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Personality trajectories from early childhood into emerging adulthood

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This chapter concerns personality trajectories as they present themselves from early childhood into emerging adulthood. Doing so, it focuses on the notion of empirically based personality types, a relatively new approach to studying personality that originates in the seminal work of Jack Block, *Lives Through Time* (1971). Block's theoretical approach predicts three personality types (Resilients, Overcontrollers, and Undercontrollers), that indeed seem to be existent in childhood and adolescence, in various countries (see Caspi & Shiner, 2006). The LOGIC-sample was one of the samples in which these types were found (Asendorpf & van Aken, 1999), and this chapter takes the three types as a departing point for studying the individual trajectories of two other personality characteristics, shyness and aggression.

### **What Do We Know About Personality Development Between 3 And 23?**

One of the most often posed questions in developmental research is to what extent it is possible to predict developmental outcomes later in life from data that were gathered in early childhood. One of the domains in which this question has been phrased is the domain of personality: Is it possible to predict personality in adulthood from differences between children that are observed in their temperament or personality at a very early age?

In their meta-analysis on the stability of individual differences in personality traits, Roberts and DelVecchio (2000) conclude that this stability is moderate (approximately .45 over an average prediction interval of 7 years), but also that this stability is lower in the younger age ranges, making it difficult to predict from early childhood into adulthood. However, several longitudinal studies have attempted such a prediction, and have demonstrated that personality in early and middle childhood is predictive of similar personality traits, but also of important adjustment outcomes in early adulthood, in several domains (e.g., Caspi, 2000; Friedman et al; 1995; Huesmann, Eron, Lefkowitz, & Walder, 1984). Without aiming to be complete, to be mentioned among these studies are the Berkeley Guidance Study (data re-analyzed by Caspi, Elder, & Bem, 1987, 1988) on children born in

1928; the Dunedin Longitudinal Study (Caspi & Silva, 1995) on a representative New Zealand birth cohort; the Fels Longitudinal Study (Kagan & Moss, 1962); Kerr, Lambert and Bem's (1996) re-analysis of the data of a Swedish cohort; Block and Block's (1980) study on ego-resiliency and ego-control in the San Francisco Bay area; and the Jyväskylä Longitudinal Study of Personality and Social Development (Pulkkinen, 2006). Although these studies differed somewhat in the age of the children by the start, all of them demonstrate clear trajectories of personality traits from early or middle childhood into adulthood, and clear predictions of early personality on later functioning in several domains.

The two trajectories that are studied in this chapter, shyness and aggression, can be regarded as examples of externalizing and internalizing tendencies (Achenbach & Edelbrock, 1981), a dimensional distinction that is sometimes made by clinicians and researchers in child psychopathology. Although it is clearly not the case that shyness and internalizing problems can be fully equated (see Asendorpf, Denissen, & van Aken, 2007) and a similar reservation should be made for aggression and externalizing problems (Bongers, Koot, van der Ende, & Verhulst, 2003), the two trajectories that were chosen for this chapter might be illustrative of trajectories of internalizing and externalizing problem behaviors. At present, research on such developmental trajectories of problem behavior over such a long time is lacking. Instead, personality in early childhood was related to personality in late adolescence or adulthood alone, ignoring the development linking the two.

Thus, much of the available evidence on the prediction of later outcomes by earlier personality is based on bivariate correlations between two time points. Although this does demonstrate the importance of early personality, it does not show the shape of a developmental trajectory, with possibly periods of change versus more stable periods. It is important therefore, that the LOGIC data, with frequent measurements over the course of development, enables us to estimate developmental trajectories empirically.

Another asset of the LOGIC data is the detailed character of the measurements, at all ages, but also at the last one, referring to the development between 18 and 23 years of age. It has been stated that the demographic shifts of the past half century in Western cultures (such as a higher age at the time of marriage, at the time of first child-birth, at the time of entering the labor force) have considerably changed the period of the late teens and the early twenties. According to this view, it is not simply a period of rapid transitions any more, but rather a distinct period of the life course, labelled 'emerging adulthood' (Arnett, 2000). Characteristic of this period is the fact that it has become more and more a period of frequent change and exploration, instead of commitments.

As Social Investment Theory (Roberts, Wood, & Smith, 2005) predicts, personality development might go hand in hand with taking up adult roles during this period. For that reason, in the present study we will not only describe the developmental trajectories of shyness and aggression from early childhood to young adulthood, but will also consider outcomes such as work, education, and relationships. It will be assumed that these outcomes partly can be the result of a developmental trajectory, but also that failure or success in these outcomes (that is, in taking up these adult roles), might mediate such a trajectory.

### **The Study of Personality in the LOGIC Study**

In 1983, when the LOGIC team began to discuss how personality should be studied, it was clear that such a long-term project would require (a) a broad measure of personality that would cover a wide array of young children's individual characteristics, and (b) a few focal constructs that could be studied in detail with assessments that entailed multiple judgment perspectives and behavioral observations.

Franz E. Weinert, the *spiritus rector* of the LOGIC study, was not only an eminent scientist and politician of science but also an extremely successful mentor for the young, eager researchers in the LOGIC group. His mentoring was guided by the principle that you

must first discover what *really* interests your student (*not* what the mentor is most interested in and *not* what's current mainstream). Thus, rather than maximizing the short-lived impact factor of research by following the crowd, this strategy encourages young researchers to express their own ideas in research which may eventually create a new mainstream and make them leaders of new crowds – the kind of foresight typical for Franz E. Weinert. This is a risky strategy that requires a tough pre-selection of students in terms of competence, but then increases the likelihood for a spin-off in terms of new lines of research and creative solutions to long-standing problems. Consequently, Weinert restricted himself to suggestions for the broad measure of personality but left the decision for the focal personality constructs to his postdoc JBA.

Regarding the broad measure, it is important to notice that in 1983, variable-centered research on the “Big Five” factors of personality differences (John & Srivastava, 1999) that dominates current personality research also for children (De Fruyt et al., 2006; Kohnstamm, Halverson, Mervielde, & Havill, 1998) did not yet exist. A measure based on the “Big Five” was not an option. Instead, the person-centered approach to childhood personality by Block and Block (1980) was chosen, including the broad Q-sort measure of early childhood personality, the California Child Q-Set (CCQ). A large number of personality-descriptive items, each printed on a card, is sorted by a judge into numerous piles that represent the saliency of the trait for the judged child, from extremely uncharacteristic to extremely characteristic for the child. Weinert generally liked the idea of individual-centered personality assessment, and therefore the Block and Block approach appealed to him very much. Because we wanted to obtain Q-sort descriptions for multiple children by the same preschool teacher, the full 100-item CCQ was too long. Instead we translated a short 54-item version of the CCQ by Schiller (1978) into German including a back-translation procedure (Göttert & Asendorpf, 1989).

Regarding the specific constructs, JBA decided to focus on internalizing tendencies such as shyness, low self-esteem, loneliness, and social anxiety because at that time externalizing tendencies such as aggressiveness, impulsivity, and hyperactivity dominated the literature. Only somewhat later, JBA became aware of the related research of Jerome Kagan and associates on behavioral inhibition to the unfamiliar (Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984). This was a fortunate circumstance because at this time JBA had already developed a broader concept of shy-inhibited tendencies, based on his simultaneously conducted research on shyness in adults (Asendorpf, 1987, 1989), that included not only inhibition based on temperament but also inhibition based on experiences of being neglected or rejected by others. Therefore, the research on shyness and inhibition in the LOGIC study developed somewhat independently from the research by the Kagan group.

Even more influential than the research by Kagan and colleagues was that Kenneth Rubin responded enthusiastically to a letter that JBA sent to numerous researchers well-known for their developmental studies of shyness and related constructs. In this letter, researchers were invited to collaborate with the LOGIC study. Rubin's sophisticated view on different facets of social withdrawal (see Rubin, 1982, 1985) and his theoretical model of the development of internalizing difficulties (e.g., Rubin, LeMare, & Lollis, 1990) that he presented in 1985 during a one-month visit to the Max Planck Institute for Psychological Research, strongly influenced JBA's further research. JBA and Rubin closely collaborated for many years thereafter (e.g., Rubin & Asendorpf, 1993).

JBA's strong focus on the development of shyness and inhibition led to numerous publications on this topic (Asendorpf, 1990, 1991, 1993, 1994; Asendorpf & van Aken, 1994). The last one was co-authored by MvA who spent three postdoc years at the Max Planck Institute from 1990 to 1993 and became JBA's closest collaborator in the LOGIC study. In his dissertation, conducted independently of the LOGIC study, MvA had

investigated the stability and cross-judge consistency of Q-sort descriptions of children's personality (van Aken & van Lieshout, 1991), and fueled JBA's interest in social-relationship correlates of personality (van Aken & Asendorpf, 1997; Asendorpf & van Aken, 2003a) as well as in person-centered approaches to personality (Asendorpf & van Aken, 1991, 1999, 2003b) – with a spin-off for personality research in adults (Asendorpf, 2003; Asendorpf, Borkenau, Ostendorf, & van Aken, 2001; Asendorpf, Caspi, & Hofstee, 2002; Asendorpf & Wilpers, 1998; Neyer & Asendorpf, 2001).

JBA and MvA were joined by JD for the analyses of the last LOGIC assessment. Just as MvA, JD studied psychology at the University of Nijmegen, The Netherlands, and did most of the person-focused analyses (Asendorpf & Denissen, 2006; Denissen, Asendorpf, & van Aken, in press) on which the present chapter is based when he was a fellow of the International Max Planck Research School LIFE and of the Department of Psychology at Humboldt University, Berlin.

The present chapter focuses on the person-centered personality research in the LOGIC study. Each individual is described by a broad array of personality characteristics, represented by a Q-sort profile. Table 1 presents 3 examples for such personality profiles of young children. The first one describes a “resilient child” characterized as self-confident and cognitively competent, able to cope with stress, and not moody. The second one depicts an “overcontrolled” child described as agreeable, not aggressive, and not self-confident. The third one describes an “undercontrolled” child described as energetic, restless, antisocial, uninhibited and inattentive.

- insert Table 1 -

The terms “resilient”, “overcontrolled”, and “undercontrolled” refer to the conceptual framework developed by Block and Block (1980). These authors assumed that young children's personality varies in a two-dimensional space with the dimensions ego-resiliency

and ego-control. Ego-resiliency refers to the tendency to respond flexibly rather than rigidly to changing situational demands, particularly stressful situations. Ego-control refers to the tendency to contain versus express emotional and motivational impulses (overcontrol versus undercontrol). Block and Block (1980) assumed that both extremely high and low ego-control are related to low ego-resiliency. Therefore, 3 types of children can be distinguished (see Fig. 1): ego-resilients (high scores in ego-resiliency, intermediate scores in ego-control), overcontrollers (high in ego-control, low in ego-resiliency) and undercontrollers (low in ego-control, low in ego-resiliency).

- insert Fig. 1 -

In fact, Table 1 describes these 3 personality types in terms of their empirically derived prototypic Q-sort profile (only the 6 highest and the six lowest-scoring items of all 54 items are listed). These prototypic profiles were derived as follows. First, each child of the LOGIC sample was described by the child's teacher on the German CCQ in every year in preschool/kindergarten. For the 151 children who were 3 times judged in this way, the CCQ scores were averaged across the 3 assessments to increase the reliability of the Q-sort profiles. Second, these individual Q-sort profiles were factor analyzed by Q-factor analysis (also called inverse factor analysis because the roles of persons and variables in ordinary factor analysis are reversed). The resulting Q-factors represented prototypic personality patterns that fitted the expected prototypes of resilient, overcontrolled, and undercontrolled children quite well (see Asendorpf & van Aken, 1999, for the Q-factor loadings of the items).

Following a procedure proposed by Robins, John, Caspi, and Stouthamer-Loeber (1996), 141 children were subsequently classified into personality types by assigning them to the most similar prototypic profile (10 of the original sample of 151 could not be clearly classified; see Asendorpf & van Aken, 1999, for details). Of the 141 children, 49% were classified as resilient, 21% as overcontrollers, and 31% as undercontrollers. As one might

expect, boys were overrepresented among the undercontrollers, and therefore underrepresented among the resilient; in contrast, boys and girls were equally represented among the overcontrollers. The following analyses refer to these three groups of children identified at ages 4-6 years.

### **Concurrent Correlates of Early Childhood Personality**

The 3 personality types in early childhood can be described in the LOGIC study by their concurrent correlates in terms of social competence, shyness-inhibition, aggressiveness, and cognitive achievement (see Table 2). Compared to the well-adjusted ego-resilients, the overcontrollers are expected to be more shy-inhibited whereas the undercontrollers are expected to be more aggressive and lower in cognitive achievement. These expected differences between the 3 types were evaluated by using the ego-resilients as a reference group and contrasting this group with the overcontrollers and the undercontrollers.

- Table 2 –

The first 3 correlates of Table 2 refer to *individual* correlations between a child's Q-sort and a prototypic Q-sort for a socially competent, a shy-inhibited, or an aggressive child that were independently obtained from other German preschool teachers. These correlations describe how similar the Q-sort profile of a particular child was to one of the prototypic profiles. The 3 similarity coefficients that were obtained for each child at ages 4, 5, and 6 years were averaged. These average similarity coefficients characterize the stable personality of the LOGIC children in early childhood from the perspective of their teachers.

The data for social competence indicate that ego-resilients were described by the teachers as significantly higher in social competence than both the over- and the undercontrollers because the Q-sort profiles of the ego-resilient children resembled more strongly the prototypic profile of a socially competent child (mean correlation of .53 with a standard deviation of .16) than the Q-sort profiles of the overcontrollers (mean correlation of

only .27) and the undercontrollers (mean correlation of .07). Similarly, the next two rows in Table 2 indicate that the teachers judged the overcontrollers as having a personality more typical for a shy-inhibited child (.37) than the ego-resilients (.04) whereas they judged the undercontrolled children as being not typical for a shy-inhibited child (-.27). Furthermore, they judged the undercontrollers as resembling more the prototype of an aggressive child (.22) than both the ego-resilients (-.41) and the overcontrollers (-.45). It should be noted that these relationships were so strong because they were based on the same teacher judgments.

Therefore it was important to cross-validate these results with independently obtained personality judgments by the children's parents (nearly always the mother). Table 2 indicates that indeed the overcontrollers were judged as particularly shy-inhibited (a mean rating of 4.16 on a scale ranging from 1 to 5), and the undercontrollers as particularly high in aggressiveness (3.16). This latter score was somewhat underestimated by the fact that the parental judgments for aggressiveness did not correlate with the teacher judgments and also not with behavioral observations in the preschools at age 4 but did correlate with both measures of aggressiveness at ages 5 and 6. It seems that children's aggressiveness was highly context-specific at age 4 such that their aggressiveness outside of the preschool (observed by the parents) was not related to their aggressiveness in the preschool (observed by the teachers and our observers), and this inconsistency suppressed the aggressiveness scores of the undercontrollers (defined by teacher judgments) at age 4 and therefore also the average for ages 4-6. Thus, except for this particular problem for age 4, the parental judgments were consistent with the personality types defined by the teacher judgments.

Further evidence for the validity of the personality types comes from observational data (see Table 2). According to the concept of behavioral inhibition toward the unfamiliar by Kagan and associates (Kagan et al., 1984), shy-inhibited children are expected to have problems in getting into contact with strangers, particularly unfamiliar peers. To test this

hypothesis, the LOGIC children were invited at age 4 to play for 10-15 minutes with an unfamiliar, same-sex peer from the LOGIC sample in the Max Planck Institute. Analyses of the videotaped behavior showed that, as expected, the overcontrolled children needed much more time until they requested something from their playmate (e.g., asking a question); see Table 2 (and Asendorpf, 1990, for more details). Aggressive behavior was rarely observed in these dyadic play sessions; it occurs more often in preschool. Table 2 indicates that, as expected, the undercontrollers were more often observed to react aggressive by trained observers who were sent to their preschools and observed each child on at least 5 different days for a total of approximately 100 minutes during free play periods in class (see Asendorpf, 1990, for more details).

Concerning the cognitive achievement of the 3 personality types, Table 2 indicates that, as expected, undercontrollers had a lower IQ (average of 2 nonverbal and 2 verbal IQ tests conducted between ages 4 and 6) and made the transition to elementary school later than the ego-resilients (see Asendorpf & van Aken, 1999, for details of the IQ assessments). Somewhat surprisingly, the overcontrollers achieved also a somewhat lower IQ than the ego-resilients (4 points less on average; see Table 2). For a proper interpretation of these results it is important to note that IQ is tested interactively in young children (they cannot read instructions) such that test achievement is not only due to cognitive competence but also to temperamental factors such as inhibition to strangers (relevant for the overcontrollers) and distractibility (relevant for the undercontrollers) Therefore, the slightly lower IQ of the overcontrollers and part of the low test achievement of the undercontrollers can be attributed by these temperamental factors.

Similarly, the late schooling of the undercontrollers seems to be attributable not only to their lower cognitive competence but also to their temperament. When the IQ differences between the undercontrollers and the ego-resilients were statistically controlled by analysis of

covariance, the undercontrollers still made the transition to elementary school marginally later ( $p < .15$ ). Although this seems to be a very weak effect, controlling for IQ is actually a form of overcorrection because the achievement in the IQ tests is affected by temperament as well. The bottom line is that there is no clear evidence that overcontrollers are lower in cognitive competence, and that undercontrollers seem to be underachievers already at the transition to elementary school (they achieve less than one might expect on the basis of their cognitive competence).

Together, these results strongly support the validity of the 3 personality types in early childhood. Their concurrent correlates in terms of key variables of internalizing and externalizing tendencies (shyness-inhibition and aggressiveness) and in terms of their social and cognitive competence draw a consistent picture of differences between the types.

Although the types were only empirically derived (Q-factor analysis of Q-sort descriptions, followed by assignment of each child to the most similar Q-factor), they are consistent with expectations based on the theory of Block and Block (1980), and tell a coherent story about important personality differences in early childhood. How does this story continue as we follow the LOGIC children over childhood, adolescence, and the first years of adulthood?

### **Trajectories into Adulthood**

Until the last assessment at age 23, 27% of the initially 141 classified children dropped from the study. As explained in chapter 1, the initial attrition was mainly due to the parents who moved away from the greater Munich area, but after age 12 it was increasingly due to the LOGIC participants themselves. Therefore it was important to check the data for systematic attrition effects by comparing the 38 drop-outs with the 103 longitudinal participants. In line with other studies showing a higher drop-out rate for more problematic participants (e.g., clinical groups versus controls, low IQ versus high IQ), only 33% of the drop-outs were ego-resilient whereas a majority of the longitudinal participants was ego-resilient (55%) – a

significant difference. Thus, ego-resilience contributed to the participants' cooperation in the LOGIC study. Consequently, differences between the overcontrollers and the ego-resilients and differences between the undercontrollers and the ego-resilients were somewhat attenuated by the selective drop-out. Fortunately, the proportions of over- and undercontrollers among the non-ego-resilient participants remained constant; they were not affected by selective attrition. With other words, *if* characteristics were found that distinguished the two non-ego-resilient groups from the ego-resilient group in the assessments after early childhood, they could be trusted, and there was no bias in the LOGIC study towards finding characteristics of overcontrollers more easily than characteristics of undercontrollers, or vice versa.

Because drop-out occurred for different participants at different times, and sometimes data could not be assessed for just one point in time or one assessment procedure, there was a complex pattern of missing data over the course of the LOGIC study. Reducing the data to those participants that had non-missing data in all assessments would have extremely reduced the sample of participants, and would have introduced additional problems with selective attrition. One solution to this problem is to analyze individual developmental trajectories based on points in time that can differ between participants. This approach was early introduced into the LOGIC study by JBA who showed that more intelligent and more socially competent children became less shy over the first 6 years of the LOGIC study than less intelligent or less socially competent children (Asendorpf, 1994).

More specifically, JBA used hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992; Raudenbush & Bryk, 2002). The same methodological approach to the study of long-term developmental change was used in later studies (Asendorpf & van Aken, 1999; Denissen et al., in press). Each participant's repeated assessments are regressed at level 1 of the hierarchical model on age or (if non-linear change is studied) on particular functions of age such as age squared (U-shaped or inverted U-shaped trajectories), or functions

describing exponential change. Thereby each participant's development is described by at least two parameters: level (average over all repeated assessments) and change (the slope of a straight line describing linear change and/or other parameters describing non-linear change). This can be accomplished separately for each participant, followed at level 2 of the analysis by an analysis of inter-individual differences in these parameters (e.g., correlating the slope of changes in shyness with the initial level of IQ; Asendorpf, 1994). However, HLM offers more powerful opportunities such as simultaneous Bayesian estimates of both level and change that weight each individual's parameter by its intra-individually determined reliability (see Raudenbush & Bryk, 2002).

The following analyses of the developmental trajectories of the 3 personality types are based on such Bayesian estimates of change (see Denissen et al., in press, for details). Similar to the analysis of concurrent correlates of the types (see Table 2), they contrast ego-resilients with overcontrollers and undercontrollers, respectively. Instead of contrasting them in terms of correlates assessed at the same age, these longitudinal analyses contrast them in terms of the level and linear and quadratic change in individual trajectories. Denissen et al. (in press) applied this approach to the developmental change in parental judgments of shyness and aggressiveness that were obtained all over the LOGIC study, from age 4 until age 23. One particular advantage of these analyses is that the definition of the 3 personality types was based on data sources (teacher Q-sort judgments) that were completely independent in terms of judges and methods from the dependent variables (parental questionnaires). Therefore, relations between the personality types and developmental change cannot be due to shared methods.

## Shyness

Figure 2 shows the average developmental trajectories of the 3 personality types for the parental judgments of shyness. The figure suggests an overall decrease in these judgments. An HLM model including quadratic trends did not show any significant quadratic effects. Therefore, a linear model was chosen that contrasted overcontrollers with ego-resilients, undercontrollers with ego-resilients, and males with females, and that estimated overall effects for (male) ego-resilients (no sex effects were found such that the overall effects likewise apply to females). The logic behind this approach is that the ego-resilients are something like a control group representing “normal” development, and that the development of the over- and undercontrollers is then described as a deviation from this normal pattern.

Ego-resilients’ overall level of shyness between ages 4 and 23 was estimated as 2.77 on the scale ranging from 1 to 7, thus clearly below the mean 4 of the rating scale. Note that this estimate is not simply the average of all available data for the (male) ego-resilients because the individual trajectories were weighted by their reliability. Concerning change, shyness was estimated to significantly decrease for 0.087 points/year in this group. Thus, over the 19-year period, the (male) ego-resilients were judged as 1.65 points less shy at age 23 than they were at age 4.

Let us now turn to the deviations of the two non-ego-resilient groups from the ego-resilient group. Figure 2 suggests that the overcontrollers were constantly judged as more shy than the ego-resilients whereas the undercontrollers started off with the lowest shyness scores but ended up with as high shyness as the overcontrollers. Indeed, the overcontrollers were judged as 0.55 points more shy overall than the ego-resilients (a significant difference), and were not significantly different from the ego-resilients in terms of their slope in shyness. In contrast, the undercontrollers were judged by the parents as as shy as the ego-resilients overall but their shyness decreased less strongly than the shyness of the ego-resilients (the difference

was 0.060 points/year, amounting to a total of 1.14 points between ages 4 and 23). With other words, whereas the ego-resilients' shyness decreased for 1.65 points, the undercontrollers' shyness decreased only for  $1.65 - 1.14 = 0.51$  points on the 7-point parental shyness scale. All in all, the expected overall higher shyness of overcontrollers was confirmed, but in addition an unexpected shift of the initially below-average shyness levels of the undercontrollers to above-average shyness levels was found.

Additional analyses of the participants *self-judgments* of shyness that were obtained at ages 12, 17 and 23 did not show any effects of early personality on level or change in the self-concept for shyness. Also, the concurrent correlations between the self- and parent-judgments of shyness were rather low (below .32 for all ages). It seems that the later self-concept of shyness is independent from early personality and follows an own developmental trajectory from late childhood into adulthood.

Analyses of the relationship between self- and parent-judgments of shyness and the quality of the LOGIC participants' social relationships with their peers and parents suggest that the self-concept of shyness is related to the quality of peer relationships in adolescence and emerging adulthood. The perceived support from peers and parents was reported by the LOGIC participants at ages 12, 17, and 22. Table 3 presents the concurrent correlations between the two measures of shyness with perceived support. Perceived support from the parents was unrelated to both measures of shyness but perceived support from peers was related to these measures, particularly to the self-report of shyness at ages 17 and 23 (see Table 3).

- Table 3 -

The most likely interpretation of these results is that in adolescence the self-concept of shyness becomes linked with negative experiences with peers such as perceptions of lack of support or even peer rejection. To the extent that the parents observe the quality of the peer

relationships (which might be particularly difficult for them during adolescence), their shyness judgment is also influenced by these perceptions.

Having this in mind, we can once more turn to the interpretation of the increase in undercontrollers' shyness between ages 12 and 23 (see Fig. 2). This increase was only found for the parental judgments of shyness, not for the self-judgments. Indeed, perceived support from peers was unrelated to the early personality types, both in terms of overall level across the 11-year period between ages 12 and 23 and in terms of change (there was a significant increase over this period shared by all three types). In particular, undercontrollers' perceptions of support did not increase less than the support perceptions of ego-resilients. This observation suggests that the perceived increase in the parental judgments of shyness might be due to increasing problems in undercontrollers' relationships with the *parents*. Indeed, the undercontrollers perceived as much conflict with the parents as the ego-resilients at age 12, but at age 17 and 23 they tended to perceive more conflict than the ego-resilients. In contrast, the overcontrollers perceived as much conflict as the ego-resilients at all three ages. The bottom line is that the increases in parents' perceptions of the undercontrollers' shyness between ages 12 and 23 may be based based on problems of the parent-child relationship.

- Fig. 3 -

### **Aggressiveness**

As can be seen in Figure 3, aggressiveness shows an extremely small initial difference between the personality types at age 4 which can be attributed to problems with the parental judgments of aggressiveness at this early age (see section on concurrent correlates of the types). Later, undercontrollers were judged as constantly more aggressive than the ego-resilients, and overcontrollers were perceived as increasingly aggressive, starting off at low scores at age 6, reaching resilient's level of aggressiveness around age 12, and increasing further, particularly between ages 17 and 23 (accelerated increase).

This pattern was confirmed by the HLM analyses. A model including linear and quadratic trends as well as sex indicated that male undercontrollers, but not male overcontrollers, were judged by their parents as significantly more aggressive than male ego-resilients (an average of 0.80 points higher on the 7-point aggressiveness Scale). Also, females were judged as significantly less aggressive than males (their scores were an average of 0.26 lower). Thus, the effect of undercontrol on aggressiveness was three times as large as the effect of sex.

The analyses of linear and quadratic trends indicated a significant mean decrease in the parental judgments of aggressiveness for male ego-resilients. The corresponding decrease rate was .067 points/year on the 7-point scale. Thus, over the 19-year period, ego-resilient male participants were judged as 1.27 points less aggressive at age 23 than at age 4. There was a significant additional influence of sex on this linear change such that females decreased 0.028 points/year *less* than boys. An additional significant positive mean quadratic trend indicated that this overall decrease was particularly strong in the beginning but less strong or even reversed into an increase toward the end. Indeed, Figure 3 indicates an increase rather than a decrease of the aggressiveness scores between ages 17 and 23.

Turning to differences in change between the types, the analyses confirmed a significant difference for the male overcontrollers for both the linear and the quadratic trend in aggressiveness. The male overcontrollers' aggressiveness scores decreased 0.030 points/year *less* than the aggressiveness scores of the male ego-resilients, amounting to a total of 0.57 points over the 19-year period. In addition, male overcontrollers' aggressiveness scores showed an even stronger positive quadratic trend than the male ego-resilient participants. Inspection of Figure 3 reveals that this was mainly due to a particularly strong increase between ages 17 and 23; this increase was shared to some extent also by the undercontrollers.

Analyses of the participants *self-judgments* of aggressiveness that were obtained at ages 12, 17 and 23 showed only an effect of undercontrol on the level of aggressiveness; as expected, the undercontrollers reported significantly higher aggressiveness than the ego-resilients. The concurrent correlations between the self- and parent-judgments of aggressiveness were low to intermediate (they varied between .26 and .40).

Similar to the results for undercontrollers' shyness, the stronger increase of overcontrollers' and undercontrollers' aggressiveness was not supported by the self-judgments of the LOGIC participants. Although also the self-judgments showed a significant increase of aggressiveness between ages 17 and 23, this increase was very similar for all three personality types. Thus, the specific increase for over- and undercontrollers was due to specifics of the parental perceptions of aggressiveness. Conflict in the parent-child relationship can be excluded because neither the overcontrollers nor the undercontrollers reported more change between ages 17 and 23 than the ego-resilients. Instead, as we will see in the next section, the increase in parents' perceptions of aggressiveness was due to a delayed adoption of adult roles by the non-resilient participants.

### **Outcomes of Early Personality in Emerging Adulthood**

Important developmental outcomes of the early personality types after the 18<sup>th</sup> birthday (that marks in Germany the transition into adult roles and obligations) were studied retrospectively by a Life History Interview conducted at the last assessment (age 23). In this interview (see Denissen et al., in press, for details), major life history data between the 18<sup>th</sup> birthday and the time of the interview (age 23) were reconstructed on a monthly basis. In this chapter we discuss five such outcomes: leaving the parental home, establishing romantic relationships, continuing education, integration into the labor force, and delinquency.

**Leaving the parental home**

Regarding the age of leaving the parental home for the first time (some participants moved back for some time after leaving), there were no significant differences between the early personality types. Indeed, according to Arnett (2000), leaving home and returning home as a transitional phase of living are irregular developmental patterns in emerging adulthood, and therefore difficult to predict. Separate analyses for males and females indicated that male ego-resilients left home 1 year earlier than non-ego-resilient males whereas no such effect was found for females (Denissen et al., in press) but this sex difference should be considered with caution because the sex by type interaction was only marginally significant.

**Romantic relationships**

Analyses of the time until the participants established a stable romantic relationship showed again no significant differences between the personality types but a strong sex effect (males needed 1.1 years more time than females, a difference of nearly 1 standard deviation). A marginal sex by type interaction was due to the fact that overcontrolled males needed significantly more time to establish a romantic relationship than other ego-resilient males whereas no such difference was found for females. This sex difference is consistent with traditional gender roles where males are expected to show more initiative than females (which, in turn, may be more difficult for overcontrolled males).

**Education**

A strong effect of early personality type on the level of education (highest achieved educational degree) was due to the fact that undercontrollers reached a significantly lower educational level than the other participants (the overcontrollers did not significantly differ from the ego-resilients). This effect of early undercontrol applied to both males and females. Of the undercontrollers, only 28% finished high-school (0% of the 5 female undercontrollers, 35% of the 20 male undercontrollers) whereas 63% of the remaining participants finished

high-school. Because the undercontrollers had a lower IQ in early childhood (see Table 2), we statistically controlled the educational data for early IQ by analysis of covariance. After this control, the undercontrollers still showed a significantly lower educational level and a significantly lower percentage of finishing high-school. Thus, the undercontrollers were educational underachievers who failed to reach the educational level expected by their IQ.

Because underachievement has been regularly found to be linked with the socio-economic status of the family of origin (as operationalized by the occupational prestige of the parents), because undercontrollers were found to be significantly lower in socio-economic status than the remaining participants, and because socio-economic status correlated significantly with educational level ( $r=.37$ ), we statistically controlled the influence of undercontrol on educational level also for socio-economic status. After this control, and even after controlling for both early IQ and socio-economic status, the undercontrollers continued to show a significantly lower educational level and a significantly lower percentage of finishing high-school. Thus, early undercontrol led to educational underachievement even when social-economic status was controlled.

### **Work**

Three different variables were analyzed that indicate important steps toward integration into the labor force: latency to the first part-time job, latency to the first full-time job, and percentage of time in a full-term job (all variables were computed for the interval from the 18<sup>th</sup> birthday to the day of the Life History Interview). Educational level significantly correlated with both latencies, but in different directions (with latency to part-time work,  $-.42$ , with latency to full-time work,  $.25$ ). This correlational pattern is very likely due the fact that it is difficult to combine higher education, particular at university, with a full-time job although it can be combined with a part-time job (most students in Germany work part-time). Because

of this close relation between education and part-time versus full-time work, it is important to control educational level in analyses of work.

Concerning full-time work, the early personality types did not show significant differences in either the latency to full-time work or the percentage of time spent in full-time work. However, when educational level was statistically controlled, the undercontrollers spent significantly less time after their 18<sup>th</sup> birthday in full-time work (12%) than the other two types (resilients, 25%; overcontrollers, 21%). Interestingly, the latency to the first full-time job was not significantly related to early personality when educational level was controlled. Thus, undercontrollers were not only educational underachievers but also occupational underachievers. They engaged less in full-time work than expected by their educational level, and this was due to interruptions of jobs rather than a late start of those jobs.

Concerning part-time work, the ego-resilients started a part-time job 1 year earlier than the other two types ( $p < .005$ ). When educational level was controlled, only a statistically marginal difference remained ( $p < .09$ ). Thus, the effect of early ego-resiliency on the engagement in a part-time job was largely mediated by the higher educational level of the ego-resilients. The remaining effect reflects the fact that ego-resilients start to adopt adult work roles earlier than the other two personality types (see Denissen et al., in press). The reason for not adopting these roles may be different for these other two types, however. The undercontrollers may show a lack of interest in work and may be not willing to fulfill work requirements such as reliable engagement whereas the overcontrollers may have problems in securing a job.

Whatever the reasons were for not engaging in a part-time job, the latency to a part-time job was an important mediator of the somewhat surprising and yet unexplained increase in parent-judged aggressiveness between ages 17 and 23 (see Fig. 3). This increase was predicted by being *not* ego-resilient in early childhood, and this predictive relation was fully

mediated by the latency to part-time work because this latency (a) was predicted by being not ego-resilient in early childhood, and (b) predicted increasing parent-judged aggressiveness (see Fig. 4).

- insert Fig. 4 -

Interestingly, educational level, although related to the latency to part-time work and early ego-resiliency, did *not* mediate ego-resiliency's effect on increased aggressiveness judgments (a significant path remained). Therefore, in line with Denissen et al. (in press), it seems that engaging in a part-time work prevents aggressiveness in young adults who have not fully adopted adult roles and responsibilities, at least as far as parental judgments are concerned.

### **Delinquency**

A last analysis concerned the self-reported number of criminal charges because of delinquency after the 18<sup>th</sup> birthday, standardized in terms of charges within 5 years. As expected on the basis of the findings by Caspi et al. (1996), undercontrollers reported more such charges (.10 charges on average) than the other two types (.01 charges in both cases). Thus, they reported nine times more charges than the other LOGIC participants. This effect of early undercontrol on later delinquency was only partially mediated by social-economic status. Undercontrollers were significantly lower in socio-economic status than the other participants, and socio-economic status correlated  $-.24$  ( $p < .01$ ) with delinquency, but after controlling for socio-economic status, early undercontrol continued to significantly predict later delinquency (the corrected rate was still 9%).

In line with the self-selection of the longitudinal LOGIC sample for higher ego-resiliency, the rate of charges reported even by the undercontrollers was low; only 28% of them reported any charges (as compared to 5% of the ego-resilients and the overcontrollers). Most charges related to drug trafficking, traffic violations and physical assault. In the two

most delinquent cases, one participant was incarcerated for dealing in drugs; another was ordered to undergo therapy after five different charges had been laid for theft and drug usage. Both were classified as undercontrollers in early childhood.

### **Discussion**

Our analyses of the long-term effects of early personality relied on a person-centered approach where broad personality patterns were empirically classified into a few personality types. Alternatively, the LOGIC data can be analyzed from a variable-centered perspective with regard to specific personality dimensions such as shyness or inhibition, aggressiveness, social competence, or the Big Five factors of personality (extraversion, neuroticism, conscientiousness, agreeableness, and intellect or culture); see Asendorpf and van Aken (2003b), Asendorpf and Denissen (2006), and Asendorpf, Denissen, and van Aken (2007) for such analyses. Because differences between the 3 personality types are systematically related to these personality dimensions (e.g., overcontrollers differ from ego-resilients primarily in terms of higher shyness-inhibition; undercontrollers differ from ego-resilients primarily in terms of higher aggressiveness; ego-resilients differ from the other two types primarily in terms of higher social competence), presenting both approaches would be largely redundant. We chose the person-centered approach here mainly because (a) the results can be presented in terms of group differences which are easier to grasp for most readers than correlational findings, (b) because the results can be directly compared with the results of the Dunedin Longitudinal Study, and (c) because the person-centered perspective is one characteristic that sets the LOGIC study apart from most other longitudinal studies of personality development.

The empirical classification of the early personality patterns identified three personality types, ego-resilients, overcontrollers, and undercontrollers, that were strikingly similar in terms of their concurrent correlates to those introduced by Block and Block (1980), and to 3 of the 5 personality types in 3-year-olds that were identified by Caspi and Silva

(1995) in the Dunedin Longitudinal Study (well-adjusted, inhibited, and undercontrolled children).

The analyses of the personality trajectories of the LOGIC types in terms of parental judgments of shyness and aggressiveness (key indicators of internalizing and externalizing tendencies, respectively) showed an impressive stability of the differences between the types from early childhood into young adulthood (see Figures 2 and 3). Contrary to many longitudinal studies where the predictive validity of initial personality differences decreases with increasing prediction interval, the predictive power of the early identified LOGIC types remained surprisingly constant over the 20-year period (see also Asendorpf & Denissen, 2006). It should be noted that the systematic drop-out of ego-resilients over the course of the LOGIC study is expected to diminish differences between the ego-resilient group and the over- and undercontrollers but, as Figures 2 and 3 show, this was not the case.

Although this surprising constancy of the validity of the types may be partly attributed to an unrealistic continuity of parents' perceptions of their child's personality – once formed, these parental perceptions may become highly resistant to change – the successful predictions of numerous important life outcomes from the LOGIC types such as education level, integration into the labor force, and delinquency attest to their real predictive power over the long run.

The key to this successful prediction very likely was that the predictors were based on judgments of preschool teachers who knew the children very well, and that the predictors were based on highly aggregated data – aggregated over many Q-sort items, over many children of the same personality type, and over three yearly assessments. The aggregation over time reduced the impact of fluctuating situational variables that often affect personality assessments.

Turning now to the specifics of the long-term trajectories, we discuss them here in terms of characteristics that distinguish overcontrollers, or undercontrollers, from the “control group” of the ego-resilients. The ego-resilient group can be indeed considered a control group because it was the largest one, comprising half of the sample.

### **Overcontrollers**

Initially, the overcontrollers were characterized by shy-inhibited behavior as judged by both teachers and parents, and supported by observations of play with an unfamiliar peer. A slightly lower IQ in early childhood can be attributed to shyness in the interactive testing situations. In line with this interpretation is the fact that later IQ tests in adolescence and emerging adulthood did not show significant IQ differences between overcontrollers and ego-resilients any more, and that the overcontrollers had reached at age 23 the same educational level as the ego-resilients.

Shy-inhibited behavior continued to characterize the overcontrollers all over the course of the LOGIC study, at least as far as the parental perceptions are concerned. Interestingly the overcontrollers’ self-perceptions of shyness did not set them apart from the ego-resilients’ self-perceptions. Analyses of perceived support from parents and peers revealed that the self-concept of shyness, more than the parental perception of shyness, was associated with perceived lack of support from peers (but not from parents). The specificity of this relation rules out the interpretation that the association between self-perceived shyness and self-perceived lack of peer support was simply due to a generalized negative bias in perception. Instead, it seems that problems with peers that are not predictable from early personality influenced the emerging self-concept of being a shy person. Similar to the influence of peer relationships on internal working models of attachment (Furman, Simon, Shaffer & Bouchey, 2002), peer relationships shape the self-concept of shyness in important ways.

Male overcontrollers (but not female overcontrollers) needed more time to engage in a stable romantic relationship. This finding is consistent with earlier studies demonstrating that shy men but not women marry later than their more outgoing counterparts, both in the US and in Sweden (Caspi et al., 1988; Kerr et al., 1996). This delay can be attributed to the fact that, according to the traditional gender roles, males are expected to be the active part in dating and heterosexual relationships.

Finally, overcontrollers shared the undercontrollers' tendency to engage later in a part-time job – thus, a tendency shared by both non-resilient types. In case of the overcontrollers, this tendency was not so much explained by a lower educational level. Instead, similar to the male overcontrollers' problems with securing a date, overcontrollers of both sexes seem to have problems with securing a part-time job. When educational level was controlled, they began such a job 10 months later than the ego-resilients. Mortimer and Staff (2004) showed that part-time work in adolescence is associated with resilience and psychological well-being in early adulthood, in part because it prepares young people for stressful occupations in adulthood. Also, part-time work may offer an early opportunity to test out different occupational identities and gain (partial) financial independence, which are both essential features of emerging adulthood (Arnett, 2000).

In the LOGIC study, the delayed adoption of an important adult role led to problems with the parents who, in turn, judged the overcontrollers at age 23 as as aggressive as the undercontrollers. With other words, working at least part-time prevented an increase in parental perceptions of aggressiveness. This finding offers some interesting suggestions regarding the prevention of violence in young adults and adolescents. For example, O'Donnell and colleagues (1999) describe a violence prevention program for adolescents including a component requiring students to provide services in local health care agencies. In a controlled, large-scale evaluation study, they found that, when provided with sufficient intensity, this

intervention was successful in reducing students' level of violence. This is consistent with Roberts and colleagues' (2005) notion that assuming responsibility in taking up social roles is associated with personality maturation. The current study also suggests that the effects of work interventions may differ according to participants' personality makeup. Knowledge about the moderating role of personality on the effects of (part-time) work on aggressiveness could be used to identify individuals who are especially vulnerable to the deleterious effects of forced labor market exclusion.

### **Undercontrollers**

Initially, the undercontrollers were characterized by aggressive behavior as judged by their teachers and by observers in the preschool and kindergarten; their parents also shared this view from age 5 on. A somewhat lower IQ in early childhood may be partly attributed to distractibility in the interactive testing situations.

Aggressive behavior continued to characterize the undercontrollers all over the course of the LOGIC study, both in terms of the parental perceptions and later in terms of the self-perceptions. Interestingly the parents perceived the undercontrollers as becoming increasingly shy, starting with scores below of the ego-resilients and ending with scores as high as those of the overcontrollers. Parents' increasing shyness judgments after age 12 were paralleled by increasing perceptions by the undercontrollers that their relationships with the parents were conflict-laden. Perhaps these parent-child conflicts led to frequent withdrawal on the side of the undercontrolled children which, in turn, was perceived by their parents as shy.

At age 23, the undercontrollers reached a much lower educational level than the other participants. For example, not a single female undercontroller finished high-school, and only a clear minority of the male undercontrollers did so whereas the clear majority of the overcontrollers and ego-resilients finished high-school. More detailed analyses showed that the undercontrollers were educational underachievers (Mandel, 1997; McCall, Evahn, &

Kratzer, 1992) who failed to reach the educational level expected by their IQ. Controls for social-economic status did not substantially change this conclusion. Thus, distractibility and difficulties to concentrate that characterize undercontrollers showed long-lasting effects on their educational achievement.

Their lower educational achievement, in turn, was the main reason why the undercontrollers engaged in part-time work later than the ego-resilients, and the delayed adoption of this adult role led to an increased parental perception of aggressiveness as already explained in the preceding section on overcontrollers.

The undercontrollers also turned into occupational underachievers who did not become as much involved in full-time work as one would expect from their educational level. Interestingly, this effect was found only for the percentage of time in full-time employment, not for the latency to first full-time job. The discrepancy suggests that the undercontrollers had problems with following a continuous career after they had entered the job market. This result squares nicely with the more erratic work pattern found in the Berkeley Guidance Study (Caspi et al., 1987). It is notable that such an effect was already found early on in their working lives.

Concerning the most serious outcome of early undercontrol, delinquency in adulthood, the undercontrollers were at a 9 times higher risk of criminal charges after their 18<sup>th</sup> birthday than the other two types, and the two most delinquent participants of the sample were classified as undercontrollers at ages 4 - 6. The predictive validity of early undercontrol for later delinquency did not change substantially when it was controlled for socio-economic status. These impressive figures should be considered with caution because (a) the delinquency rate was low overall which might be attributed in part to the higher drop-out rates for undercontrolled children in the LOGIC study, and (b) only a minority of the undercontrollers reported criminal charges. When these rates are compared to the higher rates

in most other longitudinal studies (e.g. Caspi et al., 1996; Huesmann et al., 1984), it should be noted that the LOGIC sample consisted of children growing up in Bavaria, a prosperous part of Germany that provided a benign social-cultural environment. It is interesting that childhood undercontrol was a strong risk factor for delinquency even in this benign environment where the overall delinquency rate is among the lowest in Germany (Bundesministerium des Inneren, 2005).

One reason for the successful prediction of delinquency from early childhood in the relatively small sample of the LOGIC study seems to be that delinquency was restricted to charges after the 18<sup>th</sup> birthday, which is a watershed in the German legal system. Delinquency after 18 is considered as much more serious, and the response is much harsher. This distinction between adolescent and adult delinquency squares nicely with the distinction between adolescence-limited and life-course persistent antisocial behavior (Moffitt, 1993). Our measure captured predominantly life-course persistent, serious antisocial behavior which is expected to be better predictable from early childhood aggressiveness than antisocial behavior during adolescence.

### **Conclusion**

In the early days of developmental personality research, psychoanalysts as well as behaviorists strongly believed in the power of early experiences in the family. Later when the first empirical data on the rather moderate stability of personality differences over long periods of time appeared, the pendulum swung to an emphasis on developmental plasticity and change, criticizing a widespread myth of the power of early childhood experiences (Clarke & Clarke, 1977; Kagan, 1984). Subsequently, research on the temperamental underpinnings of personality, including its genetic and physiological basis, made the pendulum swing back, emphasizing the now firmer evidence for a not immutable but rather stable temperamental core of personality (Caspi, 2000; Kagan, Snidman, Arcus, & Reznick,

1994). The last decade has faced a differentiated view, emphasizing both stability and change in personality across the entire life course (Fraley & Roberts, 2005; Roberts & DelVecchio, 2000), based on complex mechanisms of gene – environment transactions (Rutter, 2006). The LOGIC study adds a small but significant piece to this large body of empirical evidence, emphasizing the surprising predictive power of early identified personality types even for a period in life, emerging adulthood, where individual trajectories seem to be particularly hard to predict.

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Table 1

*Personality profiles for 3 prototypical children at ages 4-6*

Ego-resilient child	Overcontrolled child	Undercontrolled child
CCQ item (number)	CCQ item (number)	CCQ item (number)
Attentive, able to concentrate (66)	Gets along well with other children (4)	Vital, energetic, lively (28)
Competent, skillful (89)	Considerate of others (2)	Restless and fidgety (34)
Self-reliant, confident (88)	Helpful and cooperative (6)	Pushes and stretches limits (13)
Becomes strongly involved (74)	Obedient and compliant (62)	Expresses negative feelings directly (18)
Curious and exploring (40)	Uses and responds to reason (25)	Transfers blame to others (11)
Persistent in activities (41)	Neat and orderly (59)	Stubborn (90)
Inhibited and constricted (35)	Seeks to be independent (83)	Attentive, able to concentrate (66)
Rapid shifts in mood (54)	Self-reliant, confident (88)	Fearful and anxious (23)
Immature behavior under stress (12)	Pushes and stretches limits (13)	Gives in in conflict (44)
Disorganized under stress (46)	Self-assertive (82)	High standards for self (47)
Sulky or whiny (94)	Teases other children (80)	Inhibited and constricted (35)
Cries easily (33)	Aggressive (85)	Ruminates and worries (24)

*Note.* Shown are the six highest- and the six lowest-ranking CCQ items in the empirically derived prototypic profiles for ego-resilient, overcontrolled, and undercontrolled children (see Asendorpf & van Aken, 1999, Table 2). Abbreviated item descriptions. Item numbers refer to the original 100-item CCQ by Block and Block (1980).

Table 2

*Concurrent correlates of the 3 personality types in early childhood*

Correlates	Ego-resilients		Overcontrollers		Undercontrollers	
	<i>n</i> =69		<i>n</i> =29		<i>n</i> =43	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Teacher judgment socially competent <sup>a</sup>	.53	.16	.27*	.22	.07*	0.25
Teacher judgment shy-inhibited <sup>a</sup>	.04	.16	.37*	.12	-.27*	0.14
Teacher judgment aggressive <sup>a</sup>	-.41	.18	-.45	.19	.22*	0.18
Parental judgment shy-inhibited (1-7) <sup>a</sup>	3.27	1.03	4.16*	1.02	2.94	0.82
Parental judgment aggressive (1-7) <sup>a</sup>	2.66	0.66	2.66	0.86	3.16*	0.81
Latency to first request from peer (min)	6.32	6.25	10.92*	5.63	4.12	5.47
Observed aggressiveness with peers (%)	1.79	3.05	1.16	2.03	6.20*	6.09
IQ <sup>a</sup>	103.4	9.18	98.7*	9.90	95.0*	12.21
Late schooling <sup>b</sup>	0.11	0.31	0.12	0.33	0.32*	0.47

*Note.* \* indicates significant ( $p < .05$ ) difference with resilient group.

<sup>a</sup> Average across ages 4, 5, 6.

<sup>b</sup> Percentage not yet attending elementary school in expected school year.

Table 3

*Concurrent relationships between shyness and perceived support from peers and parents*

Shyness	Age	Perceived support from	
		Peers	Parents
Self-judgment	12 years	-.09	-.02
Parental judgment	12 years	-.21*	-.05
Self-judgment	17 years	-.35***	-.12
Parental judgment	17 years	-.09	.07
Self-judgment	23 years	-.30***	-.11
Parental judgment	23 years	-.21*	-.01

*Note.* *N* varies between 115 and 182. \*  $p < .05$  \*\*\*  $p < .001$ .

Figure 1. *Theoretically expected position of prototypical ego-resilient, overcontrolled, and undercontrolled children according to Block and Block (1980).*

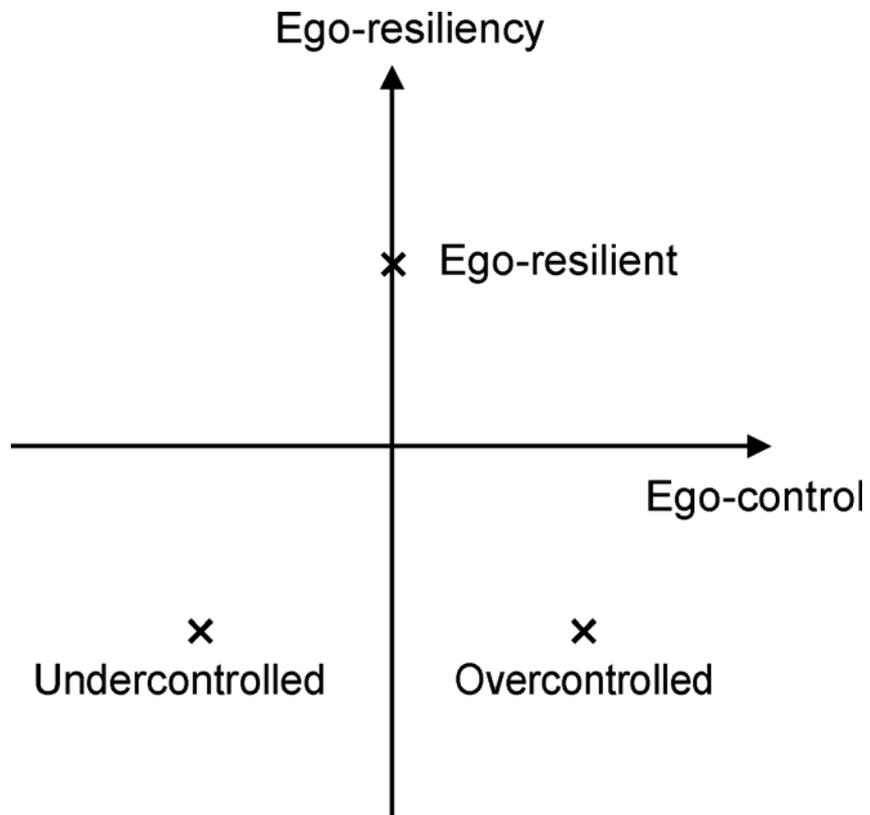


Figure 2. Developmental trajectories of ego-resilient, overcontrolled, and undercontrolled children for parent-judged shyness (reprinted from Denissen et al., in press, Fig.1).

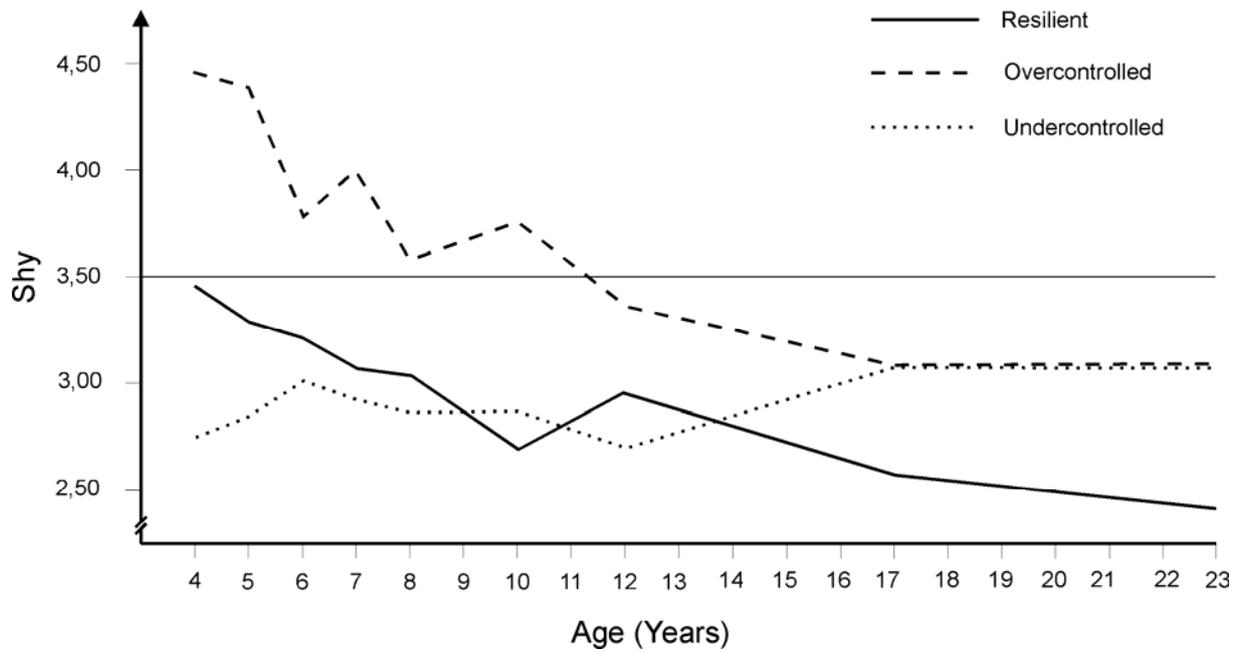


Figure 3. Developmental trajectories of ego-resilient, overcontrolled, and undercontrolled children for parent-judged aggressiveness (reprinted from Denissen et al., in press, Fig.1).

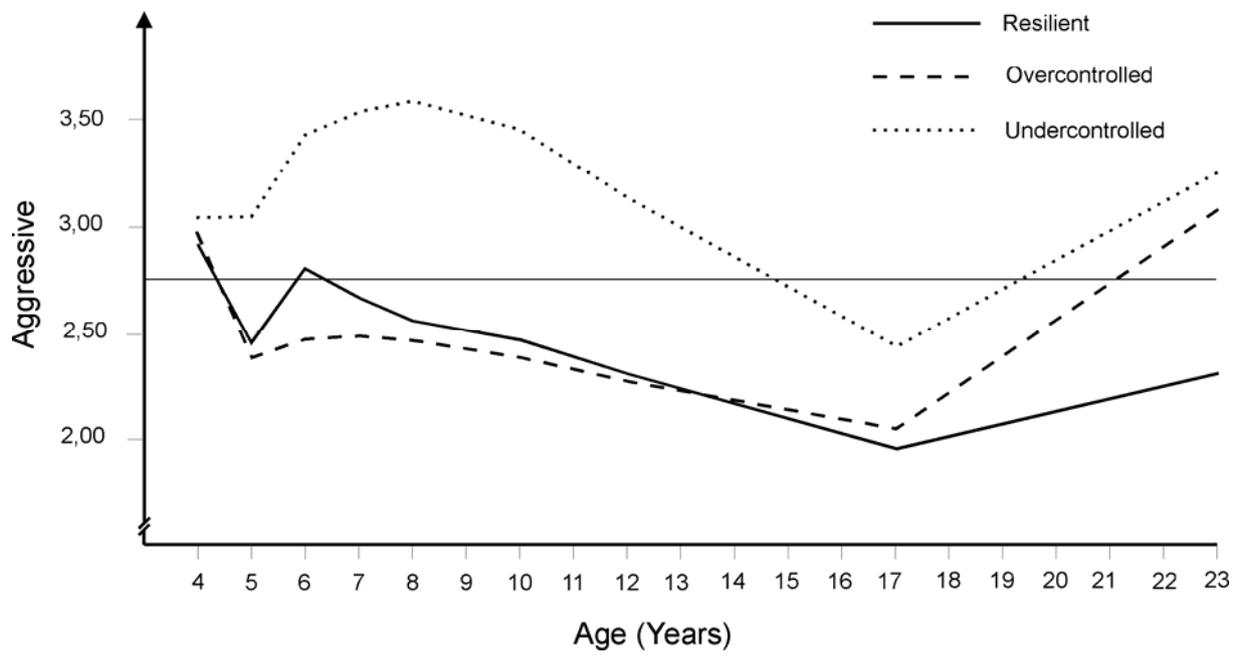


Figure 4. Mediation of the effect of early ego-resiliency on the change in parent-judged aggressiveness between ages 17 and 23 by the latency to the first part-time work (reprinted from Denissen et al., in press, Fig. 2).

