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EARLY CHILD PERSONALITY RATINGS PREDICTING DEVELOPMENTAL OUTCOMES IN THE LAST PRE-SCHOOL YEAR

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Abstract

The study investigated the predictive validity of three-year-old children's personality ratings by parents and pre-school teachers in explaining pre-schoolers' (N = 253) social behaviour and intelligence two years later. Parental variables (education, self-reported parenting practices) and age of a child's entry into pre-school were also accounted for but did not significantly contribute to the child outcomes. The reduced models with significant predictors explained 14%, 7%, 16% and 2% of variance in teacher reports on children's social competence, internalising behaviour, externalising behaviour and non-verbal intelligence score, respectively. Early personality ratings were predictive of later outcomes in pre-schoolers. Teacher-rated child conscientiousness/openness was associated with social competence and low incidence of externalising behaviour in pre-school, whereas ratings of extraversion/emotional stability were negatively related to internalising but positively linked to children's externalising behaviour. The latter was also predicted by teacher-observed early disagreeableness. Parents' ratings of child extraversion predicted low levels of internalising behaviour in pre-school, and their perceptions of conscientiousness were predictive of children's intelligence two years later.

Key words: pre-school children, personality, social behaviour, intelligence, longitudinal predictions

INTRODUCTION

Children's social behaviour, especially in (pre-) school, has been demonstrated to have a significant role in their concurrent and later developmental and education-

al outcomes such as social adjustment, acceptance by others, academic attainment, social status, and psychological well-being (Caspi, 2000; Shiner, 2006; Zupančič & Kavčič, 2007). Social competence, internalising and externalising behaviour are often viewed as relevant indicators of children's social behaviour in home and educational settings (Eisenberg et al., 1997, 2001; LaFreniere, Dumas, Zupančič, Gril & Kavčič, 2001; Shiner, 2006). Likewise, cognitive ability (usually referred to as general intelligence) is among the most powerful factors affecting individuals' academic achievement (e.g., Chamorro-Premuzic & Furnham, 2006; Zupančič & Kavčič, 2007), which is influential in the prediction of educational level, occupational status, and social status in adulthood (Hartog & Oosterbeek, 1998). Social behaviour and cognitive ability may also be considered as important developmental outcomes at the end of early childhood (pre-school years) because they represent prerequisites for successful functioning in the next developmental period (middle childhood), i.e. adjustment to school, formation of friendships, rule-abiding conduct, and academic achievement. We were thus interested in early factors that may affect social behaviour and general intelligence of pre-school children prior to their entry into compulsory schooling. Precisely, we aimed at exploring early child individual differences assessed by multiple informants, several parental characteristics, and the age of a child's enrolment into pre-school as potential predictors of the developmental outcomes.

Child individual differences

It has been shown previously that early individual differences, most often referred to as temperament, are associated with children's concurrent and later social behaviour (Caspi & Silva, 1995; Eisenberg et al., 1997, 2000, 2001; Shiner, 2006), and even intelligence (Mathney, 1989). Whereas temperament is usually defined as a neurobiological substrate of personality emphasizing emotional and regulative functions of individual differences, personality is viewed as a broader concept representing social and cognitive elaborations of early temperament (e.g., Caspi & Silva, 1995; Zupančič & Kavčič, 2007). Thus personality was thought to develop relatively late in a child's life (middle or late childhood). Recent investigations in the field led to a growing consensus among researchers that children, at least from age three onwards, are actually perceived by parents and teachers in terms of traits beyond temperamental ones (Halverson et al., 2003; Shiner, 2006; Zupančič & Kavčič, 2007, 2009). These specific (or narrow-band) traits are hierarchically organized into a smaller number of broad-band personality traits that resemble the five robust personality factors in adults, i.e. the Big Five: extraversion, agreeableness, conscientiousness, neuroticism, and openness (Halverson et al., 2003; Knyazev, Zupančič, & Slobodskaya, 2008).

Though many child studies show the Big Five structure, assessments of preschool children often yield a smaller number of factors that are more heterogeneous

in content (Mervielde, Buyst & De Fruyt, 1995; Zupančič, Sočan & Kavčič, 2009). Nevertheless, the personality factors obtained with ratings of pre-school children are stable enough to be considered trait-like (Zupančič et al., 2009) and they demonstrate consistent links with child concurrent and later adaptation in the domains of competent and problem behaviour (De Pauw, Mervielde & Van Leeuwen, 2009; Shiner, 2006; Zupančič & Kavčič, 2006, 2007). Extraversion describes sociable, lively, active, expressive, emotionally positive and socially potent children; it appears to bolster the quality of their social relationships (with peers, friends, significant adults) and protect against internalising problems (anxiety, depression) but puts children at risk for externalising problems (aggressive, antisocial behaviour). Agreeableness characterizes kind, empathic, generous, gentle children who are willing to accommodate others' wishes; it foreshadows positive social relationships, academic attainment, work competence, and reduces the risk of externalising behaviour. Conscientiousness includes responsibility, persistence, attention, self-control, achievement motivation; it promotes rule-abiding behaviour, social competence, and achievement in various domains. Neuroticism describes vulnerable, tense, moody, guilt-prone children, individuals low in frustration tolerance and insecure in relationships; it predicts internalising problems and protects against externalising problems (summarized in Shiner, 2006). Child openness is defined more narrowly (curiosity, imagination, perceptiveness, knowledge, quickness to learn, good understanding) than in adults; it is associated with measures of cognition and academic achievement but it does not always appear as an independent factor in ratings of pre-school children (Mervielde et al., 1995; Zupančič et al., 2009; Zupančič & Vidmar, in press).

However, most of the studies relating child personality to adjustment were cross-sectional and were performed with older pre-school or school-age children. Longitudinal studies mostly relied on early temperament measures or linked personality in later childhood to adolescent and adult adaptation. Therefore, the goal of our study was to examine longitudinal relations between early personality traits (age three) and social behaviour in the last year of children's pre-school attendance. Due to the moderate temporal stability of pre-school children's trait ratings (Zupančič et al., 2009), we expected significant links between early personality and developmental outcomes two years later in the aforementioned directions.

The child's age of pre-school entry and parental characteristics

Slovene parents seem reluctant to enrol their child to pre-school prior to his/her age three. From 2000 to 2007, 20% to 30% of one-year-olds, 40% to 50% of two-year-olds, and 60% to 70% of three-year-olds attended public state funded pre-schools (Statistical Information, 2000–2007). According to the pre-school teachers' knowledge, the parents usually assert that (Zupančič & Kavčič, 2006, 2007): (a) an early entry into pre-school is harmful for toddlers' (age one to three) health; (b) the

toddlers are not cared for well enough in pre-schools because of a non-favourable teacher-child number ratio in pre-school groups; (c) early pre-school entry puts children at risk for compromised psychological development; (d) toddlers are too young to engage in a group. Actually, research on psychological effects of early child out-of-home care (age one to three) on personality and adjustment yielded contradictory results. Some authors found adverse influences, e.g. on attachment and peer relationships, while others reported positive effects on sociability and social competence (summarized in NICHD, 2005). The problem on drawing conclusions from these studies is that the child age of starting out-of-home care was studied in isolation, disregarding family factors, quality of care, and child characteristics. Howes (1990) demonstrated that only the children enrolled in low-quality as opposed to high-quality day-care at any age exhibited maladjusted social behaviour over the pre-school years. Furthermore, in children who experienced two sets of socialisation agents very early in life (parents, teachers), parental socialisation practices contributed scarcely to the prediction of their social behaviour, relative to the variance explained by child characteristics and quality of care. However, when there is little variation in quality of care, other factors become more predictive of child development (Rosenthal, 1999). With regard to Slovene public pre-schools, Marjanovič Umek and Fekonja Peklaj (2008) conclude that quality at the structural level is satisfactory and similar across the institutions but that the differences in the quality at the process level are considerable, even among the groups within same pre-schools. Nevertheless, the Slovene research (Marjanovič Umek & Fekonja Peklaj, 2008; Zupančič & Kavčič, 2006, 2007) suggests no significant long-term effects of the age of early entry into a public pre-school on child language and personality development, and no associations with emotional and behavioural problems at age four. In line with recent waves of investigating the effects of early pre-school entry on developmental outcomes (e.g., Rosenthal, 1999), the present study focused on long-term effects of the age of entry in combination with early child personality and selected parental variables.

Overwhelming amount of research was devoted to parental socialisation practices in relation to child development. Significant associations were reported, but in general they are consistently low, especially with regard to later personality trait development and behaviour out of a home setting. Most of the authors were only looking for statistical significance disregarding the size of the associations between parenting and child outcomes (Harris, 1998; Zupančič, Podlesek, & Kavčič, 2004). This is not to say that family is not important in child development but that its role is often overestimated on the account of other important socialisation agents (e.g., teachers and peer group) and a child's own behavioural tendencies. Moreover, the links between parent factors and child outcomes have been widely misinterpreted over the past decades. Firstly, the one-way parent-to-child effects were taken for granted without considering that correlations and regression coefficients (even when obtained longitudinally) do not imply causation. Indeed, recent studies provide evi-

dence for child-to-parent effects, i.e. children's behavioural tendencies are likely to shape parental behaviour. Secondly, the parent-to-child effects were thought to represent direct environmental influences, though in part they are genetically mediated: moderately heritable parents' personality and cognitive ability affect their parenting practices and parents also transmit their behavioural propensities to the offspring. Therefore, children's personality, ability and behaviour correlate with the environment created for them by the parents (summarized in Harris, 1998; Zupančič & Kavčič, 2007).

Regardless of the contemporary explanations of the links between parental characteristics and child outcomes, we accounted for parental education and four parenting variables in our inquiry. Bearing in mind the bi-directionality of parent-child effects along with frequently reported associations of (a) cognitive and language development with parental education and intellectually stimulating family environment (Marjanovič Umek & Fekonja Peklaj, 2008; NICHD, 2005), (b) coercive parenting with externalising, and (c) authoritative parenting with social adjustment (NICHD, 2005; Shiner, 2006; Zupančič et al., 2004), we propose that these parental characteristics might also contribute to children's social behaviour in pre-school, and to their general (non-verbal) cognitive ability.

METHOD

Participants

Complete data of 253 children (119 boys and 134 girls) were gathered across two waves of measurement. In the first wave, the target children were three years old (M = 37.9 months; SD = 2.5 months) and they attended one of 17 state funded pre-schools in different regions of the country for at least two months. Of the total sample 34% children entered pre-school between ages 11 to 15 months, 32% at age from 16 to 30 month, and the remaining 34% at age 31 month or more. The data for the second wave was collected two years later. All of the participating children remained in the same institution over the study, 65% of them in a group with the same teacher. One pre-school teacher assessed 1 to 14 children. On average, the children's mothers and fathers had a high-school education (for mothers, the average length of schooling was 12.9 years, SD = 2.3 years; for fathers, M = 12.2 years, SD = 2.2 years).

Instruments

In the first wave of the study, mothers, fathers and pre-school teachers of the target children completed *The Inventory of Child Individual Differences* (ICID; Halverson et al., 2003; Slovene adaptation and normalization by Zupančič & Kavčič,

2009), an age- and culture-neutral measure of child personality. One-hundred and eight personality characteristics (items), rated along a 7-point scale (1 = *present much less than in an average child or not at all*; 7 = *present much more than in an average child*), form 15 scales representing mid-level personality traits. With parental ratings of a sample of three-year-old Slovene children, these traits combined into four broad-band personality components[1] (Zupančič & Kavčič, 2004): (1) *extraversion*, a combined extraversion and openness component, comprising Positive Emotions, Considerate, Sociable, Activity Level, Open to Experience, Compliant, and Intelligent mid-level scales (e.g., 'my child is sociable'; ' ...eager to learn'); (2) *conscientiousness*, a component capturing Organized, Distractible (reversed scoring), and Achievement Oriented scales (e.g., 'my child is organized'; '...has good concentration'); (3) *neuroticism*, a component defined by Fearful/Insecure, and Shy scales (e.g., 'my child is easily upset'; '...fearful'); (4) *disagreeableness*, a component described by Strong Willed, Negative Affect, and Antagonistic scales (e.g., 'my child is stubborn'; '...uncooperative'). The components were demonstrated internally consistent (α coefficients ranged from 0.79 to 0.91 for maternal reports and from .79 to .92 for paternal reports), structurally congruent across mothers and fathers, and consistent across informants (mean $r = 0.69$) (Zupančič et al., 2009).

When the same children were assessed by pre-school teachers, three reliable (alphas ranging from 0.79 to 0.92) personality components were obtained (Zupančič & Kavčič, 2004): extraversion and neuroticism (reversed scoring) or emotional stability were combined into a single component (comprising Sociable, Activity Level, Fearful/Insecure – reversed, and Shy – reversed), and so were conscientiousness and openness (capturing Compliant, Achievement Oriented, Considerate, Organized, Positive Emotions, Intelligent, Open to Experience, and Distractible – reversed), whereas disagreeableness reflected a strikingly similar structure to that derived from parental ratings (Zupančič et al., 2009).

The Family Environment Questionnaire (FEQ; Zupančič et al., 2004) was rated by the children's mothers and fathers in the first wave. The instrument was designed to provide an ecologically valid measure of parental socialization practices with preschool children in the Slovene cultural environment. Extensive analyses of 51 items, rated along a 4-point scale (1 = *almost never*; 4 = *almost always*), yielded a reliable four component structure of parental practices. The four components which were consistent across mothers and fathers were labelled: *Stimulation* (e.g., 'I encourage my child to play with puzzles'; '...to listen to songs'), *Authoritative Parenting* (e.g., 'I explain demands and rules to my child'; 'I am attentive when I listen to the child'), *Power Assertion* (e.g., 'I withdraw privileges without explanations'; 'My child has to obey because I say so'), and *Ineffective Control* (e.g., 'When my child does not do the task requested I do it'; 'He/she knows there will be no punishment

1 Principal component analysis followed by Varimax rotation was used.

when threatened'). Their internal reliabilities ranged from 0.66 to 0.86 and from 0.68 to 0.87 for maternal and paternal self-evaluations, respectively. The parent-pairs moderately correlated in their ratings and the self-reported practices were not significantly linked to the child's gender.

Raven's *Coloured Progressive Matrices* (CPM; Raven, Raven & Court, 1999) were individually administered to the children in the second wave of the study when they were five years old. CPM includes three sets of 12 tasks, i.e. 36 tasks, designed to assess general non-verbal cognitive ability in children under the age of 11 years. The tasks consist of a matrix pattern with a section missing, and six alternative responses, one of which completes the missing section of the matrix. The child is asked to select the missing section. The three sets of tasks offer the child three opportunities to learn the method of solving the tasks. Within each set the difficulty of tasks gradually increases. The final score is represented by a sum of correct answers. Across studies, the split-half reliabilities in early childhood were estimated from 0.65 to 0.90. Retest reliability coefficients ranged from 0.81 to 0.95, from 0.71 to 0.95, and from 0.68 to 0.92 over 10 days, one-month, and one-year time period, respectively. In pre-school children, the correlations of the CPM with the Primary Mental Abilities test were moderate and the validity of the CPM increases with the children's age (Raven et al., 1999; Zupančič & Kavčič, 2007).

Pre-school teachers completed *The Social Competence and Behavior Evaluation Scale – Preschool Edition* in the second wave. The scale was adapted and standardized with a representative sample of pre-school children in Slovenia (SV-O; LaFreniere et al., 2001). The SV-O consists of 80 statements about child behaviour, rated along a 6-point rating scale (1 = *occurs almost never*; 6 = *occurs almost always*). Three summary scales of the SV-O were selected as measures of social behaviour in pre-school: *Social Competence* (joyful, trustful, tolerant behaviour, integration into peer group, calm and pro-social towards peers, cooperative and autonomous in relation to adults), *Internalising* (depressed, anxious, isolated from the peer group, dependent on the adults) and *Externalising Behaviour* (angry, aggressive and egotistical in the peer group, oppositional toward the adults). Examples of the Social Competence, Internalising and Externalising Behaviour scale-items are 'readily adapts to difficulties', 'anxious-nervous (e.g., bites fingernails)', and 'bullies weaker children', respectively. The internal consistency coefficients of the summary scales were estimated from 0.85 to 0.95; the retest reliability coefficients were between 0.74 and 0.89; the agreement between teacher and assistant teacher ratings ranged from 0.69 to 0.89. The scales demonstrate satisfactory convergent and discriminant validity and are predictive of pre-school children's peer status.

Procedure

Parents (253 pairs) and 49 pre-school teachers participated on a voluntary basis in the larger longitudinal project *Effects of Pre-school Education on Child Devel-*

opment and School Achievement. In the first wave, 17 out of 18 randomly-selected public pre-schools agreed to participate. Parents signed an agreement form to permit their children to participate, teachers and pre-school principals were fully informed about the objectives and methods of the study. The teachers mediated the contact with parents of three-year-olds: they distributed the consent forms and the instruments to the parents and later, they collected the filled-in material. The sets of parental instruments included short written instructions on administration of the questionnaires. Mothers, fathers and pre-school teachers separately responded to the ICID. Both parents also independently completed the FEQ. The three adult informants were asked to complete the questionnaires within two weeks and return them in sealed envelopes which were collected in pre-schools.

In the second wave of the study, the teacher who did not participate in the first wave (two teachers are present in each group of pre-school children) assessed children's social behaviour in pre-school using the SV-O. The research assistants gave the participating teachers short oral instructions on how to fill-in the questionnaires for each child. The CPM was administered to the children by previously trained research assistants. This test was performed individually with each child and it required, on the average, 20 minutes of the child's cooperation, including the instructions. The procedure took place in a separate and quiet room within the pre-school. To answer the questions (finding a correct section that completes the matrix pattern in a booklet) the child just had to point finger to the section which in his/her opinion fitted the matrix best. Accordingly, the research assistant filled-in the CPM answering sheet.

Data analysis. The contribution of child, parent, and pre-school entry factors to prediction of later developmental outcomes was investigated by several stepwise regressions (with probability of F 0.05 to enter the variable into the model and 0.10 to remove the variable from it). Child predictor variables included component scores on personality at age three as derived from parental ratings (extraversion, conscientiousness, neuroticism, disagreeableness) and teacher reports (conscientiousness/openness, extraversion/emotional stability, disagreeableness). Aggregated scores of mother and father child personality ratings were used to reduce the number of variables. We opted for an aggregation because the four components (see the Instrument section for the component structure; see Zupančič & Kavčič, 2004, for details) are strongly congruent between the spouses (see also Zupančič et al., 2009) and the cross-parent consistency in child personality component scores is high (Pearson correlation coefficients between the respective maternal and paternal ratings are all statistically significant at $p < 0.001$: $r = 0.75$ for Extraversion, $r = 0.71$ for Conscientiousness, $r = 0.65$ for Disagreeableness, and $r = 0.68$ for Neuroticism). Parent predictor variables captured maternal and paternal education measured in years of completed schooling and four component scores of maternal and paternal parenting practices (stimulation, authoritative parenting, power assertion, ineffective control). All of the parent variables were considered in the regression with respect to each of

the children's parents separately because the respective cross-parent consistencies are only moderate (Zupančič & Kavčič, 2007; Zupančič et al., 2004). The last two predictors were represented by age (in months) of the child's entry to pre-school and child's gender (1 – male, 2 – female). All predictor measures were obtained in the first wave of the study. Children's non-verbal intelligence and social behaviour assessed in the second wave were taken as criteria variables.

RESULTS

Table 1 displays intercorrelation matrix of predictors and Table 2 shows Pearson product-moment correlation coefficients between the measures recorded in the first wave of the study (ratings of child personality traits, parental education, each parent's self-reported socialization practices, age of a child's entry into pre-school, and his/her gender) and the developmental outcomes two years later, i.e. pre-school teachers' ratings of child social competence, internalising behaviour, and externalising behaviour, and children's non-verbal intelligence. With alpha level set at 0.05, several correlations, mostly between personality ratings and child outcomes, were statistically significant. According to Cohen's (1988) suggestions to evaluate the magnitude of a relationship, most of the significant correlations were modest in size. Moderate relations were demonstrated only between teacher-perceived early child (a) conscientiousness/openness and later social competence, and (b) disagreeableness and later externalising behaviour. An inspection of the correlation sizes suggests that the longitudinal associations of pre-school teachers' evaluations of social behaviour in five-year-olds may be stronger with teacher ratings than parental ratings of early child personality (note that personality and social behaviour were not rated by the same teachers). In contrast, children's intelligence scores seem somewhat higher associated with parental reports on child personality than with teachers' reports.

To define the proportion of variance in child outcomes at age five that can be explained by a set of predictors and to explore the relative importance of different predictors, several multiple regression analyses were performed. The results showed that parent and pre-school entry factors and child gender did not contribute significantly to later developmental outcomes. Only did the child variables at age three, i.e. the child personality trait ratings contribute a significant portion of variance to the prediction of criteria two years later.

Social competence was statistically significantly predicted only by conscientiousness/openness as assessed by teachers, $\beta = 0.37$, $t(251) = 6.33$, $p = 0.000$. This regression model explained 14% of variance in the criterion, $F(1, 251) = 40.16$, $p = 0.000$. Given that the R^2 between 0.13 and 0.25 represents a medium effect size (Cohen, 1988), the teacher ratings of three-year-olds' conscientiousness/openness can be considered moderately predictive of children's social competence in pre-

Table 1. Correlations among predictors

	1	2	3	4	5	6	7	8	9
1 Extraversion$_P$									
2 Conscientiousness$_P$	0.65***								
3 Disagreeableness$_P$	-0.14*	-0.47***							
4 Neuroticism$_P$	-0.57***	-0.50***	0.33***						
5 Conscient./Openness$_T$	0.28***	0.31***	-0.11	-0.17*					
6 Extra./Emot. Stab.$_T$	0.26***	0.15*	0.01	-0.27***	0.66***				
7 Disagreeableness$_T$	0.01	-0.12*	0.23***	-0.06	-0.26***	0.02			
8 EducationM	0.14*	0.09	0.02	-0.06	0.18**	0.14*	-0.04		
9 EducationF	0.07	0.06	0.03	-0.06	0.11	0.06	-0.06	0.38***	
10 Authoritative$_M$	0.33***	0.20**	-0.08	-0.17*	0.10	0.05	0.02	0.18**	0.19**
11 Authoritative$_F$	0.24***	0.20**	-0.11	-0.08	-0.05	-0.01	0.06	0.09	0.04
12 Power Assertion$_M$	-0.09	-0.14*	0.14*	0.19**	0.06	0.03	0.04	-0.20**	-0.10
13 Power Assertion$_F$	0.06	-0.06	0.22***	0.03	-0.02	0.03	0.05	-0.09	-0.09
14 Ineffective Control$_M$	-0.11	-0.17*	0.17**	0.18**	-0.13*	-0.13*	0.02	-0.26***	-0.13*
15 Ineffective Control$_F$	-0.11	-0.17*	0.12	0.14*	-0.04	-0.12	-0.13*	-0.18**	-0.12
16 Stimulation$_M$	0.22***	0.17*	-0.05	-0.07	0.11	0.09	0.05	0.05	0.00
17 Stimulation$_F$	0.17**	0.12	0.03	-0.01	-0.03	-0.01	0.08	-0.01	-0.07
18 Pre-school Entry Age	-0.01	0.06	-0.06	0.02	0.10	-0.16*	-0.10	0.15*	0.14*
19 Child Gender	0.12*	0.15*	-0.07	-0.17*	0.22***	0.07	-0.13*	-0.04	-0.01

Table 1. - Continued

	10	11	12	13	14	15	16	17	18
11 Authoritative$_F$	0.41***								
12 Power Assertion$_M$	-0.11	-0.13*							
13 Power Assertion$_F$	0.00	-0.13*	0.46***						
14 Ineffective Control$_M$	-0.15*	-0.11	0.21***	0.07					
15 Ineffective Control$_F$	-0.06	-0.12	0.15*	0.15*	0.49***				
16 Stimulation$_M$	0.43***	0.21***	0.03	0.01	-0.08	-0.03			
17 Stimulation$_F$	0.20**	0.46***	-0.03	0.06	-0.03	-0.03	0.43***		
18 Pre-school Entry Age	0.09	0.07	0.00	0.02	0.00	0.05	0.04	0.06	
19 Child Gender	0.01	-0.08	0.10	0.03	-0.01	0.03	0.10	0.02	0.03

Note. Subscript P = parental ratings, T = teacher ratings, M = mother ratings or maternal self-report, F = father ratings or paternal self-report.
$^{*}p < 0.05$. $^{**}p < 0.01$. $^{***}p < 0.001$.

school two years later. Children who were assessed as more conscientious/open at age three were later attributed more socially competent behaviour than were their less conscientious/open peers.

The model for explaining internalising behaviour (scored reverse) was less effective in prediction, $R^2_{adj} = 0.07$, $F(2, 250) = 10.07$, $p = 0.000$. The model included child extraversion/emotional stability as assessed by teachers, $\beta = 0.21$, $t(250) = 3.37$, $p = 0.001$, and parent rated child extraversion, $\beta = 0.13$, $t(250) = 1.98$, $p =$

Table 2. Longitudinal correlations of children's social behaviour and CPM scores at age five with ratings of their personality at age three, parental variables, age of entry into pre-school and gender

	Wave 2 variables			
Wave 1 variables	Social Competence	Internalising[a] Behaviour	Externalising[a] Behaviour	CPM Score
Child Personality Ratings				
$Extraversion_P$	0.13*	0.18**	-0.04	0.15*
$Conscientiousness_P$	0.13*	0.08	0.07	0.16**
$Disagreeableness_P$	-0.12*	-0.02	-0.19**	-0.11*
$Neuroticism_P$	-0.13*	-0.18**	0.08	-0.08
$Conscient./Openness_T$	0.37***	0.23***	0.10	0.11*
$Extra./Emot.\ Stab._T$	0.22***	0.25***	-0.17**	0.04
$Disagreeableness_T$	-0.16**	-0.10	-0.34***	0.08
Parental Variables				
$Education_M$	0.09	0.05	0.03	0.03
$Education_F$	0.11*	0.09	-0.00	-0.00
$Authoritative_M$	0.08	0.02	0.03	0.03
$Authoritative_F$	-0.11*	-0.04	-0.04	0.02
$Power\ Assertion_M$	0.01	-0.01	-0.04	-0.08
$Power\ Assertion_F$	0.02	-0.04	-0.04	-0.06
$Ineffective\ Control_M$	-0.03	-0.11*	0.01	-0.03
$Ineffective\ Control_F$	-0.02	-0.04	-0.12*	0.02
$Stimulation_M$	0.07	0.10	0.08	0.07
$Stimulation_F$	-0.11*	0.00	-0.02	0.01
Pre-school Entry Age	0.02	-0.03	0.14*	0.02
Child Gender	0.13*	-0.03	0.08	-0.05

Note. CPM = non-verbal intelligence. Subscript P = parental ratings, T = teacher ratings, M = mother ratings or maternal self-report, F = father ratings or paternal self-report.
[a]Reverse scoring; higher score indicates less frequent internalising/externalising behaviour.
$^{*}p < 0.05$ $^{**}p < 0.01$ $^{***}p < 0.001$

0.048). Thus, three-year-olds who were observed as more extraverted by their parents and more extraverted/emotionally stable by their teachers, were less prone to internalising behaviour at age five than their less extraverted (and more emotionally instable) age mates. However, the variables under study predicted a small portion of variance in children's internalizing behaviour as observed in pre-school two years later.

The next model explained 16% of variance in externalizing behaviour (scored reverse), $F(3, 249) = 16.65$, $p = 0.000$. In this model, the criterion was negatively related to teachers' assessments of three-year-olds' disagreeableness, $\beta = -0.27$, $t(249) = -4.33$, $p = 0.000$, and extraversion/emotional stability, $\beta = -0.32$, $t(249) = -4.00$, $p = 0.000$, and positively associated with teachers' ratings of child conscientiousness/openness, $\beta = 0.24$, $t(249) = 2.85$, $p = 0.005$. Compared to children perceived to exhibit externalising behaviour at age five more frequently, those ob-

served to exhibit externalising tendencies less often were previously assessed by their teachers as more conscientious/open, less disagreeable and less extraverted/emotionally stable. The model predicted a moderate portion of variance in the observed children's externalizing behaviour two years later.

The regression with non-verbal intelligence as a criterion had a rather poor fit (R^2_{adj} = .02), but the overall relationship was statistically significant, $F(1, 251) = 6.17$, $p = 0.014$. The CPM scores were significantly positively related to parental ratings of three-year-olds' conscientiousness, $\beta = 0.16$, $t(251) = 2.48$, $p = 0.014$. In contrast to the models predicting social behaviour at age five, teachers' assessments of three-year-olds' personality were not significantly related to children's later non-verbal intelligence.

DISCUSSION

The present data is clear in suggesting the importance of early child personality traits as perceived by significant adults for later social behaviour of children in pre-school. Personality ratings were consistently more predictive relative to the external measures used in the present study, the parent variables and the age of children's entry into pre-school. The predictive models showed moderate effects of the variables under investigation at age three on teachers' ratings of children's social competence and externalising behaviour two years later, while the effect on internalising behaviour was relatively small. Furthermore, early child personality ratings, especially traits perceived by the pre-school teacher, demonstrated predictive specificity within the spectrum of social behaviour. Consonant with previous studies with older pre-schoolers and school-age children (e.g., De Pauw et al., 2009; Halverson et al., 2003; Shiner, 2006), teacher ratings of early child conscientiousness/openness contributed to social competence, low extraversion/emotional stability (and low extraversion based on parental reports) was linked to internalising, whereas children high in extraversion/emotional stability, low in conscientiousness/openness and agreeableness were especially likely to exhibit externalising behaviour. In addition, parent-reported conscientiousness in three-year-olds showed a modest link to later child intelligence.

The role of early personality in later developmental outcomes

Personality may be viewed as predisposing children to initiate their interactions with environments in specific ways (Caspi, 1998, 2000). Over time, individual differences in child personality trait expression may contribute to a cumulative process of personality-environment transactions and thus, shape behavioural outcomes. With regard to internalising behaviour in pre-school, low emotional stability (fear/insecurity, shyness) predisposes children to inhibit their approach toward others

(Caspi & Silva, 1995). Along with low extraversion it may discourage children to engage in a peer group, seek company and share experience with others. This passivity may contribute to them being overlooked in the pre-school group and dependent on teachers. Further, children differing in personality interpret and react differently to similar experiences, evoke different responses from others, and actively tend to select or create different environments for themselves. Strong willed, antagonistic children, and children prone to negative affect (disagreeableness), for example, tend to interpret peer behaviour as hostile and act aggressively (Caspi & Silva, 1995; Eisenberg et al., 2000), thereby creating disturbing situations and evoking negative responses in others (e.g., peer rejection). Thus, they create additional frustrating circumstances that contribute to their irritation, intolerant, aggressive, self-centred, and oppositional behaviour (externalising). Conscientious/open children (not easily distracted, organized, considerate, achievement oriented, open to experience) may be perceived as more socially competent in the pre-school group because they tend to effectively regulate their emotion, attention, and behaviour (Eisenberg et al., 1997). These regulative capacities contribute to maintenance of their positive mood in the group, tolerance, cooperation with peers and teachers, ability to negotiate calmly, use of relevant social skills across situations including conflicts with group-mates and pre-school staff.

The positive link established between teacher ratings of early child extraversion/emotional stability and frequency of later externalising behaviour requires an additional explanation. Previous research suggested that at least some expressions of externalising behaviour may have a positive developmental function (NICHD, 2001; Rubin, Bukowski & Parker, 1998). Pre-school children who more often engaged peers antagonistically also more frequently engaged others pro-socially. Peer engagement inevitably involves conflict and subsequent experiences of anger, occasional selfish behaviour, acts of aggression to defend own rights and assert own will within the group, but it may also provide opportunities for children to learn to resolve conflicts effectively. Thus, more frequent involvement in a pre-school group and extensive social participation might have contributed to somewhat higher levels of externalising behaviour in our sample of five-year-olds perceived as more extraverted, less shy and insecure by their teachers two years earlier.

Our study provides little empirical evidence that early child personality traits as perceived in a home context by parents are related to teachers' evaluations of children's social behaviour in pre-school two years later. It should be noted that the adults provided data on children in different settings (family, pre-school) and roles (a parent, a teacher). The informants within the same context/role assessing the same child's characteristics agree more strongly among themselves than do informants across contexts/roles (e.g., Eisenberg et al., 2001; Zupančič et al., 2009). This may be due to actual differences in child behaviour across different contexts (Harris, 1998), specific information on children gathered by the observers in different settings, and upon different roles the observers occupy which brings different

perspectives on children. Thus, early child personality as perceived in pre-school (teacher ratings) shows stronger longitudinal associations with social behaviour in the same context than parental ratings do. But, parent-reported child conscientiousness appears the only significant predictor of children's later general intelligence even though a very small amount of variance in CPM was explained. The link is probably due to parent perceived child intelligence (the mid-level personality scale constituting the conscientiousness component) as demonstrated with older children (Zupančič & Vidmar, in press). Adult reports on child intelligence may be considered a subjective measure of cognitive ability indicating the informant's insight into a child's functioning in intellectually demanding situations (Chamorro-Premuzic & Furnham, 2006). Adult's reactions to these perceptions (insights) of child intelligence may enhance or inhibit the child's motivation to engage in intellectual activities and thus indirectly contribute to individual differences in cognitive ability (Muller & Dweck, 1998). In addition, conscientiousness also includes ratings of child concentration, sustained attention, inhibition of attention to irrelevant stimuli (the Distractible mid-level scale), characteristics involved in individuals' self-regulation of information processing.

The effect of selected environmental variables in later developmental outcomes

Our results suggest that the self-reported parents' characteristics under study and the age of children's entry into pre-school (one to three years) are not predictive of later child social behaviour in pre-school, and performance on the (non-verbal) intelligence test. With regard to social behaviour, the finding is not too surprising in light of current overviews on links between parenting and child behaviour out-of-home. Parents' behaviour toward a child is related to how the child behaves in the presence of parents or in the context associated with the parents (Harris, 1998), but he/she may behave differently outside the home and in the absence of the parents (e.g., in pre-school where social behaviour in our study was recorded). However, the predictive (statistically non-significant) links of parenting variables with child outcomes are perhaps somewhat underestimated because of the self-enhancement bias usually affecting self-report measures. The parents may tend to present their socialisation practices in a socially desirable way (Zupančič & Kavčič, 2007). This tendency could decrease the variance in parental responses which affects the magnitude of the correlation. Next, parental reports on parenting may be more subject to change than child personality trait ratings. Because the longitudinal relations also depend on temporal stability of the measures employed, the measures that are less stable over time would be weaker predictors than more stable ones. For example, at child age three the parents may be permissive, protective, prone to underestimate certain child abilities, skills and self-regulative strategies, and they may do things instead of the child without explaining why certain behaviour is right and wrong (in-

effective control). They may simply consider the child too young to tell "good from bad", to have "bad" intentions, and/or to understand explanations. Over a year or two the parents realise the child is old enough to start learning proper, considerate, socially desirable behaviour, and their practices become more authoritative.

Finally, the absence of an association between parental education and child intelligence was rather unexpected as this link has been established across most of the studies (summarized in Marjanovič Umek & Fekonja Peklaj, 2008; Zupančič & Kavčič, 2007). Perhaps the stimulating cognitive environment in pre-school might compensate for limited resources and opportunities for children's learning at home. Among the possible reasons which might have deflated the associations (if they actually exist) between parental education and children's cognitive ability are lower reliability (though still acceptable) of the CPM scores at age five as compared to older ages (Zupančič & Kavčič, 2007), and the fact that non-verbal intelligence was measured. Stronger relations of parental education are usually suggested with verbal component of intelligence (e.g., Marjanovič Umek & Fekonja Peklaj, 2008). Prospect studies still call for consideration of pre-school quality, more objective parenting measures (e.g., observations in natural settings) than those under our investigation, and other family measures which are perhaps more powerful predictors of child developmental outcomes, e.g., parental stress, family climate.

CONCLUSIONS

Our study mainly highlights the significance of adults' perceptions of early child individual differences for his/her social behaviour one year prior to school entry whereas parental education, self-reported early parenting practices, and the child's age of entry into pre-school do not appear to make a considerable difference. Though a substantial temporal stability of child trait ratings over the pre-school years has been demonstrated (Zupančič et al., 2009) it is far from perfect, leaving enough room for individual personality change. This kind of change presumably results from maturational and environmental and/or experiential factors that differentially affect individuals. In our opinion, enhancing children's persistence in various activities, focused attention, organized and planning behaviour, consideration of others (conscientiousness), curiosity, imagination, interest in activities (openness), peer group involvement, engagement into group play (extraversion), approach toward others, self-confidence (emotional stability), and rule-abiding behaviour, negotiation, co-operative problem solving in a group (agreeableness), especially in the pre-school, might prove beneficial for child social adjustment in educational settings.

The results also imply that the time of the toddlers' entrance into public preschool (within the age range of one to three years) is not related to their development of social adjustment and general non-verbal intelligence, at least where early enrolment into Slovene public state funded pre-schools is concerned. Similar con-

clusions were reported with regard to child personality development (Zupančič & Kavčič, 2006). However, the quality of pre-school was suggested to be a crucial factor that moderates a potential adverse effect of an early entry (infancy/toddlerhood) into pre-school and/or of a disadvantaged family environment (e.g., Howes, 1990; Marjanovič Umek & Fekonja, 2008; NICHD, 2005). Therefore, a need for maintaining and preferably improving the quality of pre-schools is of essential importance.

There are several advantages to this present study (e.g., a multiple informant approach, a two-time point measurement design, sound and normalized psychometric measures), but it is also subject to several limitations. With regard to the analyses performed, for example, the hierarchical structure of data (children nested within pre-school teachers) was not taken into consideration, and the teachers' ratings were taken as if they were independent. Given that the data was measured at two occasions and the study is still in progress a cross-lagged design awaits future inquiry. Prospective studies should call for inclusion of observation measures of the child's behaviour, pre-school quality and other family measures which are perhaps more powerful than those under our investigation. Also, research into the early development of children not attending pre-schools is needed. Identifying and understanding the factors associated with social adjustment and cognitive functioning of children, prior to their obligatory schooling, would facilitate the development of intervention and targeting strategies for children who would benefit the most from it (Gimpel & Holland, 2003).

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PROCJENA LIČNOSTI U RANOM DJETINJSTVU KAO POKAZATELJ RAZVOJNIH OBILJEŽJA U POSLJEDNJOJ PREDŠKOLSKOJ GODINI

Sažetak

Istraživanje je proučavalo valjanost procjene ličnosti trogodišnje djece (N = 253) od strane roditelja i predškolskih odgajatelja u objašnjenju njihova socijalnog ponašanja i inteligencije dvije godine poslije. Uključili smo i roditeljske varijable (obrazovanje, stil roditeljstva) i dob djetetova ulaska u predškolski sustav, ali nisu značajno utjecali na djetetov ishod. Smanjeni modeli sa značajnim prediktorima objašnjavaju 14, 7, 16 i 2% varijance u izvješću odgajatelja o socijalnoj kompetenciji djeteta, internalizirajućem ponašanju, eksternalizirajućem ponašanja i u neverbalnoj inteligenciji. Rana procjena ličnosti predviđala je kasnija obilježja djece predškolske dobi. Marljivost/otvorenost djece prema procjenama odgajatelja povezani su sa socijalnom kompetencijom i niskom incidencijom eksternalizirajućeg ponašanja u vrtiću, a procjene ekstraverzije/emocionalne stabilnosti negativno su korelirane s internalizirajućim, ali pozitivno s eksternalizirajućim ponašanjem djeteta. Posljednje je također povezano s niskom razinom ugodnosti koju su uočili odgajatelji. Roditeljska ocjena dječje ekstraverzije predviđala je niske razine internalizirajućeg ponašanja u vrtiću, a njihove percepcije savjesnosti predviđale su inteligenciju djeteta dvije godine poslije.

Ključne riječi: predškolska djeca, ličnost, socijalno ponašanje, inteligencija, longitudinalna predviđanja

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