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Taris, T.W.; Bok, I. A.

published in

Early Child Development and Care
1996

DOI (link to publisher)

[10.1080/0300443961210107](https://doi.org/10.1080/0300443961210107)

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Taris, T. W., & Bok, I. A. (1996). Parenting environment and scholastic achievement: A retrospective study. *Early Child Development and Care*, 121, 67-83. <https://doi.org/10.1080/0300443961210107>

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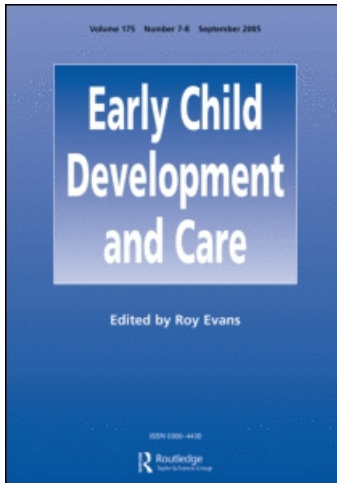
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Early Child Development and Care

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713640830>

Parenting Environment and Scholastic Achievement During Adolescence: A Retrospective Study

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To cite this Article Taris, Toon W. and Bok, Inge A.(1996) 'Parenting Environment and Scholastic Achievement During Adolescence: A Retrospective Study', Early Child Development and Care, 121: 1, 67 – 83

To link to this Article: DOI: 10.1080/0300443961210107

URL: <http://dx.doi.org/10.1080/0300443961210107>

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Parenting Environment and Scholastic Achievement During Adolescence: A Retrospective Study

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The current paper examines how two parenting styles (the degree to which parents provided an overly protective environment, and a warm and loving environment) relate to educational achievement. We expected that a warm and loving upbringing and an upbringing that is not overly protective would contribute to success at school.

Data on the educational careers of 986 Dutch adults aged 18–30 years were gathered both retrospectively and longitudinally. The hypotheses were tested using structural equation modelling. The results partly supported our expectations: respondents who felt that their parents provided a warm and loving upbringing dropped out less frequently than others while having had overprotective parents was associated with a longer stay at school and a lower level of education when leaving full-time education, even after controlling other variables. However, warm and loving parenting styles were also associated with a longer stay at school.

Key words: Parenting styles, scholastic achievement, adolescence

As the saying goes, “an unhappy childhood is a writer’s goldmine”. Unfortunately, not all children who have an unhappy childhood eventually become successful writers. Indeed, much research suggests that children who experience lack of warmth, love and attention from their parents may develop problem behaviours, including smoking, drug abuse, delinquency, and having under-age sex (among others, Barnes & Farrell, 1992; Jessor & Jessor, 1974; Steinberg, 1990; Taris & Semin, 1995). And while a novelist may find inspiration in personal experience with such matters, we know that for many other children problem behaviours just signal the beginning of a long history of problems, extending into adolescence and even adulthood (e.g., Weiner, 1982).

The current paper presents the results of a retrospective study regarding the impact of (perceived) parental styles of upbringing upon educational career

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patterns, among a representative sample of 986 Dutch adults. At the core of this study lies the assumption that the development of a child's educational career benefits from "good" parenting styles (i.e., whether the parents provided a warm, loving, and not overly protective home environment, Heesink, 1992; Parker, Tupling & Brown, 1979; Rollins & Thomas, 1979). Though many studies address the relationship between the parenting environment and scholastic achievement (e.g., Dornbusch, Ritter, Leiderman, Roberts & Fraleigh, 1987; Gottfried, Fleming & Gottfried, 1994; Grolnick & Ryan, 1989; Grolnick, Ryan & Deci, 1991; *inter alia*), previous research leaves two issues open for discussion. First, the focus of these earlier studies is usually on *children*, rather than adolescents (one notable exception is Steinberg, Elmen & Mounts, 1989). Yet, during adolescence the ties between parents and children become increasingly looser. As such, one may wonder whether the strong and consistent influence of parental practices and behaviours upon scholastic achievement reported in earlier studies generalises to older populations.

Second, the dependent variables in many studies are usually motivations (e.g., achievement motivation, which is not a direct measure of scholastic achievement), grades, or dropout. However, studies do usually not focus upon the history of one's educational *career*. E.g., it may well be that particular features of the parenting environment predict dropout; however, it would be interesting to see how dropout is related to other educational outcome variables such as final level of education and the total duration of attending school. Understanding of such issues — relations among various outcome variables — implies that we must examine the development of the educational career as an integrated whole, and not by focusing on isolated outcome variables. Stated differently: it may well be that children who have loving parents obtain higher grades, but do they ultimately also obtain a higher level of education than others? And, if so, is the effect of parenting styles upon level of education direct or indirect (e.g., via the higher grades)?

To obtain answers to these and other questions we included several outcome variables in our study. Specifically, we focused upon the relation between the parenting environment and the following four educational outcomes: (1) initial level of education, i.e. the level of education chosen after completing primary education (usually at age 12). In the Netherlands, children who have completed their primary education must choose between two main levels of education. These two levels provide differential labour market opportunities: subjects attending the lowest level of education (four years) are in principle trained to become blue collar workers, while the higher level of education (which takes six years to complete) prepares for a college or university study. Appendix A provides a short discussion of the Dutch educational system; (2) number of times the subject dropped out (i.e., the number of times one stopped attending a particular type of education), without receiving the corresponding educational qualification; after dropping out, one may continue one's education on a lower level or on the same level, but in a different direction; (3) level of education obtained after leaving full-time education; and (4) the total amount of time spent attending full-time education.

Below we first provide a short review of earlier research on the relation between parenting styles and educational career patterns. Then we briefly discuss the impact

of other (family) variables upon educational careers, after which a model is proposed that links family variables (including parenting styles) to the four outcome variables mentioned above.

PARENTING STYLES AND EDUCATIONAL ACHIEVEMENT

The concept of a “bond” between parent and child is generally accepted. Theoretically, parent-child bonds would be broadly influenced by characteristics of the child, characteristics of the parent, and by characteristics of the parent-child relation itself (Parker *et al.*, 1979). Here we will focus upon the parent’s contribution to this bond between parent and child. In general, it appears that many bonding-related behaviours of the parent can be assigned to one of two broad dimensions: one of care/involvement versus indifference/rejection (including behaviours and attitudes of care, affection, sensitivity, cooperation, accessibility, and the like), and one of control/overprotection versus encouragement of independence (behaviours and attitudes like strictness, intrusiveness, control, and overprotection, cf. Rollins & Thomas, 1979; Gottfried *et al.*, 1994; Grolnick *et al.*, 1991).

Grolnick and colleagues (Grolnick & Ryan, 1989; Grolnick *et al.*, 1991) proposed that parents contributed to the “inner resources of achievement” of their children, in either or both of two ways. First, parents high in autonomy support (thus, parents low on control overprotection) would allow their children to develop a sense of themselves as the focus of initiation of their actions (thus promoting more perceived autonomy, greater perceptions of competence, and higher control understanding). Secondly, children of highly involved parents (i.e., parents who are interested in, knowledgeable about, and spend time relating to their children — a subset of behaviours belonging to the care/involvement dimension) would feel more competent, display greater control understanding, and more autonomous motivational orientations than will those of less involved parents. Grolnick *et al.* (1991) were able to show that parenting styles indeed promoted or forestalled development of inner motivational resources, which in turn impacted on school performance. Thus, it appears that the often-reported association between parenting styles and academic achievement (e.g., Dornbusch *et al.*, 1987; Rollins & Thomas, 1979; Steinberg, 1989) must be interpreted in terms of motivational factors.

OTHER FAMILY-RELATED VARIABLES AND PROBLEM BEHAVIOUR

Apart from parenting styles, the literature identifies an array of other variables affecting problem behaviour in general and educational achievement in particular. As some of these may covary with parental rearing styles, it is important to control these other factors. Indeed, Kuo and Hauser (1995) argue that such background variables usually account for at least half of the variance in educational attainment. From their review it appears that socio-economic status of the parents (SES), and

whether or not both parents were present during the child's "formative years" are chief among these other variables.

Socio-economic status. Reiss (1967) argued early on that families are members of class or status groupings, which are the source and transmitters of differing standards. Parents transmit to their children values that are congruent with those of their social groupings. Social status will also be likely to influence the whim adolescent has for peers, the adult models they are exposed to, and their consumption patterns, including mass media consumption (Taris & Semin, 1995). Thus, the variables subsumed under SES are a potentially potent influence upon adolescent problem behaviour. Consistent with this notion, White (1982) showed in his meta-analytic review that children from a low socio-economic background usually obtain lower grades than middle- and upper-class children. Children from lower social class feel also less positive towards school (cf. Weiner, 1982). Regarding achievement motivations, Harvey and Kerin (1978) reported that eight-graders already showed clear social-class differences in their aspirations: those from higher social class tended to have relatively high educational goals and to be aiming at prestige occupations, whereas those from lower social classes tended to have resigned themselves to less education and lower job status. Thus, in our study we expected that social class and level of education would covary positively. Additionally, as parents from lower social class tend to place less emphasis on educational attainment (cf. Katz, 1967), we hypothesised that the level of education chosen after completing primary education and the number of times dropped out would also covary with SES.

Living with a single parent. A substantial number of studies have shown that adolescents not living with both biological parents are significantly more likely to be involved in problem behaviours than adolescents living with both parents (Rodgers, 1983; cf. Snarey, 1993), and that children's educational attainment is significantly lower in one-parent families (Duncan & Duncan, 1969; Astone & McLanagan, 1994; Hauser & Phang, 1993). There are several interpretations of this effect, though their relative importance is unknown. Newcomer and Udry (1987) suggested that when a marriage is in the process of breaking up, parents may be more likely to lose control of their children's behaviour, for reasons such as increased rebelliousness of the adolescent, emotional and/or practical problems of the parents meaning that quality of parent-child relationships suffer (cf. Taris & Semin, 1995), or that surveillance and disciplining of the child is diminished. Stern *et al.* (1984) argue that the father is a key figure in the transmission of values and as a role model in the life of an adolescent. The father can also be a disciplinary force whose absence means that there is less of a deterrent to the adolescent to engage in "problem behaviours". Thus, we expected that presence of the father of the child would be negatively related to educational outcome variables such as duration of attending school, and the number of times dropped out. Conversely, we expected a positive association between father's presence and level of education, both where it concerns final level of education and level of education after completing primary education.

Personality: Sensation seeking. The factors discussed above will only account for part of the variance in educational career patterns, as individual difference variables — i.e., personality — were excluded. A personality factor that is especially relevant to

the study of educational problem behaviour is the degree to which a person is a "sensation seeker" (Zuckerman, 1979). Many people pursue changes in their lives; they value varied, novel and complex sensations and experiences and are willing to take physical and social risks for the sake of such experiences. Indeed, in the context of employment careers it has been found that sensation seekers are usually less satisfied with their job, quit more often, and they even experience more downward job changes (in terms of salary and job status) than subjects low on sensation seeking (e.g., Adler & Weiss, 1988; Furnham, 1991; Taris, 1994). We are not aware of any research relating sensation seeking to the development of educational careers, but the evidence touched upon above suggests that sensation seekers would be more prone to drop out of school, and that they would need more time to obtain an equal educational qualification than non-sensation seekers. As such, it is of interest to include a measure of sensation seeking in this study as well.

EDUCATIONAL CAREER PATTERNS AND PARENTING STYLES: A MODEL

Figure 1 presents a model that describes the possible relations among family-bound and other background/explanatory variables discussed above, and the four outcome variables included in this study. This model is based on the theoretical considerations discussed above. Additionally, it includes the subject's age as a possibly important control variable.

The general line of reasoning in this model is that the level of education one aims for after completing primary education affects (a) the number of times dropped out; if the level of education one intends to obtain is simply set too high, one will probably drop out, and (b) the level of education one will have reached when leaving full-time education. Similarly, the number of times dropped out will be linked to the level of education the adolescent ultimately obtains; the more dropping out, the less likely it becomes that one will ultimately obtain a high educational qualification. Finally, the duration of attending full-time education will be associated with the level of education ultimately obtained (higher qualifications usually require more time to obtain), the number of times dropped out (as they will cost time), and the initial level of education chosen after completing primary education, as the level one chooses will determine the number of steps that should be set in order to reach a high educational qualification.

Together, these variables form a reasonably complete overview of the course of one's educational career, including successes (obtaining a particular educational qualification), as well as number of times dropped out. We assume that two clusters of variables may influence the course of the educational career: (a) parenting environment, including variables such as SES, presence of both parents, and parenting styles; and (b) individual-difference variables such as gender, age, and sensation seeking. By using this "mixed" design (including both environmental and subject-bound variables) we hope to disentangle the relative influence of both types of variables upon the course of the educational career.

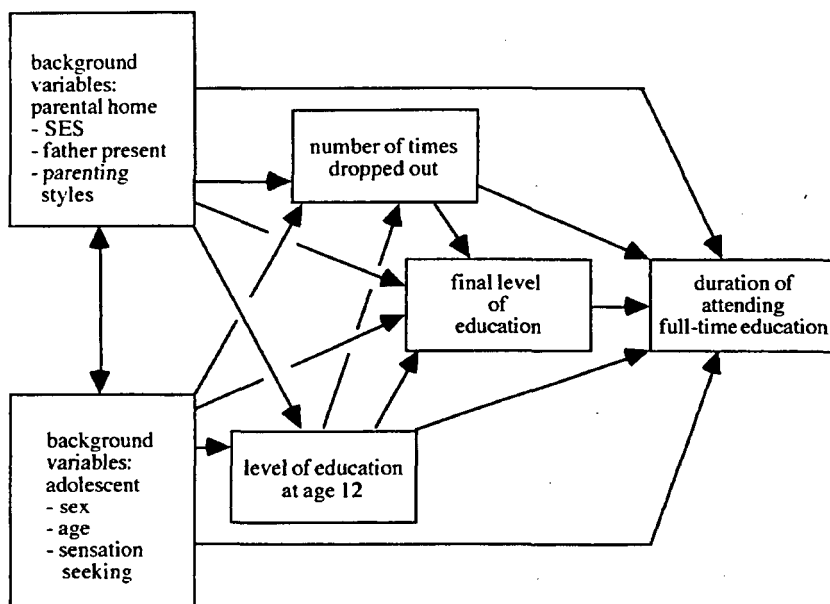


Figure 1 The model to be tested.

METHOD

Sample

The data were gathered in a two-wave panel study. The first wave was conducted during fall/winter 1987/88 among a sample of 1775 young Dutch adults, evenly divided over three birth cohorts (1961, 1965 and 1969), as well as gender. They were interviewed at their homes by trained interviewers who used a structured interview schedule. Topics of the interview were attitudes, opinions, and behaviour with respect to several life domains, such as relationships, employment, education, and family formation. Additionally, the subjects had to complete a written questionnaire.

The second wave of the study (an almost exact replication of the first wave) was conducted exactly four years after the first wave (fall/winter 1991/92). About 70% of the subjects ($N=1257$) also participated in this wave. Analysis of the non-response showed that higher-educated were slightly more likely to participate in the second wave than others, which is a common finding in survey research (cf. Goyder's [1987] review). With regard to other variables (including socio-economic, marital, and employment status, gender, and age) no important differences were found.

During both waves information was collected about the number, nature, and timing of changes on the life domains mentioned above, by means of retrospective questions. This enabled us to recreate a fairly precise record of the course of events on these domains. Applying listwise deletion of missing values, the final sample size was 986 subjects.

Variables

The event 'left full-time education' was defined as the moment one left full-time education and did not return to full-time education within one year. A simpler operationalisation of this variable would be to concentrate on the moment that one left full-time education for the first time. However, such a simple translation of this concept would neglect the fact that many subjects return to school after a shorter or longer period (i.e., they may only temporarily drop out of school). In accordance with this definition of "leaving school", the *duration of attending school* is computed as the difference between the moment one first entered secondary education (i.e., at age 12), and the moment one left full-time education and did not return for at least one year afterwards.

Level of education when leaving full-time education and level of education at age 12. We distinguished between five levels of education, ranging from low (lower secondary education) to high (e.g., college/university education, cf. Appendix A). The level of education reached when leaving full-time education ranged from 1 to 5, the level of education at age 12 ranged from 1 to 2.

Number of times of dropping out. In the Netherlands young people often find out that the type of education they have chosen does not match their capacities or interests. Consequently, they may decide somewhere half-term that they do not want to complete this type of education: they "drop out" (in the States lack of interest is also among the major causes of drop-out, cf. Weiner, 1982). This does not mean that they do not return to school at some later stage. Indeed, the number of times that our subjects dropped out in this way varied between 0 and 6; thus, some subjects tried again as often as five times. This variable was rather skew (skewness 1.35, mean 0.80). To prevent problems relating to the non-normal distribution of this variable, we computed its natural logarithm, yielding an unproblematic skewness of 0.26.

Family background variables. This cluster of variables included several of the variables that have been shown to affect adolescent problem behaviour in general and educational achievement in particular. First, we included a variable indicating whether the *father of the child was present* in the family during the first twelve years of the child's life. Second, we included the parents' *socio-economic status* (SES) in our study. This was a three-indicator variable, with as indicators job level of the father (measured on a six-point scale), and the father's and mother's level of education, respectively (using the same five-level classification as used above). These three variables were standardised with mean zero and unit variance, and their mean was taken as a measure of SES. In case of missing values (e.g., only one of the parents was present during the first twelve years of the child's life), we used the remaining valid

scores to represent SES. The reliability of this scale (Cronbach's α) was a respectable 0.83.

Finally, *parenting styles* were measured subjectively by asking our subjects to look back upon the first twelve years of their lives, and to judge several aspects of their family situation as it was then. Specifically, they had to provide answers to six items taken from the Parental Bonding Instrument (PBI, Parker *et al.*, 1979). Three items represented Parker *et al.*'s "care" factor, namely "appeared to understand my problems and worries", "was affectionate to me", and "did not understand what I needed or wanted", respectively (with scores 1 "very like" and 4 "very unlike"). All three items had to be judged for their father and mother separately, yielding a total of six responses. The reliability of this six-item scale (α) was 0.82. Similarly, three items were selected to represent the "protection" dimension, namely "invaded my privacy", "tried to make me dependent on her/him", and "was overprotective of me" (with scores 1 "very like" and 4 "very unlike"). Again, all items had to be judged for both parents, resulting in another six responses. The reliability of this scale was 0.74. If the responses for one of the parents were missing, the remaining responses were used to compute the subject's score on these variables.

Adolescent background variables. This cluster of variables included the subject's *age* and *sex*. Additionally, we included two scales tapping the degree to which subjects were high or low on sensation seeking (Zuckerman, 1979), namely, disinhibition and boredom susceptibility. *Disinhibition* is the need to seek release in uninhibited social activities with or without the aid of alcohol or (other) drugs. Typical items of this six-item scale were "I love wild parties" and "I feel good when I have had a couple of drinks", and its reliability was 0.71. *Boredom susceptibility* is an aversion to repetitive experience, routine work, or predictable people (Feij, Van Kampen, Van den Berg & Resing, 1992). Typical items were "I quickly lose interest in people or things that always remain the same", and "I would like to have a job that allows me to see the world". The reliability of this six-item scale was 0.81. Disinhibition and Boredom susceptibility were considered indicators of a latent construct, *sensation seeking*.

Appendix B presents the correlations among the variables, as well as means and standard deviations.

PROCEDURE

The data were analysed using structural equation modelling (Jöreskog & Sörbom, 1993). This procedure estimates the effects among latent variables with one or more observed indicators, and it presents a chi-square test to assess the goodness of fit of a particular theory-based model evaluated against the observed data. As several variables in our model were dichotomous, (default) maximum likelihood estimation was not really applicable; we used least-squares estimation — which depends much less on distributional assumptions — instead.

Preliminary analyses revealed that the measurement models for the latent construct sensation seeking could empirically be retained. Then we proceeded by

estimating the model presented in Figure 1, yielding a chi-square value of 32.69 with 9 *df*, NNFI = 0.91. Though the chi-square value is significant, this may be due to the large sample size (Bentler & Bonett, 1980). Therefore, we attached more value to the NNFI, as this index is relatively independent from sample size (Marsh, Balla & McDonald, 1988). As Bentler and Bonett (1980) state, models with a NNFI of less than 0.90 may well be substantially improved. Applying their rule of thumb, there is no reason to reject the model. Non-significant paths were stepwisely omitted, yielding a final model with a χ^2 -value of 44.46 with 22 *df*, NNFI = 0.96. We felt these values were acceptable given the sample size.

Moderator analysis: the role of gender. As previous research suggested that the relations between the explanatory variables in the current study and the outcome variables (i.e., level of education) might be different for males and females (Eccles, 1987; Rollins & Thomas, 1979), we examined the degree to which the relations among the variables were different for these groups by comparing the variance-covariance matrices for males and females, using the LISREL multi-sample option (Jöreskog & Sörbom, 1993). We did not find significant differences between the covariance matrices for males and females (χ^2 with 78 *df* was 63.51, $p > 0.05$). Thus, it appeared that the role of parenting styles regarding the development of educational careers was the same for both sexes.

RESULTS

Table 1 presents the standardised least squares estimates for the final model. One of the major determinants of the *duration of attending school* was the level of education reached when leaving full-time education; this reflects the fact that higher levels of education usually require more time to complete. Subjects who dropped out often also needed more time to complete their education.

Individual difference variables had a strong impact upon the duration of attending school. Older subjects reached a relatively high level of education, which was because a considerable proportion of the youngest age group included in this sample had not yet completed their education (usually at college or university level, cf. Taris & Feij, forthcoming). When we examined the same model for the oldest age group only — of which almost everyone had finished their full-time education — very similar results regarding the effects of the other variables in the model were obtained. Thus, it appeared that the structure of the model did not depend strongly upon the age composition of the sample. Regarding the other individual-level variables, our analysis revealed that males and sensation seekers needed slightly more time to finish their education than females and non-sensation seekers, respectively (note that level of education is already controlled for).

Finally, we found that both parenting styles were positively associated with the amount of time one needed to complete secondary education. This confirmed our expectations for the “overprotective” parenting style (a standardised effect of 0.07, $p < 0.05$), but the fact that a warm and loving parenting style was also likely to lead to a longer stay at school was rather surprising (an effect of 0.08, $p < 0.05$).

Table 1 Standardized least squares estimates for the final model ($N=986$, χ^2 with 22 $df=44.46$, NNFI=0.96).

<i>variables</i>	<i>duration of attending school</i>	<i>final level of education</i>	<i>number of times dropped out</i>	<i>level of education at age 12</i>
final level of education	0.28***			
number of times dropped out	0.16***	-0.16***		
level of education at age 12		0.43***	0.07*	
<i>family background variables:</i>				
father present (high = present)			-0.08*	0.12**
SES		0.18***		0.41***
parents were overprotective	0.07*	-0.10**		
parents cared	0.08*		-0.13**	
<i>adolescent background variables:</i>				
age	0.60***		0.07*	
sex (high = male)	0.07**	0.07**		-0.10***
sensation seeking ^a	0.09**	0.11**		0.17***
R^2	0.44	0.36	0.04	0.24

^aLatent variable, loading of Disinhibition = 0.86 (fixed for identification purposes), loading of Boredom Susceptibility = 0.57***.

The variables included in the model account for 44 percent of the variance in the duration of attending school.

Table 1 shows that the level of education at age 12 was a good predictor of *final level of education* (a standardised 0.43, $p < 0.001$). Subjects who dropped out often were more likely to have a lower educational qualification than others. Males and sensation seekers were likely to have a relatively high level of education. Regarding the effects of the family background variables, socio-economic status had a profound influence on level of education (0.18, $p < 0.001$), even though SES also affected level of education at age 12. Thus, SES had a *lasting* effect upon educational achievement. Finally, we found a small but significant negative effect of the overprotective parenting style (-0.10 , $p < 0.01$), showing that overprotective parents may exert a negative influence on their child's educational achievement.

Taken together, the variables in the model account for 36 percent of the variance in level of education. Even though this is considerably lower than the figure mentioned by Kuo and Hauser (1995), we still consider this as satisfactory.

The *number of times dropped out* increased slightly if the level of education chosen after completing primary education was high (0.07, $p < 0.05$). Thus, it appeared that some children start their secondary education at a level that demands too much of them. Older subjects had dropped out more often (but this, again, was due to the fact that older subjects were in the study for a longer time; thus, they had more opportunity to drop out than others). Regarding the family background

variable, we found that presence of the father was negatively related to the number of times dropped out, which supported our expectations. Finally, the warm and loving parenting style was negatively related to the number of times dropped out ($-0.13, p < 0.01$), which was in accordance with our *a priori* expectations. It must be noted however that our model accounted for a mere 4 percent of the variance in the number of times dropped out. Thus, it seems likely that other variables — such as intelligence — may be of more relevance in explaining drop out.

Our fourth dependent measure was the *level of education chosen immediately after leaving primary education*. Sensation seekers were more likely to start off at a relatively high level, while males were more likely to start off at a low level. Concerning the family variables, SES was very strongly related to initial level of education ($0.41, p < 0.001$), while the presence of the father increased the likelihood that the child obtained a high level of education. Together, these variables account for 24 percent of the variance in initial level of education.

CONCLUDING REMARKS

All in all, our study provided good support for the hypothesis that family variables in general and parenting styles in particular are systematically related to children's educational career patterns. However, the influence of individual difference variables on these career patterns must certainly not be underestimated.

Family variables. Earlier studies reported that family status i.e., presence of the father) and educational achievement were closely connected; our results supported these findings. However, the current study extends these findings by identifying two variables that *mediate* the relationship between presence of the father and educational achievement. Indeed, after controlling level of education at age 12 and the number of times dropped out, no direct effect between family status and level of education remained. As indicated above, several explanations compete for the explanation of these effects of presence of the father: (a) the father may be a key figure in the transmission of values (Stern *et al.*, 1983); (b) the father may act as a deterrent to the adolescent to engaging in school-related problem behaviour (e.g., dropping out); or (c) that a single mother may be less able to control her child's behaviour, possibly because she herself may have emotional/practical problems. Our data cannot provide evidence as to whether which of these interpretations is correct, and further research must be awaited.

While we were able to interpret the relation between family status and final level of education by introducing level of education at age 12 and number of times dropped out, we must acknowledge that a good explanation of final level of education cannot do without some explanation for level of education at age 12. We found that parental socio-economic status — as expected — was strongly related to level of education at age 12. The effect of SES upon level of education however was not limited to this indirect effect; we also found a strong and very significant main effect. Thus, it appears that high-SES adolescents are more likely to obtain a high level of education

than low-SES adolescents, even when the initial level of education is held constant. This may be due to the beneficial intellectual climate that high-SES parents provide (Kuo & Hauser, 1995), or the fact that high-SES parents tend to stress educational achievement more heavily than lower class parents (e.g., Katz, 1967). As such, SES may be considered an "outer" resource of achievement (in contrast to Grolnick *et al.*'s, 1991, "inner resources of achievement").

Finally, we found that the two parenting styles examined here were systematically related to three of our four outcome variables. In accordance with our expectations, the overprotective parenting style was associated with a lower level of education and a longer stay at school, apparently harming the "inner resources of achievement". The negative effect of the warm and loving parenting style on the number of times dropped out may be interpreted in a similar fashion. What is remarkable, however, is that the latter parenting style is also associated with a *longer* duration of attending school, rather than a shorter duration as we initially expected. There are two alternative explanations for this finding. First, the correlation matrix in Appendix B shows that the correlation between this parenting style and duration of attending school is only -0.01 , *ns*. Thus, it is likely that we are dealing with a suppressor effect, caused by the high correlation between the two parenting styles ($r = -0.39$, $p < 0.001$, see Appendix B). A second, more substantive, interpretation may be that this effect may indicate a hidden liability of children in a favourable parenting environment. They may illustrate a "golden girl" phenomenon (Bandura, 1979; Seligman, 1975), in which their privileged parenting environment may weaken their assertiveness below the level necessary to perform well at school.

Adolescent background variables. As already indicated above, the effects of age on the duration of attending school and the number of times dropped out can be explained as due to the nature of the data, as older subjects have simply had more opportunity to obtain a high score on these variables. Of more interest is that, while 12-year old girls on average attend a higher type of education than boys, boys ultimately seem to be more successful in realising a high level of education, even though they need more time to reach that level than females. Thus, boys seem to be more persistent in aiming to obtain a particular level of education. One way of interpreting these findings is that girls may have a lower motivation to achieve than boys, possibly due to the traditional sex-role socialisation patterns: men are expected to achieve and to become the bread-winner, whereas this is not the case for women. Indeed, while we did not find the gender x parenting styles interaction effects that follow from Eccles' (1987) theory, these direct effects of gender on our dependent measures suggest that there is at least *some* ground to expect that parenting styles are different for boys and girls. However, it appears that it is not so much the amount of control and love parents provide that determines the differentials regarding educational achievement, but rather what type of *values* they transmit to their children.

Finally, we found that sensation seeking was systematically related to three of our four dependent measures. Sensation seekers entered the system of secondary education at a slightly higher level than non-sensation seekers, their final level of education was also higher (note that earlier authors, e.g., Feij, 1979; Zuckerman, 1979, reported that sensation seeking and intelligence are positively correlated,

implying that we may be dealing here with the effect of ability, not personality); but they needed more time to complete their education. Of course, what stands out is that the only effect we did *not* find was the expected positive effect of sensation seeking on the number of times dropped out. There is no obvious explanation for this finding. Appendix B shows that the correlations between the number of times one dropped out and the two indicators of sensation seeking are in the expected direction, but very low (0.03–0.05). Thus, it appears that the effect of sensation seeking upon the number of times one dropped out is simply not strong enough.

LIMITATIONS OF THE STUDY

One obvious limitation of the current study is that the parenting styles were *subjectively* and *retrospectively* measured. Thus, the explanatory variables were measured after the dependent variable occurred, yielding the possibility that the subject's evaluations of the parenting behaviours of their parents are influenced by precisely what is to be explained. Might it not be the case that subjects who feel that they have underachieved attribute the cause for their failure to realise their full educational potential to their parents? i.e., they may judge their parents' behaviours in the light of the results of their parenting behaviours (i.e., failure of their child to realize its potential).

This option is unlikely for two reasons. First, the items regarding the parenting behaviours were deliberately measured in the written questionnaire that *preceded* the oral interview addressing the development of the subjects' educational careers. Thus, as the explanatory variables were dealt with before the dependent variables were actually measured, it appears unlikely that subjects will ever have made the connection between parenting behaviours and the development of their educational career, at least not during the interview itself.

Second, as data from two waves were available, we could link the development of the educational careers of those subjects who were still attending school at time one to perceived parenting styles, as measured at time one. We found a comparable pattern of effects, though the significance of the parameters was considerably lower due to a smaller sample and less variance in the dependent variables. Thus, it appears that the results reported above were not severely biased by the possible temporal problems in the measurement of the variables.

Regarding the possible objection that we used *perceptions* of parenting styles instead of more objective measures to explain educational achievement patterns, we must remark (a) that children's perceptions of parenting styles are usually significantly correlated with parents' own ratings of their behaviour (though not as highly as one would desire: see for example Grolnick *et al.*, 1991); and (b) that in explaining school achievement, theorists have argued that precisely the children's own phenomenological view of their parenting environment is what is of importance (e.g., Bronfenbrenner, 1977). Stated differently, what may be a weakness from one view may be a strength from another. Indeed, we would expect that actual parenting

behaviours are linked to educational achievement only indirectly, via the perceived parenting behaviours (and other possible intermediating variables, cf. Grolnick *et al.*, 1991). Thus, there seems no reason to discount our results on the basis of using perceptions rather than objective measures.

All in all, our study has shown that characteristics of the parenting environment continue to exert a considerable influence on the development of educational careers, not only during childhood but also during adolescence. As such, it seems justified to consider parenting styles and other family variables as contributors to Grolnick *et al.*'s (1991) "resources of achievement". Indeed, while Grolnick *et al.* seem to point at *educational* achievement only, we know that level of education and for example job level and income are highly correlated, and that the effects of level of education persist across time (Taris, forthcoming). Thus, it is likely that the effects of parenting environment extend far beyond childhood, at least indirectly but possibly also directly; in this sense, one may even speak of parenting styles as contributors to "life achievement".

APPENDIX A

An overview of the Dutch educational system.

Figure 2 presents a simplified flow diagram of the rather complicated Dutch educational system, without going into its finesses.

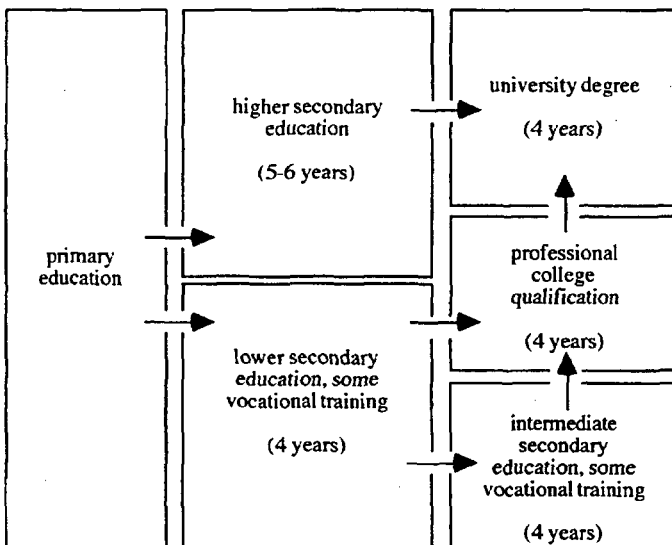


Figure 2 Simplified flow diagram of the Dutch school system (after Taris & Feij, forthcoming).

We have five main levels of education. The first level is *lower secondary school*, with or without some vocational training. Usually this type of education is attended after completing primary education. It takes four years to complete. The second level is *intermediate secondary school*, with some vocational training. This level takes four years to complete, and it is usually attended by subjects who have completed their lower secondary education (level 1). Hence, one usually needs as many as eight years to obtain this qualification. The third level is *higher secondary school and pre-university training*. This type of education takes five to six years to complete, and it is attended after completing primary education. The fourth level, *professional college degree*, takes four years to complete and is a natural choice after completing either intermediate or higher secondary school. The fifth level is the *university degree*. Subjects who have completed either higher secondary school and pre-university training, or have obtained a professional college degree (levels 3 or 4), can enter at this level.

Figure 2 shows clearly that subjects starting off at the lowest level of education can in principle reach the highest level, though this will take a considerable amount of time. Similarly, subjects who fail to obtain a particular educational degree may try again at a lower level, or at the same level but in a different direction (i.e., a biology undergraduate may feel that psychology is far more interesting and switch from one study to another — same level, different direction).

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APPENDIX B

Correlations, means and standard deviations (at the diagonal) for all variables in this study ($N=986$, correlations of $|0.062|$ or better significant at $p < 0.05$).

<i>variables</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) duration of attending school	3.81											
(2) final level of education	0.23	0.82										
(3) number of times dropped out*	0.17	-0.13	0.95									
(4) level of education at age 12	0.11	0.53	0.06	0.21								
(5) Father present (high = yes)	0.00	-0.04	-0.08	0.08	0.26							
(6) Socio-economic status parents	0.06	0.40	0.05	0.44	-0.07	1						
(7) sex (high = male)	0.13	0.06	0.03	-0.06	-0.03	0.03	0.50					
(8) age	0.57	-0.08	0.08	-0.08	0.06	-0.13	0.03	3.34				
(9) disinhibition	0.04	0.24	0.03	0.22	-0.09	0.25	0.15	-0.21	1.23			
(10) boredom susceptibility	-0.05	0.06	0.05	0.10	-0.08	0.07	0.14	-0.21	0.48	1.14		
(11) parents cared	-0.01	0.08	-0.14	0.01	0.13	0.05	-0.02	-0.10	-0.09	-0.09	0.60	
(12) parents were overly protective	0.07	-0.12	0.02	-0.04	-0.00	-0.06	0.00	0.07	0.08	0.11	-0.39	0.62
mean	9.80	3.44	0.80	1.38	0.93	0.00	0.49	22.51	4.41	4.21	3.38	1.77

*Correlations based on log-transformed variable because of severe skewness. Mean and SD based on raw (untransformed) variable.

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