 0.1, \*\* < 0.05, \*\*\* < 0.01.

**Table 3: Determinants of intentions to have a first or second child within the next two years: respondents who are married or cohabiting (ordinal logit regression)**

	Parity							
	0				1			
	Females		Males		Females		Males	
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
<b>Perceived benefits</b>								
Increasing closeness with partner								
completely/rather agree	0.114	0.635	-1.605**	0.812	0.551**	0.240	0.345	0.281
neither agree nor disagree	0.724	0.713	-2.022**	0.927	0.065	0.247	0.182	0.295
Increasing closeness with parents and relatives								
completely/rather agree	1.212**	0.575	1.560**	0.619	0.168	0.211	0.133	0.234
neither agree nor disagree	0.413	0.594	1.453**	0.660	0.016	0.216	0.070	0.240
Increasing old age security								
completely/rather agree	-0.376	0.352	0.775*	0.437	0.362**	0.151	0.510***	0.170
neither agree nor disagree	0.193	0.407	-0.024	0.472	0.387***	0.165	0.464***	0.181
<b>Perceived costs</b>								
Decreasing time for personal interests and friends								
completely/rather agree	0.594	0.394	0.236	0.380	0.036	0.173	-0.380**	0.169
neither agree nor disagree	0.718	0.549	0.101	0.474	-0.059	0.240	-0.208	0.200
Increasing economic difficulties								
completely/rather agree	-0.822*	0.452	0.350	0.386	-0.883***	0.193	-0.670***	0.201
neither agree nor disagree	-1.133*	0.655	0.947*	0.567	0.064	0.259	-0.050	0.270
Decreasing career perspectives								
completely/rather agree	-0.725**	0.326	-0.266	0.431	-0.200	0.137	-0.355**	0.161
neither agree nor disagree	-0.893	0.585	0.355	0.406	-0.005	0.199	-0.287*	0.174
<b>Respondent's characteristics</b>								
Age	1.427***	0.467	0.134	0.263	0.415**	0.200	0.185*	0.102
Age squared	-0.027***	0.009	-0.003	0.004	-0.007**	0.004	-0.003*	0.002
Age of first child	--	--	--	--	-0.058***	0.023	-0.057***	0.018
Cohabitation	0.035	0.321	-0.421	0.292	--	--	--	--
Duration of partnership	-0.099	0.064	-0.073	0.071	--	--	--	--
Siblings	-0.087	0.206	-0.189	0.195	0.017	0.078	0.116	0.094
Tertiary education	0.190	0.359	-0.153	0.369	0.201	0.145	0.179	0.171
Intention to start education	-0.588	0.404	-0.342	0.492	--	--	--	--
Income from labor	0.629*	0.343	0.888**	0.439	0.161	0.133	-0.094	0.201
Religiousness	0.182	0.293	0.110	0.287	0.218*	0.123	0.230*	0.124
<b>Household's characteristics</b>								
Equivalence income (log)	-0.678***	0.235	-0.265	0.217	0.140	0.100	0.318***	0.107
Countryside	0.235	0.412	0.508	0.425	-0.130	0.170	0.008	0.176
<b>Cut points</b>								
1	15.365	5.993	-0.374	4.120	5.321	2.708	2.463	1.683
2	16.496	6.010	0.798	4.123	6.711	2.711	4.060	1.686
3	18.052	6.033	2.535	4.125	8.419	2.714	5.998	1.691
LL	-220.304		-233.088		-1248.061		-1128.814	
$\chi^2$ (df)	43.08 (23)		43.86 (23)		117.93 (21)		96.55 (21)	
N	185		194		994		903	

Unstandardized coefficients, standard errors, and levels of significance are reported. Levels of significance \* < 0.1, \*\* < 0.05, \*\*\* < 0.01.

The findings also give some hints about the variation of structural evaluations resulting from the respondents' living situations. Since most Bulgarian females and males have their first child at the beginning of their marriage or cohabitation, they do not need to utilize this child as a means to improve or strengthen their relationships with their partners. This does not apply to individuals with an intimate friend. Their relationships are probably younger and less secure. This may lead to the perception that a first child is an investment in the relationship as it has a high potential to strengthen the bond between the partners. Childless married or cohabiting couples, however, need more likely material and non-material support from their relatives to establish their families and to integrate them in the wider context of kin. Thus, their expectations of closer relationships with parents and relatives are significant motivations to have a first child within the next two years. Finally, the significant sensitivity of respondents to the expectation that a child will increase their security at old age refers to the fact that intergenerational transfers tend to have the character of long-term exchange processes in Bulgaria. Many parents expect to receive support from their children when they are old and many children feel obliged to compensate their parents for the costs and efforts spent on them during their childhood. However, this task is very much associated with the second child.

## **5. Concluding discussion**

The purpose of the foregoing explanations was to discuss the structural value of children under a theoretical and empirical perspective. The theoretical section introduced the concept by arguing that the substantive aspects of the value of children rest on interpersonal exchange relationships between the parents and their children as well as between the parents and their relatives or other members of their social networks. Parents are provided with child-related benefits because of the child-induced changes of these relationships. Children are the direct exchange partners of their parents and supply them with a variety of intrinsic and material benefits. Moreover, in reacting to the birth of a first or another child, relatives or other members of the social environment cause changes in the parents' status, prestige, power, or social recognition. These changes give them access to resources and advantages they did not have before. Therefore, children have a structural value to their parents as their birth induces direct and indirect alterations in the parents' social networks, which build the basis for the provision of child-related benefits.

However, does this structural view offer any progress for research on fertility? At least three answers can be made. First, by addressing the structural preconditions of the value of children, the concept emphasizes that child-related benefits are not automatically given. The direct provision of benefits through the child depends, among other

things, on the quality and character of the relationship between the child and its parents, on the values and goals the parents pursue by having a child (as these determine the resources that the parents are willing to spend on the child), as well as on general role models of parents and children. Moreover, the parents' increase in status, power, or access to resources due to the birth of a child rests on the opportunities offered by the social environment. These opportunities reflect the cultural or social evaluations of parenthood or ideas of an appropriate family size. Thus, the structural value of children enables the identification of the general meanings and implications of fertility by the characteristics of the parents' relationships with their children and the reactions of the larger family or the local community to parenthood.

Second, the concept links the value of children with other theoretical approaches. The perception of the relationships between the parents and their children as processes of reciprocal exchange brings together child-related values with theories of intergenerational transfers. The aspect of postponed reciprocity highlights the mechanism behind the way in which parents are able to ensure the provision of long-term or future advantages. Moreover, as exchange relationships are characterized by exchanges of heterogeneous material and non-material goods, the concept covers the altruistic as well as the instrumental motivations of the parents to transfer resources to their children. There are also overlaps with network-based theories of social capital. As these theories perceive the accumulation of individual social capital as an outcome of interpersonal exchange processes, they address the same structural mechanisms as does the structural value of children. Thus, the direct or indirect material benefits of children can form a substantive part of the parents' social capital. Social capital can be built up purposefully and parents can perceive children as a means for its accumulation. This leads to the general conclusion that parents can intend to have a first or another child in order to improve their social networks by deliberately forming the structural conditions for the provision of child-related benefits.

Third, by following the conclusion above, the concept of the structural value of children helps in understanding the empirical phenomenon that individuals evaluate the birth of a child in terms of its potential to change their social environments in an advantageous way. Of course, individuals hardly evaluate the abstract changes in their social networks. It is more likely that they have the expected outcome of these changes in mind. In this case, structural evaluations work as summarizing assessments, i.e., individuals assume they will profit from the birth of a child without being able to quantify these benefits in detail.

However, the theoretical argument has its shortcomings. One central idea of the structural value of children is that individuals do not perceive an improvement in their social environment as a value in itself, but as an expression of particular benefits that become available due to the child-induced changes in their social networks. Nevertheless, these benefits stand on a weak theoretical ground. Most of them are inductively generated from empirical research and do not rest on deductive derivations from theory (Nauck 2005,

Friedman, Hechter, and Kanazawa 1994). Up to now, this criticism has not been considered intensively in research on fertility. One way to solve this difficulty is the derivation of child-related benefits from the general immanent values all people struggle to fulfill (Nauck 2007, 2005, Nauck and Klaus 2007, Friedman, Hechter, and Kanazawa 1994, Lindenberg 1990, 1991). In this case, the evaluations of children and the related benefits are expressions of these general values, which individuals intend to accomplish in the living-sphere of their families. Moreover, this general perspective of values enables analyses that address how much benefits that can be accomplished in other living spheres, like work or leisure, compete with the values provided by children.

The empirical section of the article explored the expectations of Bulgarian females and males that children will improve their social environments and analyzed the associations of these prospects with their intentions to have a child within the next two years. Similar to results from the United States (Schoen and Tufis 2003, Schoen *et al.* 1997), estimates from multivariate analyses show that structural evaluations are positively correlated with individuals' motivations to have children. The analyses, however, do not identify an aspect of structural evaluation that exerts a constant association with intended fertility among the different subgroups of respondents. This insight is consistent with results from other studies on Bulgaria (Bühler 2005, Bühler and Philipov 2005, Philipov, Spéder, and Billari 2006) that document a high variation by gender and parity of the socioeconomic characteristics influencing individuals' reproductive planning.

Nevertheless, the positive results for structural, child-related evaluations are remarkable, as the models also consider important child-related costs as well as objective characteristics of the respondents and their households. Thus, although people in Bulgaria associate the birth of a first or second child with substantive costs that are a serious argument for postponing or stopping childbirth, the prospect of an improved social environment is to some extent a counterweight to these considerations. Of course, the analyses do not allow for the conclusion that the expected structural benefits of a child outweigh its expected costs. They do not consider the expected net-benefit of a first or second child, as the data do not cover the whole range of child-related benefits and costs.

This limitation also addresses a general problem of the instruments used to measure the structural value of children and their impacts on fertility intentions. They have an *ad hoc* character, which limits their usability for causal analysis. Although the utilization of child-related attitudes to measure child-related values is methodologically meaningful, the statements that address the structural value of children did not emerge from systematic theoretical considerations. Moreover, the statements do not directly address children as a means for improving the respondents' social environments. Thus, an advanced empirical examination of the structural value of children needs a more theory-driven measurement.

## **6. Acknowledgements**

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## Appendix A: Instrument used to measure the expected benefits and costs of children

I am now going to ask you something about having children.

*Interviewer, neither of the possible answers should be assessed as positive or negative.*

	If you would have a child during the next two years, irrespective of whether you really wish to have a child or not, to what extent do you agree that this would:	Comp. disagree	Rather disagree	Neither agree nor disagree	Rather agree	Comp. agree
A	increase your economic difficulties	1	2	3	4	5
B	decrease your chances in your working career and/or higher education	1	2	3	4	5
C	increase your security that at old age because there is someone who cares for you	1	2	3	4	5
D	increase uncertainty in your life	1	2	3	4	5
E	<b><i>This response is for females only!</i></b> increase the physical burden for you because of the pregnancy, the care for the baby, or breast feeding	1	2	3	4	5
F	increase joy and satisfaction in your life	1	2	3	4	5
G	increase worries and preoccupations in the course of your daily life	1	2	3	4	5
H	decrease time for your personal interests, for contacts with friends	1	2	3	4	5
I	increase certainty in your life	1	2	3	4	5
J	increase the closeness between you and your partner	1	2	3	4	5
K	increase the closeness between you and your parents and relatives	1	2	3	4	5
L	mean that a part of you is continued into the future	1	2	3	4	5

Source: Philipov et al. (2007)

## Appendix B.1: Expected benefits of having children by marital status, parity, and gender

### Increase in closeness between the respondent and his/her partner

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity		Parity	
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	22.9	30.0	35.8	41.5	40.7	45.8	27.2	33.7
Rather agree	34.3	40.0	37.5	40.3	35.7	39.0	34.5	38.7
Neither agree nor disagree	33.1	24.0	16.1	13.5	14.3	10.0	23.8	19.3
Rather disagree	6.9	4.1	6.2	3.3	3.9	3.6	8.4	6.1
Completely disagree	2.8	2.0	4.4	1.3	5.4	1.6	6.1	2.2
Total	100.0	100.1	100.0	99.9	100.0	100.0	100.0	100.0
N	568	1,154	614	600	258	251	1,103	1,020
$\chi^2$ (df = 4)	28.252		19.640		8.480		38.533	
Sign.	(0.000)		(0.001)		(0.075)		(0.000)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 54.744$ , sign = 0.000; males:  $\chi^2 = 38.715$ , sign = 0.000.

Single versus married or cohabiting: females:  $\chi^2 = 48.787$ , sign = 0.000; males:  $\chi^2 = 35.257$ , sign = 0.000.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 3.859$ , sign = 0.425; males:  $\chi^2 = 2.743$ , sign = 0.602.

### Increase in closeness between the respondent and his/her parents and relatives

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity		Parity	
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	23.4	24.5	29.4	33.8	34.4	34.3	22.4	24.1
Rather agree	35.1	39.4	32.5	37.8	32.0	37.5	30.1	37.4
Neither agree nor disagree	28.5	25.8	22.3	19.7	20.1	19.9	27.3	24.5
Rather disagree	8.3	8.1	9.5	6.5	7.0	6.4	12.2	9.2
Completely disagree	4.8	2.3	6.4	2.2	6.6	2.0	8.1	4.9
Total	100.1	100.1	100.1	100.0	100.1	100.1	100.1	100.1
N	569	1,154	613	600	259	251	1,101	1,022
$\chi^2$ (df = 4)	10.761		21.222		7.314		23.248	
Sign.	(0.029)		(0.000)		(0.120)		(0.000)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 10.862$ , sign = 0.028; males:  $\chi^2 = 20.209$ , sign = 0.000

Single versus married or cohabiting: females:  $\chi^2 = 14.866$ , sign = 0.000; males:  $\chi^2 = 11.377$ , sign = 0.023.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 3.248$ , sign = 0.071; males:  $\chi^2 = 0.052$ , sign = 1.000.

## Increase in respondent's assurance that at old age there is someone who cares for him/her

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity			
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	15.3	18.4	20.6	21.5	27.0	26.5	18.4	17.5
Rather agree	32.8	33.1	25.1	33.9	26.6	36.8	27.2	32.5
Neither agree nor disagree	29.3	29.6	25.8	22.5	20.1	23.7	25.7	28.5
Rather disagree	13.0	11.8	14.0	12.4	12.7	7.5	15.2	14.1
Completely disagree	9.7	7.1	14.5	9.6	13.5	5.5	13.6	7.5
Total	100.1	100	100.0	99.9	99.9	100.0	100.1	100.1
N	570	1,154	613	613	259	253	1,101	1,032
$\chi^2$ (df = 4)	5.755		21.222		16.245		16.894	
Sign.	(0.218)		(0.000)		(0.003)		(0.002)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 17.972$ , sign = 0.001; males:  $\chi^2 = 12.889$  sign = 0.012.

Single versus married or cohabiting: females:  $\chi^2 = 14.432$ , sign = 0.006; males:  $\chi^2 = 23.395$ , sign = 0.000.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 6.363$ , sign = 0.174; males:  $\chi^2 = 9.891$ , sign = 0.042.

## Appendix B.2: Expected costs of having children by marital status, parity, and gender

### Less time for personal interests and contacts with friends

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity			
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	33.0	26.0	33.0	30.9	32.4	21.2	34.0	20.5
Rather agree	45.7	48.8	45.2	41.1	37.5	44.4	40.3	39.5
Neither agree nor disagree	11.6	14.5	11.1	15.0	12.7	16.8	10.4	20.7
Rather disagree	6.2	8.6	6.3	10.0	12.7	14.0	9.6	13.9
Completely disagree	3.5	2.2	4.4	3.0	4.6	3.6	5.6	5.5
Total	100.0	100.1	100.0	100.0	99.9	100.0	99.9	100.1
N	569	1,157	615	601	259	250	1,103	1,022
$\chi^2$ (df = 4)	15.314		21.222		11.732		9.368	
Sign.	(0.004)		(0.000)		(0.019)		(0.053)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 0.680$ , sign = 0.954; males:  $\chi^2 = 10.562$ , sign = 0.032.

Single versus married or cohabiting: females:  $\chi^2 = 13.007$ , sign = 0.011; males:  $\chi^2 = 11.579$ , sign = 0.021.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 12.103$ , sign = 0.017; males:  $\chi^2 = 9.566$ , sign = 0.048.

## Increase in economic difficulties

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity		Parity	
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	38.5	37.0	39.3	38.2	45.6	33.2	44.5	39.5
Rather agree	44.1	47.0	39.1	43.6	29.7	38.3	34.5	38.4
Neither agree nor disagree	10.0	7.9	8.5	7.3	8.1	13.0	9.4	10.7
Rather disagree	4.9	5.2	7.8	6.2	10.0	11.5	7.4	6.6
Completely disagree	2.5	2.9	5.4	4.7	6.6	4.0	4.1	4.8
Total	100.0	100.0	100.1	100.0	100.0	100.0	99.9	100.0
N	517	1,171	614	615	259	253	1,103	1,032
$\chi^2$ (df = 4)	3.127		3.544		12.598		7.338	
Sign.	(0.537)		(0.471)		(0.013)		(0.119)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 12.879$ , sign = 0.012; males:  $\chi^2 = 5.818$ , sign = 0.213.

Single versus married or cohabiting: females:  $\chi^2 = 27.442$ , sign = 0.000; males:  $\chi^2 = 23.958$ , sign = 0.000.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 7.695$ , sign = 0.103; males:  $\chi^2 = 15.650$ , sign = 0.004.

## Fewer opportunities in working career and/or higher education

	Marital status							
	Single		Intimate friend		Marriage or cohabitation			
	Parity		Parity		Parity		Parity	
	0		0		0		1	
	Females	Males	Females	Males	Females	Males	Females	Males
Completely agree	25.6	12.4	25.1	12.5	22.0	7.5	22.9	8.1
Rather agree	37.8	21.6	32.7	18.1	25.5	8.7	26.1	13.2
Neither agree nor disagree	13.8	21.1	11.1	16.1	7.7	15.8	12.3	17.3
Rather disagree	14.9	28.2	18.2	28.3	22.8	35.6	21.6	31.4
Completely disagree	7.9	16.7	12.9	24.9	22.0	32.4	17.1	30.0
Total	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0
N	571	1,169	614	614	259	253	1,102	1,032
$\chi^2$ (df = 4)	138.588		94.427		9.368		79.994	
Sign.	(0.000)		(0.000)		(0.053)		(0.000)	

Differences between childless respondents:

Single versus intimate friend: females:  $\chi^2 = 13.056$ , sign = 0.011; males:  $\chi^2 = 21.594$ , sign = 0.000.

Single versus married or cohabiting: females:  $\chi^2 = 27.442$ , sign = 0.000; males:  $\chi^2 = 23.958$ , sign = 0.000.

Intimate friend versus married or cohabiting: females:  $\chi^2 = 49.835$ , sign = 0.000; males:  $\chi^2 = 55.306$ , sign = 0.000.

## Appendix C: Variables used in the multivariate analyses and their descriptive statistics

Variable	Marital status								
	Single		With an intimate friend		Marriage or cohabitation				
	Parity	Parity	Parity	Parity	Parity	Parity	Parity	Parity	
	0	0	0	0	0	0	0	0	
	Females	Males	Females	Males	Females	Males	Females	Males	
<b>Dependent variable</b>									
Fertility intention	1.94 (0.901)	1.78 (0.856)	2.11 (0.991)	1.91 (0.918)	2.92 (1.061)	2.88 (1.036)	2.14 (0.994)	2.24 (0.943)	
<b>Perceived benefits</b>									
<i>A first or another child would ...</i>									
<i>... increase the closeness between respondent and his/her partner.</i>									
rather/completely agree	0.59 (0.492)	0.71 (0.453)	0.73 (0.446)	0.82 (0.381)	0.78 (0.416)	0.85 (0.357)	0.61 (0.487)	0.72 (0.448)	
neither agree nor disagree	0.32 (0.466)	0.22 (0.416)	0.16 (0.371)	0.13 (0.337)	0.13 (0.337)	0.10 (0.305)	0.24 (0.428)	0.19 (0.395)	
rather/completely disagree									
<i>Increasing closeness with parents and relatives</i>									
rather/completely agree	0.61 (0.489)	0.65 (0.479)	0.61 (0.488)	0.72 (0.447)	0.69 (0.463)	0.72 (0.452)	0.54 (0.499)	0.62 (0.486)	
neither agree nor disagree	0.28 (0.447)	0.25 (0.432)	0.23 (0.420)	0.19 (0.392)	0.18 (0.388)	0.20 (0.402)	0.27 (0.442)	0.25 (0.431)	
rather/completely disagree									
<i>Increasing old age security</i>									
rather/completely agree	0.49 (0.500)	0.51 (0.500)	0.45 (0.498)	0.54 (0.499)	0.51 (0.501)	0.62 (0.487)	0.45 (0.498)	0.50 (0.500)	
neither agree nor disagree	0.29 (0.454)	0.29 (0.454)	0.26 (0.438)	0.24 (0.428)	0.22 (0.416)	0.30 (0.430)	0.26 (0.437)	0.28 (0.448)	
rather/completely disagree									
<b>Perceived costs</b>									
<i>A first or another child would ...</i>									
<i>... decrease time for respondent's personal interests, for contacts with friends:</i>									
rather/completely agree	0.78 (0.412)	0.75 (0.433)	0.78 (0.417)	0.73 (0.447)	0.68 (0.467)	0.65 (0.477)	0.74 (0.439)	0.60 (0.490)	
neither agree nor disagree	0.12 (0.328)	0.14 (0.349)	0.12 (0.321)	0.15 (0.355)	0.14 (0.343)	0.17 (0.377)	0.10 (0.305)	0.21 (0.405)	
rather/completely disagree									

Appendix C (continued)

Variable	Description	Marital status								
		Single		With an intimate friend		Marriage or cohabitation				
		Parity		Parity		Parity		Parity		
		Females	Males	Females	Males	Females	Males	Females	Males	
		0	0	0	0	0	0	1	1	
		Females	Males	Females	Males	Females	Males	Females	Males	
<b>Perceived costs</b>										
<i>Increasing economic difficulties</i>	A first or another child would ... increase respondent's economic difficulties:									
rather/completely agree	1 = yes, 0 = no	0.83 (0.372)	0.85 (0.356)	0.78 (0.383)	0.82 (0.410)	0.77 (0.424)	0.72 (0.452)	0.79 (0.416)	0.78 (0.416)	
neither agree nor disagree	1 = yes, 0 = no	0.10 (0.303)	0.07 (0.264)	0.09 (0.280)	0.07 (0.260)	0.07 (0.256)	0.11 (0.318)	0.09 (0.293)	0.10 (0.304)	
rather/completely disagree	reference category									
<i>Decreasing career perspectives</i>	... decrease respondent's chances in his/her working career and/or higher education:									
rather/completely agree	1 = yes, 0 = no	0.62 (0.486)	0.33 (0.472)	0.57 (0.496)	0.31 (0.462)	0.46 (0.500)	0.14 (0.352)	0.50 (0.500)	0.22 (0.413)	
neither agree nor disagree	1 = yes, 0 = no	0.15 (0.357)	0.21 (0.406)	0.12 (0.326)	0.16 (0.364)	0.08 (0.265)	0.15 (0.362)	0.12 (0.324)	0.16 (0.369)	
rather/completely disagree	reference category									
<b>Respondent's characteristics:</b>										
Age	Age at time of interview	23.68 (4.180)	23.82 (4.139)	23.98 (4.019)	24.17 (3.563)	25.63 (3.836)	28.54 (4.762)	27.55 (3.970)	31.34 (5.032)	
Age of first child	Age of the first child at time of interview	--	--	--	--	--	--	4.76 (0.642)	4.89 (4.310)	
Cohabitation	Respondent lives in cohabitation: 1 = yes, 0 = no	--	--	--	--	0.49 (0.501)	0.46 (0.500)	--	--	
Duration of partnership	Length of partnership at time of interview	--	--	--	--	2.80 (2.492)	2.81 (0.820)	--	--	
Siblings	Number of siblings the respondent has	1.04 (0.731)	1.051 (0.663)	0.95 (0.508)	0.96 (0.570)	1.02 (0.691)	1.09 (0.806)	1.10 (0.806)	1.04 (0.650)	
Tertiary education	Respondent has completed tertiary education: 1 = yes, 0 = no	0.31 (0.463)	0.09 (0.286)	0.33 (0.472)	0.13 (0.337)	0.40 (0.491)	0.25 (0.436)	0.33 (0.469)	0.18 (0.384)	
Intention to start education	Respondent intends to start education within the next two years: 1 = yes, 0 = no	0.26 (0.437)	0.17 (0.374)	0.25 (0.431)	0.20 (0.398)	0.15 (0.359)	0.11 (0.311)	--	--	
Income from labor	Respondent generated income from employment or self-employment during the last three months: 1 = yes, 0 = no	0.53 (0.500)	0.53 (0.499)	0.63 (0.484)	0.67 (0.472)	0.70 (0.461)	0.82 (0.381)	0.53 (0.500)	0.87 (0.334)	
Religiosity	Respondent perceives himself/herself as a religious person: 1 = yes, 0 = no	0.60 (0.491)	0.41 (0.492)	0.66 (0.473)	0.42 (0.495)	0.58 (0.494)	0.44 (0.497)	0.62 (0.486)	0.43 (0.495)	

## Appendix C (continued)

		Marital status		With an intimate friend		Marriage or cohabitation	
		Single		Parity		Parity	
		Females	Males	Females	Males	Females	Males
Variable	Description	0	0	0	0	0	1
<b>Household's characteristics</b>							
Equivalence income (log)	Logarithm of equivalence income of the household	2.67 (0.680)	2.65 (0.690)	2.80 (0.583)	2.82 (0.679)	2.87 (0.740)	2.87 (0.820)
Countryside	Household is located in the countryside: 1 = yes, 0 = no	0.90 (0.306)	0.83 (0.38)	0.90 (0.301)	0.87 (0.337)	0.85 (0.354)	0.83 (0.377)
N		440	889	457	454	185	194
				994	903		

Means and standard deviations (in parentheses) are reported.