Training Graduate-Level Pediatric Psychology Researchers at Case Western Reserve University: Meeting the Challenges of the New Millennium

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Objective To describe the challenges in training graduate-level pediatric psychology researchers for successful careers and to discuss solutions. Methods We reviewed experiences in training graduate students at Case Western Reserve University to identify key challenges in research training and potential strategies to meet them. Results We identified the following key challenges: stimulating graduate students’ career interest in pediatric psychology research; teaching students about the pragmatic challenges of conducting research in pediatric settings, specialized research design, and data analytic issues; helping students to develop essential research skills; developing opportunities for student research-related collaborations; helping students develop professional identities as researchers; and developing and supporting their research careers beyond graduate school. Conclusions Useful strategies for meeting these challenges include involving an interdisciplinary faculty in research training; developing specialized training methods that focus on critical research skills such as writing and data analysis; peer support; and involvement with multiple mentors who are successful researchers. Pediatric psychologists should also develop opportunities for the next generation of researchers by facilitating research job options and leadership opportunities.

Key words research training; mentoring; pediatric psychology.

Research, a core activity of pediatric psychologists, spans a wide spectrum of topics and populations (Roberts, 1995). Surveys have documented that pediatric psychologists devote a significant percentage of their professional time to research and value it highly (Drotar, Sturm, Eckerle, & White, 1993). Moreover, research is critical to the continued development of the field of pediatric psychology (Drotar, 1997). Research advances form the basis for practice and teaching. One example is the series on empirically supported treatments published by the Journal of Pediatric Psychology.

The professional advancement of pediatric psychologists in academic settings also depends on the quantity and quality of their research and scholarly accomplishments. Psychologists who achieve success and leadership roles in these settings are generally accomplished researchers. Moreover, research in pediatric psychology, especially interdisciplinary research, is important to public health because it can extend scientific knowledge in ways that can significantly affect the health of children and families (National Academy of Science, 1994; National Advisory Mental Health Council, 1999). Finally, the future research agenda for pediatric psychology involves the need to address unanswered questions. What are the most effective interventions for children with behavioral problems in primary care? What are the most effective interventions to promote adherence to treatment and illness management in pediatric chronic illness? What are effective strategies for prevention in important public health problems—i.e., injury, violence, obesity? What are the most effective strategies to assess relevant health and mental health outcomes? What are the primary risk and protective factors that underlie the psychological and health outcomes of pediatric populations?
For these reasons, training issues (Brown & Roberts, 2000), including training the next generation of researchers, have been identified as primary challenges for the future of pediatric psychology (Drotar, 1993, 1994), as well as for other disciplines (Center for Advancement of Health, 1999). Consequently, we need to identify the critical issues involved in training researchers, the obstacles to such training, and research training models that will best equip future pediatric psychologist researchers for successful careers.

Several authors have described the content of graduate, internship, and postdoctoral programs in pediatric psychology (La Greca, Stone, Drotar, & Maddux, 1988; La Greca, Stone, & Swales, 1989; Routh & La Greca, 1990) and identified training programs whose graduates have frequently joined the Society of Pediatric Psychology (SPP; Routh, 1988). Yet, to our knowledge, no previous reports have articulated the specific challenges in training graduate students to conduct research in pediatric psychology or have made specific recommendations to enhance the quality and impact of such training. A task force of the SPP has recently completed a comprehensive set of recommendations for training in pediatric psychology, but these do not focus specifically on graduate research training (Spirito et al., this issue).

The need for such a description also derives from several other sources. These include the highly specialized nature and demands of psychological research in pediatric settings and potential future constraints on the career development of pediatric psychology researchers. For example, research with pediatric populations requires pediatric psychologists to collaborate with physicians and other professionals and manage significant setting-based constraints that influence study design and data collection (Drotar, 1989, 2000b). Research in pediatric psychology also requires specialized knowledge and experience with interdisciplinary collaboration as well as a range of methodologies (Drotar, 1994, 2000a), including intervention (Brown & Roberts, 2000; Drotar, 1997; Roberts, 1988) and prevention research (Roberts, 1991).

Beyond their need to learn specialized methodologies, the pediatric psychology researchers of the future need to learn to manage threats to their career development. For example, pediatric psychologists in academic medical settings face increasing pressures to support their own salaries and research activities (Drotar et al., 1993; Williams & Kohout, 1999). To develop and sustain their careers in any employment setting, the pediatric psychology researchers of the future need complex skills to sustain their scholarly productivity, including the ability to publish; to conduct collaborative, interdisciplinary research; and to obtain and successfully manage research grants (Brown, 2000; Drotar, 2000a).

Despite its value, such training is by no means routine in graduate training programs in pediatric psychology. In 1990, Routh and La Greca found that only five universities of those surveyed had any specialized graduate training tracks in pediatric psychology. It was not clear which, if any, of these programs had specialized research training tracks in pediatric psychology.

Published writings on the professional development of pediatric psychologists have focused on clinical or professional training and have been silent about critical issues and potential options for the content and process of graduate research training in this field. To address this need, this article defines key challenges in training graduate students to conduct research with pediatric populations, describes how the graduate training psychology program in pediatric psychology at Case Western Reserve University (CWRU) has developed ways to meet these challenges, and considers general implications for training graduate researchers in pediatric psychology to achieve success in the new millennium.

**Description of the Evolution and Current Context of the Training Program at CWRU**

This description of challenges is based mostly on our experience in research training in one university-based program with close ties to a large academic pediatric setting and a track record of funding for research training (Drotar, 1998). Nevertheless, this program evolved slowly in incremental steps. We briefly describe the setting of the program.

The pediatric psychology training program at CWRU creates scientist-practitioners and provides an organized training sequence for students who have identified a career interest in pediatric populations. Pediatric psychology is a specialized track within the child clinical psychology program, which includes six students at any time (see Drotar, 1998, for more detail). The program began in 1972 when the senior author took a position as a psychologist in a university-affiliated pediatric hospital, Rainbow Babies and Children's Hospital. Initial training efforts began with undergraduates who volunteered to participate as research assistants on projects and then graduate students who observed case conferences, consultation, and clinical work in the setting, and then completed a year-long clinical placement in the pediatric hospital. Graduate research training began with students doing master's or dissertation research projects with pediatric populations starting in 1976 and continuing sporadically until 1987, when an institu-
tional research training grant in pediatric psychology was
awarded to CWRU. This provided funds, tuition stipends,
and research-related costs for students \((n = 4)\) and facil-
tated the recruitment and program development. The pro-
gram director's (Drotar) involvement within the depart-
ment also evolved from peripheral adjunct faculty status
to a faculty member who chairs dissertations, participates
in departmental planning, and votes on relevant decisions.

**Defining Features of the Research Training Program in Pediatric Psychology at CWRU**

The definition of pediatric psychology that guides this
training program broadly focuses on research and prac-
tice with pediatric populations in medical settings as well
as the health, including prevention-based care, of chil-
dren outside of medical settings (Roberts & McNeal,
1995). In accord with this definition, students have ex-
periences in a range of hospital and community settings
other than Rainbow Babies and Children's Hospital, in-
cluding experience in primary care. Students in the pe-
diatric psychology track do more clinical training in pe-
diatric settings and also have opportunities for additional
research-related experiences with faculty (psychologists
and pediatricians) in the department of pediatrics. In ad-
instruction, students in the pediatric psychology program have
the following didactic experiences: the pediatric psychol-
ogy seminar, ongoing throughout the course of the stu-
dents’ training, includes topics in specialized research
methodology, consultation in pediatrics, and also regu-
larly involves pediatric faculty as well as faculty from the
university as guest lecturers; the writer's workshop; and
data-analytic seminars (Drotar, 2000c). These seminars
are open to (but not required of) students in the clinical
child psychology program.

**Seven Key Challenges in Training Researchers in Pediatric Psychology**

Our collective experience as students and mentors who
train graduate student researchers in pediatric psychol-
ology has led us to identify seven key challenges:

1. stimulating students’ career interest in pediatric
psychology research;
2. teaching graduate students about research-related
 collaboration, medical settings, and pediatric
populations;
3. training in specialized research design and
data-analytic methods relevant to pediatric popu-
lations;
4. developing opportunities for graduate student–
initiated research and collaborations in pediatric
settings;
5. helping graduate students to develop critical re-
search skills;
6. developing the professional identities of graduate
students as pediatric psychology researchers; and
7. sustaining and supporting students’ research ca-
reers beyond graduate school.

**Stimulating Students’ Career Interest in Pediatric Psychology Research**

One of the primary challenges in training researchers in
pediatric psychology is attracting talented students. Op-
opportunities for undergraduates to learn about pediatric
psychology are especially important because this field is
not routinely represented in departments of psychology,
either in undergraduate courses or in the research interests
of faculty who help shape the career interests of under-
graduates.

How can pediatric psychologists meet the challenge of
making their research known to undergraduates? We have
used a number of strategies to meet this challenge, such as
guest lectures to undergraduates on relevant pediatric psy-
chology topics, a course focusing on the needs of the hos-
pitalized child, independent study research, volunteer ex-
periences, and paid work on faculty or graduate student
research. Graduate students excited about their own re-
search are among the best ambassadors to attract others
into the field of pediatric psychology. Graduate students
specializing in pediatric psychology can serve as mentors
for undergraduate students by giving seminars on topics
such as stress and coping, psychological aspects of chronic
illness, and by providing opportunities for undergradu-
ates to participate in their research. These experiences
have been well received by undergraduates and also pro-
vide important opportunities for graduate students to
supervise the work of others (Drotar, 2000b).

Though some students develop an interest in pedi-
atric psychology as undergraduates, this is by no means a
universal entry point into this field, so other methods of
exposure to the field are important. For example, post-
graduate research experiences that involve working closely
with a pediatric psychologist or other professionals as a co-
ordinator or research assistant can realistically expose
students to preparing abstracts and presentations, man-
uscripts for publication, and grant proposals. Finally, those
graduate school students unfamiliar with pediatric psy-
chology can also develop an interest in the field through
didactic courses or by working on pediatric psychology
research.
Teaching Graduate Students About Research-Related Collaboration, Medical Settings, and Pediatric Populations

Research in pediatric psychology inevitably requires collaboration with pediatric colleagues and members of other professions (Drotar, 1993, 1995). Consequently, successful pediatric psychology researchers have generally learned to assume collaborative roles (e.g., as consultant to pediatric colleagues conducting research, as principal investigator of research that involves pediatric colleagues, or as co-investigator in a research team). To collaborate successfully, one needs to understand each of these potential roles as well as the perspectives of different professional colleagues, especially pediatricians, concerning research.

Research with pediatric populations usually takes place outside of a laboratory setting in a hospital or clinic. For this reason, pediatric psychology researchers need to know the advantages and constraints of data collection in pediatric settings and how these factors affect research design and implementation (Drotar et al., 2000). Students need to have hands-on experience in collecting data in pediatric settings. To conduct research informed by clinical practice, students need to know about pediatric conditions, relevant symptoms, complications, and medical management. Graduate students can benefit from the comprehensive reviews of research and clinical issues in pediatric populations contained in the *Handbook of Pediatric Psychology* (Roberts, 1995) and *Sourcebook of Pediatric Psychology* (Olson, Mullins, Gillman, & Chaney, 1994).

One successful didactic approach in our setting is to invite pediatricians who are research or clinical collaborators to lecture students about their expertise, which may involve a specialized area of pediatrics or population (e.g., pediatric oncology), or a broader focus, such as primary care. Experienced pediatric colleagues are highly credible mentors, and their presentations often address difficult questions: What psychological issues are associated with particular pediatric conditions? What do pediatricians want most from a psychologist who works with this population? What are critical research needs with a specialized population? Such lectures not only inform graduate students concerning pediatricians’ perspectives about psychological research needs but also provide an excellent introduction to a pediatric population’s clinical characteristics (e.g., symptoms, natural histories, and clinical management). In addition to hearing from experienced pediatricians, students can also benefit from lectures and discussions with experienced pediatric psychologist researchers who describe their collaborative work with pediatric colleagues and specific roles in their current research collaborations.

Although didactic presentations about consultation and collaboration are helpful, they should be supplemented by clinical experiences in providing psychological consultation, assessment, and intervention, especially with populations that reflect students’ primary research interests. We have found that matching students’ research interests with a particular population (e.g., quality of life of children with cancer) with their experiences in clinical placements (e.g., clinical consultation in pediatric oncology) can be useful. Such targeted clinical experiences help students develop and refine their research questions and put them in close collegial contact with potential research collaborators.

Training in Specialized Research Design and Data-Analytic Methods Relevant to Pediatric Populations

The complex, ever-changing field of pediatric psychology research requires researchers to learn about a wide range of methods and design issues, some not well represented in typical graduate curricula. A potential short list includes intervention research design (e.g., design and implementation of randomized, controlled clinical trials of interventions with pediatric populations); program evaluation in pediatric settings; specialized measurement issues with pediatric populations (e.g., adherence to treatment, pain, functional status, and quality of life) and new assessment methods (Quittner, 2000); and specialized data-analytic methods such as qualitative analysis and methods of analyzing data from prospective studies (e.g., growth curve analysis).

How can such specialized research training be incorporated successfully in a graduate training program? One option is to develop specialized courses and seminars that teach students about relevant methods (e.g., applied research methodology, data-analytic methods). Because teaching about highly specialized data-analytic methods can place a formidable burden on individual mentors and on programs, such specialized courses and seminars may be taught as a lecture series. A guest lecture or team teaching model also has the advantage of familiarizing students with experienced researchers in their setting and enhancing student opportunities for additional mentoring. For example, one of our research seminars on data-analytic methods featured experienced researchers who presented practical issues in applying methods (e.g., qualitative analysis, growth curve analysis, factor analytic approaches, etc.) to their data. These lecturers were asked to address the following questions. When are these data-analytic meth-
ods appropriate? What are the benefits and problems involved in using them? Can you provide illustrations of how these methods are used based on data from your research? The purpose of this course was to teach students about methods to enable them to use statistical consultation effectively rather than to facilitate their mastery of these methods. We have also found that additional methods-based courses in related fields, (e.g., epidemiology, anthropology) may also be helpful to graduate students interested in a research career in pediatric psychology.

**Developing Opportunities for Graduate Student–Initiated Research and Research-Related Collaborations in Pediatric Settings**

Knowledge and skill development in pediatric psychology research are best developed in the context of real-life projects. Consequently, students need ample opportunities to initiate and conduct their own research, as well as collaborate with faculty and staff in pediatric settings. The success of such student-faculty collaboration depends on the success of the match between faculty mentors and students. This match is facilitated in several ways. First, students apply to the pediatric psychology training program to work with a primary research mentor, usually a pediatric psychologist. Prospective mentors and other faculty, as well as current students, interview applicants to determine whether there is a suitable fit between the students' interests and the program. Once students are admitted into the program, they work with a number of faculty (e.g., psychologists and pediatrics in the department of psychology and school of medicine) who are their secondary mentors for research projects. To help them identify secondary mentors, students are given information about ongoing faculty research projects and their availability to students. The primary mentor also works with students to help them identify faculty members who are a good match for their interests and research projects.

Depending on student and faculty interest and experience, secondary faculty mentors might have several roles in student research, ranging from a more narrow one (e.g., helping to recruit populations) to a more collaborative one that involves mutual planning of a new research project. As an example of the latter role, one student in our program became particularly interested in the impact of work-related stress on pediatric residents. She was helped to identify a pediatric faculty member with similar research interests and worked with her on a pilot study. Their collaboration led to the development of a master's thesis that documented the effects of call duty on residents' psychological distress (Berkoff & Rusin, 1991) and to a dissertation that described the effects of resident gender and personality style on health behaviors and psychological status (Berkoff & Drotar, 1994).

**Helping Graduate Students to Develop Critical Research Skills**

One research training challenge is for mentors and programs to provide repeated opportunities for students to obtain supervised experience in skill-based learning in multiple areas critical to their subsequent career development (e.g., manuscript writing, data analysis, etc.) under supervision. Individual mentoring is critically important, but it may not be sufficient to foster the extensive skill development needed for a successful research career. For this reason, students need other training experiences designed to enhance students' scholarly writing and editing and their abilities to develop grant proposals, data-analytic skills, and collaborative skills and knowledge.

**Methods to Enhance Scholarly Writing and Editing.** One useful method to facilitate students' scholarly writing skills in our program is a writers' workshop seminar, structured as follows. First, students select a writing project (e.g., proposals for master's and dissertation research, review articles, research-based manuscripts) for which they want feedback. For each meeting, one or more students agree to make progress on their writing projects and distribute them to the instructor and classmates 1 week before the workshop meeting for review (Drotar, 2000c).

The main didactic method of the seminar is peer- and instructor-written and oral reviews of student writing projects, designed to provide honest and constructive comments to facilitate revisions. Free-ranging peer and instructor critiques may include specific suggestions for reworking and rephrasing text as well as strategies for conceptualizing research problems. Students then modify their manuscripts in response to critique and bring them back to the group for subsequent review until the projects are completed.

The writers' workshop seminar has proven successful not only in helping students to complete a diverse set of writing projects but also in publishing them (Drotar, 2000c). All students who have participated in this seminar have published at least one first-authored manuscript based on their research or review of research, and many have published repeatedly in graduate school. The writers' workshop seminar has also helped facilitate students' abilities to provide critical written review to their colleagues as well as their mentors' manuscripts. Mentors' submissions of manuscripts to the writers' workshop "levels the playing field" by communicating the message that everyone's writing can benefit from critique. Students' skills as reviewers can also be enhanced by having them prepare...
written critiques of manuscripts or published work and compare them to those of colleagues and experienced reviewers.

Collaborative writing experiences with secondary mentors have provided another useful vehicle to enhance the development of students’ writing skills, as well as an opportunity to experience different styles of writing and critique. Such mentorship experiences have facilitated successful publication of student research (e.g., Burgess et al., 1999; Levi, Drotar, Yeates, & Taylor, 1999). Students also receive training in preparing written critiques of research submitted for publication.

**Methods to Enhance Students’ Abilities to Develop Grant Proposals.** Graduate students interested in research careers need to develop their skills as writers of grant proposals as soon as possible in their careers (Brown, 2000). Toward this end, students in our program have been encouraged to submit proposals to local university-affiliated foundations as well as national sources, such as individual predoctoral research training proposals to the National Institutes of Health (NIH).

The writers’ workshop seminar and a formal course on grant writing have helped students refine their proposals. The grant writing course included didactic training in such issues as the process of submission and review at NIH and private foundations, what reviewers look for in different sections of the grant, how to respond to reviewers’ critiques, and examples of successful and problematic grants. As part of the course, students prepare grant proposals that are reviewed and discussed in class and then submitted to funders. Most of our students have been successful in achieving funding for their research for small grants through local foundations or the American Psychological Association. Others have competed successfully for larger amounts of funding such as Individual National Research Service Awards from the NIH and a Lung Research Dissertation Grant from the American Lung Association. Students’ success in achieving funding has not only provided direct incentives such as funds needed to cover relevant costs of data collection (e.g., payment of travel costs or incentives for research participants) but also has given students a valuable initial introduction to grantsmanship.

**Methods to Enhance Data-Analytic Skills.** Students also benefit from repeated opportunities to practice their skills in data analysis. We have students present data from their ongoing research to their peers and instructor as a work in progress and explore options for data reduction and analysis. To facilitate peers’ understanding of their data, students have presented summaries and graphical representations, followed by group discussion. We have also involved faculty with expertise in data-analytic methods in such workshops to provide didactic training and consultation to students interested in using these methods.

Another potentially valuable approach to enhancing students’ data-analytic skills is to give them supervised practice in analyzing data sets gathered for pediatric populations. Given the constraints of data collection for master’s and dissertation research, students rarely have opportunities to analyze data from prospective studies or from very large samples. Consequently, this valuable training experience for some of our students has led to publishable work (e.g., Burgess et al., 1999; Levi et al., 1999).

**Methods to Enhance Research-Related Collaborative Skills and Knowledge.** In our experience, students’ research-related collaborative skills are best developed by repeated practice under supervision. We have found that students can benefit from opportunities to participate in collaborative research projects with different faculty colleagues to help them experience and appreciate mentors’ and collaborators’ work styles, personalities, and research experiences. We have used an apprenticeship model in which students are assigned to a research group led by a pediatric psychologist or pediatrician, who is either a primary or secondary mentor. Such experiences give students a revealing “behind the scenes” involvement in the process of planning and implementing research projects. As one example, we have involved students in an interdisciplinary research project led by a pediatric oncologist/ethicist and designed to study the informed consent process in clinical trials in pediatric cancer research (Kodish et al., 2002). Students have learned about the progress and problems in data collection in this multisite study, helped to develop plans for data analysis, and helped to prepare presentations and manuscripts. Such experiences also give students the opportunity to learn firsthand about leadership and management of a research project and to observe the work of an interdisciplinary research team.

**Developing the Professional Identities of Graduate Students as Pediatric Psychology Researchers.** One of the most significant training-related challenges is to help graduate students develop their professional identities as researchers. Pediatric psychology features exciting clinical opportunities for students, some of whom are initially drawn to this field because of their clinical interests. For these students, both during and subsequent to graduate training, clinical activities compete directly with research for their time, energies, and professional development. The experience of early success in real-life clinical encounters with children and families, especially with supportive supervision, can be rewarding to students.
Moreover, supportive peers are a receptive audience to script accepted for publication, for their junior colleagues. Key research-related milestones, such as having a manuscript, learning similar skills, and encountering similar challenges. Developing opportunities for interaction among graduate students who have different levels of experience and energy toward developing their research skills and plans for research careers.

Even for the most highly motivated and talented students, the development of a research career needs to be nurtured over time in multiple ways, especially individual mentorship by successful researchers, involvement in multiple research projects with different research mentors, peer support for research activities, experiences in clinically relevant research, and involvement in conferences and scientific meetings.

**Individual Mentorship by Successful Researchers.** There is probably no substitute for individual mentorship in facilitating students’ professional identities as researchers. When students see their mentors as actively engaged in and excited by research, they are more likely to want to emulate them. Pediatric psychology students are no exception. Moreover, close individual mentorship is a primary vehicle to teach key research-related skills such as manuscript preparation, proposal writing, and data analysis.

**Involvement in Multiple Research Projects With Multiple Mentors.** We have found that giving students opportunities to become involved in multiple research projects beyond their master's and dissertation research also facilitates their professional identities as researchers and provides experience in possible roles as researchers. For this reason, students in our program are strongly encouraged to participate in as many research projects as their time, interests, and energies allow in collaboration with faculty pediatricians or psychologists (see previous section).

**Peer Support for Research Activities.** Another key ingredient of developing the professional identities of pediatric psychology researchers is peer support, which serves many important functions (Brown, 1997). By working closely with their colleagues who share their interests, students experience support and mentoring from their peers who are going through the same training program, learning similar skills, and encountering similar challenges. Developing opportunities for interaction among graduate students who have different levels of experience and research expertise also gives senior students a chance to model skills (e.g., writing and presentation) as well as key research-related milestones, such as having a manuscript accepted for publication, for their junior colleagues. Moreover, supportive peers are a receptive audience to whom students can present their ideas for research, data analysis, and manuscripts (Drotar, 2000c).

We have facilitated peer support for research activities through the pediatric psychology seminar, which is ongoing through the students’ graduate career, by encouraging student review and critique of colleagues’ work through the writers’ workshop seminar (Drotar, 2000c), by pairing senior students with junior ones on projects, and by having dedicated space, computer lab resources, and informal student-faculty gatherings.

**Experiences in Clinically Relevant Research.** A concerted focus on integrating research and practice in research training can underscore the clinical relevance of research to students and also facilitate their skills in program evaluation and intervention research. Formal course work and didactic training can be used to help students appreciate the difficult logistical problems in conducting clinically relevant research, including intervention in clinical settings (Drotar et al., 2000), the common threats to the validity of intervention research and ways of managing them, and methodological issues in program evaluation (Kelley, Nixon, & Bickman, 2000).

Engaging students in clinically relevant intervention research in pediatric and community settings can provide exciting, challenging training experiences. Examples of such research are the screening of economically disadvantaged mothers for depression in a primary care pediatric clinic (Needlman et al., 1999), outcomes of screening for behavioral problems in children seen by primary care pediatric practitioners (Riekert, Stancin, Palermo, & Dro- tar, 1999), and interventions for inner-city children with hard-to-control asthma (Walders, 2001).

**Involvement in Scientific Meetings and Conferences.** Students also benefit from the experience of presenting their data and interacting with students and faculty at conferences such as the Florida Conference on Child Health Psychology or regional meetings such as the Great Lakes Society of Pediatric Psychology. Such meetings provide an excellent opportunity for students to meet faculty from other settings including those who share their research interests. Wherever possible, students’ involvement in organizing meetings can give them other opportunities to meet faculty, connect with others in the field, and learn to participate in the professional culture of pediatric psychology.

**Sustaining and Supporting Students’ Research Careers Beyond Graduate School**

Clinical researchers, including pediatric psychology researchers, face extraordinary challenges in developing and sustaining their careers (Nathan, 1998). Students inter-
ested in research careers need to appreciate that graduate training is only the beginning of research training and the first link in a chain of experiences that includes other critical steps such as postdoctoral research training and research career development opportunities in their first job. **Postdoctoral Research Training.** Beyond graduate training, another critical link in career development is research training at the postdoctoral level. Such training is necessary to equip researchers to be competitive for research funding either as an independent researcher or a mentored scientist (Drotar, Palermo, & Ievers-Landis, this issue). Consequently, all of our graduate students with strong research interests and talents have been strongly encouraged to pursue available postdoctoral research training opportunities and to carefully aim their research careers toward publishing their work and establishing a track record of research productivity.

**Research Career Development Opportunities in the First Job.** A critical link in the chain of pediatric psychology researchers’ career development is the transition to the first job, which may make or break a budding research career for several reasons. One reason relates to the extraordinary and contradictory work-related demands, especially in medical settings (Drotar, 1991, 1993). In some settings, researchers are often expected to “hit the ground running” and develop a research program at the same time that they may be expected to support a significant portion of their salary. This expectation has some obvious but highly undesirable consequences. For most junior researchers, clinical work may be their only short-term option to generate salary support. The paradox is that time- and energy-intensive demands of clinical work often preclude the time and energy concentration needed to develop a research career. One simply cannot manage a successful research career “on the side.” Consequently, to make a research career a realistic option, an informed, long-range professional career development plan needs to include a concentration on research as well as mentorship.

Students interested in careers in academic departments of psychology face a somewhat different set of challenges in the transition to their first job. For example, more protected research time is available for research, and start-up monies for research are generally more available in such settings than in academic health centers. Yet teaching loads can be formidable, especially for new faculty, who need to spend extensive time in course preparation and consequently need to negotiate to ensure sufficient time for research. Moreover, access to pediatric populations for research may be difficult depending on the physical proximity of medical settings to the university and local history of collaboration among faculty.

Students need to understand the critical importance of taking a position in a setting that has a strong mentoring and support program for career development in research. One resource that can be used by pediatric psychologists to develop their research careers is the NIH-sponsored Mentored Clinical Scientist Training program. This award is designed to promote research careers by providing salary support for new faculty to develop a mentored career development plan focused on specific clinical research.

**Tensions and Obstacles in Implementing Research Training in Pediatric Psychology**

The specific strategies suggested to meet the challenges of graduate training for pediatric psychology researchers are not easy to implement. That is why they are challenges! The implementation of research training in our and other programs is inevitably affected by tensions and obstacles. Some of these are generic; that is, they involve every program. Others may depend on the specific characteristics of the setting.

**Patient Care Demands in Pediatric Settings**

It may be difficult, if not impossible, to develop and sustain any research-related collaborations, let alone graduate research training, in settings that focus primarily on patient care. Research has become increasingly difficult to accomplish in some academic health centers because of mandates to increase direct patient contact hours to counter lower and lower reimbursement rates. These pressures can create significant disincentives for faculty to carve out time for research and research mentoring. We have tried to limit the impact of this barrier by making sure that mentorship responsibilities are shared by multiple faculty.

**Tensions Surrounding Specialized Training**

The model here involves a highly specialized program with an intensive research focus. Selection of a highly specialized program such as this one is a tall order for many prospective students, especially those who have not been exposed to pediatric psychology. Our training program would not be appropriate for students who have not identified pediatric psychology as an interest.

Students’ specialization in pediatric psychology research and practice also can isolate them from their peers in the graduate program. We have tried to counter this
barrier by offering the pediatric psychology seminar to all students and also by providing funding for students in the clinical child psychology program to facilitate their work in pediatric psychology.

**Time Demands of Specialized Training**

Another problem that relates to the issue of specialization involves the added time demands required by intensive research training. Given the structure of our graduate program, it has not been possible to replace courses or clinical experiences to accommodate the added time requirements of research training. Students have to be prepared to manage these strenuous requirements. The availability of stipends from the training grant, which obviates the need to obtain a job outside the program, and the expectation that students devote full time to the training program, including summers, have facilitated students' commitment to the program and its special demands.

**Training-Related Demands on Faculty**

The research-intensive focus also places added demands on faculty, especially at the program director's level for mentorship and teaching in the seminar. To help manage these demands, we involve faculty from multiple departments in the university, especially pediatrics, as well as practitioners in the community, in some of the didactic teaching. Moreover, over the history of the program, we have expanded the number of primary and secondary faculty members.

**Thoughts About Generalizable Principles of Program Development**

On the one hand, because the setting and this program are by no means typical, the generalizability of some of these specific strategies may be limited. On the other hand, based on our discussions with researchers and students in other programs and settings, we believe that the principles of research training and implications for pediatric psychology may be generalizable as long as they are tailored to the resources and characteristics of individual programs.

**Faculty Commitment and Leadership**

One important series of questions concerns how to develop training programs that meet the challenges in programs in different settings that have different resources. Effective training programs of all sorts, including pediatric psychology training, begin and end with faculty interest, expertise, and leadership. Thus, there needs to be at least a single faculty member with interest and knowledge of pediatric psychology who can then stimulate interest among students, other faculty, and pediatricians in the community.

**Developing Resources for Research and Training in Pediatric Psychology**

Given the requirements of training in pediatric psychology, it is clear that program development is a team effort and develops gradually. One question concerns who should be on the team and how should they be engaged. We recommend a “cast the nets widely” approach that involves reaching out to faculty in different programs and areas and also can allow individual programs to capitalize on faculty- and setting-based strengths. Training programs depend on the kind of collaborative relationships among faculty, whether in a large medical setting or in a community setting, that take time to develop and sustain. Some practitioners and researchers find it stimulating to have students involved in their work, whereas others, especially those with very hectic professional lives, may find it prohibitive. So it is important to allow for and expect changes in specific supervisors and mentors.

**Recruiting Students With Interest and Talent**

A final critical ingredient of this training program generalizable to others in pediatric psychology and other fields is, of course, the quality of the students. Talented students excited by the challenges of pediatric psychology will often help to create their own training opportunities and facilitate good will among their supervisors. Moreover, talented students are critical for the success of newly developing training programs, as they create the good will on the part of supervisors to sustain their involvement. Consequently, we spend much time and energy on student recruitment and depend heavily on current students in this process.

**Conclusions and Implications: Promoting a Leadership Agenda for Research Training**

Recognizing that the methods described here are not the only ways to meet the challenges of research training, we invite others to describe methods that have worked in other settings. Moreover, data are very much needed to document the outcomes of pediatric psychology research training programs (e.g., students’ success in achieving jobs as researchers, research productivity, and job satisfaction).

The challenges of developing the careers of researchers in pediatric psychology will necessitate multifaceted strate-
gies that transcend individual programs. For example, SPP’s continuing efforts to promote and recognize the work of student researchers through research and dissertation awards have been important, but may need to be expanded to include funding for junior researchers. In addition, the “lessons learned” by successful researchers need to be described in multiple venues (e.g., panels at professional meetings or newsletters). The potential opportunities in pediatric psychology for students at all levels need to be made visible in courses as well as in publications that describe graduate programs (e.g., Sayette, Mayne, & Norcross, 1999).

Another pressing need concerns expansion of job options for students who wish to pursue careers as pediatric psychology researchers. Some students’ interests in research careers may be dampened by what they perceive as a limited market for researchers in this field. Mentors need to support the next generation of researchers by helping to create as many viable professional options for them to develop as researchers as possible.

The messages concerning the vision of the professional future of researchers in pediatric psychology that mentors provide their students may be influential in their careers. Are we encouraging, pessimistic, or only lukewarm about the prospects for our students’ research careers and their potential to become successful researchers? Talented but worried students who are concerned about their professional futures as pediatric psychologists, let alone as researchers, have posed penetrating questions to us. “Will there be a job for me?” “Can I really expect to find a job that will fit with my research and professional interests?” To our minds, the proper “answer” to such important questions is to pose an alternative set of questions and challenges to our students and ourselves. We might want to ask our students (and help them answer) the following questions. How can they, as future leaders, best shape the future direction of pediatric psychology? How can they be best equipped by their mentors and training programs to use their talents to create their own research opportunities and professional niches? How can their research talents and training address important public health problems? Those mentors and training programs that are the most successful in helping students address these questions will shape the future of research training in pediatric psychology well into the new millennium. We invite others to contribute descriptions of models of training pediatric psychology researchers that address these and other questions.

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