

DEVELOPMENTAL PSYCHOLOGY

Distinctive features of adolescent hardiness in families of different composition

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This article analyzes the influence of family structure on the hardiness of adolescents aged 16-18 (average age 17.2). The aim was to investigate hardiness of subjects from full, single-parent, and large families. We used the Test of Hardiness Survey and the Noetic Orientations Test (SZhO). The sample comprised 200 subjects, first year university students from families with different compositions: 75 were brought up in a full family, 75 in a one-parent family, and 50 in a large family. A one-way analysis of variance and repeated measures MANCOVA showed that the subjects differ both in their hardiness and the distinctive features of its development. The authors conclude that subjects from full families are less hardy than those from single-parent families, but more hardy than those from large families. Also the hardiness dynamics of children from full, single-parent, and large families differ. Adolescents from single-parent families increase their hardiness further, whereas in students from full families it decreases. This can be explained by specific ways that the students survive the crisis of adolescence. And finally, students from large families demonstrate a similar level of hardiness in comparison with students from full families. This can also be explained by specific ways that they survive the crisis of adolescence. Later, when this crisis is almost over, their hardiness becomes similar to that of students from full families, which has decreased by that time.

Keywords: hardiness, commitment, control, challenge, family structure, adolescents

Introduction

During the past 20 years, hardiness has been a subject of study by scientists internationally and in Russia. Although as M.V. Loginova (2010) has pointed out, there are many interpretations of hardiness (e.g., “survivability”, or “the courage to be” by P. Tillich et al.), in Russian psychology, the most empirically substantiated theory of hardiness is that of S. Maddi. According to his theory, hardiness is a pattern of attitudes and skills that, together, facilitate resilience under pressure by turning stressful circumstances from potential disasters into opportunities to grow in wis-

dom and performance. Hardiness consists of three attitudes: commitment, control, and challenge. Strong commitment refers to the belief that, no matter how bad things get, it is usually best to remain involved with the events and people in one's life, rather than to retreat into isolation and alienation. Strong control is the belief that, no matter how bad things get, it is worth continuing to try to effect outcomes, rather than retreating into powerlessness and passivity. Strong challenge is the belief that stressful changes are normal in life, and provide an opportunity to learn more, rather than being an inappropriate violation of one's right to easy comfort and security (Maddi et. al., 2009).

During the last 25 years, some investigations have touched on the problem of hardiness development and the factors that determine hardiness. Khoshaba and Maddi (1999) suggested that the roots of hardiness lie in youngsters' early experiences. They discussed the ideal condition for the development of hardiness as a nurturant period of childhood giving way to the more individualized development of adolescence, when youngsters must find their own way in a period marked by social and biological changes on an unprecedented scale for them. According to this hypothesis, in early life, persons who later became very hardy frequently experienced stressful changes and conflicts (for example, the emotional or physical absence of one or both parental figures, poverty, immigrant status, mental or physical illness of one or both parental figures). As a result, Khoshaba and Maddi conclude that it is not the mere fact of stressful circumstances in early life that contributes to the development of personal hardiness but, rather, the response to such circumstances in a compensatory manner by the family and the individual.

But this result was obtained in a group of adults. Some studies rely on data from teenager groups. For example, Hannah and Morrissey (1987), using a sample of adolescents, found that sex, age, religion, and the well-being of the family have strong correlations with hardiness. Shepperd and Kashani (1991), using a sample of adolescents, showed how hardiness, gender, and stress are interrelated. These variables can be a foundation for classification of teenagers' hardiness. Though there has been some research on the relation between adolescents' hardiness and their families (e.g., Walsh, 1996), very often other methods are used to study this phenomenon.

Bigbee (1992) tries to analyze the hardiness concept beyond the individual level. He emphasizes that, according to Maddi and Kobasa (1984), hardiness develops as a result of the family environment, so he explores the concept of hardiness from a family perspective, examining the effects of stressful life events on hardiness, and their effects on illness in families. In his view, "hardy families" are the result of hardy adult family members. But Bigbee does not analyze the hardiness of adolescents specifically, although in his study there are families with children under 18. Moreover he does not analyze non-married families, although his sample includes 10.4% such families.

Henry, Robinson and Wilson (2003) investigated how demography, family system, adolescent perceptions of parental behavior, and youth characteristics correlate with adolescent substance abuse. They tested a path model of specific factors within three levels of the family system in relation to substance abuse with a subsample of 214 high school students. Using this model, they studied family hardiness in different families (including single-parent families). According to their

definition, family hardiness describes the extent to which families feel a sense of control over life events. But family hardiness is not the same as hardiness as it is understood by Maddi, the authors did not identify distinctive features of family hardiness in different families.

Amerikaner, Monks, Wolfe, and Thomas (1994) investigated the relationships between individual psychological health (PH) and perceptions by young adults of family interaction and family climate. But though they described particular characteristics of young adults' hardiness, they did not consider families with different compositions.

Khodarahimi and Ogletree (2011) researched the hardiness of adolescents from different families and found that larger family size is related to less life satisfaction and special attention to emotions, and that having sisters may predict more negative outcomes than having brothers. Also, using the Ahwaz Hardiness Inventory (in the Farsi language), they found that family structure (including birth order) does not have a significant effect on hardiness. But the authors analyzed only large families and did not consider single-parent families.

Mirzaei and Kadivarzare (2014) studied the relationship between parenting styles and hardiness of high school students. They concluded that parenting styles play a significant role in hardiness, and that control is the key concept in both variables of parenting styles and hardiness. In authoritative and authoritarian parenting styles, the method of parenting is control. Control regulates intra-psychic processes and forms the control component of hardiness. Therefore it is essential to devise a special training method for parents to enhance the students' mental health.

Thus although some papers have shown that family structure affects the development of hardiness, no special research on this influence has been conducted. Our study is therefore aimed at revealing how family composition affects the hardiness of adolescents.

The specific hypotheses tested are:

- subjects from full families have greater hardiness than those from single-parent and large families;
- adolescents from full, single-parent, and large families demonstrate different dynamics of hardiness development.

Method

Participants

In this cross-sectional study, we use a sample of teenagers aged 16–18 (average age 17.2) first-year students from families with different compositions. They were recruited from various departments of Irkutsk State University (journalism, psychology, physics, philology, law, and mathematics) by university newspaper announcements and bulletin boards. After selecting the participants, explaining the aims of the study, and securing their cooperation, we interviewed them to refine their family status. Then we reduced the sample to 200 participants: 75 from a full family, 75 from a one-parent family, and 50 from a large - family (three or more children). The number of boys and girls in all groups was equal, so the samples are representative with respect to demographic variables.

In the group of single-parent families we included families which were single-parent ones originally (64% of the sample) as well as those where divorce took place when the teenage subjects were children (36% of the sample). We did not take into consideration their siblings' gender and their birth order in large families, though in 74% of cases the subjects were the oldest children.

Procedure

We utilized the Test of Hardiness, which is the Personal Views Survey III-R by S. Maddi as adapted by D.A. Leontiev (Leontiev & Rasskazova, 2006). This consists of three dimensions: commitment, control, and challenge. The internal consistency of the total measure was 0.91 in the present sample, with 0.84 for commitment, 0.86 for control, and 0.89 for challenge. Commitment measures the extent to which individuals seek involvement rather than withdrawal; it contains a vital motivational quality that compels the individual to persist in pursuing a goal despite repeated obstacles, for example, "By working hard, you can always achieve your goal". Control deals with the extent to which individuals strive to exert control over their circumstances rather than feeling powerless. Perception of control or the degree to which a stressor is seen as under an individual's control are thus important in the appraisal of threat (e.g., "Most days, life is really interesting and exciting for me"). Challenge measures the extent to which individuals strive to learn from experience rather than feeling threatened (e.g. "My mistakes are usually difficult to correct").

We also used the Noetic Orientations Test (SZhO), an adaptation by D.A. Leontiev (2006) of J. Crumbaugh's and L. Maholic's Purpose-in-Life Test. The SZhO is a self-report attitudinal scale designed to measure the extent to which a respondent perceives a general sense of meaning and purpose in life, or conversely, suffers from an "existential vacuum". It consists of 20 items which focus on the respondent's mood (e.g., item 1: I am usually completely bored; neutral; exuberant; enthusiastic), 3 items addressed to life goals (e.g., item 3: In life I have no goals or aims at all; neutral; very clear goals and aims), and 3 items addressed to the meaning of life itself (e.g., item 4: My personal existence is utterly meaningless and without purpose; neutral; very purposeful and meaningful). Although Leontiev suggested 5 subscales, we used only the general scale of this test.

The data were analyzed using SPSS software. We used the independent two-sample t-test and dependent t-test for paired samples.

Results

The first step was to compare the hardiness of a single-parent family and a full family. Table 1 contrasts the mean values of each group. A one-way analysis of variance showed that the subjects from single-parent families demonstrated commitment more clearly than those from full families. The other scale data of the Test of Hardiness are also higher, but these differences are not significant. The use of a one-way analysis of variance let us see that all the differences between the subjects from full and single-parent families involved boys. While the girls from full and single-parent families did not demonstrate differences in their level of hardiness, the boys from single-parent families achieved higher scores on the scales for hardiness, control, and challenge.

Table 1. Contrast of the mean values of hardiness in single-parent and full families

	Variable	Mean Score		F	p
		Single-Parent Family	Full Family		
All	Commitment	34.43	31.57	4.45	0.01
	Control	31.34	29.76	1.05	0.31
	Challenge	16.52	16.20	0.29	0.69
	Hardiness	81.75	78.40	1.02	0.31
Boys	Commitment	36.89	33.26	2.54	0.11
	Control	35.26	29.01	8.90	0.00
	Challenge	18.16	15.65	4.60	0.03
	Hardiness	89.05	77.92	5.26	0.02
Girls	Commitment	32.56	33.90	0.35	0.56
	Control	28.36	28.49	0.01	0.94
	Challenge	15.28	16.80	1.86	0.18
	Hardiness	76.20	76.20	0.38	0.54

The second step was to compare the hardiness of a large family and that of a full family. It turned out that the subjects from large families demonstrated a much lower level of hardiness than the subjects from families with one or two children. A one-way analysis of variance showed that differences appeared on all scales: hardiness, commitment, control, challenge. As we mentioned earlier, the differences between the subjects from full and large families involve mainly girls. Girls from large families demonstrate higher levels of hardiness, commitment, control, and challenge than those from the other families.

Table 2. Contrast of the mean values of hardiness in large and full families

	Variable	Mean Score		F	p
		Full Family	Large Family		
All	Commitment	31.57	28.78	11.53	0.00
	Control	29.76	24.39	15.52	0.00
	Challenge	16.20	14.53	5.42	0.02
	Hardiness	78.40	67.97	13.93	0.00
Boys	Commitment	33.26	31.39	1.47	0.23
	Control	29.01	26.44	3.52	0.06
	Challenge	15.65	14.67	1.74	0.19
	Hardiness	77.92	72.50	2.75	0.10
Girls	Commitment	33.90	26.17	12.53	0.00
	Control	28.49	22.33	15.29	0.00
	Challenge	16.80	14.39	3.83	0.05
	Hardiness	76.20	63.44	13.53	0.00

So while the subjects from single-parent families demonstrated much greater expressiveness of such hardiness attitudes as commitment, those from large families, conversely, demonstrated less expressiveness of hardiness itself and all its attitudes. At the same time, for subjects from single-parent families, boys demonstrated all the differences, whereas for subjects from full families, all the differences were demonstrated by girls.

The third step was to analyze the dynamics of hardiness of all the subjects. Using a repeated measures MANCOVA, we compared the results achieved a year later, and found that the subjects from full families demonstrated significant differences only for commitment ($F = 5.9$, $p < 0.03$). The level of this attitude decreased (from 31.57 to 29.11). But additional analysis showed this difference only for girls; no changes took place with boys. On the contrary, the girls from single-parent families demonstrated a great increase of such attitudes as challenge, from 15.28 to 17.89 ($F = 13.7$, $p < 0.01$), and the boys did not demonstrate such results.

Thus the dynamics of hardiness and its attitudes are different for the subjects from full and single-parent families. We found a decrease of commitment in the girls from full families and an increase of such an attitude as challenge in the girls from single-parent families. The boys from both full and single-parent families did not demonstrate any differences in the level of hardiness and its attitudes.

The situation with the children from large families is different. According to a repeated measures MANCOVA one year later, they demonstrated a sharp increase on such scales of the Test of Hardiness as hardiness from 63.44 to 67.07 ($F = 9.5$, $p < 0.01$) and control from 22.33 to 24.54 ($F = 7.4$, $p < 0.02$). The scales of commitment and challenge also increased, though not so much. The second analysis of differences between the children from full and large families a year later did not demonstrate any significant differences between the samples.

Thus we can conclude that the hardiness dynamics of children from full, single-parent, and large families differ. Adolescents from single-parent families demonstrate a further increase in hardiness, and those from full families show a decrease.

And finally, the students from large families demonstrate a similar level of hardiness in comparison to the students from full families.

In the fourth stage, we analyzed the results of the SZhO test. First, we saw that the teenagers' results are in the statistical norm. A one-way analysis of variance showed that girls, in general, get a higher score on the SZhO than boys ($F = 9.9$, $p < 0.01$). But we did not find any difference between teenagers from a full family and those from a single-parent family, nor was there a difference between teenagers from full families and those from large families. This is of great interest, as there are stronger correlations between hardiness and its attitudes and the scales of the SZhO test (Kuzmin, 2012); but in this situation we could not find them.

Discussion

We could not find many studies that set out to investigate how family composition affects hardiness. According to Khoshaba and Maddi (1999), it is not the mere fact of stressful circumstances (like the loss of mother or father, divorce, and so on) in early life that contributes to the development of personality hardiness, but rather the response of the family and the individual to such circumstances.

Also, according to the results of Mirzaei and Kadivarzare (2014), hardiness is determined by parenting styles (authoritarian first of all). We did not analyze the distinctive features of the response to the styles in single-parent families, but boys from single-parent families scored higher on such Hardiness Test scales as hardiness, control, and challenge. So, we can assume, after Khoshaba and Maddi (1999), that the situation in single-parent families pushes boys to “transcend the morass” (as Khoshaba and Maddi put it). Another possible explanation is that in single-families, as Khoshaba and Maddi suggested, parents attempt to convince the child that he or she has special abilities and talents that will lead to strength and achievement, whereas in full families the situation is different.

According to Khodarahimi and Ogletree (2011), larger family size is related to lower life satisfaction and special attention to emotions, where as family structure (including birth order) does not have a significant effect on hardiness. We found that hardiness of adolescents from large families is expressed less than in those from full families. We believe that this phenomenon may be connected with the following: Khodarahimi and Ogletree used a sample of subjects aged 11–19, but our subjects were only 16–17, and differences in how the hardiness of subjects from full and large families was expressed applied only to subjects of this age. Later, at ages 17–18, the differences disappeared. We conclude that this reflects a difference in the dynamics of hardiness.

Moreover, we found out that girls from large families in comparison to those from other families demonstrated a greater difference on such scales as hardiness, commitment, control, and challenge. Khodarahimi and Ogletree (2011) do not address this question. We suggest that the majority of subjects from large families who participated in the investigation were elder siblings, and hence received less attention from their parents, and that this fact influences their hardiness level during the period of adolescent crisis. Later, when this crisis was almost over, their hardiness became equalized with that of the students from full families, which had decreased by that time. On the contrary, the hardiness of subjects from one-parent families seems to be the basis of their way of coping. That is why it increases over time.

Conclusion

We conclude that the expressiveness of hardiness of adolescents from full, single-parent, and large families differs. Subjects from full families are less hardy than those from single-parent families, but more than those from large families. So the first hypothesis is partly confirmed.

The dynamics of hardiness of children from full, single-parent, and large families also differ. Adolescents from single-parent families demonstrate a further increase in hardiness, and students from full families show a decrease. This could be explained by their specific ways of surviving an adolescent crisis. And finally, teenagers from large families demonstrate a similar level of hardiness in comparison to students from full families. This could also be explained by their specific ways of surviving an adolescent crisis. Later, when this crisis was almost over, their hardiness became equalized with that of the students from full families, which had decreased by that time.

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Structural characteristics of the institutional environment for young children

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The research literature suggests that institutions for children left without parental care do not provide environments that adequately promote children's development, and that characteristics of orphanages should be considered as an environmental factor influencing developmental difficulties in children living in institutions and later in post-institutional families. This study aimed to analyze the structural characteristics of the caregiving environment in two St. Petersburg (RF) orphanages—baby homes for children from birth to 4–5 years of age (BH A and BH B), and the maintenance of the structural interventions that were implemented in BH A during 2000–05 (The St. Petersburg–USA Orphanage Research Team, 2008). Both institutions belong to the Ministry of Health and are managed under the same medical regulations, providing about the same quality of medical care and nutrition. The results of the study show that the number of children living in each ward (4 to 6 in BH A and 5 to 8 in BH B), and the child–caregiver ratio (2 to 3 for BH A and 2.5 to 4 for BH B) in the two baby homes are about the same, while BH A have fewer staff members who are assigned to the ward (6–8 vs. 9–14 in BH B). The ward assistant teachers in BH A are assigned as the primary caregivers, working 5 days a week (39 hrs) vs. about 25 hrs a week for assistant teachers in BH B. While living in the baby home, children in BH A are integrated by age and disability (vs. segregation by age and partial disability integration in BH B), and are assigned to one ward (meaning the same caregivers, peers, rooms, etc.), while in BH B the children change their ward when they reach a certain age or developmental milestone (number of wards children experienced $M(SD)=1.1(0.2)$ in BH A and $2.7(1.1)$ in BH B). Our results support the hypothesis that the structural characteristics of institutional environment in the two baby homes are different, and that in comparison with BH B, the structural characteristics of BH A show more caregiving stability and consistency. The results also show that the interventions implemented in BH A within the St. Petersburg–USA Orphanage Research Project were maintained for many years after the project was finished. The specific features of

an institutional caregiving environment should be taken into consideration in studies of the mental health and bio-behavioral development of children in institutions and post-institutional families.

Keywords: institutions, children, caregiving environment, stability, consistency

Introduction

The research literature suggests that institutions for children left without parental care do not provide environments that adequately promote children's development (McCall et al., 2011; Rutter et al., 2010; The St. Petersburg–USA Orphanage Research Team, 2008; van IJzendoorn et al., 2011; Zeanah et al., 2009). Structural deficiencies of institutional environments are characterized by large numbers of children per ward (from 9 to 16+), high child–caregiver ratios (6–8+), the practice of dividing children into groups (either by age or by disability status) and frequent transitions to new wards (Bakermans-Kranenburg et al., 2012). Often the quality of caregiving in these institutions is extremely low: Caregiver–child interactions are infrequent, limited to routine caretaking activities, delayed, and caregiver-directed rather than responsive to children's actions, and are conducted in an impersonal manner (Groark et al., 2013; Muhamedrahimov, 2000). In a study of orphans in the Greek Metera Babies Center (Vorra et al., 2003), infants spent 17.5 hours in bed, indicating that for a major part of the day they had little opportunity to interact with a caregiver. Observations of caregivers with children from birth to 3 months and 3 to 10 months of age once a week from 9:30 am to 12:30 pm—including routine caregiving and “free time”—over a 2-month period documented the minimum amount of caregiver–child interactions in one St. Petersburg (Russian Federation) orphanage for infants (Muhamedrahimov, 2000). Across these two age groups, caregivers initiated interactions with the children approximately 10% of the total available time (approximately 18 min from 9:30 am to 12:30 pm). They responded to children's initiations of social interaction less than 1% of the time (less than 2 min); children cried for approximately 11 min before a caregiver responded; there was essentially no talking during more than half the time the caregivers were engaged in routine caregiving; and on average an individual child interacted with a caregiver for any reason for only approximately 12.4 min during any 3-hr. period and nearly half of this was associated with feeding. The social-emotional environment of infants and young children in these orphanages was characterized by severe deficits in the sensitivity, responsivity, and stability of the caregiving environment, as well as the neglect and maltreatment of the children.

Overall, institutions can be differentiated according to the severity of deprivation. Certain institutions can be categorized as “globally depriving institutions” that do not provide children with adequate medical care, nutrition, or sanitation (Gunnar, 2001). Psycho-social conditions in such institutions are very poor, since children spend most of the time in their cribs, do not have enough stimulation, and one-to-one interaction with caregivers is very rare. In “social-emotionally depriving institutions,” children have adequate medical care and nutrition, but caregivers are business-like when performing routine caretaking activities and do not provide much interaction with children (Gunnar, 2001; The St. Petersburg–USA

Orphanage Research Team, 2008). According to the results of the quasi-experimental intervention study, the structural characteristics of institutions for infants and young children was shown to be critical for the positive development of children in orphanages. Specifically, the double intervention program was designed to provide structural changes (by assigning two primary caregivers to smaller age- and disability-integrated groups, terminating transitions of children to new wards, and establishing a "Family Hour" for primary caregivers to be with their children), coupled with staff training (emphasizing sensitive and responsive caregiver-child interactions); it showed better developmental outcomes for children as compared with the intervention program implementing staff training only (Muhamedrahimov et al., 2004; The St. Petersburg-USA Orphanage Research Team, 2008).

A considerable number of studies have shown that children reared in institutions are at substantial risk in various domains of functioning, including their physical, cognitive, and general behavioral development (Bakermans-Kranenburg et al., 2012; The St. Petersburg-USA Orphanage Research Team, 2008; van Ijzendoorn et al., 2011). Those with a substantial history of institutional care (IC) (~1-2 years) display a variety of long-term neurological, physical, cognitive, behavioral, and social-emotional difficulties (Nelson et al., 2011; Rutter et al., 2010). These adverse developmental outcomes in institutionalized children might be produced by other confounding risk factors, such as genetic or prenatal conditions, birth complications, or negative pre-orphanage experiences (Bakermans-Kranenburg et al., 2012; van Ijzendoorn et al., 2011). The literature cited above suggests that characteristics of institutions should be considered as an environmental factor influencing developmental difficulties in children living in institutions and later in post-institutional families. The aim of this work was to study the caregiving environments in St. Petersburg orphanages for infants and young children, including in the orphanage in which the intervention program (structural changes coupled with staff training) was implemented during 2000-05 (The St. Petersburg-USA Orphanage Research Team, 2008). The differences in the structural characteristics of these orphanages will be analyzed. It was assumed that the structural interventions implemented in one of the orphanages by the St. Petersburg-USA Orphanage Research Project were maintained by the orphanage personnel for many years after the project was finished, and that even those orphanages that belong to the same system of institutions would be different in their structural characteristics, namely in the stability and consistency of the institutional environment.

Method

Participants

Baby Homes. Two institutions (baby homes, BH) located in St. Petersburg, Russian Federation, for children approximately 0 to 4-5 years of age left without parental care, participated in this study. These institutions are administered by the Russian Federation Ministry of Health and the local district administration, and were selected because their directors (head pediatricians) were willing to participate in the study, and they were relatively good institutions, providing adequate medical care and nutrition. Children arrive at the BH at various ages, but mostly in the first few months of life, either directly from the hospital where they were born or another

hospital, or after spending a few months with their birth families. They were relinquished by their biological parents for a variety of reasons, including financial and behavioral inability to rear the child. Caregivers in the BH are all females with some training in health and education (The St. Petersburg–USA Orphanage Research Team, 2008).

In the first baby home (BH A), caregivers were trained in an intervention program by the St. Petersburg–USA Orphanage Research Project during 2000–05 (The St. Petersburg–USA Orphanage Research Team, 2008) to engage in sensitive and responsive interactions with children. Structural changes were also implemented in the institution, including a reduction in group size, the assignment of permanent primary caregivers to each group, age and disability integration of children, and no transitions of children to new wards. The second baby home (BH B) offers the same quality of medical care and nutrition for children as BH A, but for the staff and children of BH B the research project was a new experience; no intervention was provided and BH B had not been part of the St. Petersburg Orphanage Research Project.

Children. Environmental characteristics of the group of 119 children aged from birth to 5 years from the two baby homes (60 from BH A and 59 from BH B) were taken into consideration in the analysis of the general structural characteristics of each institutional environment. A group of 69 institutionalized children participated in the study of the number of wards and transitions that the children had experienced. Thirty-eight of them were from BH A (63.3% of the total number of 60 children at that baby home) and 3 from BH B (52.5% of the total number of 59 children in BH B at the beginning of the study). The children's ages ranged from 5 to 60 months [$M(SD) = 26.8(15.2)$], including 5 aged 60 months [$M(SD) = 30.9(16.6)$] in BH A and 5 aged 46 months [$M(SD) = 21.8(11.7)$] in BH B. In the total sample there were 38 boys and 31 girls (19/19 in BH A and 19/12 in BH B). Based on the baby homes' medical records, out of the total group of 69 children, 30 were characterized as typically developing (TD) (18 from BH A and 12 from BH B) and 39 were children with a special needs (SN) (20 and 19, respectively). Descriptive data for the different groups and subgroups of children from the two baby homes are presented in Table 1.

Table 1. Descriptive data on children from the two baby homes

Groups and Subgroups	BH A			BH B			BHs A & B		
	TD	SN	Total	TD	SN	Total	TD	SN	Total
N	18	20	38	12	19	31	30	39	69
Age range, months	5–57	8–60	5–60	6–34	5–46	5–46	5–57	5–60	5–60
Age $M(SD)$, months	26.1 (14.9)	35.3 (17.1)	30.9 (16.6)	19.4 (10.1)	23.3 (12.7)	21.8 (11.7)	23.4 (13.4)	29.4 (16.1)	26.8 (15.2)
Gender, n (boys/girls)	7/11	12/8	19/19	9/3	10/9	19/12	16/14	22/17	38/31

Note: TD - typically developing children; SN - children with a special needs

Assessments

Several structural components of the baby home environment were assessed to demonstrate differences in the caregiving stability/consistency for the children. Evaluation of the structural characteristics of the caregiving environment included the number of children in each baby home, the number of groups, group size, number of staff members working in the groups (assistant teachers, medical nurses, and nursery nurses), and an assignment of primary caregivers to each group, an implementation of age and disability integration of children in groups in contrast to the frequent transitioning of children between groups.

Assessment of transitions. A common practice in institutions is to have wards containing children of approximately the same age (e.g., infants, toddlers). Children are transitioned to older groups with new caregivers and older peers when they reach a certain age or developmental milestone (e.g., crawling, walking). In cases of infection, children also might be transferred for some period of time from the ward to a special medical treatment department at the baby home (the “isolation ward”) and/or from the baby home to a children’s hospital and back.

Procedure. In order to participate in the research project, an Institutional Agreement between each of the baby homes and St. Petersburg State University was drawn up and approved by both administrations. The baby home records were used to understand the staff employment and working schedules, as well as caregiver and children assignments. The project systematized the recording process by creating a set of checklists, which were tested, optimized, and implemented, and the data collection process was established.

Information about the structural characteristics of the baby home environment was extracted from official baby home documents, including employment and records on distribution of caregivers and children to groups for the period of September–December, 2014. Data on children’s age and disability status were based on the baby home’s medical records. The group records were used to determine whether children with different ages and disabilities were assigned to a group. The baby home kept records of children’s transitions to new wards, from wards to the isolation ward, and to hospitals and back. These records were used to calculate the number of transitions each child had experienced before the research project started. The project systematized the recording process by creating a checklist of transitions to be filled in for each child by the baby home pediatricians.

Results

General information on structural characteristics of each institutional environment. At the beginning of the study, BH B housed 59 and BH A housed 60 children from birth to 5 years of age, placed into 8 and 12 wards, respectively (see Table 2). The number of wards in BH B included the isolation medical ward which was also used for long-term housing, while the isolation ward in BH A was used for the short-term observation of newly arrived children and the treatment of sick children. For the period of observation (September–December 2014), the number of children living in each ward (group size) varied from 5 to 8 in BH B and from 4 to 6 in BH A. Children in BH B were assigned to different wards according to age; children

with severe disabilities lived for long periods of time in the isolation medical ward (children 0 to 5 years of age) and/or in the special ward for disabled children (from 1 to 5 years of age). At BH B, there are two wards for children aged 0 to 7 months, one for children aged 7 to 18 months, one for children aged 1.5 to 2.5 years, and two for children aged 2.5 to 4 years; there is no age integration. The last ward included typically developing children and children with disabilities. Children in BH B are transitioned to other wards with new caregivers and older peers when they reach a certain age or developmental milestone. All groups in BH A are integrated by age and disability and there are practically no transitions from one ward to another.

Routine care in both baby homes is provided by caregivers who work on the wards with the children. In both baby homes this includes medical nurses (MN) who work a 24-hr shift once every 4 days (4–5 MN per ward, 1 per shift; and in the BH B isolation medical ward there are 10 MN, 2 per shift), as well as assistant teachers. In BH B assistant teachers (AT) (3–4 per ward, 2 during the day with one working from 8 a.m. to 2 p.m. and the other from 2 p.m. to 8 p.m.) work in a shift for about 25 hrs a week; there are no ATs in the BH B isolation ward.

In each of the BH A wards, 2 ATs are assigned as primary caregivers (plus 1 AT in case of substitutions) working 5 days a week for 39 hrs a week (2 days for 7 hrs a day from 7:30 a.m. to 2:30 p.m., 2 days for 6 hrs a day from 2:30 p.m. to 8:30 p.m., and 1 day for 13 hrs from 7:30 a.m. to 8:30 p.m.). The nursery nurses are assigned to each group in BH B (2–5 per group, 1 during the day), while this position was eliminated in BH A. Depending on the group, the total number of caregivers who work with the children in each of the wards varies from 9 to 14 (4 during the day) in BH B, and from 6 to 8 (3 during the day) in BH A (see Table 2). Even when two caregivers are working on the ward, the child–caregiver ratio varies depending on the group, from 2.5 to 4 for BH B, and from 2 to 3 for BH A.

Table 2. Structural characteristics of institutional environment in two baby homes

Baby Home Characteristics		BH A	BH B
Number of children		60	59
Number of wards		12	8
Ward size		4–6	5–8
Number of staff members per ward (total / during the day)	assistant teachers	3–4 / 2	2–3 / 2
	medical nurses	4–5 / 1	4–5 / 1
	nursery nurses	2–5 / 1	No
	total staff in ward	9–14 / 4	6–8 / 3
Primary caregivers assigned		Yes	No
Age integration		Yes	No
Disability integration		Yes	Partly
Transition to new wards		No	Yes

Number of wards the children experienced. Comparisons revealed a significant difference in the number of wards to which children were assigned in BH A and in BH B for the total number of children [$\chi^2(4, N=69)=45.2, p<.001$], and for all subgroups: for typically developing children (TD) [$\chi^2(3, N=30)=19.4, p<.001$],

and for children with special needs (SN) [$\chi^2(4, N=39)=25.6, p<.001$] (see Table 3). Our results show that children in BH B were assigned to a greater number of wards [for different subgroups, number of wards $M(SD)=2.6(1.0)$ to $2.8(1.1)$] than children in BH A [$M(SD)=1.1(0.2)$].

Number of transitions the children experienced. Comparisons of the number of transitions children had experienced (including from one ward to another, from a ward to the isolation ward, from the baby home to a children's hospital and back) revealed a differentiation between BH A and BH B for the total group [$M(SD)=3.9(3.0)$ in BH B and $3.2(3.5)$ in BH A; $\chi^2(10, N=69)=16.0, p=.099$], mostly because of differences for typical children (TD) [$M(SD)=2.7(1.4)$ in BH B and $1.4(1.5)$ in BH A; $\chi^2(5, N=30)=10.7, p=.058$; Mann-Whitney $U=58, p=.035$], but no statistical differences for children with special needs (see Table 3).

Table 3. Number of wards and transitions in two baby homes

Groups	N of Wards $M(SD)$ (Min–Max)		χ^2 (df, N)	N of Transitions $M(SD)$ (Min–Max)		χ^2 (df, N)
	BH A	BH B		BH A	BH B	
	TD	1.1 (0.2) (1–2)	2.6 (1.0) (1–4)	19.4*** (3, 30)	1.4 (1.5) (0–5)	2.7 (1.4) (0–4)
SN	1.1 (0.2) (1–2)	2.8 (1.1) (1–5)	25.6*** (4, 39)	4.8 (4.1) (0–15)	4.7 (3.5) (0–14)	12.1 (10, 39)
Total	1.1 (0.2) (1–2)	2.7 (1.1) (1–5)	45.2*** (4, 69)	3.2 (3.5) (0–15)	3.9 (3.0) (0–14)	16.0+ (10, 69)

+ - $p<.10$; *** - $p<.001$

Discussion

The research literature suggests that institutions for children left without parental care do not provide environments that adequately promote children's development (McCall et al., 2011; Rutter et al., 2010; The St. Petersburg–USA Orphanage Research Team, 2008; van IJzendoorn et al., 2011; Zeanah et al., 2009), and that characteristics of orphanages should be considered as an environmental factor influencing developmental difficulties in children living in institutions and later in post-institutional families.

This study aimed to analyze the structural characteristics of the caregiving environment in two St. Petersburg (RF) orphanages for infants and young children (baby homes). Since both of them belong to the Ministry of Health and are managed under the same medical regulations, they are assumed to have the same quality of medical care and nutrition for children. We hypothesized that although both baby homes belong to the same system of institutions, they will be different in their structural characteristics, namely in the stability and consistency of the institutional environment.

The study results show that wards in BH A, in comparison with wards in BH B, have fewer staff members who are assigned to the ward (6–8 vs. 9–14), including during the day (3 vs. 4). The ward assistant teachers in BH A are assigned as the primary caregivers, working 5 days a week for 39 hrs a week (vs. about 25 hrs a week for AT in BH B); wards in BH A were integrated by age and disability (vs. segregation by age and partial disability integration in BH B); and there are virtually no transitions of children from one ward to another in BH A (vs. many transitions in BH B). While living in the baby home, children in BH A are assigned to only one ward (meaning the same caregivers, peers, rooms, etc.), while in BH B the children change their living ward when they reach a certain age or developmental milestone (on average 2.7 wards for the total group of children from BH B). During the observation period, the group of typically developing children from BH A experienced fewer transitions and changes in the caregiving environment (including transitions from the group to the isolation ward, to a children's hospital and back) than those from BH B.

The results support the hypothesis that the structural characteristics of the institutional environment in the two baby homes are different, and that in comparison with BH B, the structural characteristics of BH A show more stability and consistency. The interventions implemented in BH A by the St. Petersburg–USA Orphanage Research Project (reduction in group size, assignment of permanent primary caregivers to each group, age and disability integration of children, and no transitions of children to new wards; see The St. Petersburg–USA Orphanage Research Team, 2008) were maintained for many years after the project was finished. The second baby home (BH B), which offers the same quality of medical care and nutrition for children as BH A, but at which no intervention was provided, could be described as a “social-emotionally depriving institution” (Julian, 2013; Merz & McCall, 2010), where children experienced low stability and consistency of the caregiving environment, and caregivers do not provide children the opportunity to interact and form attachment relationships.

During the period of observations in the two baby homes, the number of children in each was about the same, and the range of group sizes was similar, yet the caregiving stability and consistency were better for children in BH A. The daytime child–caregiver ratios in the wards of both baby homes were within about the same range (from 2.5 to 4 in BH B, and 2 to 3 in BH A), and indeed could promote developmental benefits for children, since the literature relates smaller group size to quality of care (NICHD Early Child Care Research Network, 2000), yet without stable and consistent caregivers, even the high caregiver–child ratio does not guarantee the adequate behavioral development of the children (Bamba & Haight, 2007).

In recent years, the state policy of the Russian Federation on caring for children without parental care has been largely directed at keeping children in their birth families, placing children in different types of substitute families, and improving the quality of care in institutions for children who reside there. New regulations on improving institutions (Resolution of the Government of the RF No. 481, May 24, 2014, Moscow) were influenced by the intervention project in the St. Petersburg baby homes. The new policies require that living conditions in institutions should

be close to several aspects of the family environment in the intervention. Specifically, group size should not exceed 6 for children up to 4 years and 8 for children over 4 years; groups should consist of children of different ages and disability status; the number of caregivers per group should be limited; and children should not be routinely transferred to new groups. Results of the study show that changes in institutional structure are needed in order to improve the caregiving environment for children who still live there.

Conclusion

Although the baby homes of St. Petersburg (and the Russian Federation) are similar in number, age range, and the disability status of children, as well as in the number and structure of personnel, there may be substantial differences in the characteristics of their caregiving environments. Studies of the structure and quality of institutional environments suggest that the roots of developmental delays often seen in children with institutional experience are seeded in the quality of their early environments. Thus, improving these caregiving environments could encourage children's better mental and physical well-being. The specificity of the institutional environment should be taken into consideration in studies of the mental health and bio-behavioral development of children in institutions and post-institutional families.

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