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## **Psychosocial development and the development of problem behaviour during adolescence**

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## 5 The Effect of Psychosocial Development on Problem Behaviour beyond Environmental Factors<sup>1</sup>

*The present study examines the effect of psychosocial development of adolescents on the development of problem behaviour beyond the effect of parental and peer factors. We used a two-wave sample of 539 adolescents. They were asked to complete a self-report questionnaire on problem behaviour and the environmental factors and a sentence completion test on psychosocial development. We investigated two non-normative types of development (underdeveloped and precocious). The effect of an underdeveloped psychosocial development (including the lagging behind, stagnating, and regressing pathway) on problem behaviour beyond environmental factors was not found. However, a significant protective effect was found for female adolescents showing a precocious psychosocial development.*

### 5.1 Introduction

Psychosocial developmental theories have proven to be of great importance in developmental psychology (Noam, Young & Jilnina, 2006). Research indicates that non-normative development of psychological maturity can have a risk effect, but also a protective effect on problem behaviour. On the one hand, there is a considerable body of evidence showing that lower levels of psychosocial maturity are associated with problem behaviour and delinquency in adolescence. Several studies have shown that lower levels of moral reasoning and psychosocial development are associated with a higher prevalence of problem behaviour (Brugman & Aleva, 2005; Colby, Kohlberg, Gibbs, & Lieberman, 1983; Langford, 1995; Ezinga, Weerman, Westenberg & Bijleveld, 2006; Frank & Quinlan, 1976). On the other hand, psychosocial development can also restrain the adolescent from behaving problematic. That is, higher levels of psychosocial and socio-moral development might act as a protective factor against the development of problem behaviour (Ezinga, Weerman, Westenberg & Bijleveld, submitted; Hauser, Borman, Powers, Jacobson, & Noam, 1990; Hennighausen, Hauser, Billings, Schultz & Allen, 2004).

At the same time, adolescent problem behaviour and delinquency is related to multiple factors in childhood and adolescence (Farrington, 2005; Loeber & Farrington, 2000). For instance, parenting behaviour is very important in predicting problem behaviour (Hoeve, 2006; Le Blanc, McDuff & Kaspy, 1998; Loeber & Stouthamer-Loeber, 1986). Loeber and Stouthamer-Loeber (1986) showed that disrupted family characteristics and poor parental behaviour are important explanations of problem behaviour. Next to parental behaviour, peer relations and peer influences are related to adolescent problem behaviour. These peer factors, such as social learning (or group pressure), the amount of time spent with peers and peer delinquency are also important predictors of adolescent problem behaviour (Agnew, 1991; Akers, 1998; Hartjen & Priyadarsini, 2003; Hirschi, 1969; Warr, 1993). Empirical research focusing on problem behaviour in relation to psychosocial development on the one hand, and parent behaviour and peer influences on the other hand, has largely been separated up till now.

<sup>1</sup> This chapter has been submitted for publication.

In this paper we investigate the supplemental contribution of psychosocial development on problem behaviour in early to mid adolescence over and above the influence of parent behaviour and peer influence. There are two possibilities. First of all, the influence of psychosocial development may be present but diminishes when other factors are taken into account, i.e. the effect of psychosocial development is explained by another factor such as peer and/or parental factors. Second, psychosocial development may have a *supplemental* effect on problem behaviour, next to parental behaviour and peer influences. This supplemental effect can move in two directions. The first is a protective effect, where the more developed psychosocial path leads to less prevalence of problem behaviour. The second is a risk effect where underdeveloped paths of psychosocial development lead to of greater prevalence of problem behaviour.

We will further add to our understanding of the supplemental effect of psychosocial development on problem behaviour by taking gender into account. Studies have shown that the effect of factors differs between boys and girls when the prevalence of problem behaviour is concerned. Previous studies considering differences in gender showed variability in their results regarding the effect of psychosocial level, parental behaviour and peer factors (Cohn, 1991; Ezinga et al., submitted; Hoeve, 2006). The hypotheses will therefore be tested for the total sample but also separately for the male and female sample. Before we test our hypotheses, we will explain the theoretical background of the psychosocial and environmental factors concerning this study.

## 5.2 Literature Review

### 5.2.1 Psychosocial development and problem behaviour

A theory focusing on psychosocial development is Loevinger's theory of ego development (Loevinger, 1976). Loevinger defines ego development as personal growth experienced by every individual, entailing changes in impulse control, conscious preoccupations, character development and interpersonal orientation. The theory identifies nine levels of psychosocial development, each of them having its own unique characteristics. As far as the developmental level of early-mid adolescents is concerned, four levels are most relevant: the Impulsive level (E2), the Self-protective level (E3), the Conformist level (E4), and the Self-awareness level (E5). Table 5.1 summarises the characteristics of the four developmental levels that are most relevant for adolescence.

**Table 5.1 Levels of Ego Development in Early to Mid Adolescence**

	Description
Impulsive E2	Impulsive, egocentric, dependent, preoccupied with bodily feelings
Self-protective E3	Opportunistic, manipulative, wary, preoccupied with control and "trouble"
Conformist E4	Respect for rules, cooperative, loyal, preoccupied with appearance and correct behaviour
Self-awareness E5	Exceptions allowable, helpful, self-aware, preoccupied with feelings, problems, adjustment

*Note.* Based on Loevinger, J. (1997). Stages of personality development (p. 203). In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of Personality Psychology* (pp. 199-208). San Diego, CA: Academic Press. Reprinted with permission.

The Impulsive level is characterised by high impulsivity and a dependent character; this person may react aggressively if dependency needs are violated. These individuals rely on their environment to restrain their impulsivity. At the Self-protective level, feelings of independence develop, and may reach a level of indisputability. Adolescents in the self-protective level try to keep their own impulses in check and will try to manipulate their environment. Their main preoccupation is to get what they want but stay out of trouble. In the Conformist level, impulse control is reasonably developed. Bonding and social behaviour are important. Equality has a large influence within relationships with others. The last relevant level in adolescence is the Self-aware level where the focus is changed to the (inner) self, instead of the group. Rules are guidelines while in the previous level rule obedience is essential. Between successive levels, Loevinger posited transitions levels or so-called *borderline*<sup>2</sup> levels. These “in-between” levels have characteristics of both the previous level as well as the upcoming level. Two elements of the ego development levels are specifically relevant with respect to problem behaviour: impulse control and social behaviour. These aspects change dramatically when adolescents develop from the third, self-protective level to the conformist level. From here on, respect for rules is coupled with an appreciation of other people’s interests.

Much existing research on Loevinger’s model of psychosocial development and problem behaviour has been cross-sectional. Already in 1976, Frank and Quinlan showed that delinquent girls were more often in the early developmental levels, compared to non-delinquent girls who experienced a more advanced development. More recently Krettenauer and colleagues (2003) showed that a delayed developmental level increases the chance of problem behaviour and externalising problem behaviour (Krettenauer, Ullrich, Hofmann & Edelstein, 2003). In addition, Ezinga et al. (2006) revealed that not only underdeveloped levels associate with more serious problem behaviour, but also that the normative levels are associated with so called tolerated problem behaviour. In a recent study we have observed a supplemental effect of low ego level on problem behaviour after individual differences in self-control had been accounted for (Ezinga et al., in press).

The cross sectional results are in line with the few longitudinal studies on psychosocial development and externalising behaviour (Noam, Recklitis, & Frome-Paget, 1991; Hauser et al., 1990). Noam and colleagues found that a decrease in externalising symptoms over time was significantly larger in those adolescents who progressed in psychosocial development, than in those who did not show considerable progress (Noam et al., 1991). Following Hauser et al. (1990), Ezinga et al. (submitted) investigated the effect of paths of psychosocial development on problem behaviour in a 2-year follow-up study: the *stagnating* pathway (no progression between the two waves, which means that the level becomes pre-normative), a *normative* pathway (progression from a normative level in Time 1 to a normative level in Time 2), a *precocious* pathway (developing from a (post)-normative level to a post-normative level), a *lagging* pathway (adolescents progress from a pre-normative level in Time 1 to another pre-normative level in Time 2), and finally a *regressing* pathway (declining from a normative level in Time 1 to a pre-normative level

2 This term is not referred as the clinical disorder, but used for describing the event of being in transit from one psychosocial stage to the other.

in Time 2). The results showed that underdeveloped paths of psychosocial development (such as regressing or stagnating over time) were associated with more problem behaviour than the normative path and precocious path. Also, the precocious path was associated with less problem behaviour than the normative path.

Summing up, cross-sectional and longitudinal studies indicate that relatively low levels of psychosocial development relate to higher prevalence of problem behaviour. Moreover, a few studies suggest that relatively high levels might act as a protective factor against serious problem behaviour, whereas normative levels are associated with relatively mild behaviour problems. However, evidence on the supplemental effect of psychosocial development on problem behaviour is lacking.

#### 5.2.2. *Parenting behaviour and problem behaviour*

For already a considerable period, criminological research has acknowledged the importance of parenting behaviour in the understanding of problem behaviour prevalence (Loeber & Stouthamer-Loeber, 1986). Perspectives on parenting in relation to the presence of problem behaviour are partly derived from the classic control theories (Hirschi, 1969). Nowadays, parental behaviour (the general definition of parenting), as a correlate with problem behaviour, is in contemporary research often divided in three relatively independent dimensions: behavioural control (i.e. monitoring), psychological control (i.e. inducing feelings of guilt) and parental bonding (De Kemp, Scholte, Overbeek, & Engels, 2006). Gray and Steinberg (1999), and more recently Bean and colleagues (2006), showed that behavioural control negatively associates with delinquency (Bean, Barber, & Crane, 2006). Also parental bonding shows considerable and consistent evidence for being an essential feature in the individual development (Galambos, Barker, & Almeida, 2003; Gray & Steinberg, 1999). There is less agreement regarding the psychological control dimension of parental behaviour effecting on adolescent behaviour. Studies report a negative impact of psychological control on adolescent development (Hauser, Powers, Noam, Jacobson, Weiss, & Follansbee 1984) and even a promoting trend towards delinquent behaviour (De Kemp et al., 2006). Among others, Ellis and Walsh revealed that, although a modest amount of research is completed, a warm and loving environment is negatively associated with problem behaviour (Ellis & Walsh, 2000; De Kemp et al., 2006; Wilson & Herrnstein, 1985). Parents, who do not show parental bonding and try to control their children directly by restraining, even spur greater misbehaviour and not less (Wright, Cullen, & Wooldredge, 2000).

In short, the association between poor parental behaviour and problem behaviour is well reported. Also, more and more consensus is reached on the association of parental bonding and experienced warmth on problem behaviour. Although some elements of parental behaviour act as protecting in problem behaviour, it could very well be that psychosocial development can supplement its effect for problem behaviour.

#### 5.2.3 *Peer factors and problem behaviour*

Criminological research is consistent in finding a strong correlation between peer factors and adolescent delinquency (Dishion, Nelson & Bullock, 2004; Reed & Rose, 1998; Warr, 1993; Weerman, 2003; Weerman & Smeenk, 2005). Generally seen there are three

views on the relationship between peer association and delinquent behaviour: (1) control and propensity theories, claiming that peers do not cause delinquency, but view the relationship in terms of spuriousness, social selection and response effects; (2) learning and group process theories, that focus on the causal efficacy of delinquent peers in transmitting (or learning) delinquency to members and; (3) integrated theories who emphasise explicitly both social selection and causality from a development perspective.

Although strong relations have been found, recent studies show mixed support and pose questions to the causality of the peer delinquent behaviour and own delinquent behaviour (Weerman, 2003; Weerman & Smeenk, 2005). Where there is a causality problem in delinquency prevalence, more latent peer factors also prove to explain (partially) the prevalence of delinquent behaviour of the adolescents. Several studies show support for an effect of learning by peers on the delinquent behaviour of the adolescent. Social reinforcement, as part of social learning, is an acknowledged characteristic in influencing the adolescent's behaviour. Studies of Agnew in 1991 and Rebellon in 2006 show support for reinforcement by peers in the adolescents' deviant behaviour (Agnew, 1991; Rebellon, 2006). Also group pressure on the adolescent's deviant behaviour is proven to have an effect on the adolescent (Agnew, 1991; Reed & Rose, 1998).

Summarising, studies investigating the effect of peers on delinquency seem rather consistent in their findings upon the association of peer and delinquency prevalence. However, the main effect in combination with possible moderation of more latent factors is less well investigated and poses questions whether these peer learning effects relate to the adolescent psychosocial development.

#### 5.2.4 *Psychosocial development, parental behaviour and peers*

Considerable research has been conducted on parenting or parental behaviour and its effect on psychosocial development (e.g. Hauser et al., 1990; Hauser, Powers & Noam, 1991; Newman, Tellegen, & Bouchard, 1989; Von der Lippe, 2000; Von der Lippe & Møller, 2000). Hauser and colleagues (1990) were one of the few who studied the relation between pathways of psychosocial development and family interactions. They identified eight different pathways of psychosocial development. The results showed that adolescents within a pathway staying at the so-called pre-conformist levels exhibited a more basal, aggressive way of interacting with parents than adolescents at a conformist pathway. Other studies showed that psychological control in parenting negatively influences psychosocial development and adjustment (Bean, Bush, McKenry, & Wilson, 2003; Galambos, Barker & Almeida, 2003).

In contrast to parental behaviour little research is conducted on the influence of peers on the adolescents' psychosocial development from Loevinger's perspective. However, there are some studies that have shown that adolescents with similar psychosocial level relate to each other (Hansell, 1981; Hennighausen et al., 2004). Hansell (1981) studied the peer friendship networks associated with level of ego development. Results from this study showed that adolescents with the middle ego developmental level are expected to make most of their friendship (importance of being in a group). This accounted only for girls. This would suggest a sex difference in the importance of peer friendship structures for levels of psychosocial development (Hansell, 1981). More recently Hennighausen and colleagues (2004) implemented Hauser's psychosocial paths to study the relation

between adolescent psychosocial development and young adult relationship outcomes. They found that adolescents within the lower “profound arrest” trajectory reported ego-centric conflict resolution tactics and less mature interpersonal understanding. Their peers described them also as more hostile (Hennighausen et al., 2004). In other words, level of ego development, peer relations, and parent behaviour are all inter-related, and all variables are related to problem behaviour. It remains to be seen whether level of psychosocial development has a supplemental effect vis-à-vis problem behaviour beyond the effects of parent behaviour and peer influence.

#### 5.2.5 *Gender differences*

There is a consistent body of evidence on sex differences in frequency and severity of problem behaviour. Boys tend to be more and serious delinquent in their behaviour than girls (Junger-Tas, Ribeaud, & Cruyff, 2004; Van der Laan & Blom 2006). Gender differences are also reported in psychosocial development. Several studies have found that girls tend to develop earlier in adolescence than boys. This difference in pace diminishes in late adolescence (Cohn, 1991; Westenberg, Drewes, Siebelink, Treffers, Jonckheer, & Goedhart, 2000). There is also considerable evidence concerning differences in parental and peer influences between males and females. Studies of Bowman, Prelow, and Weaver (2007), and Tolan and Thomas (1995) showed that males were less susceptible for protecting parental influences on the prediction of problem behaviour. Regarding parental behaviour, Bowman et al (2007) showed that maternal monitoring decreases delinquency. However, these results did not occur within the male sample, suggesting less parental influences for males on delinquency prevalence. Furthermore, the results showed a relation in the male sample for the association with deviant peers and delinquency. Tolan and Thomas (1995) reported that involvement in problematic behaviour in males is best explained by peer variables (time spent, norm violations, delinquency performed by peers, labelling of peers on the adolescent), whereas in females it is best explained by family variables (time spent, norm violations, labelling of family in the adolescent). These results were however not confirmed in a Dutch study by Van de Rakt, Weerman and Need (2005). Here, within the male sample no significant effect was found of peer delinquent behaviour. Within the female sample, parental bonding appeared important as having a protecting effect on delinquency (Van de Rakt et al., 2005). In contrast, other criminological studies suggest that the predictors of delinquency are the same for males and females (Gottfredson & Hirschi, 1990; Rowe, Vazsonyi, & Flannery, 1995). Hartjen and Priyadarsini found in their study on a French sample that hardly any differences in effect were found of learning by peers in association with delinquency between boys and girls (Hartjen & Priyadarsini, 2003).

All in all, the empirical results show that gender differences occur in prevalence of problem behaviour and some studies have indicated differential effects for males and females. However, it is as yet unknown whether the effect of psychosocial development on problem behaviour could differ in relation to parental and peer effects when boys and girls are compared.

### 5.3 Hypotheses and rationale

As described previously, we have a considerable amount of evidence that psychosocial development; peer factors and parental behaviour each have an effect on the prevalence of problem behaviour. We lack however information about the additional effect of psychosocial development on problem behaviour. What is the supplemental effect of psychosocial development when parental behaviour and peer factors are also taken into account? This question was addressed in a follow-up study of problem behaviour in early adolescent participants who were retested two years later. Guided by the results from previous empirical studies we formulated the following hypotheses:

- Overall, we expect effects of level of psychosocial development on problem behaviour: lower levels are expected to be associated with more problem behaviour; higher levels with less problem behaviour. Three developmental pathways – underdeveloped, normative, and precocious – are distinguished to enable a separate study of the risk effect of slow development and the protective effect of rapid development on problem behaviour.
- We expect additive effects of psychosocial development on problem behaviour beyond the effects of peer influence and parent behaviour.
- The risk effect of slow development is expected to be most salient in the male sample, due to the fact that during early to mid adolescence males are slower in their psychosocial development than the females (i.e., low psychosocial levels are expected to be over represented in the male sample). The protective effect of rapid development is expected to be most salient in the female sample, due to the fact that during early to mid adolescence females are more advanced in their psychosocial development (i.e., relatively high psychosocial levels are expected to be over represented in the female sample).

### 5.4 Method

#### 5.4.1 Sample characteristics

This paper uses a sample that has been studied over two waves across a 2-year time span – year 2002 and 2004, respectively. The first wave (baseline) consists of 811 students. In the second wave, approximately 66.5% (539 students) participated again. This longitudinal sample consists of 271 boys (50.3%) and 268 girls (49.7%). The majority is of Dutch origin (69%) whereas roughly one-third of the sample had a different ethnic background. At the second wave, the mean age was 15.6 years ( $SD = 0.54$ ).

There are significant differences<sup>3</sup> between our final sample and the dropouts with regard to age with  $\chi^2(5, 809) = 15.1, p < .01$ , ethnicity with  $\chi^2(1, 811) = 16.4, p < .001$ , misbehaviour with  $F(1, 810) = 4.0, p < .05$ , delinquency with  $F(1, 810) = 22.5, p < .001$  and psychosocial development with  $\chi^2(4, N = 811) = 11.1, p < .05$ . In other words, the attrition

3 As can be seen from the degrees of freedom, we could not extract all the information needed from one or two respondents.

analyses show that older adolescents, adolescents coming from an ethnic minority and being more prevalent in problem behaviour in Time 1, participate less often in Time 2. The results also show that these dropouts have a psychosocial level that is relatively often pre-normative in Time 1.

#### 5.4.2 Measures

##### *Problem behaviour*

The survey contained 9 items on the frequency of misbehaviour in school and 12 items on delinquency outside school in *the past school year*. Misbehaviour in school includes the following offences: verbal bullying, physical bullying, graffiti in school, vandalizing school property, stealing something worth < €5,-, stealing something worth > €5,-, fighting without injury, fighting with injury, and threatening at or using violence against a teacher. Delinquency outside school includes the following: vandalism, graffiti, shoplifting something worth < €5,-, shoplifting something worth above €5,-, buying stolen goods, stealing a bike or moped, car theft, burglary, robbery, other theft, fighting without injury and fighting with injury. We employ variation scales that indicate the number of different offences committed. Research has shown that such variation scales are a more reliable indication of intensity than frequency scales measuring the amount of misbehaviour or delinquency (Bendixen, Endresen, & Olweus, 2003). The internal consistencies of the scales for both misbehaviour and delinquency were sufficient with a Cronbach's alpha of respectively .65 and .74 at the baseline in 2002 and .62 and .68 at the second wave in 2004.

##### *Psychosocial development*

The Sentence Completion Test for Youth (SCT-Y) consists of 32 sentence stems, such as "My conscience bothers me if..."; "My father..."; or "When people are helpless...". Students were instructed to complete the sentences freely. There are slightly different forms for boys and girls. Using an empirically based scoring manual, each response receives an ego level rating. These scores range between 2 until 6: 2) Impulsive level; 3) Self-protective level; 4) Conformist level; 5) Self-aware level; 6) Conscientious level. Eventually this results in 32 different scores ranging from 2 to 6 (for details see Westenberg et al., 2000). Regarding the reliability and validity of the instrument, Lilienfeld and colleagues (2000) published a review of projective techniques including the sentence completion test. According to this study, the sentence completion test has attained the scientific standards for 'zero order' and 'incremental' validity. Also internal consistency, and test-retest standards are judged reliable (see for more detail Lilienfeld, Wood, & Garb, 2000).

For each data wave of the present study, two trained raters scored all sentences independently and discussed and resolved any differences. The current study has an interrater agreement at the initial interpretation of each sentence of 86% in the first wave and 91% in the second wave. Two types of final categorizations are available. The first is the automatic total protocol rating (TPR). Here the main levels are identified (e.g., E2 Impulsive or E3 Self-protective). The second is called the borderline total protocol rating (BTPR).

Here the main levels as well as borderline cases are identified (e.g., E2/E3, for a student who falls in between the E2 Impulsive and E3 Self-protective ego levels). This paper uses the borderline score.

We identify five paths of psychosocial development in this paper, in line with our previous study (Ezinga et al., submitted). These are the *stagnating pathway* (no progression between the two waves, which means that the ego level becomes pre-normative), a *normative pathway* (progression from a normative stage in Time 1 to a normative stage in Time 2), a *precocious pathway* (developing from a (post)-normative stage to a post-normative stage), a *lagging pathway* (adolescents progress from a pre-normative stage in Time 1 to another pre-normative stage in Time 2), and finally a *regressing pathway* (declining from a normative stage in Time 1 to a pre-normative stage in Time 2).

#### *Parental behaviour*

We use four scales regarding parental behaviour. These scales are for a great part inspired by Hirschi's theory of social bonding (Hirschi, 1969). The first scale is parental bonding and contains four items on the affective relation (fitting the 'attachment' part from Hirschi's theory) between adolescents and parents. Here, the adolescent is asked if they believe they have a satisfying relation with their parents. The second scale concerns three items on 'rules and supervision'. The third scale is called 'experienced warmth' and consists of four items. This scale investigates the reported amount of positive attention of the parents towards the adolescents. Lastly, we investigate the amount of time adolescents spent with their parents. This scale concerns the investigation if adolescents are much at home after school or in the weekend.

The Cronbach's alpha for parental bonding, rules and supervision, and experienced warmth were respectively .65, .40, and .55 in Time 1 and .77, .28, and .69 in Time 2. With respect to the scale 'rules and supervision' the alpha was too low to make the scale reliable enough. We therefore decided to use only one item on supervision. The item is called: "My parents/caretakers are aware of my whereabouts".

#### *Peer factors*

We use three scales measuring various dimensions of peer influences. The first scale concerns the effect of 'social learning from peers'. It is a combined out of two separate scales (peers reinforcing deviant behaviour and peer group-pressure). The second scale is 'delinquency reported of peers'. The last scale is 'time spent with peers'. Here we investigate whether the adolescents are more time spending with their friends, rather than being home and spent time with their parents (see paragraph 3.2.3). The Cronbach's alpha for social learning, and reported peer delinquency are .74 and .72 in Time 1 and .69 and .83 in Time 2.

## 5.5 Results

### 5.5.1 Descriptive

Table 5.2 displays the distribution of the borderline levels of psychosocial development (BTPR) for the total sample and differentiated for gender over the Time 1 and Time 2. Next to the percentages of the various borderline levels, we show the percentages of adolescents in the various paths of psychosocial development.

**Table 5.2 Prevalence of the Levels and Paths of Psychosocial Development across a Two-Wave Study (N=539)**

	Total T1	Total T2	Boys T1	Boys T2	Girls T1	Girls T2
E2. Impulsive level	3,9%	0,2%	4,8%	0,0%	3,0%	0,0%
E2/E3	12,2%	4,6%	15,9%	7,0%	8,6%	2,2%
E3. Self-protective level	50,5%	34,5%	62,4%	48,0%	38,4%	20,9%
E3/E4	19,5%	25,4%	12,2%	28,0%	26,9%	22,8%
E4. Conformist level	13,9%	31,9%	4,8%	14,8%	23,1%	49,3%
E4/E5	0,0%	2,8%	0,0%	1,8%	0,0%	3,7%
E5. Self-aware level	0,0%	0,6%	0,0%	0,4%	0,0%	0,7%
Normative path	57.3%		42.8%		72.0%	
Underdeveloped path	39.4%		55.0%		23.5%	
Precocious path	3.3%		2.2%		4.5%	

In the total sample from Time 1 to Time 2 a shift was made from E3 as the predominant psychosocial level to a more equal representation of E3, E3/E4, and E4. Furthermore, percentages for the levels below the self-protective level E3 decreased in prevalence to become relative infrequent. In the second wave, approximately 50% of the boys-sample could be found in the self-protective level; Girls however, were faster in development and moved already towards the conformist level (E4). This difference in pace between boys and girls has also been found in earlier studies (Cohn, 1991; Ezinga et al., submitted; Frank & Quinlan, 1976).

With respect to the paths of psychosocial development, we see that almost 60% followed a normative path. When we look at the differentiated percentages for gender, we see that almost 43% of the boys were developing normatively, in contrast to 72% of the girls. Almost 40% of the sample was situated in an underdeveloped path, boys relatively more often than girls. Finally the precocious path showed a small percentage of the sample developing ahead from the rest in psychosocial maturity. The percentage was twice as high for girls (4.5%) as for boys, (2.2%).

Table 5.3 shows respectively for Time 1 (year 2002) and Time 2 (year 2004) the mean level and min-max scores of psychosocial level, problem behaviour, parental behaviour and peer factors.

Table 5.3 Mean score of the variables at Time 1 and Time 2

	Time 1 (year 2002)		Time 2 (year 2004)		T2-T1
	Mean	Min-max	Mean	Min-max	Paired T-test
Psychosocial level	3.14 (.49)	2-6	3.47 (.51)	2-6	14.45***
Misbehaviour	1.30 (1.34)	0-7	1.20 (1.56)	0-9	-1.53
Delinquency	.60 (1.13)	0-8	.71 (1.48)	0-11	1.56
Parental Bonding	14.64 (2.33)	4-16	14.69 (2.40)	0-16	.66
Supervision	1.80 (1.02)	1-5	1.86 (1.06)	1-5	-1.00
Experienced Warmth	14.56 (1.77)	5-16	14.14 (2.18)	0-16	-3.79***
Time spent with parents	2.71 (1.13)	0-6	2.79 (1.36)	0-6	1.24
Learning effect peers	5.48 (4.75)	0-20	3.67 (3.85)	0-20	-7.03***
Time spent with peers	8.41 (2.14)	4-12	9.06 (2.02)	4-12	7.00***
Delinquency peers	.44 (.50)	0-1	.44 (.50)	0-1	.15

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

As can be seen in Table 5.3, the psychosocial level increased a third level from Time 1 to Time 2, from 3.14 ( $SD = 0.49$ ) to 3.47 ( $SD = 0.51$ ). The total score of misbehaviour decreased in time, whereas the total score of delinquency increased. However, these changes were not significant. Regarding parental factors, the adolescents showed a significant decrease in experienced warmth of their parents. The reported time spent with parents was stable. Regarding peer factors the adolescents reported less influential effects from their peers, even though they reported more time spent with them. The reported delinquency rate of peers was stable.

#### 5.5.2 Univariate results

In Table 5.4, results are shown of the effects of psychosocial development on misbehaviour and delinquency. Next to the strength of the effect ( $B$ ) we also show the general explained variance, i.e. the part that psychosocial development explains in the effect on problem behaviour.

Table 5.4 Linear Regression Analyses testing the Univariate Effects of Psychosocial Development between Time 1 and Time 2 on Problem Behaviour at Time 2.

	Total sample				Male				Female			
	Misbehaviour B (SE)	Adj. R <sup>2</sup>	Delinquency B (SE)	Adj. R <sup>2</sup>	Misbehaviour B (SE)	Adj. R <sup>2</sup>	Delinquency B (SE)	Adj. R <sup>2</sup>	Misbehaviour B (SE)	Adj. R <sup>2</sup>	Delinquency B (SE)	Adj. R <sup>2</sup>
Psychosocial level at Time 2	-.209*** (.04)	.04	-.182*** (.04)	.04	-.095 (.06)	.00	-.131* (.06)	.01	-.136* (.06)	.02	-.162*** (.05)	.03
Psychosocial level at Time 1	-.101* (.04)	.01	-.112** (.04)	.01	.023 (.07)	-.00	-.087 (.07)	.00	-.026 (.06)	-.00	-.062 (.05)	.00
Normative path (o) vs. Underdeveloped path (i)	.177*** (.04)	.03	.117** (.04)**	.01	.121* (.06)	.01	.057 (.06)	.00	.061 (.07)	-.00	-.103 (.06)	.01
Normative path (o) vs. Precocious path (i)	-.196 (.12)	.01	-.258** (.10)	.02	.001 (.20)	-.01	-.345 (.19)	.02	-.280* (.13)	.02	-.206 (.11)	.01

Note: \* p < .05; \*\* p < .01; \*\*\* p < .001; The dependent variables are logged. For psychosocial development in 2004 and 2002 the N in the general sample is 539, which is divided in 271 men and 268 females. The dichotomous variable Normative vs. Underdeveloped had an N of 521, of which 265 were male and 256 were female. Lastly the dichotomous variable Normative vs. Precocious had an N of 327, of which 122 were male and 205 were female.

As can be seen in Table 5.4, psychosocial level at Time 1 and at Time 2 had a negative effect on misbehaviour and delinquency for the general sample. Thus, as was expected, lower levels of ego development were related to problem behaviour. A similar pattern was observed for males and females at Time 2, but for males the negative relationship between psychosocial level and misbehaviour was not statistically significant.

The risk effect of psychosocial development was investigated by studying the effect of the dichotomous variable Normative (o) versus Underdeveloped Pathways (1: stagnating, lagging behind and regressing) on problem behaviour. This analysis showed significant effects in the general sample on misbehaviour and delinquency. This effect was present in the male sample for misbehaviour. In other words, being in the underdeveloped path had a significant effect on the prevalence of problem behaviour, particularly for males. The protective effect of psychosocial development was investigated by studying the effect of the dichotomous variable Normative versus Precocious Pathway. As was expected, negative effects were seen, which means that a precocious development had a protective effect on the prevalence of problem behaviour. Specifically, the protective effect was statistically significant for delinquency in the total sample and for misbehaviour in the female sample. The protective effect was not significant for the male sample. In general, all four of the regression analyses had low explained variances ( $R^2$ ).

### 5.5.3 *Multivariate Results*

The next step involved the analysis of exploring the additive effect of psychosocial development on problem behaviour at Time 2, beyond the effects of peer influence and parental behaviours. The findings are presented in Table 5.5. Two models are presented each representing a dichotomous variable of psychosocial paths. Regarding the Normative versus Underdeveloped path, the general sample showed a significant effect of gender, and supervision on misbehaviour. A risk effect was found for time spent with peers on misbehaviour and delinquency and for social learning from peers on misbehaviour. Within the male sample we saw a risk effect of time spent with peers on misbehaviour and delinquency and a risk effect of social learning from peers on misbehaviour. The female sample showed a protecting effect of supervision in misbehaviour and delinquency. Also a risk effect of social learning from peers was seen in misbehaviour. With respect to female delinquency the results showed a risk effect of time spent with peers. The Normative versus Underdeveloped path yielded an additive and positive effect on problem behaviour, but the effects were not statistically significant. Regarding the analysis on the Normative versus Precocious path, similar results are found on parent behaviour and peer factors. Additive significant results are a protecting effect of supervision within the male sample and a protecting effect on misbehaviour of experienced warmth. However, the analysis yielded an additive and negative effect on problem behaviour for the Normative versus Precocious pathway, but this effect appeared only significant for female misbehaviour ( $B = -.360$ ;  $p < .05$ ).

Our last analysis estimated the supplemental effect of developmental pathways beyond peer and parental factors as measured at Time 1 on problem behaviour at Time 2. The results are shown in Table 5.6. Two models are shown, each of them corresponding with a psychosocial path.

**Table 5.5 Linear Regression Analysis of Developmental Pathways (Time 1 to Time 2), Peer Influence (Time 2), and Parental Behaviours (Time 2) on Problem Behaviour at Time 2**

	Total sample		Male		Female	
	Misbehaviour B (SE)	Delinquency B (SE)	Misbehaviour B (SE)	Delinquency B (SE)	Misbehaviour B (SE)	Delinquency B (SE)
Sex	-.140** (.05)	-.059 (.05)	—	—	—	—
Parental bonding	.014 (.01)	-.009 (.01)	.008 (.02)	-.021 (.02)	.017 (.02)	-.008 (.01)
Supervision	-.077** (.02)	-.066** (.02)	-.061 (.03)	-.049 (.03)	-.093** (.03)	-.068** (.02)
Exp. Warmth	-.020 (.01)	.011 (.01)	-.004 (.02)	.032 (.02)	-.035 (.02)	.012 (.01)
Time spent parents	.001 (.02)	-.001 (.02)	.018 (.03)	.019 (.03)	-.017 (.03)	-.001 (.02)
Time spent peers	.030* (.01)	.061*** (.01)	.037* (.02)	.078*** (.02)	.023 (.02)	.062*** (.01)
Learning effect peers	.025*** (.01)	.008 (.01)	.026** (.01)	.010 (.01)	.022* (.01)	.010 (.01)
Normative (o) vs. Underdeveloped (1)	.029 (.05)	.035 (.05)	.034 (.07)	.025 (.07)	.040 (.08)	.053 (.04)
	Adj. R <sup>2</sup> = .164	Adj. R <sup>2</sup> = .129	Adj. R <sup>2</sup> = .095	Adj. R <sup>2</sup> = .122	Adj. R <sup>2</sup> = .099	Adj. R <sup>2</sup> = .127
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Sex	-.156* (.06)	-.085 (.06)	—	—	—	—
Parental bonding	.021 (.01)	-.018 (.01)	.040 (.03)	-.020 (.02)	.008 (.02)	-.018 (.01)
Supervision	-.106*** (.02)	-.059* (.03)	-.125** (.04)	-.074 (.04)	-.085* (.04)	-.062* (.03)
Exp. Warmth	-.036* (.02)	.011 (.02)	-.053 (.03)	.060 (.03)	-.034 (.02)	.014 (.02)
Time spent parents	.003 (.02)	-.017 (.02)	.004 (.04)	-.012 (.04)	-.003 (.03)	-.015 (.02)
Time spent peers	.023 (.01)	.052*** (.01)	.025 (.02)	.075** (.02)	.020 (.02)	.051*** (.01)
Learning effect peers	.027** (.01)	.001 (.01)	.029* (.01)	-.003 (.01)	.027* (.01)	.005 (.01)
Normative (o) vs. Precocious (1)	-.219 (.13)	-.211 (.12)	.181 (.26)	-.286 (.26)	-.360* (.15)	-.223 (.12)
	Adj. R <sup>2</sup> = .195	Adj. R <sup>2</sup> = .103	Adj. R <sup>2</sup> = .181	Adj. R <sup>2</sup> = .150	Adj. R <sup>2</sup> = .122	Adj. R <sup>2</sup> = .098

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; The dependent variables are logged.

Note: We did not include the variable delinquency reported of peers in the analysis. Reason not to do so is that it is unclear if peer delinquency is caused by the own delinquency behaviour or vice versa, while inclusion in the analysis suggests a causal effect. Therefore exclusion of the variable is the best option in this matter.

**Table 5.6 Linear Regression Analyses of Development Pathways (Time 1 to Time 2), Peer Influence (Time 1), and Parental Behaviour (Time 1) on Problem Behaviour at Time 2**

	Total sample		Male		Female	
	Misbehaviour B (SE)	Delinquency B (SE)	Misbehaviour B (SE)	Delinquency B (SE)	Misbehaviour B (SE)	Delinquency B (SE)
Sex	-.163** (.05)	-.061 (.05)	–	–	–	–
Parental bonding	.001 (.01)	-.001 (.01)	-.004 (.02)	-.009 (.02)	.010 (.02)	.010 (.02)
Supervision	-.025 (.03)	-.028 (.02)	-.022 (.03)	-.041 (.03)	-.024 (.05)	.003 (.04)
Warmth	-.024 (.02)	.012 (.02)	-.025 (.03)	.044 (.02)	-.032 (.03)	-.023 (.02)
Time spent parents	-.036 (.02)	-.028 (.02)	-.046 (.03)	-.017 (.03)	-.022 (.03)	-.036 (.03)
Time spent peers	.020 (.01)	.036** (.01)	.009 (.02)	.044** (.02)	.034 (.02)	.032* (.02)
Learning effect peers	.012* (.01)	.010* (.01)	.008 (.01)	.011 (.01)	.021* (.01)	.010 (.01)
Normative (o) vs. Under-developed (1)	.050 (.05)	.062 (.05)	.105 (.07)	.033 (.07)	-.034 (.08)	.098 (.07)
	Adj. R <sup>2</sup> = .070	Adj. R <sup>2</sup> = .063	Adj. R <sup>2</sup> = .009	Adj. R <sup>2</sup> = .055	Adj. R <sup>2</sup> = .037	Adj. R <sup>2</sup> = .029
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Sex	-.164* (.07)	-.083 (.06)	–	–	–	–
Parental bonding	.009 (.02)	.001 (.01)	.015 (.03)	-.002 (.03)	.006 (.02)	.006 (.02)
Supervision/ rules	.001 (.04)	.029 (.04)	-.004 (.06)	-.009 (.06)	.010 (.06)	.074 (.05)
Warmth	-.034 (.03)	-.006 (.02)	-.046 (.04)	.037 (.04)	-.034 (.03)	-.042 (.03)
Time spent parents	-.035 (.03)	-.023 (.02)	-.056 (.05)	-.002 (.04)	-.017 (.04)	-.041 (.03)
Time spent peers	.021 (.01)	.027* (.01)	.003 (.02)	.023 (.02)	.038 (.02)	.036* (.02)
Learning effect peers	.007 (.01)	.008 (.01)	.006 (.01)	.006 (.01)	.014 (.01)	.011 (.01)
Normative (o) vs. Precocious (1)	-.118 (.15)	-.212 (.13)	-.377 (.25)	-.276 (.23)	-.428* (.18)	-.177 (.15)
	Adj. R <sup>2</sup> = .032	Adj. R <sup>2</sup> = .028	Adj. R <sup>2</sup> = -.020	Adj. R <sup>2</sup> = -.026	Adj. R <sup>2</sup> = .039	Adj. R <sup>2</sup> = .030

Note: \* p < .05; \*\* p < .01; \*\*\* p < .001; The dependent variables are logged.

Note: The negative adjusted R<sup>2</sup> from the male analysis of Normative versus Precocious path can be explained from a statically spurious phenomenon. The model predicted less than one would expect when using coincidental independent variables.

Notably, few longitudinal effects were found for both the Normative versus Underdeveloped paths and Normative versus Precocious path. Regarding the Normative versus Underdeveloped path, an effect was found for gender which reveals that being female has a long-term protective effect on misbehaviour ( $B = -.163$ ;  $p < .05$ ). We saw within the delinquency prediction a significant risk effect of time spent with peers in the general sample ( $B = .036$ ;  $p < .01$ ), and also in the male ( $B = .044$ ;  $p < .01$ ) and female sample ( $B = .032$ ;  $p < .05$ ). So, spending more time with peers than others results in a long-term risk effect on delinquency. Social learning from peers showed a risk effect within the general sample on misbehaviour ( $B = .012$ ;  $p < .05$ ) and delinquency ( $B = .010$ ;  $p < .05$ ). The Normative versus Underdeveloped Paths generally yielded an additive and positive effect for problem behaviour. But the effect appeared to be non-significant. Regarding the Normative versus Precocious path, we also found an effect for gender which again reveals that being female serves as a long-term protective effect on misbehaviour ( $B = -.164$ ;  $p < .05$ ). Furthermore, the results yielded an effect of time spent with peers in the general sample ( $B = .027$ ;  $p < .05$ ) and, in the female sample ( $B = .036$ ;  $p < .05$ ). As was anticipated, an additive, protective effect for misbehaviour was found for being in the Precocious path, and this effect was statistically significant and substantial for the female sample ( $B = -.428$ ;  $p < .05$ ).

## 5.6 Summary and discussion

Our goal in this paper was threefold: to investigate the effect of psychosocial development on problem behaviour, to estimate the extent to which psychosocial development has an additive affect on problem behaviour over and above the effects of peer influence and parenting behaviours, and to investigate sex differences in the effects on problem behaviour.

We expected a significant univariate effect of level of psychosocial development and psychosocial developmental paths on problem behaviour. The analyses showed a significant effect for levels of psychosocial development in Time 1 and Time 2. Also, a significant risk effect for the Underdeveloped path is found when compared to the Normative path on misbehaviour and delinquency. Lastly, the Precocious path had a protective effect when compared to the Normative path on reported delinquency. These results thus suggest both a risk and a protective effect of psychosocial development on a cross-sectional and longitudinal level. These effects are the strongest for misbehaviour. Furthermore, these results are consistent with previous longitudinal studies on psychosocial development of Krettenauer et al. (2003) and Ezinga et al. (2006).

At forehand, there were various possibilities regarding the additive effect of psychosocial development over and above parental and peer factors. The first possibility was that we would find no additional effect and that peer and parental factors already explain that same portion of problem behaviour that psychosocial development does. The second possibility was that we would find an additional effect. We distinguished this possible effect into two directions. The first direction was that we would find a protective effect of psychosocial development from the Precocious path and the second was that we would find a risk effect from the Underdeveloped paths. With our analyses we found no risk effect the levels of psychosocial development in Time 1 and Time 2. However we did find

an additive effect of the Precocious path for the female sample on misbehaviour, both on Time 1 and Time 2.

Strong effects were found for 'spending time with peers' and 'social learning through peers' when they are analysed cross-sectional. On a longitudinal level there is only a causal effect of time spent with peers. This suggests that the actual influences of peers, such as group pressure and reinforcement of deviant behaviour may be a short-lived effect. Interestingly, David Smith stated similar conclusions. He showed on the basis of network data that the effect of peers' deviant behaviour on the behaviour of an adolescent is not that long lasting as is found in conventional studies (Smith, 2007). A similar line of reasoning may apply to parenting behaviour. Over time, the protecting influences of parental supervision and warmth seem to diminish. Also, parental bonding as third sub-element of parenting behaviour seem to have, in contrast to recent studies, less effect than expected (Galambos, Barker, & Almeida, 2003; Gray & Steinberg, 1999).

It is interesting that the Precocious path of psychosocial development acts as a selective protective effect on problem behaviour. So, being ahead in psychosocial development can be viewed as something that *protects* the adolescent from getting involved in delinquent matters. Selective, while it only occurs in misbehaviour and within the female sample. Earlier studies revealed similar differences of gender on psychosocial development (Cohn, 1991; Westenberg et al., 2000), but not particularly on the effect on problem behaviour. Regarding these gender differences we also see that the effect of time spent with peers disappears when the analysis is conducted separately for boys and girls. This could imply that gender itself has an effect of its own when it comes to predicting problem behaviour. It could also indicate that psychosocial development does not seem to influence behaviour of males in early to mid adolescence that much, when peer factors are considered. This result again underlines the importance of analysing the effects of a psychosocial development.

#### 5.6.1 *Strengths, Limitations, and Future Directions*

Among all, this study should be considered in light of its limitations. First and foremost, we only used two time points measuring psychosocial development. With the use of more time points, the sample will be more spread over the various levels of psychosocial development. Future research might shed more light on the possibility of using more than two waves measuring individual development.

We used self-report measurements for parental behaviour and peer influences. This implies that we ask what the adolescent *perceives*, instead of receiving actual data directly. However, we believe that in this type of research it is important to ask what the adolescents perceive themselves. Nevertheless, the use of parent reports and observational measures may be valuable in future replications.

Thirdly, the attrition analyses show that older students, students coming from an ethnic minority, students with more problem behaviour, and students with lower psychosocial levels in Time 1, were less likely to participate in Time 2. This means that within our sample we lost a considerable sub-sample of deviant behaving adolescents. The results we show could therefore be an underestimation of the real effect of psychosocial development. Unfortunately, we are not able to retrieve this sample.

In general, the results from this study show that psychosocial development can have a protective effect on problem behaviour. Furthermore, the longitudinal analysis seems to point out that the effect of more distal influences, such as peers and parents are not that long lasting as often thought. That implies that psychosocial development may have more long-term consequences, especially for females. After all, their precocious psychosocial development has a protective effect on problem behaviour.

## 5.7 References

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