



Overnight care patterns following parental separation: Associations with emotion regulation in infants and young children

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ABSTRACT: *Children living in a shared-time parenting arrangement following separation (also known as joint physical custody or dual residence) spend equal or near-equal amounts of day and night time with each parent. Little data exist regarding developmental sequelae of such arrangements for infants. The current study examined a theoretically driven question: Are there associations between quantum of overnight stays away from a primary resident parent and the infant's settledness, or emotion regulation with that parent? Nationally representative parent report data from the Longitudinal Study of Australian Children (LSAC) were used. Three age bands were studied and three levels of overnight care contrasted. When parenting style, parental conflict and socio-economic factors were controlled for, greater number of shared overnight stays for the 0–1 year old and the 2–3 year old groups predicted some less settled and poorly regulated behaviours, but none for the 4–5 year old group. Limits of these data are discussed, including application to the individual case. Findings suggest emotional regulation within the primary infant–parent relationship is one useful index of infant adjustment to parenting time arrangements.*

KEYWORDS: divorce, custody, infants, children, development, attachment, parenting

DIVORCE, DUAL RESIDENCE AND CHILDREN'S OUTCOMES

Many long term correlates for children of parental separation are now well documented, including mental health, relationship and socio-economic outcomes (Amato, 2000; Cherlin, Chase-Lansdale, & McRae, 1998; Fabricius & Luecken, 2007; Kelly, 2000; Pryor & Rodgers, 2001). Causative factors underlying elevated risk status include the direct and indirect impacts of parental conflict, impoverished parenting during and after relationship breakdown (Cummings & Davies, 2010; Levendosky & Graham-Bermann, 2001), parents' co-occurring socio-emotional stress (Crockenberg & Langrock, 2001; Dixon, Charles, & Craddock, 1998), and socio-economic factors (Pryor & Rodgers, 2001). The moderating influences of warm parenting and cooperative involvement of both parents following separation are widely accepted (Amato & Gilbreth, 1999; Emery, 2012; McIntosh & Smyth, 2012).

Less is known about the influence of parenting time. With the rising prevalence of shared-time parenting arrangements internationally (where shared-time parenting is typically defined as care by each parent for between 30 and 70% of nights each year), the importance of this line of inquiry is clear. Recent US and Australian estimates indicate that around 16–20% of the population of separated parents exercise a shared-time arrangement (Kaspiew et al., 2009; Melli & Brown, 2008). A curvilinear relationship between children's age and shared-time parenting is evident, wherein infants under 3 years and adolescents over 14 years are least likely to reside in equal or near-equal shared-time arrangements, and children aged 5–11 years are most likely to live in a shared-time arrangement (Australian Bureau of Statistics, 2011; Kaspiew et al., 2009). Current Australian statistics indicate that about 4% of children aged 0–3 years spend frequent overnights (McIntosh et al., 2010) while a recent US representative sample (Tornello et al., 2013) found that about 7% of toddlers spent 35–70% of overnights with their second parent.

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The parenting-time outcomes literature is largely focussed on school-aged children or college students. One of the factors confounding research commentary in this field is the non-random selection of families into frequent overnight arrangements (Smyth, Qu, & Weston, 2004; Tornello et al., 2013). In the absence of random control studies, interpretation of correlational data reporting outcomes for children (e.g., Bauserman, 2002; Cashmore et al., 2010; Fabricius & Luecken, 2007) is complicated by the tendency for 'better resourced' parents to select into shared-time arrangements. The overall evidence for a linear relationship between parenting time and children's outcomes – such that increasing time with each parent leads to increasing improvements in outcomes for children – is not strong (McIntosh & Smyth, 2012; Smyth, 2009; Vanassche, Sodermans, Matthijs, & Swicegood, 2013). Greater consensus exists around the role of parenting qualities in translating time spent together into meaningful outcomes for the school age child (Bauserman, 2002; Johnston, 1995; Kline-Pruett, Ebling, & Insabella, 2004; Pearson & Thoennes, 1990; Pryor & Rodgers, 2001; Whiteside & Becker, 2000).

INFANT SPECIFIC STUDIES OF OVERNIGHT CARE

Controversies abound in the family law field regarding recommendations about overnight care for infants, with advocacy and empiricism sorely muddled, fuelled by conflicting and polarising interpretations of attachment theory (McIntosh, 2011). For example, Lamb and Kelly (Kelly & Lamb, 2000; Lamb & Kelly, 2001), on the one hand, emphasise the central place of developing secure attachments with both parents and posit the necessary mechanism for so doing is through the infant spending 'equal and/or frequent' time with both parents. Although these ideas are yet to be supported empirically, they nonetheless appear to have been highly influential in family law practice. Mainstream attachment researchers (see Main, Hesse, & Hesse, 2011; Sroufe & McIntosh, 2011), on the other hand, emphasise the risk engendered by frequent and lengthy absences from a primary parent of disrupting infant attachment organisation with that parent.

These assertions too are largely extrapolated from theory, from research with other populations of infants who have frequent separations from caregivers, and from studies based on mothers' reports. There is a paucity of divorce research examining the links between parenting time and infant wellbeing.

Outside of the current study, few studies of infants, pre-school children in overnight care arrangements have been conducted to date. Solomon and George (1999) studied the organisation of attachment behaviour at two points in infancy – 12 and 30 months – in 145 primary parent–infant dyads. The sample included infants of separated parents living in regular overnight arrangements at the rate of one night per week or more, infants of separated parents who had no overnight stays with the second parent, and infants in intact families. Findings showed greater propensity for anxious, unsettled behaviour on reunion with the primary caregiver in the regular overnight group of infants, and a greater propensity for the development of insecure and disorganised attachment with that caregiver by age 30 months. Co-parental conflict and anxiety were important influences in outcomes.

Kline-Pruett et al. (2004) studied Child Behaviour Checklist outcomes (mother and father reports) at two points in time for 132 pre-school children aged 3–6 years, from low-risk families involved in a collaborative divorce project. The study contrasted children who had any overnight visitation with those who had none. Parenting and parent–child relationships were central determinants of attention problems, social problems and externalising behaviours in the child. Children younger than 4 years fared worse with overnight visitation than children aged 4–6 years at the time of parents filing for divorce. Girls aged 4–6 years who had a consistent timeshare schedule that included overnight stays with both parents had fewer behavioural and social problems than girls who had either inconsistent or absent overnight visitation. In contrast, boys with more overnight time showed higher internalising symptoms, and greater externalising behaviours with inconsistent schedules.

Most recently, Tornello et al. (2013) analysed attachment and childhood adjustment data

regarding a representative sample of 1,023 1 year olds, and 1,547 3 year olds within separated families (from the Fragile Families and Child Wellbeing Study). More frequent overnights were significantly associated with attachment insecurity among infants. In turn, attachment insecurity predicted concurrent and future adjustment problems at ages 3 and 5 years. For the 3 year old group, frequent overnights were not directly linked with other adjustment problems at age three or at age five.

PERSPECTIVES FROM ATTACHMENT, INTERPERSONAL NEURO-BIOLOGY AND COGNITIVE DEVELOPMENT

Many important questions are yet to be answered about links between post-separation overnight stays and child development, and narrowing the focus of enquiry is challenging. The question adopted by the current study was defined by the body of evidence – accumulating over four decades now – suggesting a dys-regulating influence for the infant of repeated, lengthy or unpredictable absence from a primary caregiver, despite being in the safe alternate care of others. Across multiple populations, developmental studies have linked prolonged and/or frequent separation from a primary caregiver with increased potential for emotional disorganisation in young children (Main et al., 2011; Sagi-Schwartz & Aviezer, 2005; Sagi, van IJzendoorn, Aviezer, Donnell, & Maysel, 1994), marked by lack of coherence in care-seeking bids by the infant, irritable, unsettled, angry, or ambivalent behaviours, expressed on reunion with the absent caregiver (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Belsky & Fearon, 2008; van IJzendoorn & Sagi-Schwartz, 2008). Overlapping this literature, the field of interpersonal neurobiology suggests a neuro-developmental vulnerability of infants in the first years of life to prolonged separation and unpredictable care (Gunnar, 2000; Perry & Pollard, 1998; Schore, 2012; Ziabreva, Poeggel, Schnabel, & Braun, 2003). The developmental model emerging from the Minnesota Longitudinal Study findings (Sroufe, Egeland, Carlson, & Collins, 2005), suggests that infant stress states are co-regulated by the caregiver. The security of that early co-regulating partnership informs the 2–3 year old's ability to develop

adequate self-regulation. Cognitive and attachment researchers alike agree that by 4–5 years, autonomous self-regulation of stress is normally consolidated (Bretherton, 1993; Cole, Cole, & Lightfoot, 2005; Dunn & Brown, 1994; Sroufe et al., 2005). By 4–5 years, the child is more able to seek and utilise a range of care-giving relationships for soothing and comfort, has increased capacities for memory, logic, judgement, anticipation, and comprehension of the passage of time, all enabling less dependence on the presence of a particular parent for affect regulation (Carlson, Sroufe, & Egeland, 2004; Marvin & Britner, 2008; Marvin & Greenberg, 1982).

In the context of parental divorce, the inference of our focus is not that spending time and preserving relationships with both parents constitutes a stressful situation for a baby. Rather, our question concerns whether, inadvertently, a high quantum of overnight time away from a first 'organising' relationship, even when spent with a loved non-resident parent, may pose a strain for young infants during an important developmental phase, one hallmark of which is the emergence of capacities for coping with stress.

Aside from markers of emotional distress expressed in the primary dyad, a related question concerns psycho-somatically expressed stress. Several studies confirm a link between stressful family environments and compromised physiological stress responses (Jordan & Sketchley, 2009; Troxel & Matthews, 2004), such as chronic low grade illness and early onset asthma (Berz et al., 2007; Klinnert, Kaugars, Strand, & Silveira, 2008; Shankardass et al., 2009).

STUDY QUESTIONS AND HYPOTHESES

This developmental perspective on self-regulation during early infancy and the pre-school years shaped the questions, design and hypotheses of the current study.

Specifically, this study set out to explore three questions, as follows. In the general population of separating families:

- (1) Is there a relationship between amount of overnight time spent away from a primary parent and degree of emotional dysregulation displayed by young children with that parent?

- (2) Do outcomes vary for 1, 3 and 5 year olds, and, if so, how?
- (3) Given self-selection bias into shared-time arrangements, does parenting style, co-parenting relationship and socio-economic support moderate the link between overnight stays and young children's emotion regulation?

We hypothesised that:

- (1) For infants and very young children, higher number of overnight stays away from the primary parent would be associated with greater dysregulation in behaviour when with the primary parent, and greater psycho-somatic symptoms.
- (2) By 4–5 years of age, given maturation of the underlying regulatory systems, number of overnights would not be associated independently with dysregulated behaviours with Parent 1.
- (3) Factors previously shown in the divorce literature to both protect children's mental health outcomes – warm parenting style, low parenting conflict and adequate socio-economic support – would modify the effects of the number of overnight stays in all age groups.

METHOD

Design

Data were drawn from a nationally representative sample of Australian children: The *Growing Up in Australia* Longitudinal Study of Australian Children (LSAC)^{2,3}. This database contains two cohorts of children: The Birth (B) cohort, comprising 5,000 children aged under 1 year, and the Kindergarten (K) cohort, comprising 5,000 children aged between 4 and 5 years ($N = 10,000$ children).

Following the organisational model of development suggested by Sroufe et al. (2005), data

were grouped for infants aged 0–1 year, older infants aged 2–3 years, and young children aged 4–5 years, corresponding neatly with the LSAC child age cohort groups.

The nature of the LSAC database together with the normative distribution of overnight care arrangements in the general population determined much of the analytic approach adopted. In this dataset, as with the general population (Kaspiew et al., 2009), numbers of children under 4 years living in equal or near-equal shared overnight care arrangements are small. As also found by Tornello et al. (2013), overnight care arrangements across data waves were quite fluid. Both limitations negated the possibility of longitudinal analysis.

LSAC includes multiple indices of what in the current study are termed '*co-regulated behaviours*' and '*self-regulation*.' We examined the LSAC measures for indices related to regulatory *behaviours* occurring within infant–caregiver interaction, some specific to separation/reunion behaviours, others general indices of emotional regulation. Separately, and guided by the health outcomes literature outlined above, two indices of psychosomatic health were selected; global health status, and illness with wheezing.

The focus of this study was on infant dysregulation with the primary parent. This article reports on data from this parent, who in LSAC terminology is 'the parent who knew the study child best,' or 'Parent 1.' Data sources include face-to-face interviews with Parent 1, and self-completed questionnaires. Data from the Parent-Living-Elsewhere (PLE) and from independent sources (such as child care workers), particularly for the two youngest groups, were sparse, prohibiting the inclusion of other sources of data, and negating the possibility of meaningful contrast of these perspectives with that of Parent 1 (see original report for discussion of these data).

Sample

Data about children ages 0–5 years whose parents had separated were extracted from the LSAC dataset. Three overnight care groups were derived, based on responses to parent self-report questions: 'How often does this child stay overnight with his/her other parent?' and 'How many nights every (week/fortnight/month/year) does

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³ This article uses unit record data from *Growing Up in Australia*, the LSAC. The study is conducted in partnership between the Department of Families, Housing, Community Services and Indigenous Affairs, the Australian Institute of Family Studies and the Australian Bureau of Statistics. The findings and views reported in this article are those of the authors and should not be attributed to any affiliated organisations.

this child usually stay overnight?.' Children who had less than monthly face-to-face contact with the PLE were excluded.

The groups were distinguished by quantum of time spent with the PLE, and whether or not it included overnight time. The three groups were: *Daytime only* contact with the PLE⁴; *some overnights* with the PLE; and *substantial overnights*, representing the highest number of overnights spent with the PLE, including shared-time arrangements. For the ages 2–3 years and ages 4–5 years, *some overnights* was defined as '1–9 overnights per month' and *substantial overnights* was defined as '10 or more overnights per month.'

The *substantial overnights* definition for the two older age groups reflects the definition of shared-time parenting in Australia (where parenting time adjustments to child support payments apply to 35% of nights or more – that is, 128 nights or more a year). The definition of *substantial overnights* is different for the infant group. Only 11 infants were living in arrangements at the 35%+ parenting time threshold. Given this small sample size, and with regard to achieving some comparability with the Solomon and George (1999) study, *substantial overnights* ratios for infants aged 0–1 years were set at one night per week or more (i.e., 4+ nights per month), and *some overnights* was defined as '1–3 overnights per month' (see Table 1 for sample sizes and demographics within groups).

Measures: Control variables

Following the literature, the analytic framework tested three moderating variables on the relationship between the amount of overnight stays and the developmental outcomes of interest: Parenting qualities, co-parental conflict, and socio-economic factors. Other potential control variables were explored with respect to infant development, including birth weight, prematurity, and developmental delay. No statistically significant differences between groups were identified. Accordingly, controls at this level were not used in the study.

⁴ Median rates of parenting time per week for the 'daytime only contact' group were: 4.7 hours for infants 0–1 years, 2.9 hours for the 2–3 year olds, and half an hour for the 4–5 year olds.

'Parenting qualities' included the LSAC *Parental Warmth Scale*, using the mean from a six item self-report scale, scored 1 = *never* through to 5 = *almost always*, with items such as '*Thinking about the study child over the last six months, how often did you feel close to this child both when he/she was happy and when he/she was upset*' ($\alpha = 0.79$ for 0–1 years group, 0.85 for 2–3 years group, and 0.83 for 4–5 group). The LSAC *Hostile Parenting Scale* similarly took the mean of five items. Higher scores on a 10-item response scale indicate higher frequency of angry parenting, such as '*In the past six months, how often would you say ... I have been angry with this child*' ($\alpha = 0.81$ for 0–1 years group, 0.85 for 2–3 years group, and 0.62 for 4–5 group). Parents' cooperation and conflict levels were measured through self-report items concerning level of disagreement and consultation about parenting decisions, anger towards PLE, quality of parents' relating to each other, and satisfaction with parenting arrangements. Single item variables (e.g., level of disagreement and consultation about parenting decisions, anger towards PLE) originally measured on 5-point Likert-type scales were recoded into dichotomous variables for parsimony (1 = '*often*' to '*always*'; 0 = '*sometimes*' to '*never*'). Similarly, *quality of parents' relating to each other* was dichotomised (1 = '*mixed*' to '*very well*'; 0 = '*poorly*' to '*badly*'), as was *Satisfaction with level of involvement of PLE* (1 = '*satisfied*'; 0 = '*unsatisfied*'). Third level control variables included 'Parent 1' gender, parent income, education, and employment.

Measures: Developmental outcome variables

Psycho-somatic measures for children of all ages

Two parent report items were used to assess the child's psycho-somatic health. The LSAC *Global Health Measure* (5-point Likert-type scale: 1 = *Excellent*, 2 = *Very good*, 3 = *Good*, 4 = *Fair*, 5 = *Poor*), and *Illness with Wheezing* (1 = *Yes*, 0 = *No*).

Emotion regulation measures for infants 0–1

The *Parent's Evaluation of Developmental Status* (PEDS) measured significant concern by the parent about the child's psycho-somatic development (Glascoe, 2010). The response format was 0 = *No*, 1 = *Yes*, and 2 = *A little*, recoded into a binary variable for some analyses (1 = *Yes/A little*, 0 = *No*).

TABLE 1: SAMPLE SIZE FOR OVERNIGHT CARE GROUPS IN EACH AGE GROUP, CHILD GENDER PROPORTIONS, GENDER OF PARENT 1 (THE REPORTING PARENT*), AND SAMPLE OF DEMOGRAPHIC AND RELATIONSHIP CHARACTERISTICS**

Overnight time groups (number of overnights with parent-living-elsewhere) & demographics	Infants 0–1 years (mean age 8.85 months)	Older infants 2–3 years (mean age 33.88 months)	Pre-schoolers 4–5 years (mean age 57.29 months)
Daytime only (day-time visits but <1 night per year)	N = 164	N = 360	N = 520
% Boys/girls	49.7/48.9	48.5/51.5	48.5/51.1
% Mother/father = parent 1	100/0	99/1	97.8/2.2
% Reporting economic 'hardship' in past 12 months	69.4	48.9	68.7
% Ever lived with other parent	41.8	61.9	59.5
% Reporting 'get along poorly/badly' with other parent	46.7	27	32.5
Some overnights: Infants (1–3 nights per month)	N = 21	–	–
% Boys/girls	47.1/52.9		
% Mother/father = parent 1	95.9/4.1		
% Reporting economic 'hardship' in past 12 months	93.3		
% Ever lived with other parent	71.9		
% Reporting 'get along poorly/badly' with other parent	22		
Some overnights: Young children (1–9 nights per month)	–	N = 201	N = 624
% Boys/girls		57.4/42.6	54.5/45.5
% Mother/father = parent 1		98/2	97.7/2.3
% Reporting economic 'hardship' in past 12 months		44.8	56.9
% Ever lived with other parent		85.5	83.4
% Reporting 'get along poorly/badly' with other parent		21.1	20.6
Substantial overnights: Infants (4+ nights per month)	N = 63	–	–
% Boys/girls	67.3/32.7		
% Mother/father = parent 1	98.9/1.1		
% Reporting economic 'hardship' in past 12 months	67.2		
% Ever lived with other parent	72.9		
% Reporting 'get along poorly/badly' with other parent	13.8		
Substantial overnights: Young children (10+ nights per month)	–	N = 26	N = 71
% Boys/girls		53/47	62.9/37.1
% Mother/father = parent 1		74/26	79.5/20.5
% Reporting economic 'hardship' in past 12 months		31.3	58.9
% Ever lived with other parent		87.3	94.6
% Reporting 'get along poorly/badly' with other parent		21.1	12.9
Total children	248	587	1215

*This study employs the self-report data of 'Parent 1' in the LSAC study, being the parent who, when approached to participate in the study, self-nominated as being 'the parent who knows the child best'; **Full demographics for this sample can be found in the original report, McIntosh et al. (2010).

Settled/unsettled behaviour was measured by the four-item *Irritability Scale* (STSI; Prior, Sanson, Smart, & Oberklaid, 2000). Responses were to a six-point Likert-type scale for items such as 'This baby continues to cry in spite of several minutes of soothing' ($\alpha = 0.57$). A higher mean score indicates higher irritability.

The *visual monitoring* variable was derived for the purposes of this study. Ainsworth, Blehar, Waters, and Wall (1978) described vigilant visual monitoring of their parent by infants anxious about that parent's presence and availability. This is distinct from shared visual gaze for delight and joy. Items approximating this construct were

selected from the Communication and Symbolic Behaviour Scales (CSBS; Weatherby & Prizant, 1992). The score is the mean of three items, each using a three-point frequency scale with items such as, 'When you are not paying attention to this child, does he/she try to get your attention?' Possible scores ranged from 3 to 9, with high mean scores indicating higher levels of visual monitoring ($\alpha = 0.48$).

Emotion regulation measures for children aged 2–3 years

The *Problems scale of the Brief Infant-Toddler Social-Emotional Assessment* (BITSEA; Briggs-Gowan & Carter, 2002) is a 23-item parent report scale, measuring frequency of behavioural problems in the last month. Responses are on a three-point Likert-type scale. High mean scores indicating more frequent behaviour problems. Examples include, 'Seems very unhappy, sad, depressed or withdrawn,' 'Cries or hangs onto parent when he/she tries to leave,' ($\alpha = 0.70$).

The *Emotional Functioning Scale* of the PEDS (Glascoe, 2010) comprises five parent report items, measuring frequency of problems (e.g., 'In the past one month, how often would you say that the study child has had a problem with ... Worrying?'). Responses are on a five-point Likert-type scale. A lower mean score indicates greater frequency of problem behaviours ($\alpha = 0.71$).

The *Persistence Scale* (STST; Prior et al., 2000) is a parent report of the frequency of the child's persistence behaviour. The five items in the Persistence scale were derived from the *Approach* scale of the STST. Items such as 'This child stays with a routine task (dressing, picking up toys) for 5 minutes or more' are measured on a six-point Likert-type scale. A higher mean score indicates higher persistence (scale range: 6–30, $\alpha = 0.74$).

Emotion regulation measures for children aged 4–5 years

The four-item *Persistence scale* (STSC subscale; Prior et al., 2000) is a parent report of the frequency of the child's persistence behaviours. Responses were on a six-point Likert-type scale. A higher mean score indicates higher persistence

(scale range: 4–24, $\alpha = 0.74$). Examples include, 'This child stays with an activity (e.g., puzzle, construction, kit, reading) for a long time.'

The *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997) parent report of the child's behaviour in the last few months used a three-point Likert-type. Total scores for the 20-item *Problems* subscale ($\alpha = 0.79$), 5-item *Emotional Symptoms* subscale ($\alpha = 0.58$), and 5-item *Hyperactivity* subscale ($\alpha = 0.73$) were used. Higher scores indicate greater symptoms (scale ranges: 20–60, 5–15, and 5–15 respectively).

Analytic strategy

All analyses were conducted using Intercooled Stata 10 using the *svyset* command to account for the clustered survey design. LSAC sample weights were used. Data were analysed using linear or logistic regression depending on the outcome variable. The reference group was the 'substantial overnights' group in each age category. The comparison groups were the 'daytime only contact' and 'some overnights' groups. A hierarchical approach for the modelling enabled the relationship between number of overnights and developmental outcomes to be assessed as well as the extent to which any observed effects existed independently of the characteristics of the parents and their relationship.

The models tested were: 1. Number of overnight stays; 2. Number of overnight stays, plus parenting style (parental warmth and parental hostility to child); 3. Number of overnight stays, plus parenting style, and parents' relationship (disagreement, consultation, satisfaction with care arrangements, anger and hostility felt for other parent); 4. Number of overnight stays, plus parenting style, parents' relationship and key demographic variables (sex of parent, education, employment and personal weekly income). Model 1 was re-run using the cases from Model 4 to ensure that no bias ensued as an increasing number of cases were excluded from the analysis due to missing variables.

RESULTS

Consistent with prior Australian studies (e.g., Kaspiw et al., 2009; Smyth et al., 2004), several significant demographic differences were

evident between the overnight groups. Full data are reported in McIntosh et al. (2010), and a sample of the demographic variation is reported in Table 1. Overall, parents reporting substantial overnight arrangements also reported higher personal incomes, greater history of having once lived together, and less conflicted current co-parenting than did separated parents in the 'daytime only' category. In all age groups, boys were more likely than girls to have 'substantial overnights' arrangements (see Table 1).

Relationship between overnight time and developmental outcomes

Logistic regression was used for dichotomous outcome variables, and odds ratios were calculated for each predictor variable and for each of the four levels of the model (Tables 2–4). Linear regression was used for continuous outcome variables.

Infants 0–1 years: Findings

Infants in the 'some overnights' group had lower parent ratings for irritability than infants in the 'substantial overnights' group ($B = -0.31$, $p = 0.14$) which became significant as parenting ($B = -0.40$, $p = 0.04$) and parent relationship ($B = -0.39$, $p = 0.04$) were added to the model. The difference remained significant when socio-economic status was included in the model. Specifically, infants in the 'substantial overnights' group were more fretful on waking up and/or going to sleep, had greater difficulty amusing themselves for a length of time, more often cried continuously in spite of several minutes of soothing, and more often cried when left to play alone than infants in the 'some overnights' group.

Higher visual monitoring of the primary parent by babies in the 'substantial overnights' relative to the 'daytime only' group was noted when parent warmth and hostility, and characteristics of parent's relationship were taken into account, and the effect persisted when socio-economic status was controlled for. Relative to the 'some overnights' group, there was no significant difference when parenting and socio-economic status were controlled for. Parenting warmth was associated with significantly lower levels of visual monitoring (OR = 0.26, $p = 0.006$).

Stage one group comparisons showed infants in the 'some overnights' group were significantly more likely to have 'no' illness with wheezing, relative to infants in the 'substantial overnights' group. Group effect size was reduced after parenting, co-parental relationship and socio-economic status were added into the model, with a remaining non-significant trend ($p = 0.08$) for higher rates of wheezing in the 'most' overnights' group than in the 'some overnights' group. Inter-parental hostility was the strongest independent predictor of illness with wheezing (OR = 1.61, $p = 0.005$). Differences in global health scores between groups were mainly accounted for by socio-economic status and parenting factors. Better health scores were predicted by parental warmth (OR = 7.3, $p = 0.001$) and greater number of significant developmental concerns (PEDS) was predicted by low parenting warmth (OR = 0.22, $p = 0.008$) and low income (OR = 0.15, $p = 0.003$).

2–3 year olds: Findings

For children aged 2–3 years, 'substantial overnights' is defined as 35–65% of nights with each parent (128 nights+ per year with the PLE). All analyses used the 'substantial overnights' group as the reference.

Children aged 2–3 years in the 'substantial overnights' group had significantly lower persistence scores on parent report than those in either the 'daytime only contact' or 'some overnights' groups. This effect was significant for both groups when parenting warmth and hostility, co-parenting relationship, and socio-economic status were taken into account (see Table 3). High persistence was associated with parenting warmth ($p = 0.004$). Children in the 'substantial overnights' group also had significantly more problematic scores on the BITSEA problems scale than children in the 'some overnights' group. This difference was statistically significant after parenting warmth and hostility and relationship were taken into account, and remained significant with the inclusion of socio-economic status in the model. Elevated item scores for the 'substantial overnights' group clustered around distressed behaviour expressed with Parent 1 ('Cries or hangs on to parent when helsh tries to leave'; 'Worries a lot or is very serious'; 'Does not react when hurt'; 'Often

TABLE 2: REGRESSIONS OF OVERNIGHT CARE ARRANGEMENT, PARENTING STYLE, PARENTAL RELATIONSHIPS AND DEMOGRAPHICS ON DEVELOPMENTAL OUTCOME VARIABLES: INFANTS 0–1 YEARS

	Model 1 (number of overnights)			Model 2 (Model 1 + parenting style)			Model 3 (Model 2 + parents' relationship)			Model 4 (Model 3 + SES)		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Illness with wheezing (ref none)												
Daytime only compared to Substantial overnights	0.52	0.25–1.07	0.08	0.46	0.22–0.97	0.04	0.45	0.17–1.20	0.11	0.45	0.16–1.28	0.13
Some overnights compared to Substantial overnights	0.28	0.08–1.01	0.05	0.26	0.07–0.99	0.05	0.29	0.07–1.12	0.07	0.27	0.06–1.18	0.08
Global health rating (ref health good/excellent)												
Daytime only compared to Substantial overnights	1.52	0.64–3.62	0.34	1.73	0.69–4.31	0.24	1.25	0.42–3.68	0.69	1.05	0.34–3.23	0.94
Some overnights compared to Substantial overnights	2.18	0.42–11.32	0.35	2.74	0.60–12.66	0.20	3.53	0.78–15.85	0.10	2.50	0.56–11.10	0.23
Significant developmental concerns (PEDS)												
Daytime only compared to Substantial overnights	0.96	0.37–2.51	0.94	1.10	0.41–2.93	0.85	0.97	0.31–3.07	0.96	1.02	0.28–3.68	0.98
Some overnights compared to Substantial overnights	0.25	0.03–2.17	0.21	0.24	0.02–2.40	0.23	0.32	0.03–3.15	0.33	0.18	0–11.35	0.42
Irritability												
Daytime only compared to Substantial overnights	0.18	-0.17–0.54	0.31	0.07	-0.27–0.41	0.69	0.13	-0.25–0.51	0.51	0.17	-0.19–0.53	0.36
Some overnights compared to Substantial overnights	-0.31	-0.73–0.10	0.14	-0.40	-0.77–-0.02	0.04	-0.39	-0.76–0.01	0.04	-0.37	-0.74–0	0.05
Visual monitoring												
Daytime only compared to Substantial overnights	-0.08	-0.23–0.06	0.25	-0.10	-0.24–0.04	0.17	-0.22	-0.41–0.04	0.02	-0.22	-0.41–0.04	0.02
Some overnights compared to Substantial overnights	-0.17	-0.37–0.02	0.08	-0.17	-0.38–0.04	0.12	-0.18	-0.42–0.06	0.15	-0.15	-0.38–0.09	0.21

For infants 0–1 year olds: 'Daytime only contact' = <1 overnight in past year; 'Some overnights' = 1–3 nights monthly; 'Substantial overnights' = 4+ nights monthly.

TABLE 3: REGRESSIONS OF OVERNIGHT CARE ARRANGEMENT, PARENTING STYLE, PARENTAL RELATIONSHIPS AND DEMOGRAPHICS ON DEVELOPMENTAL OUTCOMES: 2–3 YEAR OLDS

	Model 1 (number of overnights)			Model 2 (Model 1 + parenting style)			Model 3 (Model 2 + parents' relationship)			Model 4 (Model 3 + SES)		
	B	95% CI	P	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Global health rating (ref health good/excellent)												
Daytime only compared to Substantial overnights	1.90	0.53–6.78	0.32	2.62	0.57–12.00	0.21	3.25	0.65–16.33	0.15	3.73	0.93–15.04	0.06
Some overnights compared to Substantial overnights	0.97	0.26–3.68	0.97	1.20	0.24–6.06	0.83	1.38	0.26–7.40	0.70	1.53	0.36–6.60	0.56
Child had illness with wheezing (ref none)												
Daytime only compared to Substantial overnights	1.70	0.61–4.75	0.31	1.86	0.52–6.61	0.34	2.02	0.52–7.92	0.31	4.46	1.18–16.83	0.03
Some overnights compared to Substantial overnights	1.74	0.62–4.89	0.29	1.74	0.48–6.29	0.40	1.78	0.46–6.87	0.40	3.70	1.03–13.25	0.05
Persistence												
Daytime only compared to Substantial overnights	0.31	0.01–0.60	0.04	0.30	0.24–0.58	0.03	0.39	0.12–0.67	0.01	0.42	0.13–0.72	0.01
Some overnights compared to Substantial overnights	0.19	-0.14–0.53	0.26	0.21	-0.11–0.52	0.19	0.29	-0.01–0.59	0.06	0.32	0.01–0.64	0.05
BITSEA Problems scale												
Daytime only compared to Substantial overnights	-0.37	-2.68–1.93	0.75	-0.68	-3.08–1.73	0.58	-1.65	-4.04–0.73	0.17	-1.95	-4.11–0.21	0.08
Some overnights compared to Substantial overnights	-1.60	-3.92–0.71	0.17	-1.82	-4.23–0.59	0.14	-2.75	-5.05–-0.46	0.02	-2.92	-4.97–-0.87	0.01
PEDS emotional functioning												
Daytime only compared to Substantial overnights	4.27	-5.23–13.75	0.38	4.32	-4.64–13.29	0.34	6.75	-2.47–15.97	0.15	3.95	-6.40–14.30	0.45
Some overnights compared to Substantial overnights	2.71	-6.91–12.33	0.58	2.73	-6.19–11.66	0.55	4.32	-4.90–13.54	0.36	2.09	-7.77–11.94	0.68

For 2–3 year olds: 'Daytime only contact' = <1 overnight in past year, 'Some overnights' = 1–9 nights monthly, 'Substantial overnights' = 10+ nights monthly.

TABLE 4: REGRESSIONS OF OVERNIGHT CARE ARRANGEMENT, PARENTING STYLE, PARENTAL RELATIONSHIPS AND DEMOGRAPHICS ON DEVELOPMENTAL OUTCOMES: 4-5 YEAR OLDS

	Model 1 (number of overnights)				Model 2 (Model 1 + parenting style)				Model 3 (Model 2 + parents' relationship)				Model 4 (Model 3 + SES)			
	OR	95% CI	p	N	OR	95% CI	p	N	OR	95% CI	p	N	OR	95% CI	p	N
Child had illness with wheezing (ref none)	1.06	0.51-2.19	0.86	1208	1.04	0.51-2.12	0.91	1121	0.83	0.39-1.76	0.63	988	0.85	0.36-1.99	0.71	838
Daytime only compared to Substantial overnights	1.37	0.68-2.74	0.37		1.27	0.64-2.49	0.48		1.18	0.60-2.32	0.62		1.16	0.53-2.56	0.70	
Some overnights compared to Substantial overnights																
Global health rating (ref health good/excellent)																
Daytime only compared to Substantial overnights	0.58	0.25-1.31	0.19	1215	0.45	0.18-1.14	0.09	1128	0.53	0.19-1.48	0.23	994	0.67	0.22-2.05	0.48	844
Some overnights compared to Substantial overnights	0.65	0.28-1.50	0.31		0.55	0.21-1.44	0.22		0.57	0.21-1.56	0.27		0.73	0.25-2.16	0.57	
Persistence																
	B	95% CI	p	N	B	95% CI	p	N	B	95% CI	p	N	B	95% CI	p	N
Daytime only compared to Substantial overnights	-0.46	-0.31-0.22	0.74	965	-0.02	-0.28-0.23	0.87	964	-0.03	-0.30-0.24	0.82	862	0.04	-0.26-0.34	0.80	721
Some overnights compared to Substantial overnights	-0.03	-0.29-0.23	0.83		0.00	-0.26-0.26	0.10		-0.03	-0.30-0.23	0.81		0.04	-0.24-0.31	0.79	
SDQ total (parent rated)																
Daytime only compared to Substantial overnights	2.46	1.03-3.86	0.001	1028	1.77	0.68-2.87	0.02	1028	1.76	0.65-2.88	0.02	1028	0.8	-0.48-2.11	0.22	1028
Some overnights compared to Substantial overnights	0.69	-0.69-2.06	0.33		0.023	-0.90-1.32	0.71		0.22	-0.9-1.36	0.69		-0.25	-1.49-0.99	0.70	
SDQ emotional symptoms																
Daytime only compared to Substantial overnights	0.36	-0.15-0.88	0.17	1028	0.53	-0.07-0.71	0.34	1028	0.23	-0.25-0.71	0.34	1028	0.23	-0.25-0.71	0.33	1028
Some overnights compared to Substantial overnights	0.001	-0.49-4.96	0.99		-0.07	-0.56-0.41	0.76		-0.06	-0.53-0.41	0.79		-0.06	-0.53-0.41	0.80	
SDQ hyperactivity																
Daytime only compared to Substantial overnights	0.73	0.20-1.28	0.008	1028	0.53	0.67-0.99	0.03	1028	0.54	0.57-1.02	0.03	1028	0.33	-0.200-0.86	0.23	935
Some overnights compared to Substantial overnights	0.18	-0.37-0.73	0.52		0.03	-0.44-0.53	0.80		0.35	-0.45-0.53	0.89		-0.07	-0.60-0.46	0.80	

For 4-5 year olds: 'Daytime only contact' = <1 overnight in past year, 'Some overnights' = 1-9 nights monthly, 'Substantial overnights' = 10+ nights monthly.

gets very upset'; 'Gags or chokes on food'; 'Refuses to eat'; 'Hits, bites or kicks parent/s'). More problematic behaviour was also predicted by poor co-parenting relationships ($p = 0.001$), low parental education levels ($B = -2.06, p = 0.026$) and higher parenting hostility ($p = 0.005$).

Differences in scores on the PEDS emotional functioning scale were not significant between the overnight care groups. Parenting hostility ($B = -2.35, p = 0.000$) and low warmth ($B = -5.90, p = 0.002$) were the strongest predictors of emotional symptoms for 2–3 year olds.

For this age group, differences in illness in wheezing were not found between the groups until socio-economic status was added to the model. Higher socio-economic status was associated with lower rates of wheezing, and with this, illness with wheezing was less likely to be reported by parents in the 'most overnights' group. Differences in global health scores between groups were mainly accounted for by socio-economic status and parenting factors. Higher health scores were predicted by parental warmth ($OR = 7.3, p = 0.001$), and greater number of significant developmental concerns (PEDS) was predicted by low parenting warmth ($OR = 0.22, p = 0.008$) and low income ($OR = 0.15, p = 0.003$).

4–5 year olds: Findings

Persistence scores did not differ between the overnight care groups at this age, but in all groups, poor persistence was significantly associated with higher anger and less warmth in parenting. There were no group differences on the SDQ emotional symptoms subscale. SDQ total scale and hyperactivity symptoms subscale (parent rated) were higher for the 'daytime only' group, but these differences became non-significant when socio-economic variables were included in the model.

Differences in parent reports of global health status and illness with wheezing did not vary due to number of overnight stays when parenting, co-parental relationship and socio-economic variables were taken into account. Increased concern about global health was significantly associated with angry disagreement between parents, and angry parenting. Wheezing was significantly

associated with both lower parental education and income, and with angry parenting.

DISCUSSION

Using a nationally representative sample, our findings first confirmed what several other studies have reported (e.g., Smyth et al., 2004; Tornello et al., 2013), namely the tendency for a small select group of families to self select into shared parenting arrangements across all three age groups. Parents who reported having the highest shared overnight ratios were better resourced, educationally, financially and in terms of their relationship history and current cooperation levels.

Despite these 'advantages,' the present study found several negative correlates of higher quantum overnights for the two younger age groups. A relationship between higher number of overnight stays and emotional dysregulation indices was evident for infants 0–1 years and children 2–3 years. No significant associations were found for older children, ages 4–5 years.

These findings support our first hypothesis that higher number of overnight separations from a primary parent during early infancy would be associated with greater degree of affect dysregulation when with this parent. Supporting the second hypothesis, no independent associations between the number of overnight stays and emotional regulation or related psychosomatic outcomes were evident for children in the 4–5 year old sample. There are parallels here with both Solomon and George (1999) and Tornello et al. (2013), who with separate populations found significant associations between greater overnight separation and greater propensity for anxious, unsettled behaviour in infants when with the primary caregiver, and with Kline-Pruett et al. (2004), who found older children 5–6 years coped better with overnights than did younger children. Supporting our third hypothesis, and consistent with prior studies described earlier, this study found low parenting warmth, angry parenting, and high rates of disagreement between parents contributed significantly to poor child outcomes.

Multiple developmental traditions suggest varying mechanisms underlying the link

between greater overnight separation from a primary parent and greater affect regulation difficulties in that infant–parent dyad. The Bowlby–Ainsworth attachment tradition highlights potential for inadvertent confusion of the infant’s efforts to establish early primary security with a focal parent (Main et al., 2011). The affect co-regulation model of attachment (Sroufe et al., 2005) suggests that repeated or lengthy separations may compromise the development of an internalised ability to self-regulate stress. Neuro-cognitive frameworks (Schore, 2012; Siegel & McIntosh, 2011) point to the significant immaturity of the human brain during infancy. Whereas the young infant has neither memory nor language capacities to support an understanding of repeated separation, or to anticipate, predict or control events such as reunion, by 4–5 years of age, myriad advances in cognitive development usher in more assured abilities to understand absence and to predict reunion. Evident by this age is the ability to ‘*imagine what tomorrow is*’ (George, Solomon, & McIntosh, 2011, p. 527).

While such developmental frameworks provide a rubric for explaining the findings of this study, the correlational nature of this study’s data means that causal attributions must be avoided, and care taken with application to the individual case. Future research will undoubtedly sharpen the lens on the factors that may predictive for groups, or even determinative in the individual case. For the many court systems looking to apply rules, or legislators exploring the merits of presumptions regarding shared-time arrangements (see for example, Fehllberg, Smyth, MacLean, & Roberts, 2011), the findings of this study are a mixed blessing. They offer a set of behavioural indices that differentiate infants’ stress response within various overnight ratios, without suggesting a causative link between the two. In conjunction with the other existing infant studies, these data also support a premise that during early infancy, lower overnight ratios are likely to be a less stressful way of being cared for by parents who no longer live together. The findings do not however describe characteristics of infants who adjust well to higher overnight ratios.

Study limitations

Related to these points, several study limitations and caveats around interpretation deserve mention. First, while on the rise, shared-time parenting remains an uncommon post-separation pattern of care for young children (Kaspiew et al., 2009). In the LSAC database, the samples of infants and young children with high rates of overnight stays were inevitably small, resulting in variable statistical power, and making some analyses impossible (for example, child gender comparisons). With small sample sizes, although statistically significant, some effect sizes as indicated by the amount of explained variance in the multivariate models are modest, and their clinical significance unknown. Second, as few young children remained in frequent overnight arrangements across data collection waves, longitudinal analysis could not be undertaken. Third, LSAC data from non-resident parents were too sparse to include in the present study. Future studies – ideally with ex-couple dyads – should contrast the views of both parents. It is important to note that gender of the reporting parent was mixed in this study, and was a control variable. The findings therefore cannot attribute any significance to the gender of the primary parent or the PLE. Fourth, as above, the cross-sectional nature of the data precludes causal interpretations. While dyadic mechanisms contributing to dysregulation in the infant have been suggested, other hypotheses will be important to consider as future data allows. Fifth, in clinical, court or similar ‘real-world’ decision-making settings, care is needed in any attempt to translate findings from group data to *individual* cases and circumstances.

The conflicted heart of the emotional debate about infants and overnight care arrangements stems from fundamental questions about what aspects of the post-separation environment are indeed stressful for the infant: Too little time with one parent, or too much time away from the other? Questions exploring both risk and benefit are important. In this light, it is important to emphasise that this was a study of ‘risk.’ Equally valid will be future studies of potential developmental advantage with respect to high frequency overnight time splits for young children.

CONCLUSIONS

The benefits of equal or near-equal shared-time arrangements after parental separation have been explored in a number of studies, most of which focus on children of school or college age, but few have studied overnights stays by infants and toddlers. Using a nationally representative sample, this study examined associations between various ratios of shared overnight time and indices of settled, emotionally regulated behaviours by the infant with their primary parent. For infants and children under 4 years old, significant independent correlations were found between higher rates of shared overnight stays and unsettled, poorly regulated behaviours, but not for kindergarten/early school-aged children.

This study offers some markers of developmental strain in the infant and young child, that may assist parents, judges and mediators in their evaluation of a very young child's response to shared overnight time between parents. While empirical data can shed light on important practical aspects of post-separation parenting, in the crafting of child-responsive parenting arrangements within an individual family, group data should not usurp parents' knowledge of their child, or well supported clinical assessment. At a broader level, no single study or commentary should be determinative of family law practice decisions, nor of wider policy concerning overnight visitation for young children.

There remains a pressing need for replication studies, and research that further delineates factors of early care-giving experiences that impact developmental security for very young children in separated families. In these endeavours, the developmental flags identified in the present study may provide a useful guide.

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