Parental Bonding after Preterm Birth: Child and Parent Perspectives in the Helsinki Study of Very Low Birth Weight Adults

Riikka Pyhälä, MA, Katri Räikkönen, PhD, Anu-Katriina Pesonen, PhD, Kati Heinonen, PhD, Jari Lahti, PhD, Petteri Hovi, MD, Sonja Strang-Karlsson, MD, Sture Andersson, MD, PhD, Johan G. Eriksson, MD, PhD, Anna-Liisa Järvenpää, MD, PhD, and Eero Kajantie, MD, PhD

Objective To examine whether parenting behavior recalled by very low birth weight (VLBW) adults or their parents differs from that of term-born control subjects or their parents.

Study design A total of 164 VLBW and 172 control adults (mean age 22.5 years, SD 2.2) assessed retrospectively the parenting behavior of their parents by the Parental Bonding Instrument, which includes dimensions of care, protectiveness, and authoritarianism. A subgroup of 190 mothers and 154 fathers assessed their own parenting behavior by the Parent Behavior Inventory, which includes dimensions of supportive and hostile parenting.

Results The VLBW women assessed their mothers as more protective and authoritarian than the control women. The VLBW and control men did not differ from each other. Both mothers and fathers of the VLBW adults assessed their own parenting as more supportive than those of the control subjects.

Conclusions Preterm birth at VLBW may promote a more protective, as well as more supportive, parenting style. *(J Pediatr 2011;158:251-6)*.

Children born preterm at very low birth weight (VLBW; ≤ 1500 g) or extremely low birth weight (ELBW; ≤ 1000 g) have higher rates of behavioral, emotional, and social problems than children born at term.[1,2] When assessed by parental reports, these problems persist into adolescence[3,4] and young adulthood.[5] Yet, self-reports by the VLBW/ELBW individuals themselves give a far less consistent picture. Some studies have shown that the VLBW/ELBW adolescents and young adults did not differ from their term-born peers in self-reported well-being,[3,6-8] and others that they reported even fewer problems than the control subjects born at term.[4] We have recently shown that a subgroup of VLBW young adults born small for gestational age (SGA; ≤ -2 standard deviation [SD] units) reported more symptoms of depression[9] and attention-deficit-hyperactivity disorder.[10]

The developmental consequences of prematurity may relate to prenatal and neonatal physiological challenges. It may also be that the inconsistency between parent and self-reports of VLBW individuals' well-being and psychiatric profiles reflect parental experience of their child's vulnerability.[11,12] This experience of vulnerability is persistent and elicits parenting behavior that is different from parenting a less vulnerable child.[13] For instance, a controlling parenting style is more prevalent among mothers of 6-month-old preterm infants[14] and overprotective pattern more prevalent among parents of 8-year-old preterm children,[15] when compared with parents of term-born children.

However, beyond early childhood, parenting issues among preterm individuals have been little studied, and particularly studies including both offspring and parent perspective are scarce. Indredavik et al[16] reported that compared with term-born participants, the VLBW adolescents perceived their parents as more protective, although this was not confirmed in parent reports. We aimed at exploring further whether recollections of parenting differ between VLBW and term young adults and between their parents. Because being born SGA may add to the parental perception of vulnerability and therefore controlling parenting style,[17] we also examined the effects of being SGA in addition to the VLBW.

Methods

The original study cohort consists of 335 VLBW infants born between 1978 and 1985, treated in the neonatal intensive care unit of the Children's Hospital at Helsinki University Central Hospital in Finland and who survived until discharge

AGA	Appropriate for gestational age
CP	Cerebral palsy
ELBW	Extremely low birth weight
SGA	Small for gestational age
VLBW	Very low birth weight

From the Institute of Behavioural Sciences (R.P., K.R., A.P., K.H., J.L.) and the Institute of Clinical Medicine, Department of General Practice and Primary Health Care (J.E.), University of Helsinki, the Institute of Clinical Medicine, Hospital for Children and Adolescents Helsinki University Central Hospital and University of Helsinki (A.K.P., P.H., S.S., S.A., A.L.J., E.K.), Unit of General Practice Helsinki University Central Hospital (J.E.), the Folkhälsan Research Centre (J.E.), and the National Institute for Health and Welfare (P.H., S.S., J.E., E.K.), Helsinki, and the Vasa Central Hospital, Vasa (J.E.), Finland

Funding and conflict of interest information available at www.jpeds.com (Appendix).

 10.1016/j.jpeds.2010.07.059

(survival rate 70.7%). To collect a control group, we selected for each VLBW infant the next consecutive singleton infant with the same birth hospital, same sex, and gestational age of 37 weeks or above and who was not born SGA (birth weight for gestational age ≤ -2 SD according to the Finnish birth weight charts).[18] The study cohort and its early phases have been described in detail.[9,19]

In their early adulthood, those 255 VLBW young adults and 314 term control subjects who were living in the greater Helsinki area, were invited to a clinical study; 166 (65.1%; 49.6% of those discharged alive from the neonatal intensive care unit) and 172 (54.8%) participated, respectively. A detailed nonparticipation analysis[19] showed that perinatal and neonatal characteristics of the participants and nonparticipants did not differ, except for the lower rate of cerebral palsy (CP) at 15 months of age in the VLBW participants. During the clinical visit, they filled in a questionnaire on parental bonding. Because of missing data, 4 participants were excluded from the maternal (leaving 162 VLBW and 172 control participants) and 14 from the paternal analyses (leaving 158 VLBW and 166 control participants). Consequently, the final analyses regarding the offspring reports included 164 VLBW participants, of whom 54 (32.9%) were born SGA and 110 (67.1%) AGA. The VLBW-SGA and VLBW-AGA groups did not differ in mean birth weight ± SD (1099 ± 240 vs 1135 ± 211 g, $P = .33$, respectively), but the VLBW-SGA group had a higher mean gestational age (31.2 ± 1.9 vs 28.2 ± 1.6 weeks, $P < .001$).

Of the participants who attended the first clinical visit, 313 (92.6%) were invited to a follow-up study 3 years later. The remaining 25 were not invited for reasons described in Figure 1. A total of 218 (69.6%) of the invited and eligible persons participated, of whom 209 (95.9%) agreed to send a set of questionnaires to either or both of their parents.

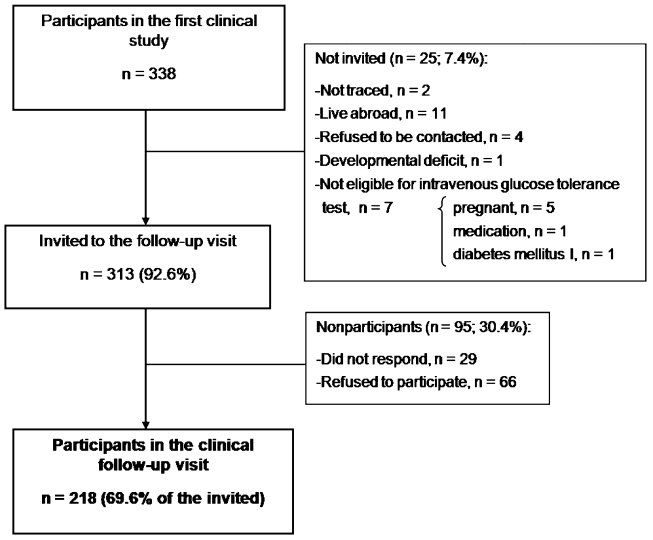

Figure 1. Participants of the clinical follow-up visit of the Helsinki Study of Very Low Birth Weight Adults.

Altogether, the questionnaire concerning parenting behaviors was sent to 203 mothers and 173 fathers, of whom 192 (94.6%) and 156 (90.2%) returned it, respectively. Because of missing data 2 mothers and 2 fathers were excluded, and we thus had mother reports from 98 VLBW young adults and 92 term control subjects, and father reports from 77 VLBW young adults and 77 term control subjects. Thus the final analyses regarding the parent reports included 102 VLBW participants, of whom 36 (35.3%) were born SGA and 66 (64.7%) AGA. Again, the groups did not differ in mean birth weight (1134 ± 221 vs 1120 ± 232 g, $P = .77$, respectively), but the VLBW-SGA group had a higher mean gestational age (31.2 ± 1.7 vs 28.0 ± 1.7 weeks, $P < .001$). Characteristics of the participants are shown in Table I.

The 63 VLBW adults from whom we obtained the offspring report but not the parent report were on average 0.8 years older at the first clinical visit than those 102 VLBW adults with complete data available (22.9 vs 22.1 years, $P = .01$). The groups did not differ in other descriptive characteristics, including mean birth weight (1115 vs 1128 g, $P = .71$) and gestational age (29.2 vs 29.2 weeks, $P = .82$). Also the 74 control subjects with offspring reports but no parent reports were similar to the 98 control subjects with both reports (P values > .19).

The information concerning neonatal characteristics was gathered from hospital records. Parental and adult characteristics were collected from questionnaires filled in by the participants. The study protocol was approved by the Ethics Committee for Children and Adolescents' Diseases and Psychiatry at the Helsinki University Central Hospital. Every participant gave a written informed consent.

Assessments of Parenting

Offspring Reports. We used the Parental Bonding Instrument,[20] which is a 25-item questionnaire for adults to assess the parenting behavior separately of their mothers and fathers during the first 16 years of the respondent's life. We used 3 subscales labeled as *care* (assessing parental warmth and affection; 12 items), *protectiveness* (assessing denial of psychological autonomy; 7 items), and *authoritarianism* (assessing discouragement of behavioral freedom; 6 items).[21,22] The reliabilities (Cronbach's alpha) of the mother-ratings were 0.87, 0.74, and 0.76 for care, protectiveness, and authoritarianism, and for the father-ratings they were 0.90, 0.73 and 0.77, respectively.

Parent Reports. For parental self-reports we used the Parent Behavior Inventory,[23] which is a 20-item questionnaire measuring parenting as perceived by the parents themselves. Similar to the offspring reports of the PBI, the questionnaire is applied here to assess the parental recollections of their parenting behaviors during the first 16 years of their child's life. Items are divided into scales labeled as supportive/engaged parenting (assessing affectionate acceptance and emotional and behavioral support; 10 items) and hostile/coercive parenting (assessing negative affect and use of coercion, threat