

# Aggression in Childhood and Long-Term Unemployment in Adulthood: A Cycle of Maladaptation and Some Protective Factors

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The present study was designed to shed light on specific risk mechanisms and protective factors in the relation between aggression in childhood and long-term unemployment in adulthood. Participants were drawn from the ongoing Jyväskylä Longitudinal Study of Personality and Social Development; data gathered at the ages of 8 ( $N = 369$ ), 14, 27, and 36 years ( $n = 311$ ) were used in the present study. Teacher-rated aggression at age 8 was related to subsequent long-term unemployment through a cycle of maladaptation. Specifically, childhood aggression predicted school maladjustment at age 14, which was both directly and indirectly (via problem drinking and lack of occupational alternatives at age 27) related to long-term unemployment. Child-centered parenting and prosocial tendencies in an aggressive child significantly lowered his or her probability of becoming long-term unemployed in adulthood.

Prospective studies of the individual characteristics that predict unemployment have revealed that conduct disorder (Fergusson, Horwood, & Lynskey, 1997), behavior problems (Caspi, Wright, Moffitt, & Silva, 1998), and low self-control of emotions (Kokko, Pulkkinen, & Puustinen, in press) are powerful predictors of subsequent unemployment. Although measured and defined differently, these predictors have one thing in common, namely, physically aggressive behavior that is intended to hurt other people and that reflects a lack of concern for other people's feelings (Loeber & Hay, 1997). Previous research, however, has not specified the risk mechanisms through which aggressive behavior in childhood and adolescence produces unemployment in adulthood. Our main aim in the present investigation was to identify links between aggression in childhood and long-term unemployment in adulthood and to shed light on factors that might counteract these links.

Two mechanisms have been suggested that may heighten the risk of long-term unemployment among aggressive children: cumulative continuity and interactional continuity (Caspi, Bem, & Elder, 1989; Caspi, Elder, & Bem, 1987). *Cumulative continuity* describes prior behaviors in which individuals select environments that further strengthen their behaviors. In this manner, aggressive behaviors "are sustained by the progressive accumulation of their own consequences" (Caspi et al., 1987, p. 308). It has been shown that childhood aggression is a powerful determinant of subsequent poor educational attainment (Brook & Newcomb, 1995; Caspi et al., 1987, 1989; Rönkä & Pulkkinen, 1995), which further increases the chances of unemployment (Caspi et al., 1998; Kokko et

al., in press) and low career orientation (Pulkkinen, Ohranen, & Tolvanen, 1999) by closing the doors of opportunity. Childhood aggression also predicts drinking problems (Brook & Newcomb, 1995; Pulkkinen & Pitkänen, 1994), which are, in turn, related to low work involvement (Brook & Newcomb, 1995), an unstable career line (Rönkä & Pulkkinen, 1995), as well as underemployment and unemployment (Sanford et al., 1994).

*Interactional continuity* describes behaviors that are sustained by the reciprocal responses they evoke in others (Caspi et al., 1987, 1989). Early aggression may begin a cycle of maladaptation that contributes to school behavior problems during adolescence, such as peer rejection (Coie & Dodge, 1998), low motivation, and poor school achievement (Bergman & Magnusson, 1997; Brook & Newcomb, 1995). Childhood aggression has also been shown to predict dropping out of school (Cairns, Cairns, & Neckerman, 1989; Ensminger & Slusarcick, 1992). These are serious problems because school adjustment and academic achievement are some of the most important developmental tasks faced in adolescence and because each is a strong predictor of subsequent success and competence in the work domain (e.g., Masten & Coatsworth, 1995, 1998). Previous research has also indicated that childhood aggression per se relates to subsequent "erratic worklife" (Caspi et al., 1987, 1989; Kokko et al., in press). Aggressive individuals may lack necessary skills for successful interaction in the workplace. For that reason they may easily be discharged from their jobs or may voluntarily leave their jobs. Hostile individuals may not be particularly successful in presenting themselves to prospective employers and thus may have difficulties with reemployment when unemployed (Layton & Eysenck, 1985).

Moderators and mediators (see Baron & Kenny, 1986) may explain the relation between aggression and unemployment. Mediators describe different pathways through which aggressiveness leads to unemployment, whereas moderators describe why some individuals avoid unemployment in spite of aggression. We equate moderators with protective factors that provide some aggressive children a buffer against becoming unemployed (see Rutter, 1994). It has been shown that protective factors can reside either in the individual or in the context, that is, that they are either personal or

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environmental (Freitas & Downey, 1998; Masten & Coatsworth, 1998; Rutter, 1985, 1994).

In the present study of aggression in childhood and long-term unemployment in adulthood, we examined both environmental and personal protective factors. Environmental main effects of parenting practices were considered because authoritative (Steinberg, Elmen, & Mounts, 1989), or child-centered (Pulkkinen, 1982), parenting—including parental acceptance, behavioral supervision, and psychological autonomy granting—is related to good school performance (Steinberg, Lamborn, Dornbusch, & Darling, 1992; Steinberg, Mounts, Lamborn, & Dornbusch, 1991), high self-reliance, a low level of psychological distress, and infrequent involvement in delinquent activity (Steinberg et al., 1991) as well as to high self-control of emotions and a stable working career (Männikkö & Pulkkinen, in press). Parenting practices may also represent environmental buffering mechanisms. Low self-control, typified by aggression, can be modified by effective child rearing (Gottfredson & Hirschi, 1990). Effective child rearing may channel an aggressive child into a more positive developmental pathway by, for example, encouraging involvement in school.

The present study also examined personal protective factors. There were two reasons for expecting prosocial tendencies to have buffering effects. First, theoretically prosocial tendencies, particularly constructive behavior in conflict resolution, and aggressive behavior can be seen as manifestations of social activity differing in emotional regulation (Pulkkinen, 1995, 1996, 1998). Self-control of negative emotions is low in aggression but high in constructive behavior. Individuals may not be absolutely consistent in displaying only either aggressive or constructive behaviors in social situations. Even a normally well-behaved child may react aggressively to adverse factors if the adversity exceeds his or her coping capacity (Pulkkinen, 1984). Feshbach and Feshbach (1986) also noted that prosocial and aggressive tendencies are not mutually exclusive: "Strong aggressive dispositions and strong altruistic dispositions can characterize the same organism" (p. 191). Individuals who are capable of constructive behavior in spite of their aggressive tendencies may be able to cope with critical life situations in more constructive ways than individuals for whom prosocial strategies are uncommon.

Second, empirical research lends support to expectations that prosocial behavior may function as a protective factor against school maladjustment. Prosocial skills protect aggressive children from exclusion by peer groups (Bierman, Smoot, & Aumiller, 1993; Nangle & Foster, 1992; Volling, MacKinnon-Lewis, Rabiner, & Baradaran, 1993). Peer rejection is one of the most important factors that explain maladjustment (Magnusson & Bergman, 1990) and even delinquency (Rutter, Giller, & Hagell, 1998). Loeber and Hay (1997) summarized the findings concerning aggression and peer rejection as follows: "Apparently it is not just the presence of aggression but also the absence of more positive features that leads to children's rejection by their peers" (p. 397). Supporting this notion is Hämäläinen and Pulkkinen's (1996) finding that not only aggressive behavior but also lack of prosocial behavior was associated with arrests for offenses.

We addressed two main research problems in the present study. First, we studied whether childhood aggression begins a cycle of maladaptation that results in an erratic worklife with cumulative continuity. By a "cycle of maladaptation" we mean that childhood aggression has continuity with adolescent school maladjustment,

which may manifest in poor school success, lack of interest in schoolwork, punishments at school, and truancy. School maladjustment was further assumed to be related directly and indirectly through problem drinking and lack of occupational alternatives in young adulthood to long-term unemployment. In addition, we expected aggression to be related to drinking problems. In this cycle of maladaptation, we hypothesized that a link between childhood aggression and adolescent school maladjustment would be particularly critical because poor school achievement has been shown to predict subsequent problems in the work domain.

Second, we investigated whether there are protective factors that buffer the relation between aggression in childhood and long-term unemployment in adulthood. We hypothesized that pathways between aggression and long-term unemployment would differ depending on the level of child-centered parenting and prosocial, particularly constructive, behavior. Aggressive individuals whose parents were supportive, gave supervision, and provided a warm family environment were expected to be at lesser risk for long-term unemployment than were aggressive individuals with less child-centered parents. In addition, aggressive individuals who manifested both aggression and prosocial behavior indexed by high self-control of emotions were expected to be at lesser risk for long-term unemployment than were aggressive individuals with low levels of prosocial behavior.

## Method

### *Participants and Procedure*

Participants were drawn from the ongoing Jyväskylä Longitudinal Study of Personality and Social Development (Pulkkinen, 1982, 1998), which has traced individuals from the ages of 8 to 36 years. The study began in 1968, when 12 school classes of second-grade pupils, from both urban and suburban areas of the medium-sized town of Jyväskylä in central Finland, were randomly selected. The original sample consisted of 369 8-year-old children (173 girls and 196 boys, most of whom were born in 1959). Data gathered at ages 8, 14, 27, and 36 years were used in the present analyses.

At ages 8 and 14, information about the participants' social behavior was gathered through teacher ratings and peer nominations. At age 14 in 1974, teacher ratings were available for 167 girls (97% of the original sample) and 189 boys (96%). At age 27 in 1986, a Life Situation Questionnaire (LSQ1) was mailed to participants and returned by 155 women (90%) and 166 men (85%). In addition, 142 women (82%) and 150 men (77%) participated in a semi-structured interview. At age 36 in 1995, a second Life Situation Questionnaire (LSQ2) was mailed to participants and returned by 150 women (87%) and 161 men (83%; 2 men had died). Both LSQs yielded information on education, work history, and alcohol consumption. Data on the length of unemployment between ages 27 and 36 were obtained from 311 participants (150 women and 161 men).

At age 36, the participants and nonparticipants differed neither in socioemotional behavior (e.g., aggressive and constructive behavior) measured at age 8 nor in school success measured at age 14. Thus, on these key variables, the adult participants were representative of the original sample. Attrition at age 36 was higher among the participants who were problem drinkers at age 27 than among the other participants (Pulkkinen, Pitkänen, & Tolvanen, 1999). However, attrition from ages 27 to 36 did not occur on the basis of education. The participants at age 36 were representative of the whole age cohort born in 1959 in terms of marital status, number of children, level of education, and unemployment rate. Between the 1986 and 1995 data collections, Finland experienced a radical change in its unemployment rate, which rose from 3% to 18% (*Employment in Europe*, 1996), a fact reflected in the employment rates of the whole age cohort born in 1959 and in the present sample.

### Age 8 Measures

Aggression was assessed by teachers using the following four items: "hurts another child when angry, e.g., by hitting, kicking, or throwing something"; "kicks pieces of furniture or other objects when angry at something"; "attacks somebody without reason"; and "teases smaller and weaker peers when angry at something." Teacher ratings were made for each pupil on a scale from 3 (*often*) to 0 (*never*). Both individual items and the composite score (CS8 = composite score at age 8) were used for data analyses. Cronbach's alpha for the composite score was .86.

Prosocial behavior was conceptualized in terms of the two-dimensional model of emotional and behavioral regulation (Pulkkinen, 1995, 1996, 1998). The following teacher-rated variables were included in a composite score for prosocial behavior: "acts reasonably even in annoying situations," "thinks that if one negotiates, everything will be better," and "sides with smaller and weaker peers" for constructive behavior; "reliable classmate" and "friendly to others" for high self-control of emotions; and "will certainly find his/her way later on in life" for good coping capacities. Teachers rated each participant on a scale varying from 3 (*often*) to 0 (*never*). In addition, two peer nomination variables were included in the composite score: "Who do you think would be a good leader of an outing?" for prosocial strategies and "Who tends to disobey the teacher?" (reverse scored) for coping with social expectations. In peer nomination, the participants were asked to name at least three same-sex children who displayed a specific behavior. A participant's score for each variable was formed by the number of nominations received in the class (Pulkkinen, 1987). Cronbach's alpha for the composite score for prosocial behavior was .80.

### Age 14 Measures

School maladjustment was a composite score of four variables: school success, interest in schoolwork, punishments at school, and truancy. School success described grade point averages collected from school archives (reverse scored). Teachers rated the pupil's interest in schoolwork ("Is the pupil interested in schoolwork?") on a scale varying from 1 (*not at all*) to 4 (*very interested*; reverse scored). Teachers also rated whether the pupil had been punished at school on a scale ranging from 1 (*often*) to 4 (*never*; reverse scored) and whether they knew of instances when the pupil was truant on a scale ranging from 1 (*yes*) to 3 (*no*; reverse scored). Both individual items and the composite score (CS14 = composite score at age 14) were used for data analyses. Cronbach's alpha for the composite score was .75.

### Age 27 Measures

Occupational alternatives were assessed during the interview ("When choosing your current field, how many alternatives did you have in your mind?") on a scale ranging from 1 (*none*) to 5 (*more than three alternatives*).

Problem drinking describes volume drinking and the difficulties caused by it (Cochrane, Goering, & Lancee, 1992; Hughes, Power, & Francis, 1992). A scale for problem drinking was constructed on the basis of information about arrests for drunkenness (gathered from both the government and the local police register, which offered information about petty offenses and arrests for which the person was not necessarily prosecuted) and responses to the CAGE Questionnaire (Ewing, 1984), which was presented in the LSQ1 (Pulkkinen & Pitkänen, 1994). The acronym CAGE refers to the focus of the four items constituting the questionnaire: "Have you ever felt you ought to Cut down on your drinking?" "Have people Annoyed you by criticizing your drinking?" "Have you ever felt bad or Guilty about your drinking?" and "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (Eye-opener)?" Responses were given on a 2-point scale (*no/yes*). A participant was categorized as having clear indicators of problem drinking if he or she had

been arrested at least three times for public drunkenness or if he or she had given at least three affirmative answers to the four questions in the CAGE Questionnaire. A participant was categorized as having some indicators of problem drinking if he or she had been arrested once or twice for public drunkenness or if he or she had given two affirmative answers to the CAGE questions. Altogether, three categories were formed: 1 = *no indicators* (60.5% of the participants), 2 = *some indicators* (22.5%), or 3 = *clear indicators of problem drinking* (17.0%).

Child-centered parenting describes participants' recollections of parenting practices and the home environment at age 14. Child-centered parents consider the child's developmental needs and tasks and provide the child with both emotional support and age-appropriate demands. A good parental relationship is important to the child's well-being and is reflected in many spheres of life. Child-centered parenting represented the composite score on five variables: *parental relationship* (0 = single-parent home or quarrelsome relationship between the parents, 1 = good relations between the parents); *relationship with the father* (0 = no father or negative memories of the father, 1 = positive memories of the father); *maternal support* (0 = no mother or mother took the participant's opinions into consideration rarely, 1 = mother considered the participant's opinions); *maternal supervision* (0 = no mother or mother's supervision was poor, 1 = mother gave supervision and guidance); and *physical punishment* (0 = physical punishment used, 1 = not used). A composite score was formed by computing an averaged score of the dichotomized variables. Our data allowed a comparison of memories on parenting and home environment with prospective data on them for a subsample of 154 participants (42% of the original sample). Significant correlations were found for individual variables (Pulkkinen, 1990) and a scale for parenting (Männikkö & Pulkkinen, in press). In order to keep our sample size as large as possible, we chose to use retrospective data on parenting collected at age 27.

### Age 36 Measures

Long-term unemployment between ages 27 and 36 was assessed. The participants were asked in the LSQ2, "How would you describe your work situation since age 26 (i.e., during the past 9 years)?" Participants described their employment history (a full-time job, a part-time job, a casual job, at home as a full-time mother or father or on maternity leave, retired, something else) and the duration of unemployment in years and months during this 9-year period. Two categories were formed: long-term unemployed (more than 24 months;  $n = 25$ ; 9 women and 16 men) and not long-term unemployed (employed or unemployed for less than 24 months;  $n = 286$ ; 142 women and 144 men). It should be noted that full-time students and full-time mothers or fathers or those on maternity leave were not included in the long-term unemployed category. Similarly, those whose health problems seriously limited their working abilities were not coded as long-term unemployed. We had two reasons for focusing only on long-term unemployment in this study and thus using a dichotomous variable as an index (for a discussion of the use of dichotomous variables, see Farrington & Loeber, in press). Previous analyses (Kokko et al., in press) indicated that the relation between childhood personality characteristics and subsequent length of unemployment was not linear and that the long-term (more than 24 months) unemployed formed a special group that differed significantly from the others in terms of personal development.

### Data Analysis

Links between aggression in childhood and unemployment in adulthood were studied by means of the LISREL models (LISREL 8.14; Jöreskog & Sörbom, 1996b). The mediator model was focused on the cycle of maladaptation, beginning with aggression in childhood and ending with long-term unemployment in adulthood. The relation between aggression and unemployment was expected to be mediated by school maladjustment at age 14 and by problem drinking as well as lack of occupational alternatives

at age 27. This model consisted of two parts: the measurement model and the structural equation model. With the moderator model, we investigated the hypothesized protective effects of child-centered parenting and prosocial behavior by adding them into the model as interaction terms. As recommended by Aiken and West (1991, p. 9), we calculated the interaction terms by using the mean-centered values of aggression (CS8) and prosociality at age 8, and aggression (CS8) and child-centered parenting at age 14, which satisfied requirements that interaction terms be independent of the variables of which they consist. Both models were based on the matrix of polychoric correlations (PRELIS 2.14; Jöreskog & Sörbom, 1996c) because approximately half of the variables were either dichotomous or ordinal (see Jöreskog & Sörbom, 1996c, p. 9). In the calculation of correlations, missing values were treated pairwise. The method of estimation used was generalized least squares. We estimated the fit of the hypothetical model with the observed variables by using the following goodness-of-fit measures: chi-square, root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI). It is generally accepted that values smaller than .05 (minimum is 0) for the RMSEA and the SRMR and values higher than .90 for the GFI and the AGFI indicate a good fit of the model to the data. In order to confirm our original models, we tested several alternative models. As suggested by Jöreskog and Sörbom (1996a, p. 119), the Akaike's information criterion (AIC) was used in the comparison of the fit of the alternative models. The AIC takes both the parsimony (referring to number of parameters) and the fit of the models into account. In the comparison of the alternative models, the lower the AIC, the better the model.

The statistically significant connections between interaction terms and dependent variables (i.e., the protective effects of prosociality and child-centered parenting) were further studied by means of the Student's *t* test for independent samples. Two groups of aggressive individuals, those who later became long-term unemployed and those who did not, were compared on prosociality and child-centered parenting. Finally, we used logistic regression analysis to analyze how the level of the protective factors changes the probability of an aggressive child's becoming long-term unemployed. We used the Wald statistic (*Wald*) to test the significance of each variable.

Results

*From Aggression in Childhood to Long-Term Unemployment in Adulthood*

A LISREL model was applied to study the cycle of maladaptation from childhood aggression to adult long-term unemployment. Measurement models were formed to examine the fit of the observed variables to assumed latent factors for aggression at age 8 and school maladjustment at age 14. Intercorrelations among the variables for aggression as well as intercorrelations among the variables for school maladjustment were high; see Table 1, Variables 1-4 and 5-8, respectively. Latent factors for aggression and school maladjustment, respectively, were formed by these variables.

We assumed that aggression would explain subsequent long-term unemployment indirectly via school maladjustment at age 14 and problem drinking at age 27. School maladjustment was assumed to have both direct and indirect links through drinking problems as well as lack of occupational alternatives to long-term unemployment. On the basis of nonsignificant *t* values ( $|t| < 2.0$ ), certain paths were deleted one at a time over several iterations in the model construction, and only statistically significant connections and completely standardized coefficients are presented in

Table 1  
Pairwise Polychoric Correlations for the Variables Included in the LISREL Model for the Cycle of Maladaptation

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Hurts another child (8)	—										
2. Kicks objects (8)	.71***	—									
3. Attacks (8)	.88***	.75***	—								
4. Teases (8)	.76***	.64***	.78***	—							
5. Poor school success (14)	.36***	.27***	.36***	.29***	—						
6. Lack of interest in schoolwork (14)	.45***	.32***	.39***	.32***	.66***	—					
7. Punishments at school (14)	.52***	.35***	.42***	.39***	.51***	.59***	—				
8. Truancy (14)	.30***	.25***	.31***	.23***	.57***	.52***	.50***	—			
9. Lack of occupational alternatives (27)	.19***	.22***	.22***	.13*	.35***	.29***	.27***	.33***	—		
10. Problem drinking (27)	.43***	.41***	.35***	.40***	.49***	.48***	.45***	.38***	.30***	—	
11. Long-term unemployment (27-36)	.18**	.31***	.28***	.24***	.35***	.30***	.21***	.37***	.34***	.41***	—

Note. Numbers in parentheses indicate participants' age in years at time of measurement. Maximum *n* = 369 and minimum *n* = 254 for pairwise correlations. \* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001.

Figure 1. Modification indices were used to add specific correlations of measurement errors to the model. Aggression at age 8 explained 28% of the variance of school maladjustment at age 14, which was further, both directly and indirectly, related to subsequent long-term unemployment. Aggression had an indirect link to long-term unemployment through problem drinking. The indirect links from school maladjustment to long-term unemployment were via both problem drinking and lack of occupational alternatives at age 27. The model explained 25% of the variance of long-term unemployment.

Not shown in Figure 1 are significant correlations of measurement errors between single variables. Hurting another child at age 8 correlated with both lack of interest in schoolwork and punishments at school at age 14, as well as with long-term unemployment at age 36. Punishments at school was also correlated with both poor school success at age 14 and unemployment. Attacking other pupils at age 8 correlated with problem drinking at age 27. The model fit the data very well:  $\chi^2(34, N = 280) = 32.78, p = .53; RMSEA = .00; SRMR = .041; GFI = .98; AGFI = .96;$  and model AIC = 96.78.

Alternative models were tested next. In the first alternative model, aggression was set to directly predict school maladjustment, problem drinking, lack of occupational alternatives, and long-term unemployment. In other words, neither indirect pathways nor two-way connections were estimated. Aggression turned out to be a significant predictor of these variables, but the model fit the data poorly:  $\chi^2(37, N = 280) = 84.80, p = .00;$  model AIC = 142.80. This poor fit indicated that, at the least, two-way connections between school maladjustment, problem drinking, lack of occupational alternatives, and long-term unemployment should be included in the model. When these were added to the second alternative model, the goodness-of-fit indices showed a better fit to the data:  $\chi^2(31, N = 280) = 29.41, p = .55;$  model AIC = 99.41. This better fit implied that the latter variables were related to each other and might form indirect pathways. This finding gave support to our hypothesis of possible indirect links between aggression and long-term unemployment. Comparisons based on the model AIC indicated that the original model (AIC = 96.78) fit the data better than did the alternative models.

*Effects of Low Prosociality and Low Child-Centered Parenting on Long-Term Unemployment*

Effects of the hypothesized protective factors (prosocial behavior and child-centered parenting) on long-term unemployment were studied by including these variables and the interaction terms, calculated between aggression (CS8) and prosocial behavior at age 8 and between aggression (CS8) and child-centered parenting at age 14, into the LISREL model. We followed the procedure of testing the alternative models as described above except that we did not include measurement models and respective factors for aggression and school maladjustment in the model because these would have made it too complex (see Jaccard & Wan, 1996). Instead, composite scores for aggression at age 8 (CS8) and school maladjustment at age 14 (CS14) were used (see Table 2).

As Figure 2 indicates, both aggression and low prosocial behavior at age 8 were linked to long-term unemployment at age 36 through several paths. Aggression was related to long-term unemployment indirectly through school maladjustment at age 14 and

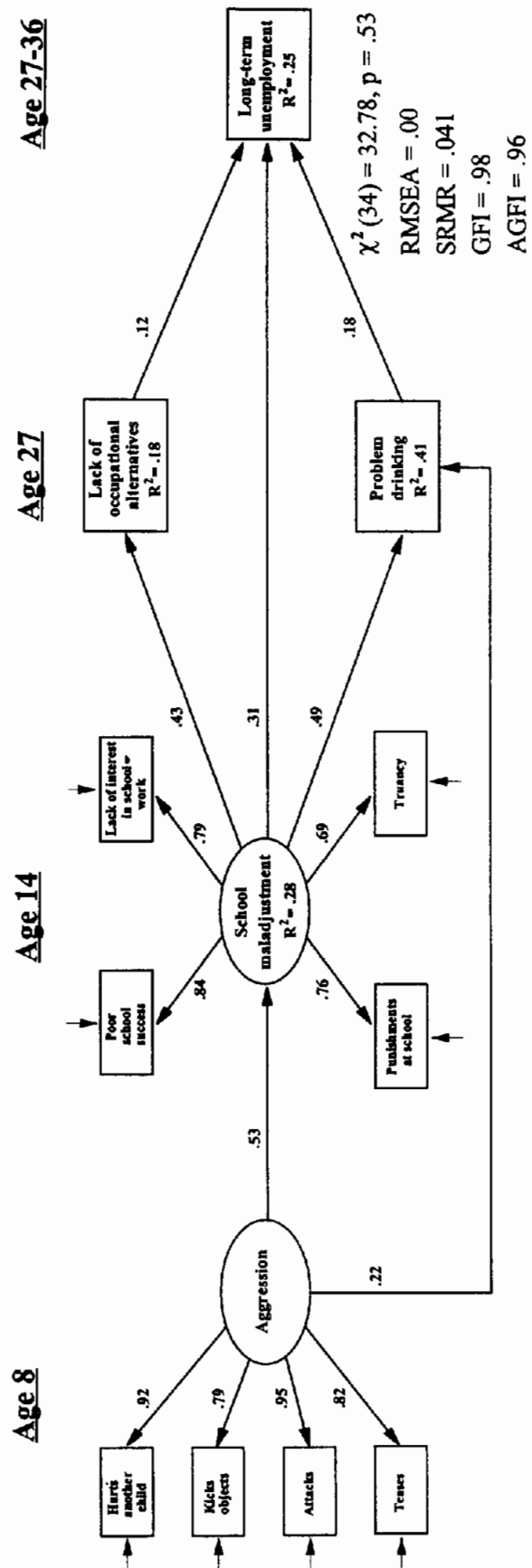


Figure 1. LISREL model of the cycle of maladaptation between aggression in childhood and long-term unemployment in adulthood.

Table 2  
Pairwise Polychoric Correlations for the Variables Included in the LISREL Model for the Protective Factors

Variable	1	2	3	4	5	6	7	8	9
1. Aggression, composite score (8)	—								
2. Prosociality (8)	-.41***	—							
3. Child-centered parenting <sup>a</sup> (14)	-.04	.18**	—						
4. Aggression × Prosociality	.00	-.09	.02	—					
5. Aggression × Child-Centered Parenting	-.05	.04	.01	.19**	—				
6. School maladjustment, composite score (14)	.38***	-.40***	-.16*	-.06	-.04	—			
7. Lack of occupational alternatives (27)	.22***	-.18**	-.28***	.04	.02	.35***	—		
8. Problem drinking (27)	.41***	-.22***	-.22***	-.04	-.07	.48***	.30***	—	
9. Long-term unemployment (27-36)	.28***	-.49***	-.39***	-.15**	-.26***	.35***	.34***	.41***	—

Note. Numbers in parentheses indicate participants' age in years at time of measurement. Maximum  $n = 369$  and minimum  $n = 254$  for pairwise correlations.

<sup>a</sup> Measured at age 27 but referring to age 14.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

problem drinking at age 27, as well as directly in interactions with low prosocial behavior and low child-centered parenting. Aside from interactions with aggression, low prosociality was related to long-term unemployment directly and indirectly via school maladjustment. Low child-centered parenting had multiple connec-

tions to long-term unemployment, both directly and indirectly via problem drinking and lack of occupational alternatives. Low child-centered parenting also interacted with aggression, suggesting that the effects of aggression on unemployment depended on the level of prosociality and child-centered parenting. The model explained

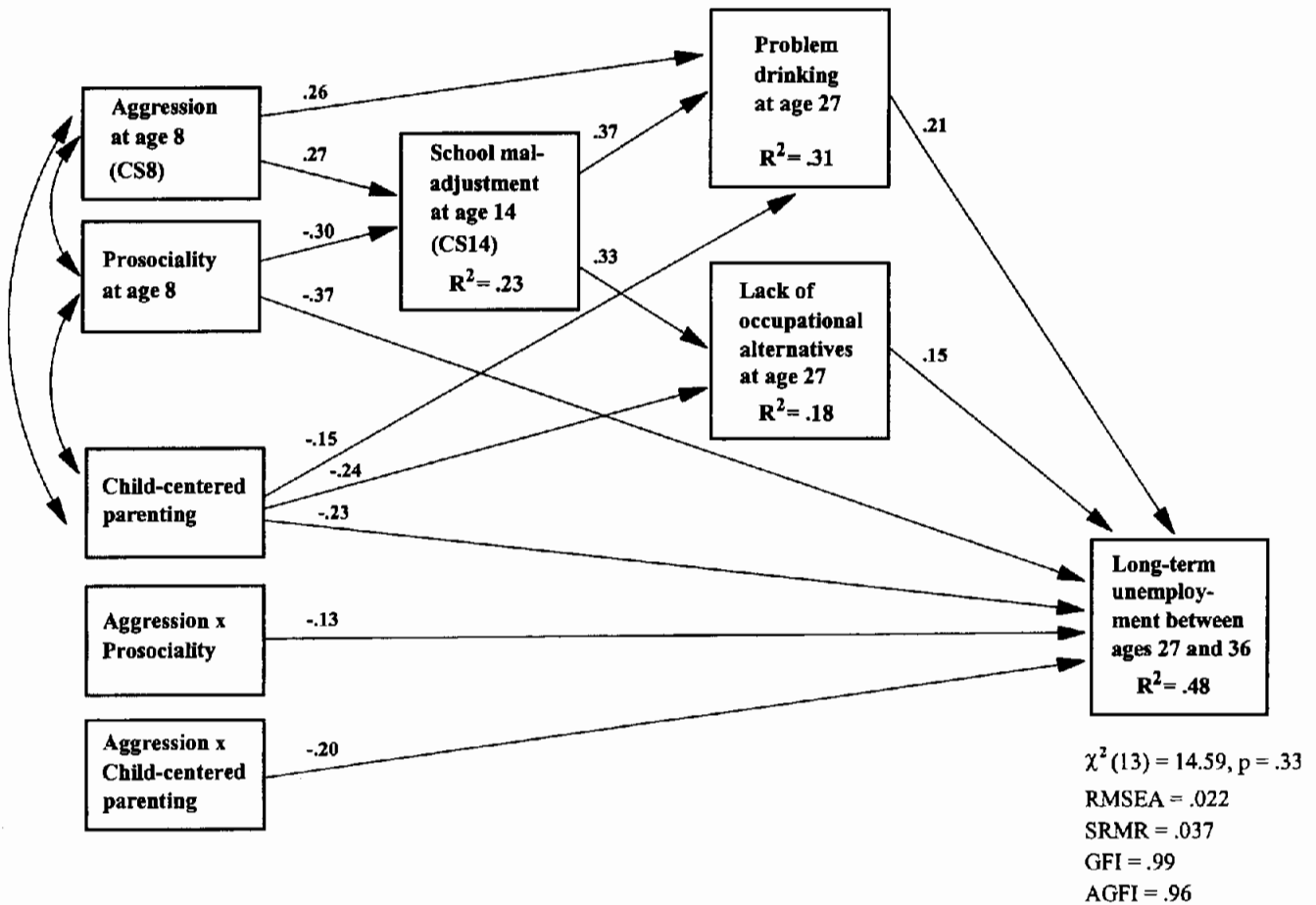


Figure 2. LISREL model of the protective factors between aggression in childhood and long-term unemployment in adulthood.

48% of the variance of long-term unemployment and fit the data well:  $\chi^2(13, N = 260) = 14.59, p = .33$ ; RMSEA = .022; SRMR = .037; GFI = .99; AGFI = .96; model AIC = 78.59.

An alternative model with no indirect pathways was tested. In the alternative model, aggression, prosociality, and child-centered parenting, as well as the interaction terms, were set as predictors of school maladjustment, problem drinking, lack of occupational alternatives, and long-term unemployment. The outcome variables were allowed to have two-way connections with each other. Although this model fit the data reasonably well,  $\chi^2(9, N = 260) = 8.74, p = .46$ , model AIC = 80.74, the comparison of the fit indices indicated that the original model (AIC = 78.59) fit the data slightly better.

### Prosociality and Child-Centered Parenting as Protective Factors

Two types of analyses were conducted to elaborate the interactions (between aggression and prosociality and between aggression and child-centered parenting): (a) the Student's *t* test for independent samples and (b) logistic regression analysis.

**Student's *t* test.** Two groups of aggressive individuals were compared: (a) those who became long-term unemployed and (b) those who did not. We classified the participants into aggressive and nonaggressive individuals on the basis of the distribution of the sum score for aggression for the whole original sample ( $N = 369$ ) measured at age 8, using the 75th percentile as the cutoff point: aggressive,  $n = 95$  (75 boys and 20 girls); not aggressive,  $n = 274$  (121 boys and 153 girls). Of the 25 long-term unemployed participants at age 36, 12 (10 men and 2 women) were aggressive at age 8; they were labeled *aggressive long-term unemployed*. In contrast, there were 68 participants (52 men and 16 women) who were not long-term unemployed at age 36 but who were aggressive at age 8; they were labeled *aggressive not-long-term-unemployed*. As Table 3 indicates, the two groups differed on both child-centered parenting and prosociality. The aggressive not-long-term-unemployed participants reported more child-centered parenting and were assessed as more prosocial than were the aggressive long-term-unemployed participants.

**Logistic regression analysis.** The analysis was run among the aggressive participants by entering child-centered parenting and prosociality as predictors of long-term unemployment in the same

step (not long-term unemployed was coded as 0; long-term unemployed was coded as 1). Among the aggressive participants, both child-centered parenting ( $R = -.29, B = -5.43, Wald = 6.51, df = 1, p < .05$ ) and prosociality ( $R = -.25, B = -.40, Wald = 5.48, df = 1, p < .05$ ) significantly predicted subsequent employment status. Low child-centered parenting and low prosociality predicted long-term unemployment, whereas high child-centered parenting and high prosociality predicted lack of long-term unemployment. The probability of an aggressive child's becoming a long-term unemployed adult is shown in Figure 3. Aggressive children whose prosociality and child-centered parenting were 1 *SD* below those of average aggressive children (see heavy solid line and  $-1.0$  *SD* point on the horizontal axis in Figure 3) had a greater probability of becoming long-term unemployed than did aggressive children whose prosociality and child-centered parenting scores were 1 *SD* above the mean (see largest dotted line and  $+1.0$  *SD* point on the horizontal axis in Figure 3); the probabilities were about 45% and 1%, respectively.

### Discussion

Our results indicate that aggression in childhood is indirectly related to long-term unemployment in adulthood. Aggression at age 8 began a cycle of maladaptation that included school maladjustment, problem drinking, lack of occupational alternatives, and, finally, long-term unemployment. Child-centered parenting and prosocial behavior, indexed by high self-control of emotions, functioned as protective factors in amelioratory links between aggression and long-term unemployment. Although child-centered parenting and prosociality had direct effects on later employment status, they also differentiated aggressive individuals who later became long-term unemployed from those who were more successful in the labor market. Furthermore, child-centered parenting and prosocial behavior significantly lowered the probability of an aggressive child's becoming long-term unemployed. These findings imply that the effects of parenting and prosociality operate directly and in conjunction with aggression, confirming the findings that protective factors operate in these two ways (Freitas & Downey, 1998; Luthar, 1993; Rutter, 1994; Werner & Smith, 1992).

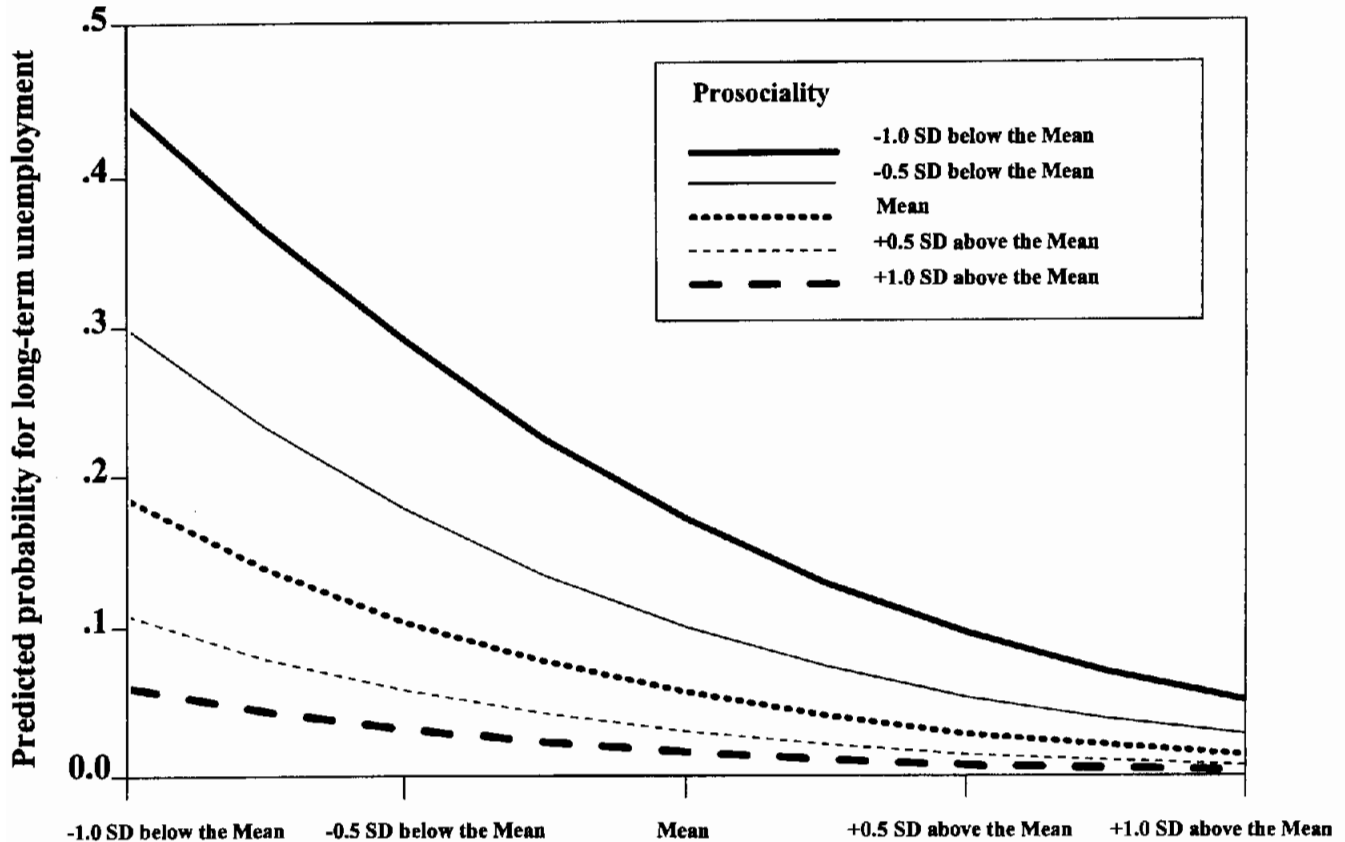
The present findings are in accord with Caspi et al.'s (1987, 1989) previous research concerning cumulative continuity, in

Table 3  
Comparison of the Aggressive Not-Long-Term-Unemployed and the Aggressive Long-Term Unemployed on Child-Centered Parenting and Prosociality (Standardized Scores): Student *t* Test for Independent Samples

Variable	Aggressive not-long-term-unemployed ( $n = 68$ )		Aggressive long-term unemployed ( $n = 12$ )		<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Child-centered parenting <sup>a</sup>	0.26	0.92	-0.91	0.80	3.61	68	.001
Prosociality	-0.39	0.83	-1.22	0.70	3.26	78	.002

Note. Entire sample:  $M = 0.00$  and  $SD = 1.00$  for child-centered parenting and prosociality.

<sup>a</sup> The number of participants for whom information on parenting was available was 61 for the aggressive not-long-term-unemployed and 9 for the aggressive long-term unemployed.



### Child-centered parenting

Figure 3. Predicted probability for long-term unemployment in adulthood among aggressive children (means and standard deviations are computed for the aggressive).

which it was demonstrated that childhood ill-temperedness sets in motion a chain of events resulting in an erratic worklife in adulthood. The role of school maladjustment was important in the cycle of maladaptation: It had both direct and indirect links to subsequent long-term unemployment. School adjustment has been shown to be one of the most important developmental tasks of adolescence, because at school adolescents learn skills that are necessary for higher education and work (e.g., Masten & Coatsworth, 1995, 1998). An unsuccessful resolution of this developmental task may result in limited future opportunities, which manifested in the present study as problem drinking and lack of occupational alternatives.

A potential explanation for the positive effects of child-centered parenting among the aggressive participants might be that the child-centered parents were more interested in their children's school performance than were the less child-centered parents. Steinberg and his colleagues (1992) demonstrated that authoritative parenting is related to parents' school involvement, which is further associated with their children's school performance. Poor school performance was proven to be a risk factor for later long-term unemployment in the present study. It may be that parental support and supervision channeled aggressive children away from

the cycle of maladaptation into a more positive developmental pathway.

As for prosocial behavior, our findings are in line with previous research concerning aggression and peer rejection. It has been shown that aggressive children with prosocial skills become accepted by the peer group, whereas aggressive children lacking in prosociality have a high risk of rejection by peers (Bierman et al., 1993; Nangle & Foster, 1992; Volling et al., 1993). Peer groups provide contexts in which to further develop social skills (e.g., Coie & Dodge, 1998) and positive peer models (e.g., Hartup, 1996). With regard to our findings, poor prosocial coping capacity may have handicapped some aggressive children in school adjustment, making it difficult for them either to secure a permanent job or to get a new job after a period of unemployment.

In previous research, prosociality and aggressiveness have been studied mainly as opposite points on a continuum, which suggests that both cannot be present in the same individual. However, Feshbach and Feshbach (1986) claimed that both aggressive and prosocial tendencies can characterize the same individual. More recently, Shiner (1998, p. 323) wrote in her review of childhood personality, "As Graziano and Eisenberg (1997) have commented, aggressiveness and prosocial tendencies may eventually prove not

to be opposite ends of a single dimension, although they may tend to covary negatively." It should be noted that we defined prosocial behavior in terms of a model of emotional and behavioral regulation (Pulkkinen, 1995) according to which aggressive behavior indicates low self-control of emotions and constructive behavior indicates high self-control of emotions. If an aggressive child displayed regulatory capacities indexed by constructive behavior, high self-control, and social coping capacity, they protected him or her from becoming long-term unemployed as an adult.

There are some limitations to our study. First, data on child-centered parenting were retrospectively collected. Even though the retrospective child-centered parenting variable correlated with the corresponding prospectively collected data (Pulkkinen, 1990), it is possible that the long-term unemployed, compared with those who were not long-term unemployed, had less positive memories of their parents as a function of their subsequent life experiences. Similarly, aggressiveness was measured at age 8, whereas the parenting variable referred to participants' memories of their experiences at age 14. It is plausible that the child's behavior influenced parenting practices. Second, small sample sizes required analyses that combined women and men. In previous literature, it has been shown that aggression is indirectly related to low career orientation in both women and men (Pulkkinen, Ohanen, & Tolvanen, 1999), which suggests that aggression plays a role in the process of selection for a working career in both genders. In the present study we focused on physical aggression, but it would be interesting to investigate different types of aggression (e.g., Crick, 1996; Pulkkinen, 1987), which may have different implications for development, particularly in women (Pulkkinen, 1992). Third, the attrition from age 27 to age 36 among the individuals who were classified as problem drinkers at age 27 was higher than the attrition among other individuals in this age range. This may have caused underestimation of the relations between aggression and long-term unemployment because problem drinking was preceded by aggression and was further related to unemployment.

In the present study, we found that the cycle of maladaptation that began with aggression in childhood and ended with long-term unemployment in adulthood could be buffered by child-centered parenting and prosocial behavior. These findings are important for the study of prevention at both the individual and societal levels. At the individual level, the prevention of long-term unemployment is important because it has harmful effects on psychological well-being (Kokko et al., in press). At the societal level, prevention is important because long-term unemployment in early adulthood is a risk factor for socialization into unemployment, social marginalization, and an accumulation of problems in social functioning (Rönkä, 1999), all of which become very expensive to society.

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