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**Bearing children in unstable times.  
Psychological traits and early parenthood in a lowest-low fertility context,  
Rostock 1990 - 1995**

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Psychological traits and early parenthood in a  
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## ABSTRACT

In this paper, we analyze a unique longitudinal data set from Rostock in Eastern Germany. Data collection began in the communist era and has been followed up until today. Employing proportional-hazard models, we use psychological individual-level measures (such as personality traits, social and cognitive resources, coping styles, etc.) at age 20 as determinants of the subjects' subsequent transition rate to parenthood. We find strong evidence to support the notion that psychological factors function as proximate determinants of differential fertility. We conclude that psychological individual-level data are important in understanding patterns, especially during times when society faces massive and incalculable upheavals.

## 1. INTRODUCTION

A complex web of factors contributes to childbearing decisions in contemporary societies. Economic and social demographic factors have repeatedly been emphasized as the key determinants of fertility differentials, and the literature mostly focuses on such factors. On the other hand, psychological action models have proven to be useful, although they have had a less frequent appearance in key theories of demographic behavior. The work of Miller (1992, 1994, 1995), for instance, shows convincingly that psychological factors, more specifically personality traits, explain an important portion of childbearing motivation. However, since Miller's publications, research on the impact of psychological factors on fertility has been scarce.

Starting from Miller's results, we assume that, within a given population, the variability of personality traits contributes to shape differentials in fertility behavior. Furthermore, we assume in general, that a full explanation of family formation decisions requires a distinguished consideration of psychological mechanisms and factors. It is our purpose, in what follows, to argue and to show that specific psychological factors may contribute to the explanation of population-level phenomena such as fertility levels and trends (von Rosenstiel et. al, 1986, Fawcett, 1973). So far, a psychology of populational processes has frequently been claimed by scholars, but seldom pursued. We suppose that this is mainly due to a lack of suitable data.

In this paper, we exploit the unique opportunity of analyzing a small-scale longitudinal data-set that includes extensive psychological measures collected after 1989, when the Berlin Wall fell. We trace the fertility behavior within the sample for the period between 1990 and 1995 – known as the time of German reunification – and between the subjects' ages 19 and 25. . During this short time span, the Total Fertility Rate

(TFR) in East Germany was almost halved—it declined from 1.5 in 1990 to below 0.8 three years later (see fig. 1).

#### FIG. 1 ABOUT HERE

Although some authors have published reflections on this exceptional drop (Schaich 1998, Dorbritz 1997, Nauck 1995, Meyer 1995), no generally accepted explanation has been given so far. Childbearing patterns in Eastern Germany, even a decade after the political transformation, remain different from those of Western Germany. (Sackmannm, 1999, Conrad et al., 1996). Recent evidence shows some convergence toward the slightly higher fertility levels in Western Germany (Lechner, 2001), even if first births still occur at younger ages in Eastern Germany (Kreyenfeld, 2000, 2001). Thus, notwithstanding these many exploratory attempts, the scientific understanding of the past and present occurrences remains unsatisfactory.

The questions to which this paper shall suggest answers are the following.

- Do psychological measures of personality, decision styles, wishes, or fears, for instance, differ among individuals with respect to their childbearing history in the context of so-called lowest low fertility (Kohler et al., 2001)? In general, can psychological measures contribute to a multidisciplinary program aimed at understanding the transition to parenthood (Hobcraft & Kiernan, 1995)? What psychological traits increase the probability to become parents in early adult years, in contrast to the general trend?
- Are the quality and content of personal consideration of young adults proximate determinants of their fertility behavior?

In section 2, we will outline psychological accounts of fertility in an integrative demographic framework. In section 3, the data, we describe the psychological measures we

used, as well as the main hypotheses. Section 4 describes in brief the statistical methods we used for the analysis of the transition to parenthood. We conclude with , a discussion of our results and some implications for future research.

## 2. PSYCHOLOGICAL DETERMINANTS OF FERTILITY IN AN INTEGRATIVE DEMOGRAPHIC FRAMEWORK

The choices people make with regard to childbearing and family formation are closely connected to features of the actual and perceived societal opportunity structure, to social norms and values (mediated by mass media and institutional arrangements). These choices also reflect a specific logic, i.e. a motivational and decisional set of interdependencies and exclusions throughout their lives. Subjective perception, intrapsychical processing, and realization , however, are certainly dependent on an individual's personality and accumulated life experiences. (Lewis, 1999). Action and social theorists have long been concerned with the question of an adequate model containing variables of different statuses (Coleman, 1986, 1994, Taylor, 1998).

The most rewarding general approach, also from the point of view of a psychologist, is to distinguish macro from micro factors. However, the understanding of psychologists of this distinction goes deeper than what is usually included in sociological or demographic models. It is instead more common to speak of external (extrinsical) and internal (intrinsical) factors. Drawing on theories of individual perception and shaping of the world (see Ryan et al., 1996) we want to define any factor which is not represented within the individual cognitive system, i.e. unless it is perceived and to some extent internalized, as an external one. Instances of such external factors are the position in the labor or marriage market, legal or marital status, sex, income, cultural norms and

values (for instance age-specific ones or factors connected with different marital statuses). We define as internal any factor which is part of the individual cognitive (thinking, knowing), emotional (wanting, fearing), or conative (habits, abilities) subsystem.

This distinction is essential to our model because it helps us to explain why specific changes in people's external context lead to a behavioral change, namely by changing internal prods and pressures (Ryan, 1996, p. 11). Thus, traditional individual-level variables, like gender or income, are considered external to individuals as long as the way in which they affect the individual psyche is not explained (for example in the form of gender-role identity or perceived opportunity structure or satisfaction, respectively).

Starting from these definitions, we readily agree with Hobcraft and Kiernan (1995), that interdisciplinary research on fertility processes is a particularly demanding enterprise. Comprehensive models necessarily need to be complex because fertility behavior has a specific pattern of peculiarities. (a) Fertility varies strongly over time and across places and cultures. (b) Fertility can only be investigated using observational studies, as it cannot be studied under experimental conditions. (c) Fertility is simultaneously influenced by macro- as well as by micro-conditions as well as by the interaction of social players. (d) Regardless of the culture an individual belongs to, becoming a parent means a strong, life-long, and irreversible social transition for him or her. (e) Childbearing events always take place in an intimate social scene of couples and families, hence in a setting that is characterized by dense communication and interdependency. (f) Fertility itself has an impact on the macro level, namely the physical reproduction of the population in which it occurs.

Traditional scientific models of fertility can be ordered between two different poles of theories. The one pole is held by the economist's paradigm (homo economicus or rational choice). It assumes a rational actor performing his or her choices in a market of costs and benefits (Becker, 1988, Easterlin, 1993, Hotz et al., 1997). Researchers have often criticized the generality of this approach, especially for a complex event like becoming a parent. They contrast it with the approach of the second pole. This focuses on norms, habits, or values, based on the idea of homo sociologicus (Cleland & Wilson, 1987, Lesthaeghe, 1995). A central point of their critique is that, "in sum, the majority of rational-choice theories, especially the economical, suffers from applying a far too simple, 'home-made' psychology." (Burkart, 1994, p. 63, our translation)

In order to link our psychological investigation to demographic theorizing, we fall back on a recent approach which tries to appease the sociological and demographic camps. In general, recent models attempt to bring out the interplay of macro and micro factors in fertility processes (Giele & Elder, 1998). Herein, we regard social-psychological models as a crucial link. (Nolte, 1994).

For our analysis, we use the integrating paradigm developed by de Bruijn (de Bruijn, 1999) in order to structure theoretical reasoning, a methodological approach and hypothesis-building. This paradigm describes individual action and choice processes as a dynamic interplay of external and internal factors. For the external side, he suggests the analysis of historical social institutions, both of the formal (health system, educational system, and legislation, for instance) and of the informal type (religion, family and kinship systems, local communities, and gender roles, for instance). These are regarded first and foremost as structuring, meaning-giving, and behavior-guiding both with respect to individual life-course development and to personal considerations in-

volved in choice processes. Internal factors include various specifications of personal considerations and individual endowment, both of which play a crucial role for decision-making throughout one's life. We shall explain them later in more detail. An abridged draft of the general structure of the paradigm is given in Figure 2.

#### FIG. 2 ABOUT HERE

This paradigm is particularly suitable for our investigation because its psychological part is elaborate. This part is consistent with relevant findings of social-psychological research to which de Bruijn refers (Bandura, 1986, Ajzen, 1991). Furthermore, it is highly compatible with the recent psychological concept of social actors, which indicates that individual behavior can only be understood adequately if three different individual subsystems are taken into account: the affective subsystem, the cognitive subsystem, and the conative subsystem (Schwarz & Bohner, 1996, Brunstein et al., 1999).

De Bruijn contends, entirely in accordance with our consideration of external and internal determinants of behavior, that external information influences people's demographic behavior as it translates into the internal factors on which they act (de Bruijn, 1999, p. 85)<sup>1</sup>. He applies theories of decision-making and includes theoretical concepts organized under the terms problem space, motivation structure, styles of decision-making, and perceived control. He concludes that internal factors "can be conceptualized as pertaining to these proximate determinants in addition to fertility behavior itself" (*ibid.*, p. 119). This framework assumes learning and choice processes, embedded into time-dependent social institutions, as the driving engines of demographic behavior.

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<sup>1</sup> In his terminology, these are *contextual information* and *personal considerations*.

We shall elaborate further on the implications of this concept when we describe our variables.

### 3. DATA, MEASURES, AND HYPOTHESES

The data for our empirical investigation stem from an extensive psychological longitudinal survey conducted by the Institute for Medical Psychology of the University of Rostock. This so-called Rostock Longitudinal Study (ROLS, Meyer-Probst & Teichmann, 1984) was commenced in 1970 with the purpose of investigating the life-long impact of biological, social, and psychological risk factors. The initial sample consisted of 1,000 newborn children and their mothers. This sample was examined in 1970/1971 (age=0) and then reduced to a core sample of 300 children who attended the Kinderkrippe (Kindergarten for the very young) in 1972 at age 2. Follow-up studies took place at ages 6 (N=279), 10 (N=268), 14 (N=247), 20 (N=199), and 25 years (N=212), and individuals were also followed up when they left Rostock. Despite sample attrition the data remained representative for this age-cohort (Reis, 1997).

From the standpoint of the study design, German reunification can be regarded as a particularly lucky event because a great amount of data was collected already before this “quasi-experiment” (Bronfenbrenner, 1981) of rapid social change. The subjects of the sample were entering adulthood at the same time as they had to cope with the challenges of a quickly changing labor market and educational system. In general, the first years after German unification can be described as an “orientation period” (Zapf, 1994). Some of our respondents opted for renewed vocational training, others took the chance to migrate to places throughout Germany and Europe (Reis et al., 1996).

In what follows, a set of psychological and other measures from the sixth wave of the study are taken as explanatory variables in a study of the fertility history of subjects during the subsequent five years. The sixth wave was conducted in 1990, when the subjects were twenty years old. In these five years, 41 births occurred , of which 34 were first births. Our analysis is restricted to the latter group because becoming a parent for the first time has a considerable impact on psychological measures, as is well known (Palkovitz & Copes, 1988, Salmela-Aro et al., 2000).

Table 1 summarizes the basic features of the sample and depicts its sociodemographic and psychological features as measured in the sixth wave.

#### TABLE 1 ABOUT HERE

We divide individual measures into three groups following de Brujn's model of fertility decisions, as described in the following sections.

#### 3.1. Sociodemographic measures

We obtained gender, educational attainment, and current relationship status of the subjects in the sixth wave. We then coded gender and the current relationship status as binary variables (female/male, and does/does not have a steady relationship). Information of the attained educational level was receded as a metric variable consisting of the number of years of education.

These variables can be interpreted as indicators of social programs (de Bruijn, 1999, pp. 124-127, Baraldi et al., 1997, pp. 139f.), and thus, as informal "institutions" which trigger fertility behavior without being affected substantially by processes on the individual level. These social programs refer to social statuses which guide individual behavior and give meaning to people's actions.

During early adult years, individuals live a "demographically dense" period within the context of social norms on the order or the timing of events. (Rindfuss, 1991) For instance, Rindfuss et al. (1988) take as a central point of their analysis a normative imperative to become a parent, and they explicitly connect this to religious norms. Such norms could be considered part of a social program. Social contexts reinforce social programs differently. They are chosen according to personality and show much variation. (Reis et al., 2001).

### 3.2. Personal endowment

Personal endowment can be defined as the set of all individual dispositions of behavior or perception. We include intelligence in the analysis as an overall measure of cognitive skills, and personality as an overall measure of an individual's mid-term-stable traits which are significant for behavior. These concepts are operationalized by standard test and questionnaire techniques, which were administered to our subjects in the sixth wave. Intelligence equals a single value, here the I.Q. We furthermore found four personality factors and one describing personal action control, using factor analysis of a 120-item standard personality inventory (TPF, see Becker, 1989). The emerging factors and their significance are given in table 2.

Table 2 ABOUT HERE

### 3.3. Personal considerations

As shown in the above theoretical model, personal considerations which are indicators of the underlying choice process are a particularly complex matter. De Bruijn (1999) suggests taking into account four different aspects: problem space, motivation,

perceived personal control, and decision style. As de Bruijn shows (1999, pp. 92-106) goals and motives are personal knowledge structures (internal contents) which serve as guidelines of perception and behavior (cf. Kruglanski, 1996). They build up a personal problem space (i.e. a perception of alternatives, outcomes, and connected evaluations) as well as subjective motivations.

The distinction between goals and motives cannot be a substantive but rather an analytical one because both are individual dispositions of actions (cf. Asendorpf, 1999, pp. 190-204). However, motives are conceptualized as more comprehensive categories and motivated by the final outcomes of actions (Pittman, 1998). We adopt these theoretical assumptions and construe an overall motive for intimacy in the life course by constructing a motif-variable composed of single goals. This procedure takes into account that family formation falls into the category of reproduction of intimacy (Reis & Patrick, 1996, pp. 535f., for a parallel sociological argument also Huinink, 1995, p. 139, Luhmann, 1982, pp. 183ff.) from the viewpoint of the psychology of motivation,

In our study, an individual's unforced choice answers to questions in an interview setting about the most important desires from and fears in life serve as indicators of the personal problem space in terms of goals to attain and goals to avoid, respectively. The individual's answers are coded into a single variable which indicates an overall desire for intimate relationships, affiliation, and a family. Answers which contain expressions like "I want a family of my own", "a long-term relationship", "family harmony", or "a life with meaning" score on the sum variable with one point each. Non-scoring answers are for example "I want material wealth", "a good job", "health", or "success". Since subjects could give a maximum three answers, the variable ranges from 0 to 3 at maximum.

The same coding design is used for the parallel question for the "most important fears in life". Answers that we code on this item describe an overall fear of losing intimate relationships and affiliation. Scoring answers are, for example, "I fear staying alone/ having no mate", "loss of family harmony" and "loss of meaning". This variable likewise ranges from 0 to 3.

We achieved a measurement of people's cognitive and conative patterns in demanding and decision-requiring situations, i.e. the so-called coping styles, by applying a standard inventory of coping styles (SVT, see Janke et al., 1997). Using factor analysis, we found five different coping style factors out of the 114-item inventory. In fact, their significance is very close to what de Bruijn (1999) describes as styles of decision-making applied to strenuous and difficult situations. It appears tenable to us to use coping-style as measures for decision-styles in this study, because coping-styles are defined as individual traits of dealing with strain or distress. In the questionnaire, subjects are asked for their usual behavior facing such strain or distress. There is convincing evidence that people, when presented with particularly new or confusing situations, want to find familiar patterns and so tend to fall back on decision-making which is based on routine behavior. (Earl, 1986, pp. 56-57, cited by de Bruijn, 1999, p. 108).

The five different coping-styles we found and their significance are described in more detail in table 3.

### Table 3 ABOUT HERE

Since there is evidence that the experienced level of social support and resources influences (Stroebe & Stroebe, 1996, pp. 611f.), we include in the analysis a sum score of four different resources. It captures the subjects' answers on how much they feel supported and backed by their own knowledge and skills, by their family, by their partner,

and by their friends when they plan their future. Since the individual scales range from 1 (low level of perceived support) to 4 (high level of perceived support), the integrated sum score ranges from 4 to 16. High scores indicate an overall high level of perceived individual resources.

### 3.4. Hypotheses

We examine the following hypotheses

- (H1) Variables of each of these three groups (sociodemographic measures, personal endowment, and personal considerations) influence childbearing behavior in young adulthood. An omission of either group leads to a deterioration of the regression model's fit.
- (H2) On the level of social institutions, being female, having a partner, and attaining low education increases the childbearing rate. These are common standard findings by research on structural determinants of childbearing (cf. Hill & Kopp, 2000).
- (H3) On the level of personal endowment, personality traits which provide subjects with a higher social and mental stability (well-being, positive evaluation) will increase the probability of becoming a parent. A high level of general action control and cognitive capacities (intelligence) will delay childbearing. An overall personal tendency toward performance and self actualization will lower the transition rate to parenthood.
- (H4) On the level of personal considerations, a pronatalist individual problem space (i.e. high desire for/ high fear of losing affiliation, strong social support for future development) will increase childbearing rates. Regarding the personal style of coping with demands, we expect a rather heterogeneous pattern.

#### 4. STATISTICAL METHODS

Given that we have data on the exact month, between 1990 and 1995, when individuals made the transition to parenthood for, and that we can consider other individuals censored at the end of 1995, the most appropriate method to analyze first births is event history analysis. Other researchers have also recently recommended such common demography methods for human development research (Yamaguchi & Jin, 1999).

A peculiar problem of this data-set is the small number of cases (199), and the even smaller number of events (34). Due to missing values, the number of first-birth events included in the analysis has even to be reduced to 20 for some parts of the analysis. Using Monte-Carlo studies, Li et al. (1996) have shown, however, that the well-known Cox proportional hazard model (Cox, 1972) is the most appropriate statistical model for time-to-event data in the case of a very small number of events. It is robust to violations of the proportionality assumption, and likelihood-ratio tests based on partial likelihood are well-behaved.

Our first model includes all variables considered in section III. In this analysis (not shown here), four variables turn out to have a significant impact on fertility: the subject's sex, a positively-evaluating personality, an alternative-seeking coping-style, and a strong wish for intimacy in life. A Shoenfeld test rejects the proportionality assumption. We subsequently proceed in two steps.

First, we test the statistical relevance apart from the three variable clusters (i.e. social-demographic variables, personal endowment and personal considerations). In particular, we exclude each group of variables from the regression, and we compute likelihood-ratio tests compared to the full model. The results are shown in table 4.

Table 4 ABOUT HERE

We found the clusters concerning personal endowment and personal considerations to be important contributions to the explanation for the transition to parenthood. Similarly to Miller's results (1992), the variable cluster comprising sociodemographic measures has a less important contribution, and its exclusion from the full model is not rejected by the test. However, we decide to keep sociodemographic measures as control variables in subsequent models.

In the final model, we exclude, step by step measures contradicting the proportionality assumption . These variables are the measures of a self-actualizing personality, of generally perceived action control, and of a controlling coping-style. Neither variable was statistically significant in the first analysis. This adjustment of the model, according to its premises, does not decrease its fit (Likelihood-ratio test:  $p = .51$ ). The corrected model does not violate the proportionality assumption (Shoenfeld test:  $p = .41$ ). We shall report on this model in what follows.

The possibility of drawing quantitative conclusions from the results we obtain is clearly limited by the small number of events. However, throughout the adjustment of the Cox analysis, i.e. by the exclusion of various single variables or clusters of variables, each finding concerning single variables proves a substantial qualitative stability. Coefficients and levels of significance are altogether quite similar for each step of the analysis. We shall argue that the qualitative conclusions drawn from this study paragraph are substantial, whereas quantitative interpretations need larger data sets.

## 5. RESULTS AND DISCUSSION

In the final model, two variables significantly increase first-birth rates: (i) sex and (ii) a positively-evaluating personality. Three variables significantly reduce first birth rates: (i) an evasive, alternative-seeking coping style, (ii) a self-delusive coping-style, (ii) the desire for intimacy, (iv) and a high level of personal and social resources. The results of the final Cox Regression model are shown in table 5. Let us now discuss more in detail the implication of such results for the research hypotheses outlined earlier.

Table 5 ABOUT HERE

### 5.1. The complex requirements for fertility behavior

Regarding our first hypothesis, the findings indicate that a model which simultaneously takes into account sociodemographic factors, measures of individual backgrounds, and personal considerations, applies best to early life course fertility in changing times. We find strong significant impact made by variables from either group. This confirms the first hypothesis. It allows us to conclude that the individual fertility histories of the young adults result from processes involving norms (sociodemographic variables were interpreted as measures of norms in the sense of social programs, cf. our chapter 3.1.), individual biographical learning processes, as well as individual choice processes. In the end, this is also a clear sign of the usefulness and adequacy of the integrating model of de Bruijn. We regard this as an encouraging sign for further elaboration of the notion of "personal considerations as proxies for decisions".

### 5.2. Female fertility and contextual moratorium

We partially confirmed our second hypothesis. As expected, females have a much greater fertility rate among young adults. This fits with the frequently given judgment that fertility analyses on a larger scale need to differentiate between female and male fertility (e. g. Greene & Biddlecom, 2000). It is not possible, though, to do this here because of the small data size.

The results for the other two variables are more surprising. Neither partnership status (i.e., whether the subject currently has a steady relationship or not) nor educational attainment in 1990 (i.e., the total number of years spent in education) significantly affects fertility in the five-year interval. From our perspective, this result can be attributed to the young age of the subjects. First, subjects had much the same educational level in 1990. It can be expected that the major differences in education did not start before 1990.

For our second finding, namely that early union formation does not have any significant influence on childbearing rates, our interpretation reads exactly the same way: On the one hand, societal instability and mobility increased dramatically in early 1990 (when the union measure was taken). Thus, the probability of splitting a union, into which they entered when the GDR was still a state, and of starting a new one might have been very high. In fact, this result corresponds to others from the ROLS describing the period of early adulthood as a "contextual moratorium" (Reis et al., subm.). It is the time of "try and error" cycles of union formation, of going back and forth between parents, peers, and partners and a high rate of moving. That is, the fact whether our subjects had a union or not at the age of 20 in 1990 did not lead to any important consequence for their consecutive transition to parenthood.

### 5.3. The importance of personal stability in turbulent times

We partially confirmed the stability part of the third hypothesis. The strong impact of personality traits describing individuals with a positive appraisal of themselves and of others indicates that this was an important feature in taking the big step toward parenthood in unstable times. In other words, the great demands which societal change made on personal resilience require, or, one could also say “select” a high personal evenness of temperament of persons who were to be potential parents.

As put in the second part of the hypothesis, the model of transition rates to early parenthood did not require specific forms of overall action, control, beliefs, or cognitive skills. To include more specific measures in the model, such as specific social skills (social competence, for instance), might be rewarding from this perspective. Interestingly, a tendency toward self-actualization and personal ambition did not reduce fertility. One can argue that this measurement is not meaningful as a predictor of future life course development when it is taken at an age as young as 20. However, one cannot rule out the possibility that it becomes more relevant at later ages. One should leave this question to future investigations.

### 5.4. True desire waits? Unexpected findings on personal considerations

The most surprising and counter-intuitive findings emerge from testing the fourth hypothesis, which deals with the impact of personal considerations on fertility. We expected a high desire for children, a wish for a long-term relationship. We expected a high evaluation of family and harmony to lead to a higher rate of first birth. We hypothesized the same impact for the availability of personal and social resources. However, a high score in variables, which capture these desires and resources, actually

turns out to substantially decrease the hazard of transition to first parenthood before age 25.

This remarkable finding can perhaps be interpreted as an example of a person-environment interaction effect: Young adults who are particularly affected by the idea of family formation and of continuity of their life course refrained from childbearing during the peak of the political transformation process. It can be argued that adults with these specific goals were particularly sensitive to the ongoing societal transformation process, and they arguably instead acted cautiously and consciously with regard to this subjectively important life domain. They waited and postponed the realization of childbearing ("true desire waits")<sup>2</sup>.

Regarding the observed negative coefficient for personal resources, one can think of at least two possible explanations. Either, the measures of social resources (for instance, family ties) are linked to a highly pronatalist social network (see i.e. Kohler et al., 2001). In this case, the interpretation follows the previous one concerning pro-family desires. That is, subjects with a pro-family support structure probably refrain from early parenthood in order to postpone it instead. Or else, the social resources are independent of a family-appraising environment. In this case, the interpretation would be that subjects who were personally and socially particularly well off during the "Wende" (the German term for the political transformation) were liable to invest their resourceful starting position carefully and to adopt an attitude of "wait and see"<sup>3</sup>.

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<sup>2</sup> There might also be a different interpretation: Subjects who express a strong desire for children might be the ones who perceive the least chance to achieve it. Although this will remain a valuable sign to keep in mind for future analyses, the weak or zero-correlations of Intimacy with resources, well-being, and partnership status do not support this possible interpretation for this sample. Thanks to B. Meyer-Probst for this insight.

<sup>3</sup> Again, the weak bivariate results of a calculated correlation holds a point against a link between resources and wishes. This supports the latter interpretation.

As hypothesized, though, coping styles show a rather heterogeneous picture which provides one more valuable insight. Subjects who report that they react to stress and demands by searching for an easier and more quickly rewarding alternative are not the ones who intended to be parents in the early 1990s in East Germany. In exactly the same way, subjects who reported that they respond to stress by using self-persuasive and rationalizing strategies of "escape" did not enter into parenthood. In an overall view, these are rather comprehensible findings which go along with the notion of parenthood as a long-term and challenging, in part also burdensome, demand. These individual coping-styles, however, prevent the individual from directly pursuing anything , and from planning realistic approaches to personal future planning, which are arguably required with regard to parenthood. Evasive or self-delusive subjects obviously aim at avoiding this.

The results of the other measured styles appear rather mixed. None of these factors is significant at the 0.1 level. It will be particularly rewarding from our perspective, of course, to use the more extensive data-base of the next waves of ROLS in order to draw firmer conclusions and to shed more light on this interesting field of behavior styles.

## 6. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The reported analysis shows that psychological measures are essential in disentangling the two faces of the same coin and to illuminate previously unconsidered relations. On the one hand, given a specific institutional structure, people can be regarded as performing active, maybe idiosyncratic, choices between options and opportunities. These choices more or less follow the content of their past life experiences as well as

elements of their respective problem space. Behavioral habits, that we addressed here as so-called coping-styles, facilitate or hinder the making of certain decisions at specific moments in time. Psychological research can address this by assessing personal concepts (goals and options), by observing habits, or by testing for an individual's personality traits.

On the other hand, societal transformation (or cultural evolution) might also skip the individual level and exert a strong normative impact on people's behavior. In the case of the present study, this results in a great effect of being a woman on having a comparatively early first birth. To include more variables would arguably lead to further relations of that nature. One could say that our results present further evidence to the notion that a cultural or societal situation also chooses (selects) for reproduction people with specific attributes and personal requirements.

Given the scarce fertility histories of the young adults, some of the presented interpretations need further confirmation, of course. However, we have shown a practicable way to address demographic questions in a psychological longitudinal survey, such as the Rostock Longitudinal Study, that includes fertility histories. Compared to the surveys that have previously appeared in the literature and have shown that psychological factors matter (for instance Miller, 1992), the ROLS does not suffer from possible biases, due to retrospective reporting, in psychological measures. It is our intention to also follow the fertility history of the ROLS subjects as they age.

Although our results arise from a small-scale (but longitudinal) survey, we have found comfort in the fact that there is a significant impact of psychological factors on childbearing behavior in a societal situation that will never come back again. Of course,

nothing will be more welcome than a continuation of this stream of research, possibly with large-scale surveys in different social settings and time periods.

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## FIGURES

Fig. 1. The change of the TPR in East and West Germany, 1985 through 1999

Fig. 2. Abridged draft of the general set-up of the integrative model by de Bruijn (our own adaption from de Bruijn's chart p. 175)

Fig. 1. The change of the TFR in East and West Germany, 1985 through 1999

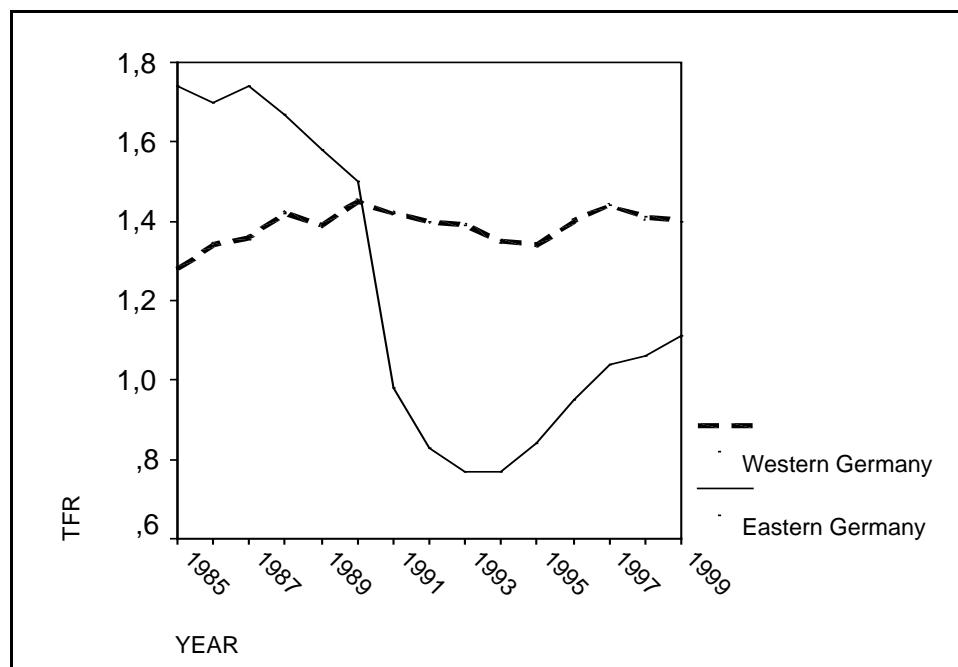
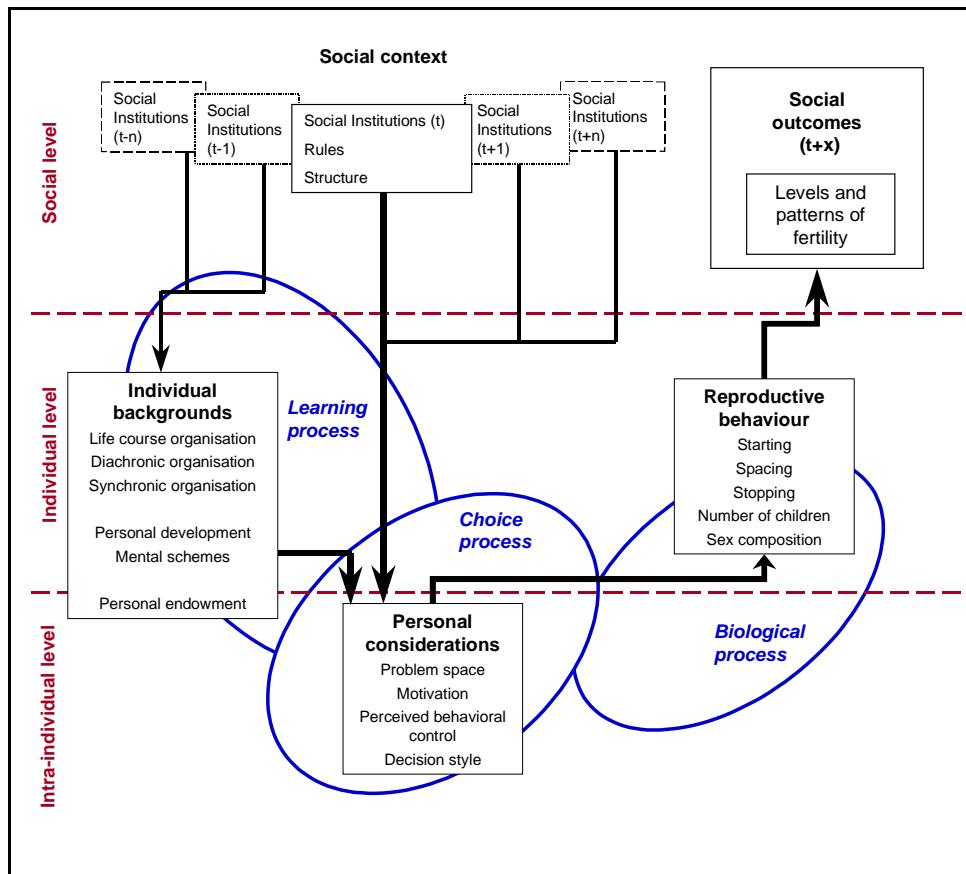


Fig. 2. Abridged draft of the general structure of the integrative model by de Bruijn  
(1999, our own adaption from de Bruijn's chart p. 175)



**TABLES**

Table 1. Sample characteristics and measures of the sixth wave of the ROLS  
(1990/1991)

Table 2. Factors of personal endowment derived from personality inventory TPF

Table 3. Factors of personal coping styles derived from stress inventory SVF

Table 4. Likelihood-ratio test for nested models based on partial likelihood. Values for variable clusters

Table 5. Cox Regression, final model.

**Table 1.** Sample characteristics and measures from the sixth wave of ROLS (1990/1991)

Variable [Method]	(Mean) Value
Number of participants	199
<b>Sociodemographic variables</b>	
Age (years)	20,08
Gender	
Male	96 (48,2%)
Female	103 (51,8%)
Educational attainment (years)	
not finished school (7)	4 %
semi-skilled worker (8)	1,5 %
skilled worker 8 <sup>th</sup> grade (8)	4 %
skilled worker 10 <sup>th</sup> grade (10)	57,8 %
technical college (12)	12,6 %
"occupation with Abitur" (12)	6 %
"Abitur" (high-school) (12)	11,1 %
Have a steady relationship	
Yes	59,3 %
No	40,7 %
<b>Personal endowment</b>	
Intelligence (IQ [MWT])	100,15 (SD: 9,67)
Personality factors [TPF]	
Evaluation, Mental Well-being, Bodily Well-being, Self Actualization, and General action control [TPF]	all z-scores [0;1]
<b>Personal consideration style</b>	
sum score of Desire for Intimate Relationships	.81 (SD: .72)
sum score for Fear of Losing Intimate Relationships	.62 (SD: .70)
sum score of Present Resources	6.43 (SD: 1.77)
Coping styles [SVT]	
Flight, Control, Rationalization, Alternatives, Drug Abuse	all z-scores [0;1]

**Table 2.** Factors of personal endowment derived from personality inventory TPF

Factor no.	Factor name	Eigen-value	% of Variance	Signification
1	Evaluation	3.508	38.978	Positive evaluation of oneself and others. Subjects with high scores are loving and agreeable, mentally sound, have a high self-esteem and positive appraisal of others
2	Mental Well-being	1.374	15.266	Subjects with high scores are more optimistic with regard to their future, more satisfied with their lives and less anxious in general.
3	Bodily Well-being	1.057	11.739	Subjects with high scores report less health-related problems, have the feeling that they are physically and mentally strong enough to cope with demands, and have a higher self-esteem .
4	Self Actuation	.877	9.740	Subjects with high scores are more extraverted, autonomous, and risk-taking, they are performance-oriented and strive for personal control.
5	Action Control	.729	8.101	Subjects with high scores report a more internal locus of control, they think and reason more about decisions, and are less spontaneous and more reflective.

**Table 3.** Factors of personal coping styles derived from stress inventory SVF

Factor no.	Factor name	Eigen-value	% of Variance	Signification
1	Flight	4.512	23.749	Coping by flight. Subjects with high scores tend to withdraw themselves from social contact and to escape from the stressful demand. They also self-accuse and give up more frequently.
2	Control	3.779	19.891	Coping by control. Subjects with high scores perform a direct, tackling and straightforward strategy to obtain control over and react self-responsibly to the stressful demand.
3	Rationalization	1.918	10.097	Coping by rationalization. Subjects with high scores react to stress and demand by persuading themselves that such a situation is unimportant, not <i>really</i> demanding, or not addressing them at all.
4	Alternatives	1.360	7.158	Coping by alternatives. Subjects with high scores prefer strategies of evasion and diversion when being confronted with stress and demands. They prefer turning toward easier alternatives instead.
5	Drug Abuse	1.007	5.301	Coping by self administration of drugs. Subjects with high scores react aggressively and self-aggressively and take medical or non-medical drugs.

**Table 4.** Likelihood-Ratio Test for nested models.  
Values for variable clusters

$H_0$ : Omission of variable cluster does not deteriorate the fit of the model	Comparison with full model		
	Chi2	df	p-value
Social institutions	5.95	3	.1153
Personal endowment	12.53	6	.0512
Personal considerations	39.95	8	.0000

**Table 5.** Cox Regression, final model

Variable	Coefficient	Stand.Error	P > [z]
Gender	1,793	,750	<b>0,017</b>
Relationship status	,047	,607	0,938
Educational attain.	-,270	,188	,0152
I.Q.	-,010	,037	0,779
Evaluation	1,074	,382	<b>0,005</b>
Mental Well-being	-,335	,302	0,268
Bodily Well-being	,545	,370	0,140
Flight	,	,330	0,146
Rationalization	-,433	,249	<b>0,079</b>
Alternatives	-,508	,226	<b>0,024</b>
Drug Abuse	,508	,361	0,159
Desire for Int. Rel.	-1,079	,427	<b>0,011</b>
Fear of Losing Int.	,024	,374	0,949
Personal Ressources	-,335	,196	<b>0,087</b>

Number of observations: 151

Number of events: 19

Results significant on the .1-level in **bold face**