CHILD STUDY CENTER ANNUAL REPORT // 2015-2016

MISSION

The Child Study Center (CSC) is dedicated to promoting children's development and well-being through the dynamic integration of research, teaching, and community engagement. We seek to bridge the gap between research and practice, maintaining a vibrant research agenda that expands understanding of typical and atypical development, and engaging in community partnerships that inform the translation of developmental science into effective programs and practices.

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MESSAGE FROM THE DIRECTOR

At the Child Study Center (CSC), faculty and students from psychology, education, human development, and other disciplines join with community partners to design and transform developmental science in order to improve outcomes for children and families. Our work is guided by four key principles: *collaboration* across disciplines and with community partners, *innovation* in research, and *education* for undergraduate and graduate students, all integrated with *action* to bridge the gap between research and practice. Driven by a dedicated commitment to improving outcomes for children, particularly those most vulnerable, the CSC supports collaborations with families, schools, and communities throughout the state and beyond, working together to find solutions to pressing problems and to promote practices that will reduce disparities and enhance healthy outcomes for all children.

A primary goal of the CSC is to facilitate faculty research and outreach efforts and help them access the resources and attain the external funding they need to move their work to the next level. To do so, the CSC provides a forum for regular collegial discussion and scholarship support in five key areas: pathways to competence (faculty lead: Dr. Pamela Cole), families at risk (faculty lead: Dr. Doug Teti), gene environment interactions (faculty leads: Dr. Jenae Neiderhiser and Dr. Bo Cleveland), human developmental neuroscience (faculty lead: Dr. Rick Gilmore), and school readiness (faculty lead: Dr. Karen Bierman). Central to the success of the CSC are the faculty affiliates who participate in these initiatives—a group that continues to grow.

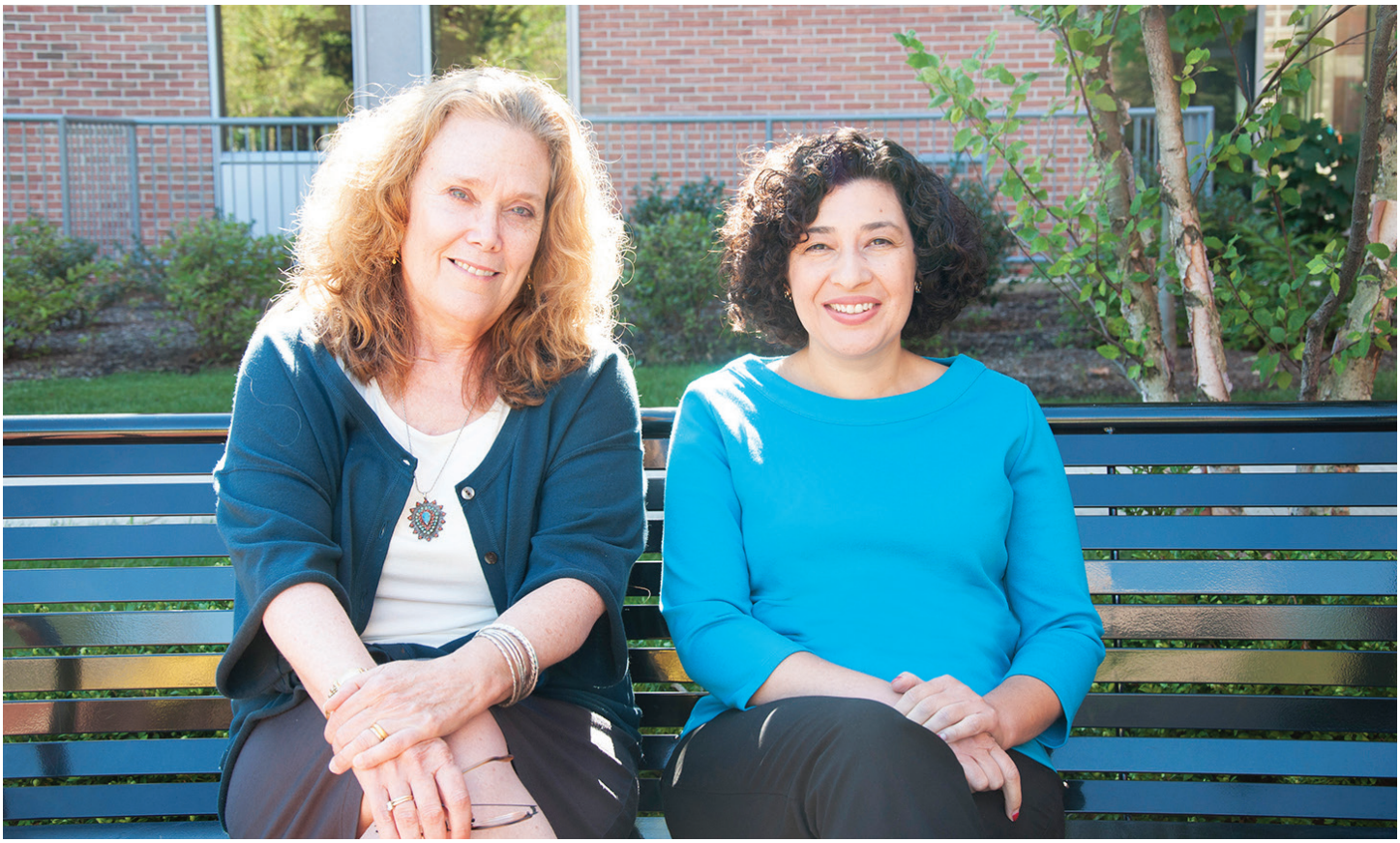
Over the past few years, the CSC has grown at a rate of about 10% per year, reaching a high in the 2014-15 academic year of 66 faculty affiliates. This steady growth reflects the increasing visibility of the CSC within the Penn State community, along with its efforts to reach out to faculty across departmental and disciplinary lines. Supported by the College of the Liberal Arts, the CSC is recognized as a Center of Excellence by Penn State's Children, Youth, and Families Consortium, and collaborates closely with the Prevention Research Center for the Promotion of Human Development (housed in the College of Health and Human Development) and with Penn State's Network for Child Protection and Well-Being. The CSC also houses an interdisciplinary training program funded by the U.S. Department of Education Institute of Education Sciences, which brings together faculty and predoctoral students across campus from six graduate programs.

This report shares CSC highlights from the 2014-2015 academic year, providing an overview of CSC activities, faculty and student accomplishments, and research-outreach activities.

Karen Bierman
Ph.D., Distinguished Professor of Psychology, and Director of the CSC

RESEARCH SPOTLIGHT

Developmental Neuroscience, Emotion Regulation, and Mental Health



Drs. Pamela Cole and Koraly Perez-Edgar

Mental health disorders are a leading cause of disability worldwide, and most begin in childhood and adolescence. CSC researchers are studying the development of emotional patterns that underlie the most common forms of mental health disorders. In particular they are examining how children learn to manage emotions in order to inform prevention and early intervention programs.

Managing anxiety.

The roots of anxiety disorders begin early; individual differences in fearfulness are evident in the first year of life. Some infants and toddlers are very wary when faced with unfamiliar people, places, or events. Although most outgrow this early wariness, some become increasingly fearful of social situations as they grow. They are painfully shy and find it hard to make friends or feel comfortable around others. As adults, their fears isolate and distress them, greatly reducing their capacity to enjoy productive lives.

In the Cognition Affect and Temperament (CAT) lab, Dr. Koraly Perez-Edgar and her team ask why some children follow this pathway to social anxiety while others do not. A central focus is on the development of attention biases. From birth, individuals are bombarded with sensory stimuli. To make sense of the world and focus on their goals, children learn to pay attention to some aspects of the environment and ignore others. Over time, children learn to willfully direct their attention, while monitoring for possible threat in the background. The process can go awry, however, if children are overly vigilant and detect threat too easily and too often. This heightened attention to threat increases feelings of anxiety and can lead to increasingly avoidant behaviors in a spiral that can lead to anxiety disorders.

Perez-Edgar and her colleagues are finding that these biased patterns of attention to threat emerge early—by 24 months of age. In their studies, they are tracking the development of attention biases and exploring interventions in older children that can reduce biases and thereby protect children against future anxiety disorders. Funded by the National Institutes of Health, Perez-Edgar's lab is using multiple resources and technologies at the CSC, including eye-tracking systems, brain imaging systems (EEG and MRI), and computer-based assessments.

Managing angry and sad feelings.

In contrast to fearful, shy children who are at risk for anxiety, other children have difficulty tolerating frustration and disappointment. For these children, a major challenge is learning to manage anger and sadness when things do not go their way. At the CSC, Dr. Pamela Cole and her team study how young children learn to tolerate these feelings. The goal is to help children manage these feelings effectively so that they achieve their personal goals but do so in socially acceptable ways. A recent study from Dr. Cole's lab followed children from 18 months to 5 years of age. Between the ages of 24 and 36 months, most children started using strategies to forestall feelings of frustration and reduce anger. At first, their efforts only worked for short periods of time, and were easily overwhelmed. But, two things helped toddlers become more effective at managing their feelings by age 4 years. One was their development of language skills, and the other was having parents who used feeling words (e.g., happy, mad) and talked with them about their feelings. In contrast, children who were still struggling with frequent anger outbursts and disruptive behaviors after age 4 were at risk for future adjustment difficulties.

> "The goal is to help children manage their feelings effectively."

For at-risk children, it appears especially important for parents to manage their own feelings effectively, rather than getting angry and yelling or threatening in response to child tantrums. Parents who remain calm in challenging situations cope with parenting challenges more effectively and also serve as good models, able to teach their vulnerable children how to manage strong feelings. Two recent grants from the National Institutes of Health are helping Cole and her team learn how children's brains react to parental anger and how parents influence children's anger management skills (for better or for worse). A key goal is to use this research to enhance early interventions designed to prevent disorder and promote family and child well-being.

OUTREACH SPOTLIGHT

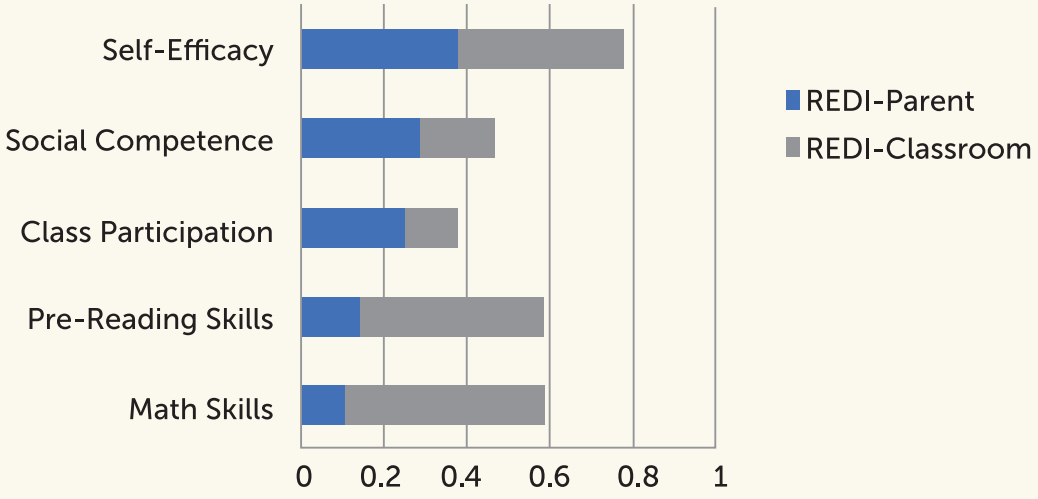
Closing the Achievement Gap with Early Childhood Initiatives

Of the 12 million preschoolers living in the United States, one in four is growing up in poverty. As a group, these children lag behind their more advantaged peers in school—beginning with poor school readiness at kindergarten entry and continuing with lower rates of high school graduation and college attendance. Early childhood programs have the potential to reduce this achievement gap, but many are unequipped to meet the needs of vulnerable children.

At the CSC, Dr. Karen Bierman and her colleagues have forged a strong partnership with Head Start and with other early childhood programs and policy-makers. A major focus of their work together is to use research to improve early learning programs and strengthen the training of those in the early learning workforce. With funding from the National Institutes of Health, they delivered and evaluated the Head Start-REDI (Research-based, Developmentally Informed) program in Pennsylvania Head Starts.

Head Start—REDI provided teachers with lesson plans, books, activities, and games to boost learning in areas of reading readiness and social skills. Children who received REDI relative to those in "usual practice" Head Start classrooms showed accelerated gains in vocabulary, reading readiness, emotional understanding, and social problem-solving skills. They were more engaged in learning and were less aggressive with peers. In a second study, parents were given REDI materials to use at home. Children who received the REDI parent program with the classroom program showed enhanced reading skills in kindergarten, higher levels of self-directed learning, improved social competence, and better academic performance.

REDI Effects in Second Grade: Classroom and Parent Programs



Three years after preschool, when children were in second grade, children who received REDI were doing better than those who received "usual practice" Head Start in academic and social-emotional areas of adjustment.

THE NEED FOR IMPROVED EARLY INTERVENTION

3 MILLION
preschoolers age 3-5
are growing up in poverty
in the United States

A majority of these children (75%) participate in early childhood programs, but many of these programs are unprepared to meet their needs. In the U.S., public programs suspend 5,000 preschoolers a year. A major focus of the CSC school readiness team is to use research to improve early learning programs and strengthen the training of those in the early learning workforce.

Researchers at the CSC are following children who received REDI as they move through elementary school and into middle school. So far, sustained gains are evident through elementary school. With additional funding from the National Institutes of Health, Bierman's team is partnering with Penn State's Cooperative Extension to deliver REDI widely through their online professional development program (Better Kid Care).

School readiness faculty are also working on a new program funded by a generous gift from the Lippin Family Fund. This program will deliver early learning materials online to preschool teachers and parents. Learning activities will promote social-emotional skills and moral and ethical learning, as well as teaching early reading and math skills.

CSC researchers working on these projects include (alphabetically) Karen Bierman, Celene Domitrovich, Scott Gest, Sukhdeep Gill, Mark Greenberg, Cristin Hall, Damon Jones, Claudia Mincemoyer, Robert Nix, and Janet Welsh.

CSC RESEARCH HIGHLIGHTS

Video gaming as an intervention to improve social skills in autistic kids

One of the earliest signs of autism is a lack of eye contact with other people in the first few years of life. Eye contact is a basic human behavior, and is needed for effective social interaction and communication. With funding from the Center from Online Innovation in Learning here at Penn State University, Drs. Suzy Scherf and Elisabeth Whyte are designing an immersive, highly engaging computer game that teaches adolescents with autism to attend to the eyes in faces of animated characters. Players discover how to use information about where the characters are looking to guide their own behavior in the game. The game helps adolescents with autism learn how to use the important social cues and information conveyed by other's eyes. The goal is to improve the way the adolescents pay attention to eyes in people's faces outside of the context of the game, and to improve their understanding of what people are looking at in their environment. Ultimately, the long-term hope is that the game could help alleviate some of the social symptoms of autism and help people with autism function in a more independent way.

Exploring the ways children's social anxieties may arise

Anxiety is one of the most common disorders in children and adolescents. At the CSC, Dr. Kristin Buss is following a group of children who were very fearful as toddlers. Buss and her team hope to better understand why some of these children develop anxiety disorders and others don't, and how to prevent poor outcomes. Buss is focusing on child factors that might increase risk, including being very fearful, being shy, and feeling uncomfortable or wary in social situations. To identify these factors early, Buss watches toddlers react to a series of novel situations in the laboratory. She has found that children who are fearful in many situations, even those with low levels of threat, are especially likely to be shy and withdrawn when they enter preschool and kindergarten. Children who are shy and withdrawn with unfamiliar peers are also more likely than others to experience social anxiety in early childhood. Buss and her team are also working with older children and adolescents who feel anxious in social situations. They are looking for biological factors that may increase risk for some children, and parenting styles that may shape fearful children's development. They found that some mothers view their fearful children as vulnerable and, as a result, become overprotective in ways that increase rather than decrease fearful and anxious behavior in their children.

Transmission of depression across generations

New research led by Dr. Jenae Neiderhiser at the CSC is examining how depression and anxiety may be transmitted across generations. In one study, Neiderhiser and her team compared identical and fraternal twins in order to understand how genetics might contribute to anxiety or depression in ways that are distinct from parenting and family influences. They found only a little evidence for genetic influence, whereas parenting and family experiences accounted

for most of the transmission of problems from parents to their children. In a second study, they included adopted children who were genetically unrelated to their adoptive parents. In this study, problems experienced by the adopted children were influenced by depression in their birth mothers; adoptive parents who were challenged by these child problems showed increases in depression over time. In this case, the influence went from the child's problem behaviors (which had genetic roots) to the adoptive parent's mental health. Both of these studies indicate that intergenerational transmission of anxiety and depression is complex and bidirectional. They also highlight how specialized research designs can help to clarify how children and parents influence one another over time. This understanding is important in order to refine and improve family interventions that support mothers struggling with depression, and to promote positive mental health across generations.

At the end of the 2014-2015 academic year, there were a total of 26 externally funded grants supported by the CSC, 21 of which are administered in the College of the Liberal Arts. This success reflects the talents and hard work of our faculty investigative teams, along with the outstanding peer support and senior mentoring our initiative leaders provide to our faculty.

Drs. Jenae Neiderhiser, Suzy Scherf, and Kristin Buss

MEET *Professor* MARTHA WADSWORTH

CSC FACULTY MEMBER

For Dr. Martha Wadsworth, becoming an Associate Professor in Child Clinical Psychology was a way to reach a much broader goal—social justice. As an undergraduate student at the University of Vermont, Wadsworth worked with George Albee, a pioneer in the field of community psychology whose groundbreaking research in the 1950s and 1960s demonstrated that societal factors such as poverty and racism affected the development of mental illness. Working with Dr. Albee, the idea of social injustice and inequality and their roles in causing psychopathology inspired Wadsworth.

Over the course of graduate school, Wadsworth honed in on socioeconomic inequality as the source of many problems for families. As a first generation college student herself, understanding that sort of risk was close to her heart. Her dissertation examined the types of stress that families living in poverty experience, how they cope with that stress, and how their stress and coping processes affect their experiences and mental health.

When Wadsworth took her first job at the University of Denver, she began to develop and evaluate interventions that might make a difference for families living in poverty. Wadsworth took a strengths-based approach, focusing on strategies parents could use to buffer themselves and their children from the negative effects of stress associated with poverty. She began to work with Latino families in the Denver area, intrigued by the cultural and religious strengths that characterized the Latino community.

After Wadsworth came to Penn State University in 2012, she began to work with families in the Harrisburg area, where there is a large Latino population. Her current intervention, BASICS, focuses on building coping skills among adolescents living in highly stressful circumstances, and empowering them to make a difference in their communities. The goal of the intervention is to strengthen coping mechanisms by teaching youth coping skills to use to manage everyday stress. In addition, the program teaches youth to join together and helps them to get involved in community improvement. When youth face violence, victimization and other more severe stressors, it helps if they feel that they are a part of a group and that they can act in ways that will improve their situation. Wadsworth's intervention includes a community action project designed and managed by the youth themselves. One group turned a vacant lot into a park. Another group partnered with a local artist to create a mural. At the youth's direction, the artist painted a school of fish. The youth wanted to send the message they had learned—that sometimes you can't do it alone, sometimes it takes a school of fish to accomplish your goals.

PACT

Parents And Children Together (PACT), a Child Study Center initiative, is a collaboration between Penn State researchers and community leaders in Harrisburg, PA. Their goal is to promote the health and well-being of children, youth, and families from diverse backgrounds. PACT helps Penn State researchers, along with community members and organizations in the Harrisburg community, to work together to achieve these goals using culturally sensitive and community focused research projects.

STUDENT SPOTLIGHT

ALEXANDER WEIGARD

The Child Study Center has many exceptional graduate students, and amongst them Alexander Weigard is a stand out. Alex is a fourth year student in the Clinical Psychology doctoral program specializing in neuroscience. Under the mentorship of Dr. Cynthia Huang-Pollock, Associate Professor of Psychology, Alex is researching learning and memory in children with ADHD, specifically examining their response times. The goal is to better understand the areas of the brain involved in attention control and learning and to document how things go awry with ADHD, in order to plan interventions that might reduce the difficulties that children with ADHD have in school settings and with learning tasks.

THE STRUMPF SCHOLAR AWARD

The Strumpf Scholar Award recognizes outstanding performance and excellence in graduate studies in areas of research aligned with the Child Study Center. Students who receive the Strumpf Scholar Award show innovation and promise in their own research, often have multiple lines of research, and have begun the process of sharing this work with the child psychology research community via presentations and often publications. We are grateful for the Linda Brodsky Strumpf Liberal Arts Centennial Graduate Endowment, which provides funds to support graduate students in the Department of Psychology's Child Study Center.

Alex grew up in Lancaster, PA. As a high school student, he read books by Dr. Oliver Sacks, describing how different neurological conditions can affect one's experiences and perceptions, and his interest in psychology was born. As an undergraduate student at Temple University, Alex worked on developmental psychology research examining teen decision-making, and became intrigued by the ways in which the research could inform interventions to help teens make more thoughtful and less risky decisions.

After receiving his B.A. in Psychology from Temple University, summa cum laude, with a minor in cognitive neuroscience, Alex sought a graduate program that combined training in clinical psychology with neuroscience research. Because of the fascinating research going on here at the CSC, Alex decided that Penn State would be the best fit for him. "Penn State offers a unique opportunity for collaboration across departments," says Alex. The opportunities for interdisciplinary collaboration and application of neuroscience research to clinical problems for children and adolescents were unique to Penn State, and offered the opportunity for cutting-edge training. Alex also felt that the CSC had impressive facilities and structures in place to support research with children.

As a recent recipient of the CSC's Strumpf Scholar Award, Alex will soon travel to Australia for a month of intensive study with two cognitive scientists highly regarded for their work on computational models of response time that allow differences in underlying brain processes to be estimated from response time data. Alex is grateful for the opportunity to train with these scientists, supported by the Strumpf award. And while in Australia, Alex also hopes to do a little surfing!

In the future, after completing his Ph.D. in child-clinical psychology, Alex plans to continue his research, helping to bridge the gap between our understanding of the neurological basis of ADHD and the design of early interventions for children affected by this disorder.

LEARNING DIFFERENCES AND ADHD

Dr. Cynthia Huang-Pollock and her team are studying the ways that children with ADHD learn, to better understand the challenges these children face in social and academic settings. ADHD is a risk factor for academic underachievement, and many children with ADHD struggle to make friends and to get along well with their classmates. As adults, children with ADHD are more likely than their peers to engage in risky behaviors, have driving accidents, develop substance abuse problems, and face long-term under-employment. Although existing interventions help, the benefits are often short term and do not off-set the long-term risks. Huang-Pollock and her students are focused on discovering the learning differences in ADHD, hoping that new insights will help them design more effective early interventions.

CSC RESEARCH GRANTS

A prominent strategic goal for the CSC is to strengthen and expand the CSC portfolio of significant, innovative, and externally-funded research that addresses critical issues in child, adolescent, and family development and well-being. In this past year, the CSC had a banner year for new external funding—our best year ever in the history of the center. In addition to 14 continuing research grants (12 administered in the College of the Liberal Arts), 11 new research grants were funded this year (7 administered in the College of the Liberal Arts).

Promoting School Readiness in Child Care Centers

Bierman, Karen L
Eunice Kennedy Shriver National Institute of Child Health and Human Development
R01 HD079410-01A1

Total Award $3,003,512 Award date: 3/25/2015
Period of Performance: 2/20/2015-1/31/2020

Physiology of Coping in Rural Low-Income Preadolescents: *An Experimental Approach*

Wadsworth, Martha E
Eunice Kennedy Shriver National Institute of Child Health and Human Development
R21 HD078753-02

Total Award $390,310 Award date: 7/22/2014
Period of Performance: 7/1/14-6/30/16

Children's Neural Processing of the Emotional Environment: *Angry Voices*

Cole, Pamela M
National Institute of Mental Health
R21 MH104547-01A1

Total Award $410,098 Award date: 5/25/2015
Period of Peformance: 5/15/15-3/31/17

Head Start REDI Classroom and Home Visiting Programs: *Long-Term Follow-up*

Bierman, Karen L
Eunice Kennedy Shriver National Institute of Child Health and Human Development
RO1 HD046064-11A1

Total Award $2,907,183 Award date: 9/18/2014
Period of Performance: 9/1/14-8/31/15

Patterns of Attention to Threat Linked with Negative Reactivity in Infancy

Perez-Edgar, Koraly
National Institute of Mental Health
R21 MH103627-01

Total Award $382,670 Award date: 8/25/2014
Period of Performance: 8/15/14-6/30/16

Training Interdisciplinary Educational Scientists (TIES) Program

Bierman, Karen L
U.S. Department of Education
R305B150033

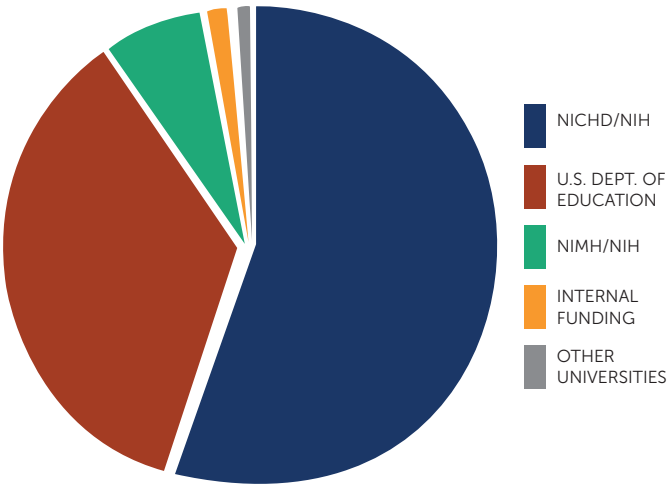
Total Award $3,989,554 Award date: 6/24/2015
Period of Performance: 8/1/15-7/31/16

Family and Peer Processes and G-E Interplay in Middle School: *An Adoption Study*

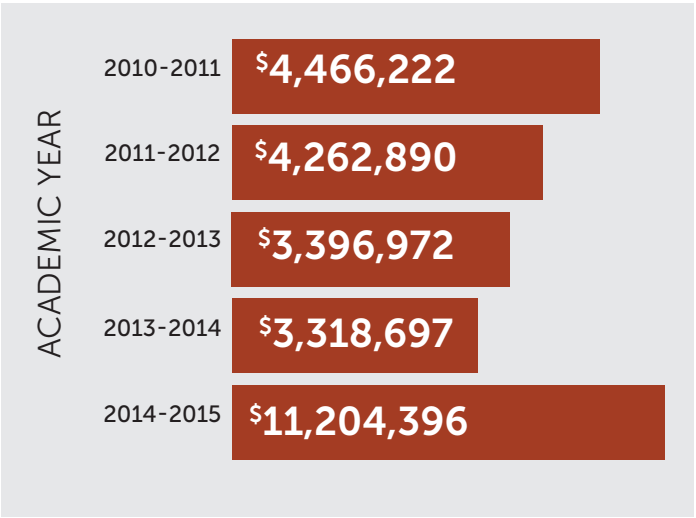
Neiderhiser, Jenae M
University of Oregon
215440A

Total Award $27,836 Award date: 9/1/2014
Period of Performance: 9/1/14-8/31/15

THE DISTRIBUTION OF 2014/2015 AWARDS BY SPONSOR

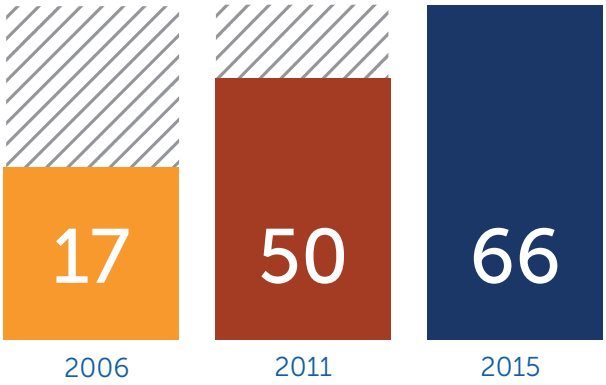


CSC FUNDING INCREASES 2010-2015



$11,204,396

Total amount of research funding in 2014-2015



Increase of FACULTY AFFILIATES

The CSC would like to recognize the gifts provided by Lois Bloom, Robert and Ruth Faris, Dick Hayes, Arnold and Bette Hoffman, the Lippin Family Fund, the McCourtneys, Richard and Susan Sokolov, and Linda and Jonathan Strumpf. These gifts provide invaluable support, for which we extend our sincerest thanks.

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The CSC benefits extensively from the gifts provided by Lois Bloom, Robert and Ruth Faris, Dick Hayes, Arnold and Bette Hoffman, the Lippin Family Fund, the McCourtneys, Richard and Susan Sokolov, and Linda and Jonathan Strumpf, and we are indebted to them for their support.

With the invaluable support of our donors and funders as well as our partners at Penn State and in the community, the CSC seeks to leverage the deep intellectual resources and the research and training capacity of Penn State in order to enhance understanding and identify solutions, thereby improving the quality of developmental support available to children and promoting positive educational, health, and mental health outcomes. We look forward to seeing where the next year takes us in achieving these goals.