A "Natural Experiment" in Childrearing Ecologies and Adolescents' Attachment and Separation Representations

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Employing a quasi-experimental design, this study explored the long-term effects of different childrearing ecological contexts. Participants were 131 adolescents (aged 16–18) from four groups: some who lived in a city, some from a kibbutz familial setting, some from a kibbutz communal setting, and a transitional group that included adolescents raised in a communal setting as young children who moved to a familial sleeping arrangement before the age of six. Adolescents' state of mind with regard to attachment and representations regarding separation were examined. Participants were administered the Adult Attachment Interview, the Separation Anxiety Test, and background questionnaires. The group raised in a communal setting in the kibbutz showed a higher incidence of nonautonomous attachment representations and less competent coping with imagined separations than did the other groups. By contrast, the transitional group was comparable to the city and the kibbutz familial groups. These results are discussed in light of the plasticity and adaptability of children to changed circumstances.

INTRODUCTION

Bowlby (1969, 1973, 1980) asserted that infants are biologically predisposed to establish an enduring bond with caregivers who provide protection and psychological security. Disruptions in this relationship, such as separations, losses, or placement in caregiving environments that prevent consistent and adequate caregiving, can exert harmful long-term influences on children's development. Bowlby observed that even short-term separations from the mother (due to hospitalization) gave rise to extreme emotional reactions among children (Robertson & Bowlby, 1952). In this respect, the kibbutz was seen as a "natural laboratory" for examining the consequences of childrearing practices involving separations, which are markedly different from childrearing practices common in the West, and even violate some accepted childrearing norms (Aviezer, van IJzendoorn, Sagi, & Schuengel, 1994; Beit-Hallahmi & Rabin, 1977; Bettelheim, 1969; Oppenheim, 1998). The present study employed this "natural experiment" (Bronfenbrenner, 1979) to examine the long-term effects of different ecological childrearing contexts characterized by varying separation experiences.

The Kibbutz Ecology and Separation Experiences

The Israeli kibbutz is a small cooperative community in which many responsibilities—the most salient being child care—are shared, and material property is commonly owned (Aviezer et al., 1994; Oppenheim, 1998). Collective childrearing emerged early in kibbutz history in the context of the harsh and dangerous living conditions of early kibbutzim, which were established in remote areas and hostile environments. It reflected the belief that such practices would prepare children for collective life as adult members of the kibbutz. Collective childrearing involved the exposure of kibbutz children to multiple caregiving early in life (Lavi, 1990) and was regarded as essential in fostering the solidarity of the group and restraining individualistic tendencies in both children and adults (Aviezer et al., 1994; Gerson, 1978). After the first few weeks of life, infants were cared for in small groups by professional caretakers in infant houses where they spent about nine hours each day (six working days a week). These practices resembled high-quality day care, with long spells outside the home (Sagi & Koren-Karie, 1993).

Although some kibbutzim practiced the childrearing form described above, the most distinctive feature of collective child raising in the kibbutz was the communal sleeping arrangement for children, away from their parents (Deveroux et al., 1974). Children raised in communal sleeping arrangements spent the afternoon with their parents and then returned to the children's house and spent the night separated from their attachment figure(s). During the night they were supervised by a weekly-rotated night caregiver, usually an unfamiliar person who had the responsibility of simultaneously monitoring a number of children's houses from a central location. Thus, during the night the caregivers were often unfamiliar to the children.
and often unable to respond promptly to children’s distress (Aviezer et al., 1994). Until the late 1970s, the communal sleeping arrangement was practiced in the majority of kibbutzim. From the beginning, however, a small number of kibbutzim maintained a home-based sleeping arrangement, where children spent the night at home with their parents (familial sleeping). As part of a historical development (Aviezer et al., 1994), all kibbutzim have changed their child-rearing practices and moved from communal to familial sleeping arrangements. (At the time this research was conducted all kibbutzim except one had abandoned communal sleeping arrangements in favor of the familial sleeping arrangement.) Consequently, in this naturally occurring experiment of various childcare ecological contexts, three major groups of children with diverse separation experiences were available for research: a familial sleeping arrangement group, a communal sleeping arrangement group, and a transitional group (children who were first raised in the communal and then in the familial sleeping setting).

From the attachment paradigm it appeared that the kibbutz practice of communal sleeping for children created an environment that deviated from what might be considered desirable for healthy emotional development (Aviezer et al., 1994). In a recent study (Sagi, van IJzendoorn, Aviezer, Donnell, & Mayselss, 1994), kibbutz infants in the communal sleeping arrangement showed low incidence of secure attachment (48%) compared with the Ainsworth and colleagues (Ainsworth, Blehar, Waters, & Wall, 1978) normative sample (all the insecure infants were ambivalent). In comparison, kibbutz infants in the familial sleeping arrangement showed a high frequency of secure attachment patterns (80%). The researchers concluded that the exposure to nightly separations from the mother, and not the exposure to the daily regime of the children’s house, was a risk factor for the development of insecure attachment, specifically of the ambivalent type. Given such non-optimal conditions, when these circumstances endure there is also the potential of long-term negative effects.

Individual Differences in Attachment Representations

In the course of the first year of life, infants begin to develop generalized expectations regarding the way in which the parent will take care of them and the extent to which the world may be seen as a secure and trustworthy environment. These generalized expectations are internalized to form representations, which Bowlby termed internal working models. They include beliefs and expectations regarding the lovability of the self and the availability of the caregiver, as well as rules and strategies for regulating attachment-related affects and behaviors (Belsky & Cassidy, 1994; Main, Kaplan, & Cassidy, 1985). The child’s actual experiences shape his or her representational models, which subsequently serve as a guide for his or her behavior in novel circumstances (Bowlby, 1973, 1980). Children experiencing sensitive and responsive care will develop trust in their ability to influence the environment and to receive care when in need (secure attachment), and their attachment figure will be perceived as a secure base from which to venture forth to cope with the developmental challenges arising at various stages (Ainsworth, 1990). By contrast, children experiencing unresponsive and insensitive care will not develop trust in their environment or in themselves, and will perceive the attachment figure as rejecting (avoidant attachment) or as unpredictable (ambivalent attachment) in her or his responses.

Stability and Change in Attachment Representations

Although Bowlby acknowledged that development of attachment should be regarded as “environmentally labile,” especially in the early years of life (Bowlby, 1980, p. 414; van IJzendoorn & Bakersmans-Kranenburg, 1997), he thought that early internal working models of the attachment figure and of the self might be relatively immune to revision through subsequent experience because they crystallize before the acquisition of language, and are therefore less influenced by verbal messages contradicting the child’s early emotional experiences (Bowlby, 1980). For example, among high-risk samples, consistent relations between attachment history and externalizing problems have been found (Greenberg, DeKlyen, Spelz, & Endriga, 1997; Lyons-Ruth, Easterbrooks, & Cibelli, 1997; Renken, Egeland, Marvinney, Stroufe, & Mangelsdorf, 1989; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997). Moreover, Bradley, Caldwell, and Rock (1988) demonstrated that early maternal care predicted social functioning at the age of 10, with experiences after early childhood statistically controlled. These findings seem to indicate that experiences in infancy exert effects on later developmental stages, which cannot be explained solely on the basis of environmental continuity. Support for this contention can also be found in studies of non-human primates (Novak, O’Neill, Beckley, & Soumi, 1991; Sackett, 1970). It may be that early experiences are not “lost,” but leave their imprint on subsequent patterns of adaptation (Struwe, Egeland, & Kreutzer, 1990).
Nevertheless, Bowlby (1973, 1980, 1988) believed that despite the tendency toward continuity in attachment patterns, certain changes may occur in the course of life. At any point in time, the individual may be vulnerable to negative experiences, but may also derive benefits from positive experiences (Bowlby, 1988). The need to adjust existing models to novel circumstances arises when the discrepancy between the individual’s interpersonal relations and his or her internal working models becomes so great that the old models are no longer useful. Inappropriate models of self and others may be revised or replaced when changes occur in caregiving (Egeland & Farber, 1984), or when the individual has a corrective experience such as a supportive and sensitive relationship, whether with a significant other, a friend, or a psychotherapist (Bowlby, 1988; Lieberman, Weston, & Pawl, 1991; Ricks, 1985; van IJzendoorn, Juffer, & Duyvesteyn, 1995). Models may also undergo revision because of internal changes. In adolescence, this may occur when the individual is able to utilize his or her newly acquired ability for reflection to examine contradictions in internal models, as well as to initiate and experience extrafamilial relationships (Ainsworth, 1989; Main et al., 1985). Adolescence holds the promise of opportunities for growth and development as well as the threat of crisis and collapse; it appears to be a period of great relevance for the assessment of the long-term effects of early ecological conditions on representational models.

Ecological Variation and Socioemotional Development

Although the kibbutz childrearing ecology differed markedly from the optimal conditions advocated by an attachment perspective (Bowlby, 1969, 1980), researchers found that kibbutz children grow up to be well-functioning adults (Amir, 1976; Bettelheim, 1969; Rabin, 1965; Spiro, 1958). However, there was also evidence of a lower capacity for establishing intimate friendships (Rabin & Beit-Hallahmi, 1982) and a reduced need for affective involvement and emotional intimacy (Sharabany & Wiseman, 1993). It was suggested that although the intensive social environment of the kibbutz might promote the acquisition of advanced social competencies, the reserved emotional and behavioral style found among kibbutz adults might be related to the experience of communal upbringing (Aviezer et al., 1994).

In line with this suggestion, a wide body of knowledge points to the association between parent–infant attachment and the child’s socioemotional functioning in later developmental stages (Belsky & Cassidy, 1994; Bretherton, 1985; Thompson, 1997). In infancy, communal sleeping was related to high incidence of insecure attachment (Sagi, van IJzendoorn, Aviezer, et al., 1994). The aim of the present study was to explore the long-term effects of this childrearing ecological context, as well as the possible implications of changes in this ecology. To tease out the effects of the communal sleeping arrangement from the early intensive day-care experience of kibbutz familial rearing, and to assess the possible effects of the specific kibbutz ecology, four childrearing ecological context groups were studied: (1) The city group included adolescents raised in a family setting in the city; (2) the kibbutz familial sleeping group included adolescents raised in day care in the kibbutz; (3) the kibbutz communal sleeping group included adolescents raised in a communal sleeping setting in the kibbutz; and (4) the transitional group included adolescents who had been raised in a communal sleeping setting in the kibbutz as young children but were moved to a familial sleeping arrangement before the age of six.

The long-term effects of these diverse ecological contexts were examined by use of two major markers of socioemotional development. The first is the adolescents’ attachment representations, measured by the Adult Attachment Interview (AAI: George, Kaplan, & Main, 1985), and the second is the adolescents’ representations regarding imagined separations. The AAI is a semi-structured interview, and its coding is based on the participant’s reflections and evaluations, which are considered a manifestation of one’s state of mind with regard to attachment (Main & Goldwyn, 1994). People are classified as having a secure state of mind, termed an autonomous state of mind, if they are coherent in discussing and evaluating their experiences. People are classified into one of the insecure states of mind (Dismissing, Preoccupied, Unresolved) if they show low coherence in discussing and evaluating their experiences. In line with findings with infants (Sagi, van IJzendoorn, Aviezer, et al., 1994), it was hypothesized that adolescents experiencing exclusively familial sleeping arrangements (city or kibbutz) would exhibit a higher proportion of autonomous representations than adolescents raised in communal sleeping arrangements. As noted, internal working models formed early in life are liable to be relatively immune to revision, but changes in surroundings or circumstances in the course of life may facilitate their modification. Thus, within the transitional group we expected to find a proportion of autonomous representations somewhere between the familial and the communal groups.

In light of the relevance of separations to our participants’ childhood experiences, we further explored
adolescents’ representations regarding imagined separations, using a projective test (The Separation Anxiety Test, SAT; Hansburg, 1972, 1980; Klagsbrun & Bowlby, 1976). The SAT was previously used to assess attachment-related representations (Main et al., 1985; Slough & Greenberg, 1990). In the present study, the SAT was used as an additional attachment-related measure of representations, which specifically focus on imagined separations. The adolescents examined in this study differed markedly in the extent to which they were exposed to stressful separations early in life, an experience which might have left those in the communal sleeping arrangements vulnerable to issues of separation. We expected this vulnerability to be apparent at the representational level in their capacity to construct coherent narratives and competently cope with those imagined separations.

According to Hansburg (1980), appropriate/competent coping regarding separation is expected to reflect a balance between relying on oneself and the capacity to turn to others, combined with the ability to handle the situation and resolve it. Accordingly, we expected the city and the familial groups, who were raised in a family setting and presumably did not experience disruption of relationships due to separation, to show better coping with them on a representational level, and to discuss them more coherently. By contrast, adolescents from the communal group who experienced nightly separation were expected to evoke the worst coping with imagined separations, and to discuss them least coherently. Finally, the transition group was expected to occupy an intermediate position between the communal group and the city and familial groups.

Hansburg (1980) suggested additionally that part of appropriate coping with separations is the distinction between daily separations, which are not expected to arouse high distress, and severe separations, which challenge the person’s coping resources. Accordingly, and following the conceptualization of attachment researchers (e.g., Ainsworth et al., 1978), it was expected that individual differences would be revealed, especially in severe separations that arouse distress and the need to regulate it. In these conditions, especially, resilient adolescents were expected to exhibit their coping competence, whereas vulnerable adolescents were expected to evince less adaptive reactions. In line with these suggestions, we expected the above-mentioned anticipated difference between the groups in coping with separations on a representational level to be particularly salient concerning severe separations. Additionally, we expected adolescents in the city and familial groups to be able to mobilize their resources to respond adequately to severe separations, and to show constructive coping with imagined separations more in severe than in mild separations, which do not require such mobilization. By contrast, adolescents from the communal group, for whom the challenge of severe separations might have been too overwhelming, were expected to show constructive coping less in severe than in mild separations. The transitional group was expected to be in between, showing no differentiation on the representational level between severe and mild separations.

Finally, following Bowlby (1980), who suggested that separation experiences may interfere with and affect the quality of attachment relationships, we hypothesized that an association would be found between the adolescents’ state of mind with respect to attachment and their representations regarding separations. Specifically, autonomous adolescents were expected to show better coping with separations than were nonautonomous adolescents, as evinced in their constructive coping and coherence. By the logic presented above, we also expected this difference to be especially salient in severe separations. Further, we expected autonomous adolescents to show constructive coping better in severe than in mild separations, and we expected the opposite pattern to characterize the nonautonomous adolescents.

METHOD

Participants

The research sample comprised 131 adolescents (64 males and 67 females) aged 16–18, \( M = 17.21, \ SD = .64, \) residing either in a city or a kibbutz. They participated in the research as part of a larger project on attachment representations in adolescence. The research groups consisted of 31 city adolescents reared in a familial sleeping arrangement; 33 kibbutz adolescents also reared in a familial sleeping arrangement; 33 kibbutz adolescents reared in a communal sleeping arrangement from birth; and 34 kibbutz adolescents initially reared in a communal sleeping arrangement and then transferred to a familial setting before the age of six (the transition group). It would have been preferable to choose as participants for the transition group individuals who experienced the transition at the same age; however, due to the small number of kibbutzim that modified sleeping arrangements during the period relevant to this study, a range of transition ages was included (3–6 years). The age of six years was chosen as the cutoff point since by this time complex cognitive processes shaping the internal working model have crystallized (Bretherton, 1987; Main, 1991). Data regarding the specific age of
transition were collected to allow the statistical assessment of possible differential effects of varying transition ages.

The kibbutz participants were sampled from 24 different kibbutzim (eight from each ecological context), four or five adolescents (half of them girls) from each kibbutz, with the aid of the Institute of Research on Kibbutz Education, which monitors all research activities conducted with kibbutz children. All kibbutz participants lived in rural locations, at different distances from urban locations. These distances were similarly distributed among the three kibbutz groups. The city participants were sampled from four schools in a large city in the north of Israel. The sample included only adolescents from intact families, to control for the influence of significant stress variables such as loss or divorce. It should be noted that according to the Statistical Abstract of Israel (1993), the rate of divorce in the kibbutzim was 2.7%, whereas the city rate (the rate for the specific city included in our study) was 3.5%. There are no data regarding the specific divorce rate in the various types of kibbutzim. Nevertheless, according to the Institution for the Study of the Kibbutz, there are no known differences between the various types (Leviatan, personal communication, April 1999). Thus, sampling only intact families did not result in any major sampling bias.

Procedure

Individuals in positions of responsibility in the various kibbutzim were contacted by telephone and requested to assist us by providing a list of 6 to 8 adolescents from intact families residing in their kibbutz. We then randomly contacted by phone 4 or 5 of the adolescents from the list of each kibbutz. They were given an explanation of the purpose of the study, and were asked whether they would be willing to participate, namely to attend to two meetings held at their homes at times convenient to them. All except one of the adolescents approached agreed to participate. Two of them subsequently terminated their participation after the first session. The author, a clinical psychologist, and two psychology students who received intensive preliminary training in the administration of questionnaires and conducting of interviews collected the data. The same interviewer collected all the data from each participant. Given that the interviews were conducted at the adolescents’ residences, interviewers were not always blind to the group status of their interviewees, at least where city versus kibbutz groups are concerned. During the first meeting, the adolescents were administered the Separation Anxiety Test, background questionnaires, and several other questionnaires. At the conclusion of this meeting, interviewees received a small gift (a T-shirt). During the second meeting, they were administered the Adult Attachment Interview.

Measures

The Adult Attachment Interview (AAI). This interview (Main & Goldwyn, 1994) is a structured interview designed to arouse memories and emotions regarding attachment experiences. Subjects are requested to give a general description of their relationships with their parents and to support these descriptions with specific biographical incidents. The interview includes direct questions regarding the experience of rejection, moods, illness, or injury, as well as questions related to the experience of loss, separation, and trauma (abuse). The interviewees are requested to give explanations for the parents’ behavior, to describe the nature of their current relationship with their parents, and finally to assess the influence of childhood experiences on their development and personality. Minor adaptations were made in the closing questions of the interview, which in the original form inquire about the participant’s own children. Instead, adolescents were asked to imagine how they would feel and behave if and when they became parents themselves.

The coding of the AAI is based on the participant’s reflections and evaluations, which are considered a manifestation of one’s state of mind with regard to attachment (Main & Goldwyn, 1994). Particular emphasis is given to the accessibility of childhood memories, quality of generalized assessments of relationships, and the general overall level of coherency of the participant’s responses throughout the interview. The classification system assigns interviews to the following groups: insecure-dismissing (DS), insecure-preoccupied (E), secure-autonomous (F), and unresolved trauma or loss (U) (Main & Goldwyn, 1994). People are classified as having an autonomous state of mind if they have accessibility to their childhood experiences and evaluate them coherently. They are classified as dismissing when they tend to minimize the importance of attachment for their own lives or to idealize their childhood experiences. A preoccupied state of mind is assigned when people manifest angry, passive, or confused preoccupation with attachment figures. Finally, people are classified as unresolved with respect to trauma or loss when there are momentary lapses of reasoning or discourse while discussing potentially traumatic experiences such as loss and abuse. These people are also placed in one of the first three categories as alternates.

Since its initial development, the AAI has been utilized in numerous countries around the world, and
psychometric data are now available (van IJzendoorn, 1995). Reliability between raters and test–retest reliability is high, as shown in a variety of studies (Benoit & Parker, 1994; Sagi, van IJzendoorn, Scharf, et al., 1994). Attachment classifications based on the interview were found to be independent of intelligence, social desirability, cognitive complexity, or memory skills (Bakermans-Kranenburg & van IJzendoorn, 1993; Sagi, van IJzendoorn, Scharf, et al., 1994; Waters et al., 1993). Additionally, the possible effect of interviewers also serving as raters has been examined; results indicate that the AAI is relatively immune to biases that may arise in such a situation (Sagi, van IJzendoorn, Scharf, et al., 1994). The AAI was also successfully applied to assess individual differences in attachment representations during adolescence (van IJzendoorn & Bakermans-Kranenburg, 1996). For example, Kobak and his colleagues demonstrated the association between adolescents’ ego resilience, and their functional emotion regulation during problem-solving discussions with their mothers and the AAI (Kobak, Cole, Ferenz-Gilliens, Fleming, & Gamble, 1993; Kobak & Scery, 1988). Furthermore, as with samples of adults, Ward and Carlson (1995) found a correspondence between teenage mothers’ attachment representations and their infants’ attachment classifications.

The interviews were audiotaped and transcribed verbatim. Due to technical failure, one interview could not be transcribed. Transcripts identified by number only were analyzed by the author. Twenty-five transcripts were also analyzed by an independent judge, and interrater reliability was 91.8% (κ = .83). Both judges were trained by Mary Main and Erik Hesse, and achieved high reliability.

The Separation Anxiety Test (SAT). This is a projective test (Hansburg, 1980) designed to assess reactions to separation and loss on a representational level. The original test consists of 12 pictures depicting separation between a child and a caregiver in different contexts. Six of the pictures depict mild, daily separations, and six describe severe separations. Each picture is labeled with the description of the scene, but the emotional expression on the child’s face is ambiguous. The test was validated in various studies using pathological as well as normal populations (Hansburg, 1980; Kroger, 1986; Levitz-Jones and Orlofsky, 1985; Wade, 1987), discriminating between people with different intimacy and ego identity and showing that clinical populations have more pathological profiles of SAT responses.

In this research, owing to time constraints, seven pictures including mild and severe separations were chosen from the original set. Three pictures depicted mild separations, which included joining a new class at school, moving to a new neighborhood, and a mother putting a child to bed. Four pictures depicted severe separations, which included father leaving after an argument, one of the parents being taken to the hospital, child and father standing beside mother’s grave, and child running away from home. In the present study we adopted a modification to the procedure, first suggested by Klagsbrun and Bowlby (1976) and later employed by Kaplan (1985) and Resnick (1992) to observe attachment-related individual differences in internal representations of separations. Specifically, instead of choosing a response from a list of possible reactions, the respondent was shown each picture and asked to describe how the child in the picture feels and what the child might do in the depicted situation. Participants’ responses included, for example, attempts to prevent the separation, constructive activities, difficulties in finding solutions, and passivity or destructive actions.

All responses were audiotaped and transcribed verbatim. To assess representations regarding imagined separations, two scales were adopted. First, we coded constructive coping with separations on a representational level on a scale from 1 to 9, using a scoring system developed by Kaplan (1985) and Resnick (1992). Specifically, for each picture, adequacy of resolution of the problem presented in the picture, and flexible balance between self-reliance and the ability to turn to others for assistance, were coded. For example, constructive coping when the parent is taken to the hospital might involve going to the hospital to visit the parent, sharing feelings with close others, or helping other family members. Less constructive coping might involve not knowing what to do, or going to sleep; an even lower level of coping might involve isolating oneself by going to a distant place and/or trying to hurt oneself. Mean scores of constructive coping were calculated separately for the mild and severe separations. Using similar coding criteria, several studies found evidence that responses to the SAT correlated with attachment security. For example, a concurrent association between responses to the SAT and reunion behavior of young children was found (Main et al., 1985; Shouldice and Stevenson-Hinde, 1992; Slough, 1997; Slough & Greenberg, 1990). Second, we also adopted Main and Goldwyn’s guidelines (1994) for scoring the coherence of the transcript (on a scale from 1 to 9). This coding included assessment of the organization, clarity, and internal consistency of the whole transcript. Special attention was given to quality, quantity, and relevance of the responses. Two raters coded all the transcripts using these two scales, and obtained reliabilities of .91 on
the constructive coping with the separations scale and .89 on the coherence scale.

The Demographic Data Questionnaire. Questions solicited data about the adolescent’s family and personal history, such as the adolescent’s birth order, age, level of school achievement, date of transition to familial sleeping, as well as information about parents’ country of origin (Israel or elsewhere), and parents’ educational level.

Stressful Life Experiences Questionnaire. This is a 63-item self-report questionnaire that identifies potentially stressful situations experienced by adolescents, such as losses, illnesses, and termination of important relationships. This is an adapted version of Compas’s and Levav’s questionnaires (Compas, Davis, Forsythe, & Wagner, 1987; Levav, Krassnoff, & Dohrenwend, 1981) and it includes events which were judged relevant to the age group and to the Israeli culture. The participants were asked to indicate if they had experienced any of the events described, and also to rate the desirability of the event they experienced on a 5-point scale ranging from −2 (undesirable) to +2 (very desirable). Finally, they were asked to rate the impact of the event on their life using a 1 (no influence) to 5 (high influence) scale. Two indexes were created: (1) number of events the respondent indicated, and (2) their total influence. The second index was composed thus: first, for each event identified by the respondent we multiplied the desirability of the event by its impact score; we then summed these products across all the events identified by the respondent.

RESULTS

Analyses of Similarities among the Four Ecological Contexts

The aim of this study was to compare four groups of adolescents who differed in terms of the contexts in which they were reared, which were naturally occurring. This type of research evinces a quasi-experimental design (Cook & Campbell, 1979) in which it is important to demonstrate the similarity of the groups across background and potentially contaminating variables. To compare the four groups, a MANOVA followed by ANOVAs were computed. The results of these analyses are summarized in Table 1. There were no significant differences among the four groups in the two indexes of stressful life events and background variables (the adolescent’s age, level of school achievement, and parents’ educational level).

Chi-square analyses of the categorical background variables, which included adolescent’s birth order and parent’s country of origin, were also performed and are summarized in Table 2. None of these analyses was significant. In sum, the background characteristics of the adolescents in the four groups and their experiences of stressful life events were similar. This finding supports the requirement of the quasi-experimental research design, namely controlling intervening variables to allow a valid examination of the research hypotheses.

Attachment Representations in the Various Ecological Contexts

To examine the hypothesized differences in the distribution of attachment representations among the various ecological contexts, logistic regression analysis was performed, with attachment pattern (autonomous versus nonautonomous) as the dependent variable, and ecological context and participant’s gender as independent variables. As expected, there were significant differences in the ecological contexts, $Wald = 8.24, p < .05$. The effects of gender and the interaction were not significant. Analyses of contrasts showed that the distribution in the communal group differed

| Table 1 Background Variables of Adolescents in the Different Ecological Contexts |
|---------------------------------|---|---|---|---|---|---|---|---|
| City                           | Kibbutz—Familial | Kibbutz—Transitional | Kibbutz—Communal |
| Age (years)                    | $M$ | $SD$ | $M$ | $SD$ | $M$ | $SD$ | $M$ | $SD$ |
| School achievement$^a$         | 2.90 | .70 | 2.82 | .77 | 3.15 | .93 | 2.73 | .84 |
| Number of life events          | 26.23 | 10.16 | 23.39 | 8.39 | 27.50 | 12.13 | 26.03 | 10.59 |
| Total number of life events influence$^b$ | −126.2 | 53.07 | −111.6 | 53.44 | −138.1 | 75.86 | −130.9 | 56.32 |
| Father’s education (years)     | 13.36 | 1.84 | 12.49 | 2.00 | 12.41 | 1.73 | 12.46 | 1.94 |
| Mother’s education (years)     | 12.97 | 2.01 | 12.39 | 1.99 | 12.24 | 1.67 | 12.36 | 1.45 |

Note: None of the $p$ values reached significance.

$^a$ School achievement scale: 1 = poor; 2 = average; 3 = good; 4 = very good; 5 = excellent.

$^b$ Higher scores denote better experiences.
significantly from that in each of the other three ecological context groups, $B = .93$, $SE = .33$, Wald = 8.05, $p < .01$. The other three groups (city, familial, transitional) did not significantly differ from each other. Specifically, most of the adolescents in the city, familial, and transitional groups exhibited autonomous attachment (74.2%, 69.7%, and 67.65%, respectively), with a minority classified as dismissing (19.4%, 30.3%, 32.4%) and preoccupied (6.5%, 0%, 0%). In the communal sleeping arrangement group, a majority of the subjects displayed nonautonomous attachment (50% dismissing, 6.3% preoccupied), with only 43.7% exhibiting autonomous representations. Figure 1 displays the distributions obtained.

Additionally, we explored whether the age of transition from communal to familial sleeping arrangements was related to security of attachment representations. There were 34 subjects in the transition group, with age at transition ranging from 3 to 5 years. A $t$ test was conducted, with security of attachment (autonomous/nonautonomous) serving as the independent variable and age in months at the transition as the dependent variable. No significant difference in transition age was found, $t = -.19$, $df = 32$, $p = .85$, between adolescents with autonomous attachment representation, $M = 44.96$ months, $SD = 7.33$, and adolescents with nonautonomous attachment representation, $M = 45.45$ months, $SD = 6.51$. Nevertheless, we should keep in mind that the size of the group may have precluded detecting age effects.

Representations Regarding Separations in the Various Ecological Contexts

The second hypothesis concerned the association between the ecological context and representations regarding separations as evinced in the responses to the SAT. First, a MANOVA was conducted with ecological context group, gender, and severity of separation (mild versus severe) serving as independent variables (the last variable as a repeated measure) and scores on the constructive coping scale serving as dependent variables. Two main effects were significant, gender, $F(1, 122) = 7.66$, $p = .007$, and ecological groups, $F(3, 122) = 6.45$, $p < .001$. Specifically, girls showed better constructive coping than boys, means were 6.87 ($SD = .98$) and 6.39 ($SD = 1.09$), respectively, and the communal group showed the lowest level of constructive coping out of all four groups, $t$ test post-hoc, $p < .05$ ($M = 6.88$ for city adolescents, $6.87$ for the familial group, $6.80$ for the transitional group, and $6.00$ for the communal group). Additionally, as expected, there was a significant two-way interaction between severity of depicted separation and ecological context groups, $F(3, 122) = 5.92$, $p < .001$. None of the other effects was significant.
To explore the two-way interaction, several analyses were conducted. First, two one-way ANOVAs were conducted separately for the mild and the severe separation scores. Although ecological context groups did not differ in constructive coping in the mild separations, \( F(3, 126) = 1.85, p = .14 \), they were significantly different in the severe separations, \( F(3, 126) = 7.32, p = .001 \). Specifically, similar to the finding with the main effect of ecological context, the communal group showed the lowest level of constructive coping in the severe separations, \( t \) test post-hoc, \( p < .05 \) (see Table 3). Additionally, paired \( t \) tests comparing mild and severe separations were conducted for each of the ecological groups. As can be seen in Table 3, the city adolescents showed a higher level of constructive coping in severe separations than they did in mild separations, whereas adolescents in the communal group showed an opposite pattern: Their scores of constructive coping in mild separations were higher than in severe separations. Participants in the other two groups were not significantly different in terms of mild versus severe separations.

A similar analysis was repeated for the coherency score. Specifically, a one-way ANOVA was conducted. The same pattern of findings emerged with regard to coherency. The communal group had a lower level of coherency than did the other three groups—city, kibbutz-familial, and transitional groups, \( F(3, 127) = 4.00, p = .001 \) (see Table 3). Finally, we explored the possible effects of age of transition from communal to familial sleeping in the transitional group on representations regarding imagined separations. Specifically, we computed Pearson correlations between age at transition and both coherence and constructive coping in mild separations. Participants in the other two groups were not significantly different in terms of mild versus severe separations.

Our third hypothesis was related to the correspondence between attachment representations and representations regarding separation. First, a MANOVA was conducted, with attachment security groups (autonomous, nonautonomous), gender, and severity of separations (mild versus severe) as independent variables (the last variable as a repeated measure) and scores on the constructive coping scale as dependent variables. (The nonautonomous group included dismissing and preoccupied adolescents. The analysis was repeated with the four preoccupied participants excluded from the nonautonomous group. This exclusion did not affect the significance of any of the reported results.) Two main effects were significant: gender, \( F(1, 126) = 4.88, p = .03 \), and attachment security groups, \( F(1, 126) = 19.13, p = .001 \) (see Table 4). Specifically, replicating the results reported above, girls had better constructive scores than did boys. Additionally, autonomous adolescents showed better constructive coping than did nonautonomous adolescents. These results were qualified by a significant two-way interaction between severity and attachment security groups, \( F(1, 126) = 20.81, p = .001 \). None of the other effects was significant. To explore the two-way interaction, several analyses were conducted. First, two \( t \) tests were conducted separately for the mild and severe pictures. Attachment security groups were significantly different in their constructive coping in mild separations, \( t(128) = 2.45, p = .02 \), and in severe separations, \( t(128) = 5.13, p = .001 \). Specifically, the autonomous group showed higher levels of constructive coping in both types of separations (see Table 4).

Additionally, paired \( t \) tests comparing mild and severe separations were conducted for each of the attachment security groups. As can be seen in Table 4, autonomous adolescents showed a higher level of

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**Table 3** Means and Standard Deviations of SAT Scales According to the Different Ecological Contexts

<table>
<thead>
<tr>
<th></th>
<th>City (n = 31)</th>
<th>Kibbutz—Familial (n = 33)</th>
<th>Kibbutz—Transitional (n = 33)</th>
<th>Kibbutz—Communal (n = 33)</th>
<th>( F )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
<td>( M )</td>
<td>( SD )</td>
<td>( M )</td>
</tr>
<tr>
<td>Constructive coping</td>
<td>6.88</td>
<td>.81</td>
<td>6.87</td>
<td>.85</td>
<td>6.80</td>
</tr>
<tr>
<td>with separation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.00</td>
</tr>
<tr>
<td>Mild separations</td>
<td>6.68</td>
<td>.79</td>
<td>6.74</td>
<td>.56</td>
<td>6.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.98</td>
</tr>
<tr>
<td>Severe separations</td>
<td>7.09</td>
<td>1.13</td>
<td>7.01</td>
<td>1.36</td>
<td>6.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.46</td>
</tr>
<tr>
<td>Mild versus severe</td>
<td>( t = 2.07^*)</td>
<td>( t = 1.30)</td>
<td>( t = 1.29)</td>
<td>( t = -2.91^{**})</td>
<td></td>
</tr>
<tr>
<td>Coherence</td>
<td>5.42</td>
<td>1.19</td>
<td>5.64</td>
<td>1.54</td>
<td>5.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.72</td>
</tr>
</tbody>
</table>

\( ^*p < .05; ^{**}p < .01; ^{***}p < .001. \)
constructive coping in severe separations than in mild separations, while nonautonomous adolescents showed an opposite pattern, their coping scores in mild separations being higher than in severe separations.

With regard to coherency scores, the same pattern of findings emerged. Autonomous adolescents had a higher level of coherency than did nonautonomous adolescents, t(128) = 4.99, p = .001.

DISCUSSION

The central aim of this study was to explore the long-term effects of different childrearing contexts on attachment and on representations regarding imagined separations in adolescence. The study employed a “natural experiment” in the kibbutz setting in Israel to examine the effects of early separation experiences on socioemotional development in later years.

A concern may be raised that children’s experiences in the various childrearing contexts of the kibbutz differed in other significant ways associated with the nighttime sleeping variation. In light of this concern, it should be noted that regardless of their ideology the different kibbutzim were quite similar in many practices that characterized the collective kibbutz upbringing. These included the sharing of socialization responsibilities between parents and caregivers, non-maternal care for infants and toddlers, and the centrality of the peer group in the life of kibbutz children.

Although ideological differences have existed among the different kibbutzim since their foundation, there has never been a simple one-to-one correspondence between childrearing practice in kibbutzim and the beliefs of adult members (Aviezer et al., 1994). Socioeconomic and physical conditions have always had an impact on how kibbutz children were brought up, and individual kibbutzim adopted day-to-day practices that accommodated their particular needs (Lavi, 1990). Changes in childrearing practices from communal to familial sleeping were affected by the upsurge in familistic tendencies (Tiger & Shepher, 1975) and the growing prosperity of the kibbutz economy, which allowed enlargement of each family’s living space. The transition of any specific kibbutz from communal to familial sleeping arrangement, however, did not stem from its members being more “child-oriented” than members of other kibbutzim where communal sleeping was maintained (Tiger & Shepher, 1975; Sagi, van IJzendoorn, Aviezer, et al., 1994). Taking all these considerations into account, it seems that in terms of actual childrearing practices kibbutzim pursuing the different sleeping arrangements were quite similar, besides the sleeping arrangement variation (Sagi, van IJzendoorn, Aviezer, et al., 1994).

In line with this contention, recent findings attest that mothers in familial and communal arrangements did not differ in their socioemotional characteristics. Specifically, there was no difference between mothers in communal and those in familial sleeping arrangements in the quality of mother–infant interaction during a play session (Sagi, van IJzendoorn, Aviezer, et al., 1994). Furthermore, the distribution of security of attachment representations using the AAI was similar among mothers from a communal and those from a familial childrearing ecology (Sagi et al., 1997). Nevertheless, to control for the effects of demographic variation (e.g., parental education) and experiences of stressful life events throughout childhood and adolescence, these variables were examined and similarity was demonstrated across the ecological conditions.

Ecological Variation and Socioemotional Development

Our findings indicated that the communal sleeping arrangement was associated with a higher incidence of nonautonomous attachment representations, and with less competent coping with separations on a representational level, than were the other ecological contexts. In addition, adolescents in the communal group exhibited lower constructive coping in severe separations than in mild separations. The specific comparison group, which included adolescents in the kibbutz who slept in their parents’ house during childhood (familial group), showed significantly more competent coping with separations on a representational level and a higher incidence of autonomous representations. Thus, it seems that repeated exposure to nightly separation, an integral feature of the communal sleeping arrangement and not the experience of group child care early in life per se, is a significant risk factor to the development of attachment in-

| Table 4 | Means and Standard Deviations of SAT Scales According to AAI Classifications |
|---------|---------|---------|---------|
|         | Autonomous | Nonautonomous |
|         | (n = 83)    | (n = 47)    |
|         | M    | SD   | M    | SD   |
| Constructive coping | | | | |
| with separations | 6.95 | 1.01 | 6.12 | .97 |
| Mild separations | 6.75 | .88  | 6.38 | .74 |
| Severe separations | 7.14 | 1.36 | 5.85 | 1.41 |
| Mild versus severe | | | | |
| t  = 3.31*** | | | t  = −3.14*** |
| Coherence | 5.88 | 1.42 | 4.59 | 1.40 |

***p < .001.
security. This proposition accords with a similar conclusion of earlier research with infants raised in communal sleeping arrangements (Sagi, Lamb, Lewkowicz, Shoham, Dvir, & Estes, 1985; Sagi, van IJzendoorn, Aviezer, et al., 1994).

What is the cause of such vulnerability in representations regarding separations and the high incidence of attachment insecurity in a population not considered as high risk? The communal sleeping environment differs quite significantly from what Bowlby (1984) termed the “environment of evolutionary adaptedness” (Bowlby, 1984; Sagi, van IJzendoorn, Aviezer, et al., 1994), in which the helpless infant is in constant proximity to an experienced adult who can provide protection when needed. The delayed reaction of the night caregiver in the communal sleeping arrangement is neither an adequate nor a sensitive response to the child’s aroused attachment needs. The recurrent frustration of attachment needs at night may lie at the heart of the development of insecurity. Our study showed that these experiences, though occurring early in life, may have long-term effects on the person’s socioemotional makeup. Nevertheless, in this study the nature of the childhood experiences of these adolescents was not examined, nor were their attachment patterns in infancy. Furthermore, despite the contention that sleeping arrangement was the major variation among the different groups, and that other related childhood experiences were similar, this issue was not directly measured and the possibility that other constellations of early life experiences contributed to the outcomes reported in this investigation cannot be dismissed. Therefore, the conclusion that sleeping arrangement during infancy in the kibbutz may have long-term effects on socioemotional development should be treated cautiously. Moreover, it should be noted that neither attachment insecurity nor vulnerability in representations regarding separations are indexes of clinical impairment.

Interestingly, adolescents of the kibbutz familial group, who experienced extended hours of day care, were similar to adolescents of the city familial group in their levels of autonomous representations and competent coping with separations on a representational level. However, while both the city and the kibbutz familial groups exhibited the expected differentiation between mild and severe separation, the latter showing better constructive coping, this differentiation was significant only for the city group. In general, it seems that the kibbutz ecology, and extended hours in day care beginning early in life, did not have a debilitating effect on social and emotional development in adolescence. These findings are consistent with reports by other investigators that kibbutz adults are well functioning and that the kibbutz ecology, though unique, does not negatively affect socioemotional development (Amir, 1976; Rabin, 1965). This conclusion is limited to the measures used in the present study. Further research should use broader definitions of socioemotional competence and a larger array of measures.

Contrary to our hypothesis, no differences were found in security of attachment representations and competent coping with separations between the transitional group and family-raised adolescents (the familial and the city groups). It appears that the transition to family sleeping arrangements at an age between three and six may be a “corrective experience” (Bowlby, 1988; van IJzendoorn et al., 1995). Our data did not indicate the existence of a critical period at this age range, and it appears that changes occurring up to the age of six may have an effect on the revision and modification of internal working models. It can be claimed that with the transition to family sleeping arrangements, children formerly in communal environments experienced significant incongruity between internal models and the changed reality. It has been suggested that when the child is exposed to repeated experiences that do not fit existing internal models, corrective modification of models occurs (Bretherton, Ridygway, & Cassidy, 1990; Liberman et al., 1991). Findings of such changes in attachment representations—from insecure to secure—have been reported in other studies (Egeland & Farber, 1984; Erickson, Sroufe, & Egeland, 1985), apparently as a result of improvements in mothers’ caregiving. This interesting finding is consistent with the notion of plasticity of internalizations formed during childhood, in accordance with conceptualizations by Rutter and others (Bowlby, 1988; Rutter & Rutter, 1992), and was presented in a study that followed Romanian adoptees who suffered severe early deprivation (Rutter and ERA Study Team, 1998). These children showed impressive recovery in both physical growth and cognitive functioning at age four. It remains for future research to examine whether these recoveries may have hidden vulnerabilities, which become apparent in other contexts and under new conditions.

Correspondence between Attachment Representations and Representations Regarding Imagined Separations

As expected, the present study revealed a correspondence between adolescents’ attachment representations and adolescents’ representations regarding imagined separations. Adolescents showing autonomous attachment exhibited more competent coping. They were able to speak coherently of both pain and hurt in response to separations, and their coping was
also more constructive, a finding previously noted in research with younger children (Kaplan, 1985; Shoul-dice & Stevenson-Hinde, 1992; Slough, 1997).

In addition, as expected, autonomous adolescents differentiated on the representational level between mild and severe separations, showing better constructive coping in severe separations. Stressful separations apparently exposed the vulnerability of non-autonomous adolescents and highlighted the capacity of autonomous adolescents to mobilize their self-regulation competencies and coping skills. This difference, which is usually observed in the Strange Situation using a real separation, was apparent in our study also on the representational level; this is consistent with formulations advanced by attachment researchers that individual differences in attachment organization would be most apparent in stressful situations (Phelps, Belsky, & Crnic, 1998). A similar finding was demonstrated in a study by Dozier and Kobak (1992) using physiological measures.

This study showed a fairly strong correspondence between state of mind with respect to attachment, measured by the AAI, and coping with separations on a representational level, measured by the SAT. This correspondence is not surprising given that both are measures of attachment-related representations (tapping similar dimensions), both are based on the same informant (the adolescent), and both were administered by the same interviewer. Consequently, this correspondence may reflect a reporter bias and caution is warranted in interpreting its meaning. We suggest that the findings with the SAT in this investigation may serve only as an additional support for the findings with the AAI rather than as an independent measurement of coping processes.

Gender Differences in Representations Regarding Separations

The present study revealed higher levels of competent coping with separations in girls than in boys. This finding is consistent with several recent reports (Mayseless & Granot, 1996; Oppenheim, Nir, Warren, & Emde, 1997) that revealed better emotional organization in girls using narratives elicited in response to attachment-related story stems. Although still speculative, the cumulative evidence may suggest that girls have a better capacity for emotional expression and regulation than do boys. This gender difference accords well with societal and cultural sex-typed expectations toward boys and girls regarding emotional expression (Block, 1978; Brody, 1993, 1996; Hoffman & Levy-Shiff, 1992; Huston, 1983). Specifically, stereotypes regarding the appropriate role of emotions for boys teach them to be more emotionally restrained and to control their expression of emotion, with the exception of the expression of anger (Fivush, 1989, 1993); stereotypes regarding the role of emotional expression for girls teach them to express their emotions openly. As a result, girls may be more experienced and competent in dealing with their emotions and know how to handle emotion-laden situations, such as those depicted in the SAT, with less distortion. This capacity might also be a two-edged sword, since emotional openness and awareness may leave girls at greater risk of depression during adolescence (Zahn-Waxler, 1993).

Conclusion and Implications

Several methodological issues should be noted. This study was cross-sectional, and the participants were not examined in earlier stages of their development. By using the quasi-experimental design in this study, we learned about the participants’ normative childhood experiences and childrearing contexts, but we cannot rule out the possibility that other experiences besides sleeping arrangements led to the outcomes assessed in this study; and we can only speculate about the participants’ attachment patterns in infancy. The issue of continuity of attachment security/insecurity from infancy to adolescence in these childrearing contexts, and the issue of possible change in internal representations, must await further research using a longitudinal design. Interestingly, the few studies that followed the same individuals from infancy through adolescence reported mixed findings with regard to infancy-to-adolescence stability, indicating greater continuity in more stable contexts (Becker-Stoll, Flemmer-Bombik, Wartner, & Grossmann, 1996; Hamilton, 1995; Waters, Merrick, Albersheim, & Treboux, 1995).

In the present study, interviewers were only partly blind to the group status of their interviewees. Despite the robustness of the AAI coding as indicated by various studies (Bakermans-Kranenburg & van IJzendoom, 1993; Sagi, van IJzendoorn, Scharf, et al., 1994), this limitation should be acknowledged. This study examined adolescents’ representations from their own point of view. The addition of other sources, such as parents or friends, may enrich our understanding of the features of these representations, and overcome the limitation of reporter biases. Additionally, the questions addressed in the present study can benefit from future research conducted with a wider array of socioemotional indicators. Of particular interest might be parent–child relationships, which may shed light on processes by which communal sleeping arrangements influence adolescent attachment representations, as well as coping with developmental tasks, such as separating from one’s family of origin.
and establishing intimate relationships with romantic partners.

The findings of the present research suggest, on the one hand, that ecological contexts that deviate significantly from the norm for childrearing environments may have negative long-term effects on emotional-social functioning in later years. On the other hand, the findings regarding the probable modification of the transition group lends strength to Bowlby’s perception of the flexibility and dynamic nature of internal models, and to the inherent plasticity of children and their ability to adapt and develop in response to changed circumstances.

Of particular interest is the group of adolescents showing secure attachment despite growing up in the context of communal sleeping arrangements. What is the source of their security? Is it a result of innate flexibility, or of other personality variables enabling children to remain secure in attachment despite detrimental environmental conditions (Belsky, 1997)? Constructs such as self-efficacy (Bandura, 1986), ego resiliency (Block & Block, 1980), or hardness (Kobasa, 1982) offer a partial explanation of such “immunity.” Did this security arise due to a special sensitivity on the part of attachment figures who succeeded in responding appropriately to the child despite the suboptimal ecology? Did it develop through interaction between special qualities of the children and caregivers? Or does another factor explain it? Investigation of these questions may contribute to our understanding of factors protecting children who grow up in difficult ecological contexts and difficult life situations.

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