

FOCUS on Research

Newsletter of the



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President's Message

The Critical Importance of Data and the Fundamental Necessity of Expertise in Special Education

Thomas Farmer, *University of Pittsburgh*

Hello everyone,

On the flight back from Portland, I reflected on the wonderful presentations, discussions, and research innovations that were showcased at the CEC conference. Two linked concepts continually surfaced in my thoughts. First, special education is about individualizing interventions to the strengths, needs, and characteristics of our students and the ecologies in which they are embedded. Second, the concept of individualizing intervention requires that special educators have the training, capacity, and resources to adapt practices to specific students and their experiences and environments.

These two points are critical for understanding what special educators do on a day-to-day and moment-to-moment basis and should guide research efforts in our field. Yet, rather than focusing on the individual student and using data linked to the circumstances, contexts, and developmental history of specific youth, there is an expectation that special education research should focus on evidence-based practices generated from research centered on the general linear model (GLM). By design, such research reflects the characteristics of students who fall within two standard deviations of the mean within the universal population of youth. Further, cluster randomized trials are designed to control for

individual and contextual factors with the goal of identifying the general impact of an intervention for most youth.

By definition, many students with exceptionalities tend to be represented in the tails (i.e., two standard deviations or more) of the normal curve on specific constructs of interest. Statistics based on the GLM tend not to represent their functioning or needs. Further, students with exceptionalities are likely to experience their worlds in ways that are different from other youth. Thus, while research that uses probabilistic statistics to identify interventions that work in the general population may be better than flipping a coin, it is likely to yield practices that are not adequately responsive to the complex array of factors that are relevant to the development and long-term outcomes of youth with exceptionalities.

As currently conceived, the focus on evidence-based practice centers on the idea that if an intervention works, it will work for most youth as long as it is implemented with fidelity. This thinking ignores the fact that individual, cultural, and ecological factors are organized in a fluid system that differentially contributes to youth development and corresponding outcomes depending on how the factors within the system are aligned with each other. In other words, the outcomes of individual students involve

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OPEN SCIENCE in Special Education: Preregistration

Bryan G. Cook, Lydia A. Beahm, & William J. Therrien, *University of Virginia*

Open science is an umbrella term that refers to practices aiming to make all stages of science more open and transparent. Although some have argued that open science can make research more trustworthy, impactful, and efficient in special education (Cook et al., 2018), there is a lack of clarity in the field about what open-science practices are, their primary benefits and potential obstacles, and how to access resources for implementing them. To help inform the special education research community, we are featuring a series of short articles in the Division for Research newsletter on prominent open-science practices. In this article, we discuss preregistration.

Undisclosed researcher flexibility when conducting and reporting studies is an important source of potential bias in research (see Simmons et al., 2011). For example, researchers may “*p*-hack” (i.e., experiment with different statistical models and analyses until a *p*-value of less than .05 is attained), selectively report study outcomes (e.g., omit analyses for those that were not statistically significant), or HARK (hypothesize after results are known), but report the study as if the reported hypotheses and analyses were the only ones planned or conducted. Such questionable research practices appear to be common and are virtually impossible to detect in traditional publications (see Makel et al., 2019). Preregistration is one approach for making some questionable research practices more easily detected, thereby discouraging researchers from engaging in them and increasing the validity of research findings (Nosek et al., 2018).

Preregistration involves publicly reporting the research questions, planned methods, and data analysis plans before conducting a study. Typically, preregistration is accomplished by posting study plans on a freely accessible online registry such as the *Open Science Framework* or the *Registry of Efficacy and Effectiveness Studies* (REES). Preregistrations at these and other registries are time-stamped, assigned a digital object identifier (doi), and easily discovered in online searches. Posting research questions and plans for sampling, variables, data analysis, and other methodological details before the study begins provides researchers with a clear blueprint for conducting and reporting study findings.

Importantly, it also allows editors, reviewers, and other research consumers to compare and identify discrepancies between research plans and research reports (Johnson & Cook, 2019; Nosek et al., 2018; Nosek et al., 2019). For example, if a researcher collected data on three outcome variables, but only reported findings for the two on which participants showed significant improvement, this could be identified by examining the preregistration. Additionally, preregistration may help combat publication bias (i.e., the file-drawer problem) by making studies that are not published (e.g., studies with null findings) easily discoverable. Although preregistration is most commonly used with group research, it can be applied in single-case and qualitative research, as well as for systematic literature reviews and meta-analysis.

Preregistration should be thought of as a plan that can be amended as needed, rather than as a prison that prohibits flexibility and exploration (DeHaven, 2017). Change in education research is likely the rule rather than exception, and researchers frequently must adjust study samples, outcome variables, and interventions as they negotiate the realities of working in and with schools. Such changes are not antithetical to preregistration. Preregistrations can and should be updated as changes in a study occur, with a brief explanation of the change. Preregistration just provides a transparent record of those changes. Similarly, preregistration does not prohibit or discourage exploratory analyses. Researchers can and should conduct analyses beyond those that are preregistered. Preregistration simply provides a clear delineation between *a priori* hypotheses-testing (i.e., confirmatory) analyses and non-preregistered exploratory analyses (Nosek et al., 2018; Nosek et al., 2019).

Preregistration demands a change in workflow for most researchers, in that detailed planning of study methods and analyses occurs and must be written up before a study is conducted. Despite this greater time commitment before the study begins, preregistration can improve and streamline the subsequent conduct, analysis, and write up of the study.

Although we are not aware of any research in education, preregistration has been associated with markedly smaller effects in other fields (e.g., Kaplan & Irvin, 2015). For example, Schafer and Schwartz (2019) reported a median *r* of 0.16 for preregistered studies in psychology, compared to 0.36 for non-preregistered studies.

The actual process of preregistering study plans on a repository is not difficult. There are many registries

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for researchers to choose from, which typically provide step-by-step directions for completing the process. REES, for example, provides a series of prompts for researchers to follow and has a specific process for preregistering single-case design studies. Alternatively, the Open Science Framework provides multiple templates for researchers to choose from when preregistering studies. Some journals (e.g., *Exceptional Children*) have begun to recognize and reinforce preregistration by awarding electronic badges to articles reporting studies that were preregistered. Although preregistering studies will involve a change in workflow and possibly additional work for most researchers, it enhances the transparency and trustworthiness of the research process. ■

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Job/Position Announcements

1. Title of Position: Postdoctoral Associate; Florida International University's School of Education and Human Development and the Center for Children and Families

Mentor: Dr. Michelle Cumming

Start date: June 2020 (negotiable)

Applications due date: April 5, 2020

Link to posting: <http://facultycareers.fiu.edu/>, then search for Job Opening ID 521005.

2. Title of Position: Tenure Track Instructor in Inclusive Education for Teacher Education: The University of British Columbia

Start date: July 2020 (negotiable)

Applications due date: April 14, 2020 (deadline will be extended)

Link to posting:

<https://ecps.educ.ubc.ca/tenure-track-instructor-in-inclusive-education-for-teacher-education/>. ■

Council for Exceptional Children, Division for Research 2021 Awards: Call for Nominations

The following CEC-DR awards are open for nominations. Self-nominations are welcome. The deadline for all award nominations/self-nominations is **September 15, 2020**. Further information on each award, including application materials, can be found at <http://www.cecdr.org/>. Please email all materials to the individual committee Chair.

1. **Kauffman-Hallahan-Pullen Distinguished Researcher Award**
2. **Distinguished Early Career Research Award**
3. **Early Career Publication Award**
4. **Student Research Awards**

1. Kauffman-Hallahan-Pullen Distinguished Researcher Award

In recognition of the critical importance of research in special education that has a meaningful impact on the field, the CEC-DR seeks nominations for the Kauffman-Hallahan-Pullen Distinguished Researcher Award. This award recognizes individuals or research teams whose research has resulted in more effective services or education for exceptional individuals. Recipients of this award are recognized for both the creation of a research base and the work done to translate this research into practice. Thus, the recognized work may include, but is not limited to, research articles, paper series, monographs, professional development activities, book chapters, and/

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Call for Nominations (continued from page 3)

or books. The Kauffman-Hallahan-Pullen Distinguished Researcher Award is funded through earnings of the *Handbook of Special Education*, edited by James Kauffman, Daniel Hallahan, and Paige Pullen and published by Routledge. The award, co-sponsored by Routledge Press, includes \$1,000 presented at the DR Reception at the CEC Annual Convention. Nominations are sought across all areas of special education as well as all forms of research methodology. Previous recipients include Hill Walker, Lynn and Doug Fuchs, Mary Brownell, Karen Harris and Steve Graham, Rob Horner, Kathleen Lane, Naomi Zigmond, Ann Turnbull, and Nancy Jordan.

Chair: Clay Keller (keller.clay@gmail.com);

Committee Members: Tom Smith, Jacqueline Lubin, Elizabeth Talbott, and Dimitris Anastasiou

2. Distinguished Early Career Research Award

In recognition of the critical role of research to both current practice in and the future of the field of special education, the CEC-DR seeks nominations for the Distinguished Early Career Research Award. This award recognizes individuals who have made outstanding scientific contributions in special education, in basic and/or applied research, within the first 10 years following receipt of the doctoral degree. Nominations are sought across all areas of special education as well as all forms of research methodology. The award, cosponsored by the Hammill Institute on Disabilities, includes \$1,000 presented at the DR Reception at the CEC Annual Convention and an invited presentation at CEC the following year. Previous recipients include Alexandra Trout, Jeanne Wanzek, Michael Wehmeyer, Ron Nelson, Patricia Mathes, Rollanda O'Connor, Batya Elbaum, Terry Scott, Kathleen Lane, Frank Symons, Bryan Cook, Michael Coyne, Erik Carter, Stephanie Al Otaiba, Linda Mason, Kristen McMaster, Paul Morgan, Brian Boyd, Erin Barton, Christopher Lemons, Sarah Powell, Chad Rose, and Sara McDaniel.

Chair: Ron Nelson (nelson@unl.edu); **Committee Members:** Linda Mason, Brian Boyd, Stephanie Al Otaiba, and Frank Symons

3. Early Career Publication Award

The Early Career Publication Award recognizes an outstanding research publication by an individual within five years after completing the doctorate. The person nominated must be sole or first author of the article.

The article must be a completed study published in a peer-refereed journal prior to the deadline. OnlineFirst (or similar) publications are eligible (e.g., article is accepted, final proofs are completed, revisions are not possible, and the article is posted in final form). Pre-prints and “in-press” papers will not be considered. The article must be a primary research report, a meta-analysis, or a research review. It may not be a chapter, theoretical paper, or position or issue article. Nominations are sought across all areas of special education as well as all forms of research methodology.

The committee will initially review all articles submitted and create a short list. Evaluations may be solicited from appropriate scholars in the field based on the topics investigated in the articles constituting the short list. Feedback from these scholars to the subcommittee will be considered and a final decision reached on the recipient(s). The Early Career Publication Award will be presented at the CEC-DR Reception during the annual CEC Convention. Previous award winners include Sharlene Kiuvara, Allison Bruhn, Chris Lemons, Andrew Wiley, Sarah Powell, Brian Reichow, Karrie Shogren, Ya-Yu Lo, Andrew Roach, Terry Scott, Wendy Murawski, Margaret Beebe-Frankenberger, Alexandra Hollo, Robin Parks Ennis, Justin Garwood, and Shawn Kent.

Chair: Timothy Landrum (t.landrum@louisville.edu); **Committee Members:** Rollanda O'Connor and Terry Scott

4. Student Research Awards

CEC-DR seeks nominations for the Student Research Award. This award recognizes high-quality research across multiple research methodologies conducted by students in the course of their undergraduate or graduate special education training program. CEC-DR will award up to four such awards annually, with one award presented in each of up to four areas of research designs or methodologies: qualitative, single-subject, quantitative, and mixed-methods. No award will be given in any research methodology area if an exemplary, high-quality research study is not submitted; thus, there may be fewer than four awards presented in any given year. Nominations are sought across all areas of special education services. The awardee in each research method area will receive a \$200 award and a certificate.

The following criteria must be met in each area.

- a. The nominated student must be the sole or first author of the nominated manuscript and the

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Call for Nominations (continued from page 4)

research study must represent the student's intellectual work.

- b. The nominated research study must have been conceptualized and conducted while the first author was a student.
- c. The nominated study must not be in press at the time of submission nor have been published prior to submission for the award.
- d. The nominated manuscript must not exceed 50 double-spaced pages, not including tables and references. Manuscripts should be formatted according to current APA guidelines.
- e. Independent of the methodological area in which the manuscript is submitted, research studies nominated must adhere to standards for high-quality research advocated for in the field of special education and by the CEC-DR.

Detailed, quality indicators of high-quality research for quantitative, qualitative, and single-subject design studies can be found in the Winter 2005 special issue of *Exceptional Children*, 71(2), edited by Odom et al. Detailed quality indicators of high-quality research for mixed-methods studies can be found in Klingner and Boardman (2011) and Leech and Onwuegbuzie (2010). Applicants are referred to these references for guidance. Please note that the "quantitative" category for this award includes group experimental and quasi-experimental designs (Gersten et al., 2005) and correlational designs (Thompson, Diamond, McWilliam, Snyder, & Snyder, 2005).

Co-Chairs: Kimberly Vannest (kvannest@tamu.edu) and Tanya Santangelo ■

Advocating for Federal Research for Children and Youth with Disabilities

Elizabeth Talbot, *William and Mary School of Education*

As part of the restructuring of the public policy and advocacy unit at CEC headquarters last fall, the decision was made to bring back a policy steering committee comprised of several CEC members and chaired by Margaret McLaughlin. This committee was appointed in January 2020, and one of its first actions was to survey CEC units on their public policy priorities. While DR,

along with CEC and its units, advocates on a wide range of public policy issues that affect the education and development of infants, toddlers, children, and youth with disabilities, DR focuses considerable attention on the federal programs that support research and evaluation activities related to this population. Therefore, DR's response to CEC's request to identify our policy priorities focused on our highest priorities: the funding and work of the National Center for Special Education Research.

Below, we share our current priorities followed by a request to DR members to share with us stories about the research they conduct so that we can illustrate in our advocacy efforts the importance and impact of federal research investments.

DR Research Priorities

DR's chief public policy priority is to advocate for an increase in funding for the National Center for Special Education Research (NCSER) to \$70 million. Our long-term goal is for even higher funding, but for 2020–21 we are committed to demonstrating the need for increased funding that would return NCSER to its 2010 level of funding. To do that, we work closely with our colleagues in other divisions of CEC, the newly formed policy steering committee, and the Friends of IES coalition, led by Felice Levine, executive director of AERA.

Please see this link for information about the **Friends of IES**: <https://www.aera.net/Research-Policy-Advocacy/Friends-of-IES>

DR co-signed a letter published in *Education Week* in 2015 with the help of Friends of IES on behalf of NCSER funding. The content of that letter remains pertinent today. Please see <http://www.edweek.org/ew/articles/2015/12/09/proposed-education-cuts-hurt-special-education.html>

DR is also on the alert for the reauthorization of the Education Sciences Reform Act (ESRA), the law that authorizes the National Center for Special Education Research. The House and Senate drafted reauthorization bills in 2013 but did not vote on what would have been the first reauthorization of ESRA since it was enacted in 2004. Those bills as drafted proposed capping the funds that could be appropriated by Congress each year for NCSER research activities at levels no higher than \$66 million. Such caps would have severe and lasting consequences for NCSER funding, and therefore for children

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and youth with disabilities and their families. At this time there is no schedule for ESRA reauthorization, but it could be considered by Congress at any time. Therefore, DR continues to make the authorization of NCSER funding levels a priority.

Research Matters: What Can DR Members Do to Help?

Talking with members of Congress about why research funding matters can be a challenge! But DR has found that they and their staff appreciate reading brief stories that illustrate how research funds are being used to solve real-life problems for children, teachers, schools, and families. We have used such stories in the past when we visit the Hill to advocate for funding for NCSER and other agencies that are supporting research related to the education of children and youth with disabilities. We encourage you to share your own stories and those of your research colleagues whenever you have the opportunity to advocate on behalf of federal support for special education and related research.

We need DR members to help us tell the story that **Research Matters**. Please send us your research matters stories, and we will share them with members of Congress and post them on the DR website! Go [here](#) to see some examples of stories we have used in the past. Please use the **Research Matters Template** we have developed to make your story-telling as effortless as possible. For further information and to submit your stories, please contact Betsy Talbott (ehaltbott@wm.edu). ■

A Word from Our Student Reps

A Life Called Quarantine

Haya Abdellatif, *University of Pittsburgh*,
and Sally Fluhler, *Vanderbilt University*



Haya (pictured on the left) is a doctoral student in the USES (Urban Special Education Scholar) program at the University of Pittsburgh, and

Sally (pictured on the right) is a second-year doctoral

student in the special education program at Peabody College of Vanderbilt University.

I saw a meme the other day that said something along the lines of, “That moment I realized that my normal life is called Quarantine.” On reading this, it suddenly hit me—social distancing has not caused much change in terms of my life as a doctoral student. Aside from the one day of classes on campus, I’ve really just been working from home in solitude. That is, pretty much alone. I would say the only thing that has changed is that I could not feel free to go to the coffee shop or library for a change of scenery; but even when I could, I usually just ended up staying home. However, with this newly imposed lack of freedom to venture outdoors and meet fellow humans, the biggest challenge for many of us, including me, has been to remain motivated to stay productive. And it’s been hard!

Many have shared similar sentiments. From talking to others and from doing our share of experiments, we found some tips on how to stay productive (some old, some new) to be more helpful than others. Even though we share them here as a reminder during a time of enforced social distancing and isolation, we hope that you will find them helpful at any time you might find yourself working solo:

- **Create a to-do list.** Begin your workday by writing a to-do list of tasks you want to accomplish that day. Sometimes this may include tasks from the day prior, and that’s okay too!
- **Set up peer check-ins.** Set up a daily/weekly check-in with one colleague or more, if possible. Using the video feature can encourage you to “get ready” for work. Additionally, when you are working alone it is always nice to see your colleagues’ faces as if you were having a face-to-face meeting at your office. This time could be used to set work-related goals (e.g., transcribing, data analysis, writing). You can also agree on a time when you’ll get back to check in with one another on your progress.
- **Create a year-long timeline.** Putting your long-term plans down in a yearly calendar will give you a visual of when large projects or important tasks are due. Break those large projects down into manageable chunks that you can complete on a daily or monthly basis. This will help keep you from procrastinating!

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A Word from Our Student Reps (continued from page 6)

- **Go outside.** Go for a walk around the block, go on hikes or runs at the park, ride your bike around the neighborhood, take your pets (also known as your new coworkers) for walks. When done even for 10 minutes, getting a fresh breath of air can rejuvenate, refresh, and calm you as you prepare to dive back into work when you return home.
- **Start and end your workday by taking a walk.** Another way you could incorporate the outdoors in your daily schedule is by walking before and after your work hours. This could make it seem as if you are “commuting” to work. When you wake up and are ready to start your workday, go for a walk outside, and when you return you start work hours. Then, before you are ready to settle in for your work-free night, you take a walk “home,” which ends your day. Just as you would if you drove or took public transit to and from work daily.
- **Set boundaries between work time and relaxation time.** When you work in the same space in which you relax, the lines between the two can be blurred. Set clear start and end times for work just as if you were in your office or workplace. After your designated end time, all work-related activities (such as checking and responding to emails) can be put on hold until your next workday. ■



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the dynamic and complex interplay of multiple factors across multiple levels (i.e., individual, behavioral, ecological, socio-cultural). Research that generates evidence-based practices is aimed at reducing this dynamic interplay in controlled experimental designs in pursuit of answering the question, “Does the intervention work?” But for special educators, the question is, “How do we support the positive development and adaptation of a specific student given her or his characteristics and the strengths, resources, and constraints of the relevant ecologies in which the student lives?”

By building upon but going beyond evidence-based interventions generated by probabilistic studies, we can conduct much more rigorous, intensive, and scientifically exacting research to yield data driven practices that can be tailored to youth with exceptionalities within the contexts in which they learn, live, and grow. This

means linking (a) data on key practice elements of evidence-based intervention to (b) data about specific developmental process factors in relation to (c) data on ecological factors (i.e., local analytics) in systematic ways that are guided and tested by (d) continuous progress-monitoring data on proximal, intermediate, and long-term outcomes for specific subtypes of youth (see Farmer, 2020).

The dynamic, multi-factored complexity of the development of youth with exceptionalities makes it unlikely that general education teachers can pull an evidence-based practice off the shelf, implement it with fidelity, and effectively support the learning and adaptation of diverse learners. The intervention needs of most students with exceptionalities require the guidance of experts who have (a) a strong understanding of the functioning and adaptation of youth with specific needs and characteristics, (b) knowledge and capacity to identify practice elements of evidence-based interventions that are relevant to the specific developmental needs of such students, and (c) the capability and resources to use data to develop, coordinate, and monitor multi-factored and multi-agency individualized interventions (see Talbott, De Arment, Sterrett, & Chen, 2020). This is what we do in special education, and we need corresponding research to support such efforts.

In my first presidential message, I indicated that we need to have conversations that involve diverse perspectives and voices. For my final presidential message, I will discuss my views on how we can more effectively conduct special education research to respond to a system of complex, dynamic factors that contribute to the adaptation and outcomes of students with exceptionalities. But in the interim, I would like to hear from others to bring different perspectives into this discourse. Please send your thoughts and comments to me at tfarmer@pitt.edu. ■

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