

International Adoption Project

International Adoption Project

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Greetings from Prof. Gunnar

We are sending you this letter as a way of thanking you for participating, or being willing to participate, in research with the International Adoption Project. This letter is being sent to all of the parents who have joined our international adoption registry as well as parents who have participated in international adoption research with their birth children. We would like to thank all 3,300 of you for your willingness to participate in research. Unfortunately, due to funding restrictions, we may not be able to send a yearly newsletter next year. If you do not receive a similar letter next fall, please visit our website at: <http://education.umn.edu/icd/iap> for future results. You may also access past newsletters from our website.

Major Grant Awarded to Study Brain and Behavioral Development in Internationally Adopted Children

The National Institute of Mental Health has awarded the International Adoption Project a 5-year grant to study the neurobehavioral (brain-behavior) development of children adopted following periods of care in institutions and foster care. Two grants were actually given, one to Minnesota's IAP group headed by Megan Gunnar and one to Wisconsin's IAP group headed by Seth Pollak. The grants are identical and are designed to integrate the work of researchers at the Universities of Minnesota and Wisconsin so as not to duplicate effort but to efficiently advance our understanding of the effects of pre-adoption experiences on children's brain development in a coordinated fashion.

Seven studies will be funded by these grants. The focus of the work will be in three areas believed to be affected by pre-adoption experiences:

- attention problems
- problems in sensory and motor integration
- problems in regulating stress and emotions

Previous studies have found problems in these areas using parent and teacher report and global measures of cognitive functioning. However, multiple brain circuits are

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Growth & Development Study

By Dr. Anna Petryk, Dr. Dana Johnson, Dr. Maria Kroupina, & Dr. Bradley Miller, in collaboration with Dr. Megan Gunnar

The Department of Pediatrics at the University of Minnesota, in collaboration with the Institute of Child Development, started a new research project: "**Neuroendocrine Functions in Post-Institutionalized Children.**" Dr. Anna Petryk – pediatric endocrinologist, Department of Pediatric Endocrinology; Dr. Dana Johnson – pediatrician and director of the International Adoption Clinic, Department of Pediatrics; Dr. Maria Kroupina – child psychologist, Department of Pediatrics; and Dr. Bradley Miller – pediatric endocrinologist, Department of Pediatric Endocrinology, in collaboration with Dr. Megan Gunnar and her laboratory at the Institute of Child Development, are conducting this study.

The purpose of the research project is to look at how early high risk environments such as institutional care are related to physical growth and development of stress physiology in children. Children adopted internationally often experience a range of physical (food, clothing, medical care) and social (tactile contact, interaction) risk factors prior to adoption. Many of them also tend to exhibit significant problems with growth. According to our clinical experience, some of these children continue to exhibit growth retardation even many years after adoption. In this study, we are exploring the mechanisms of the effects of early experience on physical growth and brain development. The results of this study will help

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involved in each of these problem domains and little is known about which brain circuits may be responsible for the difficulties some internationally adopted children experience. Without adequate understanding of the specific brain systems affected by pre-adoption experiences, it is difficult to adequately diagnose and treat problems internationally adopted children may be having in these areas.

All of the children tested as part of this grant will be 8 through 11 years old. They will have been with their families for many years. Children adopted from depriving situations show very rapid recovery in the first years after adoption. In this grant, we did not want to catch them during this rapid transition period. Rather, we want to see what challenges remain after they have had time to use the resources of being with a loving family to get their development back on track. The kinds of tests that we can use with 8- through 11-year olds are also ones that have been used in imaging studies. This means that, at some point, researchers have had people perform these tests while their brains were being scanned in imaging devices like PET or MRI. This is extremely expensive, so we do not plan imaging studies until we have a better idea of which brain areas to target.

Three groups of 8- through 11-year olds will take part in each of the seven studies. None of the children will be asked to do more than one or two studies. The groups are: 1) children adopted early who have primarily been in foster care prior to adoption and 2) children adopted at 12 months or older who have primarily been in institutional care. We will also test 3) children born and raised in their birth families as a comparison group. Both boys and girls will be included, and we will try to test equal numbers of children from Asia, Russia/Eastern Europe, and Latin America/Caribbean in each study. All of the children will be asked to participate in an initial profile evaluation that will help us assign them to one of the seven follow-up studies. The visit for the second study will take place within six months of the profile evaluation. Two of the seven studies are already being conducted, and you can read about them in this newsletter.

Because the grant runs for 5 years, if you have a child who is now between 4- and 10-years old, you will probably be contacted about this study at some point. If you have friends who would like to join the registry so they can be contacted about this research, please contact us at 612-624-9322 or iap@umn.edu, and we will send you further information about joining our registry.

Growth & Development Study continued from front page

us, in the future, to identify children at risk for problems with their physical growth.

In this study, we will mainly focus on the effects of pre-adoption risk factors on: physical growth, the growth hormone system, the stress sensitive system, and development. Children will come to the International Adoption Clinic twice. The first visit (an initial evaluation) will occur within the first three weeks after arrival to the United States. The child will have a follow-up appointment six months later. Clinic visits include an evaluation for growth, development and physical status, as well as recommended laboratory screening tests. In addition to the normal laboratory screening tests, we will collect a small amount of additional blood for growth hormone determination. Before and after blood collection, we will collect the child's saliva to determine how they react to stress. Parents will also collect their child's saliva at home two times — one month and six months after adoption. This is an easy procedure and involves your child mouthing a cotton roll for a couple of minutes. Additional developmental assessments also are done at both clinic visits. This assessment will help us to follow the developmental changes in a child's language, social-emotional and cognitive skills over a six-month period.

The form for questions about or enrollment in the Growth and Development Study is available at: <http://www.peds.umn.edu/iac/research/growth.html>, or call Dr. Maria Kroupina at 612-624-6609.

Are International Adoptees at High-Risk for Vision & Hearing Problems?

By Lindsay M. Knauf, Sandra L. Iverson, & Dana E. Johnson

Background

Results of a survey on the health of 2,291 international adoptees whose adoptions were decreed in Minnesota during 1990-98 (International Adoption Project-IAP) revealed that vision and hearing problems, as well as the associated conditions of chronic ear infections and speech and language delays, were reported more frequently than almost any other health problem (Figure 1).

The present study was undertaken to:

- Confirm that international adoptees overall are at high risk for vision, hearing and speech/language disorders.
- Characterize the types and severity of hearing and vision problems.
- Identify particularly high-risk groups within this population.
- Determine whether families were following physician recommendations for hearing and vision screening.

Study Design

Of 188 children seen for post-arrival screening in 2001 at the International Adoption Clinic at the University of Minnesota (Clinic Study), parents of 100 children (52% female) were located during the fall of 2003. All families contacted agreed to participate in a brief telephone survey on vision, hearing, and speech and language problems encountered in their children since placement. Hearing and vision screening was recommended for all children at the time of the initial clinic visit. The Institutional Review Board of the University of Minnesota approved the survey. Children came from 14 countries (Figure 2).

Figure 1 Incidences of Selected Medical Issues from the International Adoption Project (n=2291)

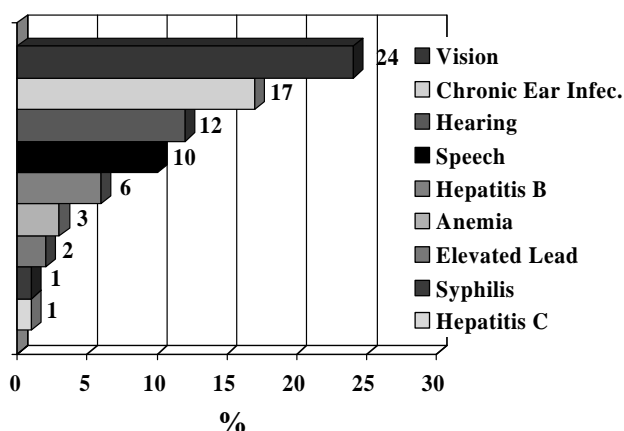
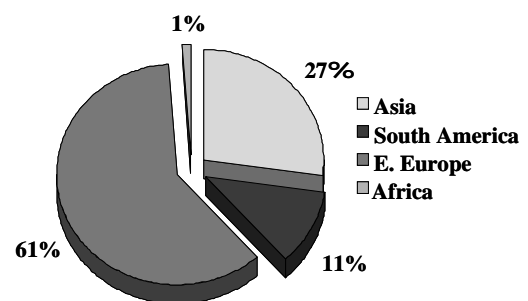


Figure 2 Clinic Study - Regions of Origin



Early Social Communication Skills Study

By Amanda Tarullo

Early social communication skills involve using nonverbal behaviors to share an experience with others, such as by pointing or making eye contact. These skills are the building blocks for subsequent language abilities and social skills. It is important for children to develop social communication abilities to prepare them for the challenges of learning language and social skills as they get older. Internationally adopted children may have experienced early social deprivation prior to their adoption, with limited opportunities to learn about social communication through interacting with adult caregivers. The goal of our research is to understand the development of social communication in internationally adopted children.

Currently, we are seeing 18- to 20-month-old infants who have been adopted from orphanages or foster care. We are also seeing a comparison group of 18- to 20-month-old infants who were born in Minnesota and are growing up in their biological families. Participating in the study involves one visit to our lab which takes about an hour and a half. In addition to early social communication skills, we also assess cognitive development, temperament, and patterns of brain activity (EEG). We are interested in how these other variables relate to early social communication. So far, 54 children have participated in this study. We plan to continue seeing children through next summer.

If you have an infant who is younger than 20 months old and you are interested in learning more about this study, please contact Amanda Tarullo at 612-624-6609 or taru0007@umn.edu.

PRE-ADOPTION EXPERIENCES AND STRESS BIOLOGY

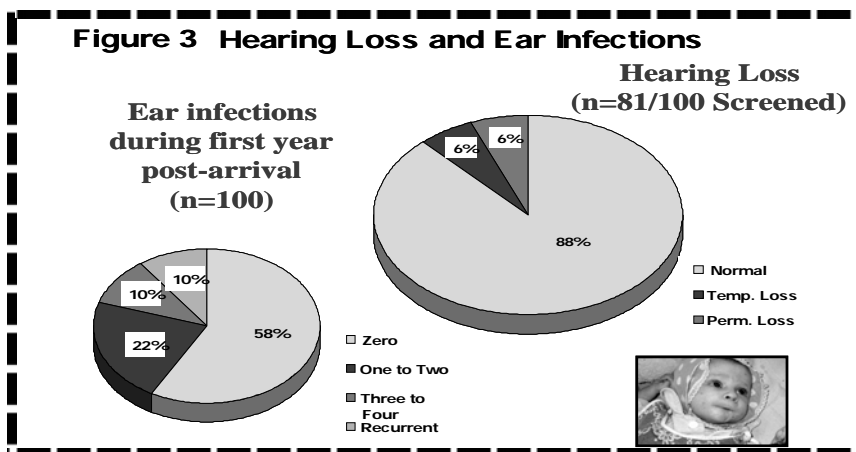
The IAP project has been examining whether the biology of stress is affected by the pre-adoption experiences of children adopted internationally. Up until now, we have only examined whether the resting state of one of the critical stress systems is altered in children who were exposed to intense, chronic deprivation early in life. To measure this stress hormone system, called the hypothalamic-pituitary-adrenocortical system, we take small samples of saliva and assay them for cortisol, the stress hormone. Our results, reported in last year's newsletter, show that children who have experienced severe early deprivation have higher resting levels of this hormone many years after adoption. That is, children who were extremely short in stature at adoption (suggesting severe growth retardation due to deprivation), children whose adoptive parents described their pre-adoption care as poor or very poor, and children cared for in institutions for prolonged periods prior to adoption, all showed slightly higher resting levels of this hormone, especially in the early morning hours. Growth retardation, poor care, and institutional care all overlapped (some children experienced all three), and these children were the most affected.

We now need to understand whether pre-adoption experiences affect how strongly children's bodies react to emotional challenge. To study this, as part of the new IAP grant, we are asking children who are 10- and 11-years old to perform a test called the Trier Social Stress Test. In this test, children are asked to imagine that they have been sent to the principal's office for something they DID NOT do. Their job is to tell the principal what really happened. They imagine what they could say and then act it out before a principal and teacher who are, of course, members of our research team. When the children run out of things to say, the principal simply asks them "Can you tell me more?" or "I don't understand. Can you explain that more?" They then do a very difficult subtraction task administered by the principal and teacher.

Vision & Hearing Problems continued from page 3

Results - Hearing

- Hearing was checked in 81% of children, 42% within the first six months post-placement. Of those screened, parents reported that 12.4% had hearing loss (Figure 3). Three children required hearing aids (2 bilateral). Length of institutional care was not associated with the incidence of hearing loss.
- During the first year post-placement, 42% of children had ear infections (Figure 3). Hearing loss was significantly more common in children (50% vs. 7%) with recurrent infections (>4 during the first year post-arrival). Ventilation tubes were placed in 13 children with chronic infections, all of whom experienced a decrease in infections. This study could not determine whether hearing improved post-tube placement.
- Temporary or permanent hearing loss had not been documented in any child prior to placement in their adoptive home.
- Analysis of the IAP data revealed an equal risk of hearing loss in boys and girls (11.2% vs. 11.9%) and similar ages of arrival for those with and without hearing loss. The percentage of children with diagnosed hearing loss did not increase with the length of placement (3-4 years = 9.4%, 5-9 years = 12.8%, > 9 years = 10.7%).



Results - Speech and Language

- Referral to a speech/language pathologist was reported for 26% of children. Of those children referred, problems encountered included articulation (35%) and general speech delays (61.5%).
- All children who were referred to a speech/language pathologist were screened for hearing problems; however, 40% of children with documented hearing loss had not been referred to a speech and language pathologist at the time of the interview.
- As expected, the percentage seeing a speech/language pathologist was high in children with hearing impairment (60%) (IAP = 31.5%). However, the rate of referral was significant (28%) in children with normal hearing, probably due to speech delays that are well described in institutionalized children.
- Analysis of the IAP data revealed that boys were more likely to be referred to a speech/language therapist (26% vs. 17.8%). Boys were slightly more likely to be diagnosed with significant speech/language delays (11.6% vs. 8.7%).

Join Your Friends

The IAP registry was established three years ago to encourage researchers to write more grants and work on more issues of concern to families who had adopted internationally. As of right now, 2400 families have registered over 3300 children to participate in future adoption research. It is important that we continue to gather families who have recently welcomed home a child so that our registry continues to represent the current international adoption community.

If you know any family whose child has just come home or has yet to join our registry, we would appreciate your making them aware of this registry. The families do not have to live in Minnesota, nor do they have to have adopted in Minnesota in order to be included in this registry. Any family with a child up to the age of 18 is welcome.

To learn more about this registry, please contact us at 612-624-9322 or email us at iap@umn.edu.

Social-Emotional Development of Children

In this study, we focused on the social-emotional development of 6- and 7-year old children. For example, we wanted to better understand children's reactions to an unfamiliar adult. As every parent knows, children vary greatly in their responses to unfamiliar people. Some children immediately feel comfortable talking and playing with others, while some children need time to feel comfortable around new people. In addition, we were interested in children's ability to understand emotions (e.g., identify another person's feelings in different situations) and regulate their behavior (e.g., wait patiently for a prize). The study included 80 children who were internationally adopted and 40 children who were born and raised with their birth families in Minnesota. Some internationally adopted children lived under challenging conditions before they were adopted, whereas others lived under less challenging conditions or were adopted at a very young age. Therefore, we were able to look at the impact that early experience has on later social-emotional development. We studied social behavior by interviewing parents and by observing children's behavior with an unfamiliar adult. We also played some games with the children that revealed their understanding of what others are feeling and thinking.

We have just started examining some of the information from this study. As described above, one of the main interests of this study was children's behavior with people with whom they were not familiar. Based on parent report and observation of the children, the adopted children were more likely to approach

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Results - Vision

- Vision was checked in 75% of children, of which 26.7% had abnormalities. Diagnoses included myopia 15%, hyperopia 30%, astigmatism 20%, strabismus 50%, and other 15%.
- Only 30% of children with documented vision problems were identified prior to placement in their adoptive home and only one child received treatment (glasses).
- Analysis of the IAP data revealed an equal risk of vision problems in boys and girls (24.9% vs. 23%). Children with diagnosed vision problems were older at the time of placement. The percentage of children with diagnosed vision abnormalities did increase with the length of placement (3-4 years = 13%, 5-9 years = 23.7%, > 9 years = 35.5%).

Conclusions

- International adoptees are clearly at high risk for vision and hearing abnormalities as well as speech and language problems.
- These diagnoses are unlikely to be made prior to placement, and virtually no treatment is provided in the country of origin.

Recommendations

- All international adoptees should be screened for vision and hearing problems within the first three months after arrival.
- Vision screening should be repeated prior to entering school.
- Due to high incidences of abnormalities, audiologists and ophthalmologists may be the most appropriate professionals to conduct these examinations.
- Speech/language referral should be strongly considered for any child with:
 - Abnormal hearing.
 - Risk factors for speech/language delays, such as prolonged institutionalization in early life (> 12 months).

PRE-ADOPTION EXPERIENCES AND STRESS BIOLOGY continued from page 4

This is a pretty challenging task, and most adults and children increase their stress hormone levels to support their ability to meet the challenge. Our main interest is how long it takes their bodies to go back to their normal resting state after the testing is over. We think that, during their early lives, children adjust to chronic stress by turning on their stress biology for longer stints with each challenge. This adaptation may have helped them survive when they were living in orphanages or other depriving conditions, but if we see this pattern now, once their lives are safer and more predictable, it may mean that they will be more vulnerable to stress than other children. If we find this, then it may be important for children with early adverse life histories to learn bio-feedback and other techniques to calm their stress biology.

Anytime we have to subject children to challenging experiences like this, we try hard to make sure that they find the session, on the whole, to be interesting and rewarding. After the session, the children earn a small gift as our thank you for their participation. They are told that it is all make believe (it is not a real principal; it's all pretend), and parents are allowed to watch the whole session on a live video-feed in a nearby room. Before seeing any internationally adopted children, we practiced on 20 birth children to make sure we had the right balance of challenge and fun. So far, as I write this, we have seen 4 internationally adopted children, and all is going well. The kids find it a bit scary but fun, like having to play a piano recital, do a math problem on the board at school, or perform in a school play.

Social-Emotional Development continued from page 6

and talk with an unfamiliar adult than children who had lived with their parents from birth. Although not true for all adopted children, this type of behavior was seen in children who lived in institutions (i.e., hospitals, baby homes, or orphanages) and in children who lived in foster care before adoption. People have speculated that this willingness to interact with unfamiliar people, sometimes called indiscriminate friendliness, is specific to post-institutionalized children. However, our preliminary results suggest that this isn't true, which raises questions about the cause of this type of behavior.

In a different task, the children were required to take another person's perspective and recognize that the person's thoughts may be different from their own. For example, in a story that was acted out using a doll, the doll placed an object in a certain location and then left the room. While the doll was gone, the object was moved to another location. The children were then asked where the doll would look for the object. The correct response (the original location) required the understanding that the doll would think it was still in the original location since the doll did not see it moved, even though the children saw it moved and knew the correct location. We found that nearly all of the children who had lived with their parents since birth could solve this problem correctly. Many of the adopted children could too, but some could not. In general, post-institutionalized children had more trouble with this task than did children who had lived with their parents all their lives.

We have planned additional analyses, but clearly more research is needed to better understand the social-emotional development of internationally adopted children. For more information, please contact Jackie Bruce at bruce009@umn.edu or Amanda Tarullo at taru0007@umn.edu.

PRE-ADOPTION EXPERIENCES AND ATTENTIONAL CONTROL

One critical aspect of attention involves using signals in the environment that tell us when NOT to respond. The children's game of "Simon Says" is a beautiful example. In "Simon Says," you are supposed to perform an action when it is preceded by "Simon Says" but not when it is not. Preschoolers love to play this game because it taps the development of brain circuits in the front of their brains (prefrontal circuits) that are just beginning to "come on line". By the time children are 8-years-old or more, "Simon Says" is too easy a game. Those brain circuits are now developed enough so that they don't make many mistakes.

There is a research game that is like "Simon Says," except it is more difficult. In this game, children are told to push a button every time a letter appears on a computer screen. They are to push the button for every letter except "X." The letters come at them very fast, and most are not "X." so they get used to pushing the button for every letter. When the X shows up, they have to send a strong message to their muscles not to push the button. This kind of a task is hard for children who have problems with attention. From studies using brain imaging, we know that very particular circuits running from an area of the brain called the dorsal lateral prefrontal cortex to a region called the anterior cingulate and then down through the brain to the striatal motor areas gets called on to inhibit responses to the "no go," or "X," stimulus. From studies measuring the brain's electrical activity during this task, we know that when a mistake is made, the brain waves show a very particular reaction that seems to be part of registering "oops, that was wrong, I'm not paying enough attention" and which results in us slowing down and paying more attention to avoid future mistakes.

The IAP group at Wisconsin is currently working on setting up a study that will be run both at the University of Wisconsin, Madison and here at the University of Minnesota as part of the new IAP grant. The study will use both the "letter" version of this "go/no go" task and a version that may tap more emotional regions of the brain. The emotional version will probably (we are still in the design phase) use faces with different emotional expressions (i.e., push the button when you see a happy face but not when you see an angry face). The reason for adding an emotional version of the task is to see if pre-adoption adversity has particularly marked effects on attention when an area of the brain that processes emotion, called the amygdala, has to be activated in order to accurately regulate attention. If so, then this might suggest that disturbances in the brain's emotional circuits are the source of some of the attention problems of internationally adopted children. We do not expect to be able to launch this study for several months. For right now, our friends in Wisconsin are testing children reared in their birth families to make sure that we have the right number of test trials, that the stimuli are effective, and that the children can tolerate the amount of time required by the protocol. After we make adjustments based on these "pilot" tests, we will train to perform the study at both research sites and will begin to recruit internationally adopted children to take part in the testing.

Cultural Socialization of Asian Adoptees

By Dr. Richard M. Lee

Approximately 50% of all children adopted internationally are from Asia, namely China and South Korea. By all accounts, these children are doing quite well in schools, careers, and relationships with family and friends. But as racial and ethnic minorities in the United States, Asian adoptees and their families may sometimes struggle with issues related to their ethnicity, race, and culture. In this study, we are interested in conducting a survey that asks parents and children about their family experiences, cultural upbringing, and personal well-being. The results of this research will be used to educate families and to inform the development of post-adoption programs and services.

If you are interested in learning more about this study or are interested in participating in this study, please contact Dr. Richard M. Lee at richlee@umn.edu or 612-625-6357 for further information.

PRE-ADOPTION EXPERIENCES AND PROBLEM SOLVING

In this study, which is also part of our 5-year grant to study brain development in internationally adopted children, 8- and 9-year olds will come to the University to take a battery of problem-solving tasks. The tasks are a part of two batteries of tests, one called the CANTAB and the other called the NEPSY. Combined, the two test batteries assess a variety of specific problem-solving abilities. These test batteries are different from IQ tests because they have been designed to tap very specific neural circuits, each involved in different aspects of attention, memory, and sensory-motor integration. The results of this study will help focus our later, more extensive studies of brain and behavioral development in this population of children.

The CANTAB/NEPSY study takes almost 2 hours from start to end. We take a lot of breaks, and children earn small gifts as they progress through the session. Parents are also involved in providing information about their children's behavior and past history. We have just completed 20 practice sessions on children reared in their birth families. These practice sessions helped us hone our skills in giving these tests and helped us to decide that we want to start by testing 8- and 9-year olds. As part of this study, we have decided to ask the children back after 2 years to determine whether areas we see as being particularly affected have continued to be affected or whether internationally adopted children with particular pre-adoption histories are beginning to show catch-up in these areas with more time in their families.

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International Adoption Project

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The International Adoption Project Fund

An opportunity to support our work through your tax deductible contribution

Since 2000, the University of Minnesota's International Adoption Project has been dedicated to providing answers and resources to families created through international adoption. Over the last four years, more than 3,000 parents have joined our registry – an amazing response – giving researchers opportunities to explore questions specific to families created through international adoption. Unfortunately, the funding that has been providing for our registry, research, and distribution of our results (such as the costs of this newsletter) is coming to an end. We will continue to write grants in the hopes of securing further funding; however, the costs to maintain our registry and distribute our results alone are \$10,000 per year and rising. It is extremely important to continue these services because they encourage research on topics specific to families created through international adoption, a group that has been neglected in many research fields. By contributing to the IAP fund, you can help support continuation of the registry, IAP research, and the distribution of our information to families, adoption professionals, researchers, and physicians.

Enclosed in this newsletter, you will find an envelope that allows you to support our efforts through your tax deductible contribution. Any amount that you are willing to give is greatly appreciated. Because the University Foundation is overseeing this account, 100% of your donation will go directly to our work and your contribution will be anonymous to IAP staff. We feel that providing this research information to families is worth the cost, and we hope you feel the same. Thank you for considering supporting our work through your tax deductible contribution. If you have any further questions about this fund, please feel free to contact us at 612-624-9322 or by email at iap@umn.edu.