

Discussion Papers

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Eileen Trzcinski
Elke Holst

Setting the Set Point

Initial Predictors of Life Satisfaction in Early Adulthood

Berlin, February 2006



DIW Berlin

German Institute
for Economic Research

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Initial Predictors of Life Satisfaction in Early Adulthood

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Abstract

In this article, we examine the patterns of association among a number of different factors that may contribute to differences in the initial baseline level of subjective well-being among young people in transition to adulthood. By examining the nature and patterns of these associations, we intend to identify potential areas where strategies may be developed—at the individual, micro, or macro level of policy—to influence the determinants of the baseline level of subjective well-being that are not attributable to genetic or inherited traits.

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1 Introduction*

Well-being researchers have developed an impressive and extensive literature on many aspects of the level and trajectory of subjective well-being during adulthood, but the question of how the initial set point is determined is underinvestigated. For several decades, the set point model of happiness has dominated both theory and research on the short and long-term determinants of subjective well-being. Articulated first by Brickman and Campbell (1971), the model is based on the premise that most changes in subjective well-being are transitory, with individuals experiencing but temporary highs and lows in response to positive and negative life events. According to the model, most individuals have a baseline, equilibrium level of happiness to which they adjust after any period of disequilibrium. Although the speed of adjustment may vary for different individuals, the theory holds that over time most individuals will drift back to their equilibrium or set point level of happiness. Early empirical research lent strong support to this theory. Researchers have found, for example, that cohorts tend to experience little variation in subjective well-being across the life cycle (Easterlin 2002). Small scale studies that examined individual reactions to strongly positive events, such as winning the lottery, and strongly negative events, such as experiencing a spinal cord injury or becoming a paraplegic, found that individuals did adjust back to levels of subjective well-being that were relatively lower or higher than the peaks and troughs experienced immediately following the event itself (Brickman, Coates, and Janoff-Bulman, 1978; Silver, 1982 cited in Lucas, Clark, Georgellis & Diener, 2003). Several extensive reviews of this body of literature exist, including Diener, Suh, Lucas, & Smith (1999) and Kahneman, Diner, & Schwarz (1999).

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2 Previous Research on Subjective Well-being: Non-genetic versus Genetic Components

2.1 Non-Genetic Factors: Correlates of Subjective Well-being

Parallel to the findings on the stability of life satisfaction, another extensive body of literature exists that examines demographic and personality correlates of subjective well-being across individuals and countries. Researchers have found that demographic factors, such as marital status, income, social class, ethnicity, and unemployment; personality factors, such as personal control, extraversion, and neuroticism; and social contexts, such as religious involvement, social involvement and uses of leisure, are consistent but relatively weak predictors of life satisfaction. See, for example, Argyle (1999), Clark & Oswald, 2002), Diener & Lucas (1999), Easterlin (2002), Oswald 2002), and Warr (1999) for reviews of this literature.¹

2.1.1 Longitudinal Research

These two sets of findings led to a number of competing hypotheses formulated to explain potentially contradictory processes—relative stability in subjective well-being over time together with strong empirical support for the idea that different states, such as differences in terms of marital status, employment, health status, and so on, are associated with different levels of life satisfaction. In the last decade, the availability of long-term longitudinal panel studies has provided researchers with the data to investigate more thoroughly the processes underlying the set point theory of happiness. Specifically, researchers have made use of the power provided by long-term longitudinal studies, particularly the German Socio-Economic Panel (see below for a description of the GSOEP), to test alternative theories concerning the stability of subjective well-being over the life cycle, the extent to which individuals adapt to events, the endogeneity of certain events relative to baseline life satisfaction, and the speed with which adaptation occurs. Long-term panel studies have also allowed researchers to investigate how adaptation responses vary systematically across individuals. Rather than replacing the set point theory of happiness with a major new paradigm shift in our understanding of

¹ Kahneman, Diener, & Schwarz (1999) also provide an excellent and comprehensive set of articles that systematically reviews all the major components of well-being and hedonic psychology.

happiness and life satisfaction, these studies have produced a set of findings that have led to refinements in the theory and to an understanding of its limitations.

Three studies that have made use of panel data are Lucas, Clark, Georgellis, & Diener (2003, 2004) and Fujita and Diener (2005). All three used data from the German Socio-Economic Panel. In the first study, Lucas et al. (2003) examined reactions to changes in marital status. They summarized their conclusions as follows:

- a. happy people are more likely to get and stay married, and these selection effects are at least partially responsible for the widely documented association between marital status and subjective well-being (see also Frey and Stutzer, 2004);
- b. on average, people adapt quickly and completely to marriage, and they adapt more slowly to widowhood (though even in this case, adaptation is close to complete after about 8 years);
- c. there are substantial individual differences in the extent to which people adapt; and
- d. the extent to which people adapt is strongly related to the degree to which they react to the initial event—those individuals who reacted strongly were still far from baseline levels years after the event (Lucas et al., 2003: 538).

In the second study, Lucas et al. (2004) examined the short and long term effects of single and multiple spells of unemployment. They concluded that unemployment is one of the few life cycle events that can create a new and lasting set point for subjective well-being. However, the initial level of life satisfaction still played an important role in that it functioned as a predictor of whether an individual experienced multiple spells of unemployment—individuals who experienced more than one period of unemployment during the 15 years of the study began the study less satisfied than individuals who experienced only one spell of unemployment. Furthermore, even for individuals whose satisfaction dropped dramatically after unemployment, they observed some rebound toward the individual's baseline before the unemployment occurred.

The findings of Fujita and Diener (2005) challenged the notion of a rigid and unchanging level of life satisfaction across all individuals. They found that life satisfaction changed significantly across the life cycle for about a quarter of the survey respondents. Thus, despite evidence that life satisfaction can change substantially for some individuals, 75% of the individuals surveyed did not report significant changes in 5-year average well-being when meas-

ured over a period of many years. Based on these findings, they argued that their results are compatible with a “soft set point” that does encompass change for some individuals.

2.2 Personality, Temperament and the Genetic Component of Happiness

Because cross-sectional and panel studies of individual well-being typically explain far less than 50% of the variance in levels of subjective well-being, theorists and researchers have frequently pointed to the role of genetic factors in determining well-being and happiness levels. A key study on the heritability of happiness is the study of Lykken and Tellegen (1996). In their study of subjective well-being in a sample of twins, Lykken and Tellegen’s methodology for assessing the genetic component of happiness consisted of calculating the correlation of one twin’s score at period one with the other twin’s score at period two measured 10 years following. Based on these results, they concluded “the disattenuated monozygotic (MZ) correlation suggests that the stable component of well-being (i.e., trait happiness) is largely determined genetically (1996: 188).” Their conclusions and interpretations are frequently cited within the literature. Their interpretation of these results, however, provides no explanation for the lack of correlation between dizygotic twins—in their argument the genetic effect on happiness only occurs in a situation where all genes are identical. Even in a period increasingly dominated by the effects of genes and genomes on human behavior and health risks, these results seem somewhat extreme—no genetic effects for the overlapping genetic mapping of non-identical siblings, but an almost deterministic effect for the identical genetic mappings of monozygotic twins.

It is also not unusual to find temperament and personality factors attributed to the inheritance of genetic traits, even among subjective well-being scholars who are not heritability researchers, as the following passage from Diener and Lucas (1999) illustrates:

...Emotional styles that are *to some extent inherited, appear early in life, remain stable in adulthood, and generalize across situation and domains*. Although the limits of this stability in the face of environmental change are unclear, theories that only focus on external influences on SWB ignore a substantial source of variation in happiness reports.

The influence of genetics and personality suggest a limit on the degree to which policy can increase subjective well-being (1999: 226-227).

Fujita and Diener (2005) also hypothesized that personality would be a factor contributing to substantial stability in life satisfaction. As noted above, they found that the majority of individuals report long term stability in self-reported subjective life satisfaction. On the basis of these findings, they concluded that this stability is “consistent with the idea that a person’s inherited temperament exerts an influence on subjective well-being” (2005: 162) and that “it is substantially influenced by one’s inherited predispositions” (2005: 164). Frey and Stutzer (2002) also invoke genetic arguments to explain unexplained variation in adult life satisfaction.

3 Research on Effects of Childhood and Adolescent Experiences on Adult Outcomes

Because inherited predispositions are not measured, one must guard against the use of genetic arguments as the cause of otherwise unexplained variance in subjective well-being both across different individuals at the same time period and across the life cycle. Caution is particularly important in subjective well-being research, which has not yet developed an extensive body of research linking environmental factors and family characteristics to the initial formation of the set point for an individual. Considerable empirical evidence does exist, however, linking other adult outcomes, including personality level outcomes, to childhood and adolescent environments and life cycle events experienced before adulthood. Parental divorce, for example, is associated with a range of negative adult outcomes. On average, adults who experienced a parental divorce have lower psychological well-being, more behavioral problems, less education, lower job status, lower standard of living, lower marital satisfaction, heightened risk of divorce, heightened risk of being a single parent, poorer physical health—all of these outcomes are also correlates of subjective well-being. When the divorce is also associated with violence, the effects are even more pronounced. (See Amato & Cheadle, 2005 Amato & Sobolewski, 2001, Amato, 2000, 1999 and McNeal & Amato, 1998 for reviews of this literature). Considerable research also documents long-term consequences of poverty and social exclusion during childhood and adolescence (see, for example, Duncan & Brooks-Gunn, 1997 and Danziger & Haveman, 2001, for reviews of this literature). How these kinds of experiences shape or influence the formation of a set point level of well-being, however, is not yet known.

4 Overview of Major Purposes

The current study allows us to examine the patterns of association among a number of different factors that may contribute to differences in the initial baseline level of subjective well-being among young people in transition to adulthood. Although we know that life satisfaction is relatively stable throughout adulthood with few factors leading to long term increases or decreases in the baseline of life satisfaction over time, we do not know very much about the determinants of baseline life satisfaction. Our own study addresses this question by looking at how demographic and socio-economic characteristics of the young persons and their parents, personality traits of the young persons, the quality and quantity of relationships as reported by the young person, the parent's level of life satisfaction, and other measures of satisfaction for the young person are related to the initial assessment of life satisfaction by the individual in late adolescence. To the extent that such factors are associated with variations in self-reported levels of life satisfaction, the potential then exists to formulate practices and policies that can have both short and long-term consequences for influencing individual subjective well-being. A failure to find such correlations would suggest more support for arguments positing a stronger causative role for genetic factors, with a corresponding lack of potential to influence baseline levels of subjective well-being.

5 Methods

5.1 Data

The German SOEP is a wide-ranging representative longitudinal study of private households. It provides information on all household members, consisting of Germans living in the old and new German states, foreigners, and recent immigrants to Germany. The panel was started in 1984. In 2004, there were nearly 12,000 households and more than 22,000 persons sampled. Some of the many topics include household composition, occupational biographies, employment, earnings, health, and satisfaction indicators. Since the year 2000, themes related specifically to children and teenagers were integrated into the SOEP by a *youth questionnaire*. It contains, in particular, retrospective type questions on school career, music, education and sport, as well as on the current life situation. In addition numerous prospective questions inquire about educational and further training plans and about expectations on future career and family. This data on teenagers can be connected to the life history of the parents, because they (as well as all other household members aged 17 and older) are also surveyed in SOEP. This dataset allows a variety of analyses, including intergenerational studies. In 2000 a pre-test was carried out with 232 teenagers who lived in SOEP-households. An expanded and revised questionnaire was completed by 618 teenagers between the ages of 17 and 19 in 2001.² From the year 2002 on each 17 year-old who is personally surveyed for the first time in a SOEP-household will begin his/her "survey career" by completing the youth questionnaire as well as the standard adult questionnaire. The data contain 1202 people so far. In our analyses, we use all 17 years who responded to youth questionnaire during the period 2001 to 2004. Our goal in this paper is to link the initial measurement of life satisfaction in late adolescence with measures from the youth questionnaire of the German SOEP, the household questionnaire, and the individual questionnaires for the parents. Our long-term goal is to link household and parental information over the entire period of early childhood, middle childhood and early adolescence to the initial measure of life satisfaction at age 17 and to examine how these factors continue to influence life satisfaction across the life cycle.

² See SOEP Group (2001) for a detailed description of the survey. Full copies of all the questionnaires are available in English at www.diw.de/english/sop/service/fragen/index.html.

5.2 Model and Estimation Techniques

In the initial stages of our estimation, we used OLS estimation to refine our model. We then used maximum likelihood estimation techniques to estimate an equation for subjective life satisfaction that contained three endogenous variables. We used an instrumental variable approach in order to take into account potential correlations between the error term of primary equation, subjective well-being of the adolescent, and the error terms of subjective life satisfaction of the mother, personal control and satisfaction with grades. See Johnston and Dinardo (1997) and Gujarati (2003) for a discussion of the use of maximum likelihood techniques to estimate a system of equations with instrumental variables. Specifically, we estimated the following equation for each adolescent in our sample:

$$(1) \text{ SBW} = \beta + \beta_1 \text{ SBW Mother} + \beta_2 \text{ PerCon} + \beta_3 \text{ SatGrades} + X\gamma + \mu$$

where

SBW = Subjective well-being of the adolescent

SBW Mother = Subjective well-being of the mother (estimated with instrumental variables)

PerCon = Adolescent's assessment of personal control (estimated with instrumental variables)

SatGrades = Adolescent's satisfaction with grades (estimated with instrumental variables)

X = Vector of exogenous predictor variables, including variables that measured personal relationships, family composition, income and economic hardship, personality traits and attitudes, parental employment and unemployment, demographic variables and education

μ = error term

The use of an instrumental variable approach provides a strong indirect test of whether any correlations observed between the subjective well-being of the adolescent and each of the three variables--SBW Mother, PerCon, and SatGrades--can reasonably be attributed to genetic factors. For example, if we were to observe strong correlations between the subjective well-

being of the adolescent and the subjective well-being of his/her mother, shared genetic factors could theoretically be responsible for this association. Similarly, genetic factors that account for relatively high or relatively low levels of personal control could also account for correspondingly high or low levels of reported subjective well-being. By using the method of instrumental variables to estimate each of these predictor variables, we are able to remove correlations that occur because shared genetic traits or some other factor result in a correlation between the subjective well-being of the mother and the error term associated with the error term of her adolescent's subjective well-being.

5.3 Variable Selection

5.3.1 Subjective Life Satisfaction

In each interviewing year of the SOEP, every adult household member is asked to rank their overall life satisfaction. The level of life satisfaction is based on the question: "Finally, we would like to ask about your overall level of life satisfaction. Please answer again according to the following scale, "0" means completely and totally dissatisfied; "10" means completely and totally satisfied. How satisfied are you at the present time, all things considered, with your life?" The answers are evaluated as the average value of the 11-point scale. We used this measure for subjective life satisfaction for the adolescent and his/her mother.

5.3.2 Personal Control

In a review of the empirical and theoretical literature linking personal control and well-being, Peterson (1999) found a consistent correlation between personal control and well-being. He also emphasized that although some theorists have equated personal control and well-being, the empirical evidence does not support such an equivalency. Instead he argued that both theoretically and empirically it is more useful and accurate to view personal control as an enabling condition for well-being. In our model, we include personal control as a predictor variable for the life satisfaction of the youth. However, because of the high correlations between personal control and life satisfaction that have been observed in empirical studies, we treat personal control as endogenous and use an instrumental variable approach in our estimation. The adolescent's assessment of personal control is based on a set of four responses to a 6 item Likert scale designed to ascertain which factors the adolescents considered the most

important for achieving success and improving one's social situation in Germany (Cronbach's $\alpha = .63$). Examples of items include *I have control over my own destiny*, *Success or failure in life is largely a question of fate or luck*, and *I have often had the experience that others have control over my life*.

5.3.3 Satisfaction with Grades

Research on subjective well-being for adults consistently finds considerable correlation among different domains of subjective well-being, for example, between life satisfaction and job satisfaction (Warr, 1999). For young people, satisfaction with grades represents an important dimension of satisfaction because school is a more central activity for most adolescents than work. We used three components to construct the overall index of satisfaction with grades (school grades in general, grades in German, and grades in mathematics), for each item responses ranged from 0 (unsatisfied) to 11 (satisfied).

5.3.4 Personal Relationships

Links between close relationships and quality of life are well-established (Myers, 1999). Hence we included a number of measures to assess the level and quality of an adolescent's relationships. The first measure relates to the number of relationships that the adolescent judges to be important or very important. The adolescent was given a list of nine individuals (mother, father, girlfriend, boyfriend, etc.) who could potentially be "especially important in your life at this time". We constructed this variable by counting the number of individuals for whom the adolescent checked important or very important; the variable range was from "0" to "9" important to very important persons.

We also included measures to assess the quality of the adolescents' relationship with their mothers and fathers. For relationship with mother, we used an index constructed from 7 items with 5 potential responses ranging from very often to never. Specific items included *How often does your mother talk to you about things you do or experience; ask you for your opinion before they decide something that affects you, etc.* Because of missing data for absent fathers, we used a different question for relationship with father that assessed level of conflict. We constructed a dummy variables based on the question *How often do you argue or fight with the following people (your father)?* A dummy variable was included for (1) Fight very often or often, (2) Fight sometimes (3) No such person in my life, with the excluded category

of seldom or never. This specification allowed a test of whether the associations between negative, positive, and no relationship and well-being. This specification also allowed us to investigate the effects of quality of relationship with father in comparison with no relationship with father.

Finally, we included a set of dummy variables that indicated whether the adolescent fought often or very often about grades with both parents, mother only, or father only; the excluded category was did not fight often or very often with either parent about grades.

5.3.5 Family Composition

One of the most robust findings in subjective well-being research concerns the relationship between marital status and subjective well-being (Lucas, Clark, Georgellis, & Diener (2003, 2004) and Fujita and Diener (2005)). As noted above, empirical evidence linking adult outcomes to family composition during childhood and adolescence is also strong and consistent. The German SOEP provides information on the adolescent's living situation throughout the entire period of childhood and adolescence. Based on this information, we constructed a set of dummy variables to measure family composition during the first 15 years of the young person's life. The first group included a set of four mutually-exclusive dummy variables—living with both parents entire life, living some time with stepparent, living some time in non-traditional setting (other relatives, foster parents, in a home), excluded variable: other. The second set indicated whether the father or the mother of the adolescent was deceased and the final set indicated whether the adolescent had contact with his or her father.

5.3.6 Income and Economic Hardship

Based on decades of research, several stylized facts exist concerning the relationship between income, economic hardship, and subjective well-being. In cross-sectional analyses both at the country and interpersonal level, higher income is associated with higher subjective well-being. The measured effects are strongest at low and very low levels of income, where increases in income that are used to provide for basic human needs do lead to more substantial increases in subjective well-being than increases in income for those who are above poverty-level income. Across time, however, rising real incomes show a much weaker association with changes in subjective well-being, leading researchers to formulate theories concerning the importance of relative versus absolute income. See Easterlin (2002), Frey and Stutzer

(2002), and Oswald (2002) for reviews of this literature. We used three types of variables to model income and economic hardship. The first was household income specified as the natural log of the yearly household equivalent income / 1000.³ The second two sets measured economic hardship with dummy variables—one set for the condition of the apartment (apartment in poor condition, apartment needs some repair, excluded category other) and the other for financial worries (major worries, some worries, excluded category other). The natural log of income and the condition of the apartment were household level variables; the assessment of financial worries was reported by the adolescent's mother.

5.3.7 Personality traits and attitudes

According to Diener and Lucas (1999), research has shown personality traits and adult subjective well-being to be strongly and robustly correlated. Major traits that have been studied include extraversion, neuroticism, self-esteem, self-efficacy and optimism. Diener and Lucas conclude their review of the literature with the observation that “SWB ratings reflect a stable and consistent phenomenon that is theoretically and empirically related to personality constructs” (1999: 226). However, they also note that the direction and strength of these relationships and the pathways from personality traits to subjective well-being are not unequivocally known.

As exogenous variables, we included two attitudinal variables that could also be interpreted as personality traits. The first measured the adolescent's assessment of future success on number of different domains related to school and work. This measure was based on an index of 4 items for which the adolescent was asked to assess the probability that that they would receive a training or university slot in your preferred field, successfully finish training or university studies, find a job in your field, be successful and “get ahead”. Eleven choices were provided, ranging from “0” to “100” percent probability. This probability of success measure can also be interpreted as a measure of optimism.

Our second index measured self-efficacy by assessing what the adolescent views as the key to success and social mobility. Factor analyses indicated that the self-efficacy construct had

³ Income is imputed in case of item-non-response. See for the method of the provided data Frick and Grabka (2005): Item-Non-Response on Income Questions in Panel surveys: Incidence, Imputation and the Impact on the Income Distribution. Allgemeines Statistisches Archiv (ASTA) 89, 49-61.

separate positive and negative components. Positive self-efficacy consisted of five items assessing the importance of effort, such as success through working hard, success through specialized training, success through school grades, results, and success through initiative (Cronbach's $\alpha=0.62$). Negative self-efficacy contained six items that measured the importance of exploitation, ruthlessness and personal connections and wealth, such as success through exploiting others, success through family background success through being tough, ruthless (Cronbach's $\alpha=0.76$). For both components, each item was ranked on a four point scale ranging from *agree completely* to *don't agree at all*.

5.3.8 Life Participation

A major theme within subjective well-being research that has received considerable empirical and theoretical attention concerns the uses of leisure and the level of satisfaction attached to different kinds of participation in life tasks. This literature spans philosophical dimensions, such as Scitovsky's *The Joyless Economy* (1992) and Amartya Sen's (2002) extensive writings on capability and well-being to examinations of the association of hours of television viewing with subjective well-being (see Cantor and Sanderson, 1999 for a review of how leisure and participation in life tasks affect well-being). In our model, we included three sets of dummy variables to measure how the adolescent spends time when not working or in school: (1) the adolescent engages in sporting activities at least once a week; (2) the adolescent spends some time reading each day, and (3) the adolescent spends some day each day doing nothing.

5.3.9 Parental Employment and Unemployment

Unemployment is strongly correlated with decreases in adult subjective well-being (Clark and Oswald, 2002; Di Tella, MacCulloch, and Oswald, 2002, and Lucas, Clark, Georgellis, and Diener, 2004). For adolescents, however, recent literature suggests that maternal employment is associated with negative outcomes for adolescents under certain conditions (Trzcinski, Brandell, Ferro, and Smith, 2005 and Brooks, Hair, and Zaslow, 2001). In order to test whether employment and unemployment are associated with subjective life satisfaction, we included three employment variables: number of months that the mother was unemployed in the previous year, a dummy variable indicating that the mother was employed full-time for 12

months in the previous year, and a dummy variable indicating that the mother was employed part-time for 12 months in the previous.⁴

5.3.10 Demographic Variables

We included a set of dummy variables that indicates whether the adolescent is West German, East German (excluded category), or non-German. We also include a dummy variable for gender.

5.3.11 Education Variables

Finally, we also included a set of variables to indicate the adolescent's school aspirations. This variable was constructed based on the highest degree received, if the adolescent indicated that he or she had no additional aspirations for education and on the highest degree expected, in cases where the adolescent intended to pursue a higher degree. Hence this variable is a mixed measure of educational achievement and aspirations. Future research will be able to differentiate more fully between these two effects, however, because our research only focuses on the adolescent's educational achievement and aspirations at age 17, it is impossible for us to separate these effects.

⁴ In our preliminary regressions, we also include unemployment measures for the father, but in no equation were these variables significant—a finding that may result from a compounding of the effect of no father versus unemployed father.

6 Results

Table 1 presents descriptive statistics; Table 2 presents ML estimates for subjective life satisfaction for the adolescents. Table 3 presents the results for the estimation of each of the endogenous variables and includes the variables for each of the three endogenous variables estimated via instrumental variables (see Equation 1 above). Mean level of subjective life satisfaction for the adolescents in our survey was 7.63 with a standard deviation of 1.52. This level substantially exceeds the mean level for their mothers, 6.55 with a larger standard deviation of 1.85 (see Table 1).

6.1 Subjective Life Satisfaction of Mother

This variable, which achieved a high level of statistical significance, was positively related to the life satisfaction of the adolescent (Table 2). Based on the estimated coefficient of 0.118, the difference in predicted life satisfaction for an adolescent with a mother whose life satisfaction was one standard deviation above the mean versus one standard deviation beneath the mean was approximately .44 points.⁵ Table 3, which shows the instrumental variable estimation for subjective life satisfaction of mother, indicates that higher levels of maternal subjective well-being were positively related to household income and negatively related to poor housing conditions, unemployment, and financial worries.

6.2 Personal Control

Adolescents who scored higher on the domain of personal control had higher predicted levels of subjective well-being, that is, adolescents who felt that they had more control over their life tended to have higher levels of life satisfaction. The size of this association was substantial—a predicted difference of .60 points for an adolescent who scored one standard deviation beneath the mean compared with an adolescent who scored one standard deviation above the mean.⁶ The results presented in Table 3 show that personal control was positively associated with adolescent engagement in sport and daily reading, with household composition, and with self-efficacy. Males also reported higher levels of personal control than females. Negative

⁵ $.118 \text{ (coefficient)} * (2 * \text{standard deviation of subjective life satisfaction of mother } 1.85) = .44$

associations were observed for adolescents who report that they did nothing daily and who lived in families where mothers report some or major worries about the family's financial situation.

6.3 Satisfaction with Grades

Our third and final endogenous variable was the adolescent's assessment of satisfaction with grades. Here the association was also positive and statistically significant, with the size of the predicted effect approximately the same as for mother's subjective well-being, with each standard deviation difference associated with a .20 point difference in predicted life satisfaction for the adolescent. According to the results in Table 3, adolescents who were foreigners or immigrants reported higher satisfaction with grades than did West German adolescents, who in turn reported higher levels of satisfaction than their East German counterparts. A positive relationship was observed between the adolescent's assessment of probability of future success and satisfaction with grades. A positive relationship also existed between actual grades and satisfaction with grades.⁷

6.4 Personal Relationships

Our results for adolescents are consistent with past research on the importance of relationships, particularly high quality relationships, in predicting levels of subjective well-being for adults. Adolescents who reported a higher quality of relationship with their mothers also reported higher levels of subjective well-being than did adolescents with a lower quality of relationship with their mothers. When this result is interpreted in conjunction with the strong associations between adolescent subjective well-being and other maternal variables, such as maternal subjective well-being, her assessment of financial worries, and her employment status, the cumulative size of predicted changes in adolescent subjective well-being is substantial. Quantity of relationships was only marginally significant as was our measure of level of conflict with father. Conflicts with mother and/or father were, however, strong and statistically significant predictors of an adolescent's satisfaction with their grades—a finding

⁶ .641 (coefficient) * (2 * standard deviation of personal control .47) = .60

⁷ Please note that the negative coefficient on grades stems from how grades are awarded in Germany—a "one" represents the highest grade possible; a "six" the lowest possible grade.

that suggests that adolescent-parental conflict may affect subjective life satisfaction via mediating variables.

6.5 Family Composition, Income and Economic Hardship

Despite strong associations that have been found in past research between adolescent outcomes and family composition, we found no statistically significant association between family composition and subjective well-being for the adolescent. Nor did we find strong direct associations between adolescent subjective well-being and our measures of household income. In the direct estimate of subjective well-being for the adolescent, increases in income were marginally statistically associated with increases in well-being. Mother's assessment of financial worries, however, was associated with both direct and indirect—via mother's subjective well-being—decreases in the predicted level of well-being for the adolescent. Indirect associations were also observed for the variables measuring whether the apartment was in poor condition or in need of repairs, which were strongly associated with mother's subjective well-being. In addition, household income was far more strongly associated with mother's well-being than with adolescent's well-being, suggesting that mothers may mediate potential effects of income and economic hardship through their own levels of subjective well-being.

6.6 Personality traits and attitudes

Among adolescents in our study, those with higher assessments of their probability of success in education and work had higher levels of subjective well-being and higher levels of satisfaction with grades, a result that is consistent with findings concerning the link between optimism and subjective well-being for adults. In our preliminary models, we found no direct association between self-efficacy and subjective well-being, but we did find an indirect association via a very strong positive relationship between self-efficacy and personal control in the instrumental variable estimation.

6.7 Life Participation

In contrast to the subjective well-being literature on adults, we did not find significant direct associations between our three measures of life participation and adolescent subjective well-being. These variables were, however, statistically significant predictors in our instrumental

variable estimation of personal control—adolescents who reported that they were active in sport and who reported that they read daily reported higher levels of personal control, whereas those who reported they did nothing on a daily basis had lower reported levels of personal control. These results suggest that how adolescents spend their time may indirectly affect subjective well-being through influencing other important personality constructs, such as personal control, that in turn may affect levels of subjective well-being.

6.8 Maternal Employment and Unemployment

As noted above, unemployment is a critical variable in predicting both level and changes in adult subjective well-being. For adolescents, maternal unemployment was associated with both direct and indirect associations with subjective well-being. Each month of maternal unemployment was associated with decreases in adolescent subjective well-being (-.043 points for each month or a decrease of more than one half point for adolescents whose mothers were unemployed for the entire year). This coefficient was approximately one-half the magnitude of the coefficient (-.097) for months of unemployment in the instrumental variable equation for mother's subjective well-being. Adolescent's whose mothers worked the entire year also reported lower levels of subjective well-being—for full-time work, a decrease of -.279 points and for part-time work, a decrease of -.197 compared with adolescents whose mothers were not employed the entire year.

6.9 Demographic and Education Variables

In the direct estimates of adolescent well-being, demographic variables only achieved marginal significance, with immigrants reporting higher levels of well-being than West German and East German adolescents. Males also had marginally higher levels of subjective well-being than females. Stronger associations were observed, however, in the instrumental variable equations. Our final set of variables assessed whether associations existed between the adolescent's educational aspirations and subjective well-being. Grades in German and in math were also included as predictors in our instrumental variable estimation of satisfaction with grades. Those adolescents who had or expected no formal degree reported the lowest level of satisfaction. Not surprisingly, higher grades were associated with higher levels of satisfaction about grades, with the absolute size of the coefficients considerably higher for grades in mathematics (.817) than in German (.529).

7 Limitations

In terms of our long-term goal, which is to learn how experiences during early childhood, middle childhood and adolescence affect the baseline level of subjective life satisfaction in adulthood, our current study has limitations. Our design is cross-sectional in nature; the alpha coefficients on a number of variables are relatively low; and our model focuses more extensively on variables that examine links between maternal variables rather than paternal variables and current subjective life satisfaction for the 17 year olds in our sample. For the more modest goal of this article, these limitations are less problematic. For example, a cross-sectional design is likely to understate rather than overstate the strength of associations between the subjective well-being of adolescents and our predictor variables. As noted above, previous research on long term effects of the socio-economic and psychological characteristics of family of origin consistently find the strongest associations between adolescent outcomes and the duration of different patterns of income and economic hardship that occurred earlier in the life cycle. Hence, if an adolescent lived in a family where the parents experienced frequent and/or long spells of unemployment or where the parents reported major financial worries for many years during the early and middle childhood period for the adolescent, the effects of such an experience may far exceed the effects of a temporary hardship experienced at one point during late adolescence. In the cross-sectional evidence, for example, we cannot differentiate between an adolescent whose parents experienced many periods of economic hardship, but where the current situation is less problematic, and an adolescent who experienced little economic hardship during early and middle childhood, but whose parents are temporarily expressing a one time spell of economic difficulties. Relatively low alpha coefficients generally produce difficulties for analyses because of the lack of precision in measuring the underlying concept—a problem that results in less efficiency and in understated levels of statistical significance. The greater emphasis on maternal variables in our study also understates potential effects of parents on the adolescent's well-being because we have more limited predictors for the fathers. At this point, however, we did not want to separately analyze adolescents in two-parent households because of well-documented effects of separation and divorce on child and adolescent outcomes. In future research, we intend to develop more complex models that enable us to exploit the longitudinal features of the German SOEP and to address more comprehensively our core long-term research question.

8 Discussion, Conclusions, and Policy Implications

As noted above in our literature review, subjective well-being researchers frequently fall back on genetic arguments to account for unexplained variations in levels and stability patterns of happiness and well-being reported by adults. Our purpose in this study was to begin to expand the range of possibilities for understanding subjective well-being by examining links between experiences in the household and family of origin and the initial measurement of subjective well-being as adolescents make the transition to early adulthood. Although our methodology does not allow us to make any claims regarding causality, our results do strongly suggest that links may exist between the formation of subjective well-being and experiences before adulthood. Our results also strongly indicate that the same factors that are associated with subjective well-being throughout adulthood are associated with the level of subjective well-being at the point of transition from adolescence to adulthood. These associations seem to operate both directly and indirectly via the association of life satisfaction of the parents with the life satisfaction of the child. For example, unemployment, which has emerged as one of the most important predictors of both level and change in adult subjective well-being, has both a direct negative association with adolescent well-being and an indirect one via its negative association with maternal life satisfaction. Income and economic hardship also seem to exert both direct and indirect effects.

In most cases, factors that predict adult well-being also predict the level of well-being reported by the adolescents in our study. We found that personality traits were associated with subjective well-being and that consistency existed across different domains of satisfaction, specifically satisfaction with life and satisfaction with grades. Based on a wide range of measures, we found a strong pattern of association between the subjective well-being of the adolescents and variables that measured different dimensions of the experiences and assessments of parents regarding economic hardship. The quality of these relationships was also a predictor of adolescent well-being. One finding that was somewhat surprising centered on the role of full and part-time maternal employment. Although the finding regarding unemployment was in the expected direction, the negative and relatively strong direct association between full-time maternal employment and negative adolescent well-being may possibly reflect internalization by adolescents of the norms of the German model regarding the balance of work and family for women with children. We strongly caution, however, against drawing any strong conclusions regarding why these findings were observed and whether they would

be dissipated or eliminated if we were to control for economic hardship, patterns of parental labor market behavior, and parental life satisfaction during early and middle childhood.

In our future work, we intend to make use of the longitudinal feature of the German SOEP and to link patterns of income, economic hardship, timing of family dissolution, and patterns and levels of parental life satisfaction over time with the subjective well-being of adolescents. We also intend to investigate whether factors that are associated with the set point of happiness are also associated with adult patterns of adaptation. Such questions are essential in order to deepen our understanding of how individual, family and policy efforts may help to shape subjective well-being. Our current study strongly suggests that such efforts may yield promising results.

Overall, despite the cautions and limitations noted above, our results suggest that considerable opportunities may exist for the design of micro and macro policy level interventions that affect the individual set point of subjective well-being. Although our findings do not negate the importance of genetic factors and predispositions, the results presented here indicate that other factors also seem to be at work in affecting the baseline level of subjective well-being. Hence policies that attempt to lower unemployment levels and that seek to minimize economic hardship and uncertainty for parents may influence not only the level of subjective well-being experienced by parents, but also the formation of the subjective well-being of their children. Programs that teach adolescents how to achieve greater personal control and/or provide direct opportunities in which youth can exercise personal control may lead to greater reported satisfaction with life. Similarly, programs that encourage parents to develop strong and positive relationships with their children and that provide the psychological and socio-economics supports necessary to facilitate the development of these relationships may also lead to long-term effects on subjective well-being of youth that may persist into adulthood.

Table 1
Means, Standard Deviation, or Proportions of Variables in Model

Variable	Mean or Proportion	Standard deviation
Subjective life satisfaction of adolescent	7.63	1.52
Demographics		
Foreign/immigrant	0.07	
East German (excluded category)	0.29	
West German	0.64	
Gender: male	0.49	
female	0.51	
Household composition		
Lived with both parents entire life	0.77	
Lives (or lived) with stepparent	0.115	
Group home, foster care at some point	0.015	
Other arrangement (primarily with single mother during some or the entire childhood: excluded category)	0.10	
Household variables		
Ln equivalent yearly household income / 1000 (CPI adjusted equivalent yearly household income in Euro)	2.73	0.48
Apartment/house in poor condition	17244.16	9180.37
Apartment/house needs some repairs	0.03	
Apartment does not need repairs	0.29	
Apartment does not need repairs	0.68	
Education variables		
Satisfaction with grades	6.23	1.84
Highest expected degree		
Intermediate school	0.33	
Vocational school	0.09	
University	0.40	
Other, including no degree	0.18	
Grades in German (1=highest, 6=lowest)	2.89	0.82
Grades in mathematics	2.95	1.03
Relationship variables		
Relationship with mother	3.74	0.67
Number of important relationships	5.74	1.55
Fights with father and mother over grades	0.36	
Fights with father over grades	0.03	
Argues a lot with father	0.14	
Argues some with father	0.33	
No contact with father	0.07	
Mother variables		
Months of unemployment (mother)	1.22	3.38
Mother worked full-time entire year	0.28	
Mother worked part-time entire year	0.37	
Major worries about financial situation (mother's assessment)	0.30	
Some worries about financial situation (mother's assessment)	0.53	

Subjective life satisfaction of mother	6.55	1.85
Life participation and use of leisure (separate variable for each activity; not mutually exclusive)		
Active in sport	0.65	
Does nothing daily	0.27	
Reads daily	0.27	
Attitude/personality traits		
Assessment of probability of success in education and work	70.78	17.52
Self efficacy (negative component items)	2.58	.61
Beliefs about life (personal control)	2.81	0.47

Table 2

Maximum Likelihood Estimation of Subjective Life Satisfaction of Adolescent, with Endogenous Variables

	β	SE.
Endogenous variables estimated via instrumental variables (see Table 3)		
Subjective life satisfaction of mother	.118	.024***
Personal Control	.641	.156***
Satisfaction with Grades	.105	.026***
Demographics		
Nationality/region		
Foreign/immigrant	.300	.161+
West German	.116	.085
Gender: male	.146	.082+
Household composition		
Lived with both parents entire life	.126	.095
Ln equivalent yearly household income / 1000	.156	.084+
Education variables		
Highest Expected Degree		
Intermediate school	.244	.086**
Vocational school	.294	.142*
University	.133	.083
Relationship variables		
Relationship with mother	.319	.074***
Number of important relationships	.050	.026+
Relationship with father		
Argues a lot with father	-.205	.177+
Argues some with father	-.063	.086
Variables pertaining to Mother		
Mother worked full-time entire year (1, else=0)	-.279	.090**
Mother worked part-time entire year (1, else=0)	-.197	.084*
Months of unemployment	-.045	.012***
Mother's assessment of worries about financial situation		
Major worries about financial situation	-.209	.098*
Assessment of probability of success in education and work	.015	.003***
Number of Cases=1152	$R^2 = .165$	

Table 3

Maximum Likelihood Estimates of Endogenous Variables using Instrumental Variables: Subjective Life Satisfaction of Mother, Personal Control, and Satisfaction with Grades

	Subjective Life Satisfaction of Mother		Personal Control		Satisfaction with Grades	
	β	SE	β	SE	β	SE
Demographics						
Nationality/region						
Foreign/immigrant			-.072	.045	.522	.197*
West German	.223	.099*			.244	.104*
Gender: male			.074	.023**	-.178	.099+
Household composition						
Lived with both parents entire life						
No contact with father			.086	.045+		
Household variables						
Ln equivalent yearly household income / 1000	.320	.099***				
Condition of Apartment						
Apartment in poor condition	-.544	.278*				
Apartment needs some repairs	-.304	.105**				
Education variables						
Highest Expected Degree						
University					.281	.101**
Grades (1=highest; 6=lowest)						
Grades in German					-.529	.066***
Grades in mathematics					-.817	.058***
Relationship variables						
Relationship with parents over grades						
Fights with father and mother over grades					-.421	.104***
Fights with father over grades					-.707	.271**
Months of Unemployment Mother	-.097	.014***				
Worries about financial situation						
Major worries about financial situation	-	.104***	1.594	-.109	.025***	
Some worries about financial situation	-.575	.096***		-.064	.023**	
Life participation variables (non school activities)						
Active in sport (1, else=0)			.062	.024**		
Does nothing daily (1, else=0)			-.056	.026*		
Reads daily (1 (else=0)			.082	.026**		
Attitude/personality traits						
Probability of Success					.023	.004***
Self efficacy			.333	.038***		
R ²	.230		.256		.422	

Remarks: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed test

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