**Knowledge Brokering in Vocational Rehabilitation Contexts**

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ANN OUTLAW: Thank you for joining us for this webcast, Knowledge Brokering in Vocational Rehabilitation Contexts. I'm your host, Ann Outlaw. This webinar is brought to you by the Knowledge Translation for Employment Research Center, or the KTER Center, which is housed at the American Institutes for Research and is funded by NIDILRR, or the National Institute on Disability, Independent Living, and Rehabilitation Research.

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Today, we'll hear findings from a recently completed study to train vocational rehabilitation-- or we'll say VR throughout the webcast-- VR supervisors as knowledge brokers. So let's start with the KTER Center's director, Dr. Kathleen Murphy. Dr. Murphy, would you go ahead and set the stage for us to share with our listeners what the KTER Center focuses on generally and the objectives of this knowledge brokering study?

KATHLEEN MURPHY: Sure, Ann. So thanks, everyone, for joining us today. I wanted to take a minute just to go over the objectives of this presentation so you have a little road map of where we're going.

I'm going to start off, and I'll talk about the targeted outcomes of the Center on Knowledge Translation for Employment Research overall. Obviously, we did this research study. We did other things. So it'll just give you a rough sense of how this study fits into the whole scope of work of the center. The KTER Center is what we call it.

And we'll talk about what these research activities were. What were the research questions? What did we do to try to address those questions? What did we learn?

And the study is a study of knowledge brokering in VR agency contexts. And then, of course, we'll talk about, what are the implications of the findings? And where could the field go?

So per NIDILRR, what NIDILRR wanted the KTER Center to accomplish, they wanted whatever you were doing to contribute to three outcomes. One of them was to increase understanding of processes and practices that will lead to successful knowledge translation, and which we often call KT, in the field of employment for individuals with disabilities. We were also tasked to increase adoption and use of relevant research findings funded by NIDILRR and other entities to improve the employment of individuals with disabilities.

That's what all of their KT centers, why they exist, to help get more leverage out of what NIDILRR has funded in other ways. And then thirdly, as a result of that, other NIDILRR grantees can look at what we're doing, see if these, perhaps, knowledge brokering approach could work for them, or some of the other ways that we, that I won't talk about today, that we made efforts to increase adoption and use, so that they can maybe learn from and incorporate what we learned into their projects.

So going back to outcome one, to figure out, hmm, well, how can we really understand these processes and practices related to KT? So we did a study. We tested a knowledge brokering strategy in the context of VR agency work.

And we focused especially on the role of VR supervisors promoting staff use of research. The reason we did that is in the previous awards cycle between 2010 and 2015, we had done another study of just a survey of what contributed to the likelihood that a VR counselor would incorporate something research-based into someone's plan for employment. And we found that it made a big difference if their supervisor was interested and encouraged them to do that.

Then, as far as outcome-- and that's what I'm going to be talking about primarily today. Another aspect of that research was to figure out, what are VR's informational needs? What do they want to know?

What would be helpful for them in helping their consumers? So we figured out what those needs were. And then we conducted scoping reviews of the research literature to figure out, where is their relevant research to address them?

And just a little side note, a scoping review, you may have heard the term systematic review. A scoping review, unlike a systematic review, does not vet the quality of the research. The idea is just to figure out, what is out there? Is there a tool kit that might be helpful? What kinds of resources can we offer to the field based on the best available knowledge?

So we took the findings from those scoping reviews. And we used them to develop trainings. So that was the content of the trainings that we used in these knowledge brokering studies.

And then to address outcome three, to increase capacity of NIDILRR's employment-focused grantees, we did things like what we're doing today. We talked about what we learned. We disseminated the findings from the studies for the benefit of other researchers interested in promoting use of adoption of their findings.

So as I mentioned, for that outcome one, we did a study. So like all studies, we had research questions. So the research questions for the overall knowledge brokers study that this webcast is going to, in total, address is, can research liaisons-- we thought maybe the term "knowledge broker" was a little bit too jargony and that people would understand better what "research liaison" meant. So when we presented the study of the field, we called the knowledge brokers research liaisons.

So can research liaisons, in other words, be our supervisors that we're training up as knowledge brokers, who receive training and support in the use of research-based practices improve the use of the relevant research by VR counselors with the goal, of course, of increasing employment and job retention among VR consumers? And secondly, if we're trying to do that, well, what's the point of that? Do the employment outcomes, in other words, greater entry to competitive employment and higher wages of consumers served by the counselors whose supervisors participated in the study, did those outcomes improve compared with the employment outcomes of consumers served by VR counselors in the control group?

OK, so getting a little more into the nitty gritty of, well, what did we really do for this study? So as I mentioned, our target audience were VR supervisors. So we worked with our partner, the Council of Administrators of State Vocational Rehabilitation Agencies, CSAVR. And they helped us send out invitations nationwide to supervisors to invite them to participate in the study.

So if they chose, if they were interested, they clicked on an online survey. And as part of signing up, where we screened to see, well, do you really work for a VR agency? And we did also make sure that someone supervised at least four counselors so that there would be enough critical mass of counselors for them to pass the research onto and look for employment outcomes.

And once they were through with that screening and consented, then they took a survey that I'm going to talk quite a bit about that had three sections. And each of the sections asked questions about research orientation. What kind of interactions did they have on the job? And what kind of resources did they seek to use to help them to do their job better? And then, of course, it collected the standard demographic information.

Then the supervisors, we shared this survey. It wasn't exactly the same survey. We had to change some of the items so it was appropriate for a counselor versus a supervisor, but essentially measuring the same things with their counselors.

Or we did ask supervisors when they did that baseline survey, that enrollment survey, to give us names. So some of the staff, the VR counselors, we sent it out to. So we had those two conduits to get the counselor surveys in the door.

Then, once we were closed enrollment, we were like, OK, this is it. We got all of our supervisors. We took the supervisors, and we looked at, we grouped them by state. And then we said, all right, let's assign these states to either assignment or control.

Because we figured, it isn't going to make sense to have supervisors from, say, whatever state. I live in Texas. If you have some supervisors in Texas who are doing the training and some of them aren't, then when you look at your caseload data, you're going to be mixing apples and oranges. So that's why we did random assignment at the state level. Supervisors were randomly assigned either to a training group or a group, a comparison group that received no training or control group.

And then the counselors, whatever, if you rolled up to a supervisor in the training group, you were assigned to the training group, and vise versa. If your supervisor was in control, and you're a counselor, you are in control. And so none of the counselors at all, even the counselors in training, no counselors received training. And nobody in the comparison group received training. But we did collect data from all those people.

So this is how this actually played out. We got 110 eligible supervisors enrolled. After we did that random assignment, we had 56 supervisors in the control group and 54 supervisors in the training group.

And now, this chart, I do want to point out. It isn't really a typical, formal study chart the way you might see in a peer reviewed journal article because what we don't have are boxes that are showing the number of people who dropped out. So I'll just do the math for you a little bit here. And also, we didn't show the counselors. But we had 96 counselors who signed up and had, their supervisor signed up, and their supervisor was eligible.

So when they were in, if you were assigned to that training group, those 54, everybody who was in the training group was invited to take a module on adult learning. And so we had 20 people who signed up and were assigned to treatment. 20 supervisors took that adult learning. So you can see, we lost 34 there.

Now, of those 20 who took the adult learning, because you had to do the adult learning one first to move onto these two topical tracks, which I haven't even talked about yet. We had five of them choose autism and 11 of them choose to do the training on pre-employment transition services. So those are distinct. You had to pick either autism or pre-employment transition services.

And the supervisors who were assigned to the training group, it was up to them. They could decide if they wanted to move onto the autism or to the pre-ETS And as you can see, the pre-ETS was twice as popular because the Workforce Innovation and Opportunity Act mandates that VR agencies set aside 15% of their budget to serve pre-employment transition use. So that explains why that was a more popular choice.

So once you did the trainings, then you got support from the KTER Center. They would, a staff person, once you're done with the training, would call you every month and ask you, anything else the KTER Center could do for you? How are you doing? So that went on for six months.

And we also, then, at the end of those interviews, once you were done with doing a follow up survey, then we ask the states who had had supervisors go through at least the adult learning module. So they did some of the training. We asked them to share their RSA-911 data, which is the administrative caseload data that state agencies collect about their consumers.

As far as the counselors, I had mentioned there were 96 of them. 38 of them had supervisors assigned to treatment. And 58 of them had supervisors assigned to control.

OK, so we've talked a lot about this slide already. I mentioned that everybody who signed up for the training was invited to do a training on tips for teaching adults. When we talked to our adult learning experts at American Institutes for Research, we're very lucky to have great colleagues who know about all kinds of things.

They really said, you know what? Before you try to teach people about anything, you need to teach them how to teach. So that's what that module was about. And then people picked either the autism or the pre-employment transition service module.

And if you're wondering like, what do you mean? What are these modules? So they were online. They were available on demand. They had pre-recorded slide presentations like this one.

And there were also embedded quizzes and exercises and research summaries available for download. So the whole thing was estimated to take five hours. So I haven't mentioned, but everybody who participated in this was offered five hours CRC credit. Or if you were in the control, you got a voucher to do a five hour ethics training.

And then, we did talk about this already. When the training was completed, we sent follow up surveys to everybody who had done at least that adult learning module. And then as well, don't forget about those counselors, and to all the supervisors and counselors in the control group.

OK, so that meant we ended up, as far as trying to come up with findings, with three data sets. So I've talked a lot about those surveys. We had baseline and post-training surveys for both the supervisors and the counselors. Those monthly follow up interviews because we were taking notes. So that gave us some qualitative data.

And then I've already mentioned that when we had participants complete all of the data collection and the training, so that we had a pre-post from them, and they had been "exposed to treatment" would be the scientific term, that they had actually done it and not dropped out. So we asked those states for their caseload data.

So the survey, I told you it had collected demographic information. There were 43 items on it that related to what we're trying to measure. And they were, you could say, it was a four point scale. So you either strongly agreed, agreed, disagreed, or strongly disagreed with a statement. And then there were these three sections.

The research orientation was the longest one. It was 23 questions long. The one about interactions that asked about collaboration with others in addition to your co-workers, like, did you seek outside experts or go to conferences? That had nine questions. And then use of resources had 11 items.

So just to give you a little more flavor of, really, what were we asking here? So on the research orientation scale example questions, and they all started with this stem. Like I said, do you agree or disagree with the following statements?

There are opportunities in my unit or office to discuss research-based best practices. My officer unit is open to evidence-based practices that I bring to team meetings. I'm willing to try new ideas based on research.

If you want to know, what do you really mean, types of interactions, here are some examples. Do you agree or disagree that the following interactions offer information you can use to do your job better? Attending unit or office meetings, meeting with consumers, which for those of you outside the disability field, "consumer" means a person with a disability, in other words, the clients of the VR agency. Collaborating with researchers, for example, academic institutions, or trade associations, consortiums, nonprofit organizations.

Then, what are these resources? Well, we were asking, did they seek information that they could use to do your job better in academic journals? That's kind of a no-brainer if you're talking about research.

Whether they were print or online, what about in-person professional development opportunities, like a conference, a summit, a training, or a workshop? And increasingly, people use social media. You can get links to all kinds of things on Facebook, Twitter, LinkedIn, or YouTube.

When all was said and done, we've got our little survey data set all cleaned up. We've figured out who did both the baseline and the follow up. What questions could that data set answer? So we asked specifically, do VR supervisors who received training and support in the use of research-based practices improve on the outcomes of interest, research orientation, the interactions, or the use of resources?

What about the staff? Will the staff supervised by supervisors who received the training improve on these outcomes? And what factors predict improvement related to these outcomes?

So what do you mean, factors that might affect the survey outcomes? Well, does it make a difference how many staff members a person supervises? What about the length of time as a VR supervisor or counselor, which is a variable we call "tenure"?

What about, do they have certification as a certified rehabilitation counselor? Do they hold their CRC, which is, at some of you may know, of great interest to the field? What about their level of education, their age, their ethnicity? Does any of this make someone more or less likely, never mind the training, to behave, to answer differently on the survey with respect to those three areas that we're interested in?

If you're curious about where all these supervisors came from, they were really, we got a wide swath of the nation that had at least one supervisor signed up. So they're in the training group. We had, I think it's eight regions, 1, 2, 3, yeah, eight regions and 10 states and then even more regions and around the same number of-- and we also included Puerto Rico and the territories. So when we say state, we're including them as well. 14, so we had 14 states represented in the control group.

As far as how many supervisors we're really looking at here, there were 39. So we had 20 of them do both the training-- the baseline and follow up survey in the training group, and 19 who were assigned to control. We had that paired data for them. And that represents 37% from the training group and 34% from control.

They were pretty experienced by and large. More than half of them had been in VR for more than 10 years. Most of them did hold their CRCs. 86% of them had that certification.

Almost 90% had a master's degree. And they were, their main age was 43.7%. And we had, just a little over 11% were Hispanic, so most of them were non-Hispanic.

As far as the counselors, what did they look like? We had 27 of them. We had 12 do the follow up survey, so we had a pair. 32% is what that is from the treatment group. And then for the control group, 15 of them did both the baseline and the follow up survey, which was 29% of the original group. So we'll be talking more later about those response rates.

And these are the counselors. So they have a little bit less tenure, 41%. But still, a lot of them have been around the block for quite some time in VR. And by "around the block," I mean, had a lot of experience with the VR agency and their occupation.

Interestingly, for the counselors, 70% of them did not hold their CRC, but over 90% did have a master's degree. And they were around the same age as the supervisors. Their mean age was 44.5. And fewer of them were Hispanic. 96% of them were not Hispanic.

So we wanted to look, since we did have a high rate of dropouts here, was there a difference between those we included in the analyses and those who didn't finish the training or never did that follow up survey? So for the counselors, there was no difference. It's called a Lever Analysis. So you want to see, well, is there a certain type of person that didn't want to stay with you? So was that contributing to biasing your results?

So for the counselors, it wasn't. For the supervisors, there was a significant, this is statistically significant difference between participants who stayed in the study and those who left, which makes sense that those with higher levels of education were more likely to complete the training. It's not a shocker that they might be more interested in things to do with research.

So what about group differences? So here, we're looking at, using random assignment, was there a significant difference between who ended up in training, who ended up in control? And there wasn't.

As far as what did make a difference, and going back to that, also, this is a more important point. The training didn't make a difference. So there was no significant group differences on our research orientation or the interactions with other type of resources as to whether or not people took the training.

But what we did find when we looked at the demographic data that supervisors scored higher if they had their CRC and if they had more levels of education. All those other variables going back, remember that third question. What is likely to predict how someone is going to perform differently on those outcomes? All the other stuff didn't make a difference, whether the number of staff members, their age, their ethnicity. That didn't matter.

Now, looking at each of those sections, we found that those who had worked for VR for longer, who had more tenure, and those who had the CRC, were more likely to score higher on research orientation. And they were more likely to use those resources we described if they had longer tenure, held the CRC, and also if they had higher levels of education.

So again, there was no significant difference between the training of control groups. And the counselors, though they scored higher if they held the CRC, and again, for the counselors now, this third bullet is referring to. These other variables that we looked at didn't have a significant effect on the outcomes.

Breaking down, now for the counselors, the individual sections of the survey, the counselors were more likely to be oriented to research if they had a CRC. They were more likely to be doing lots of interactions, again, if they had the CRC, or if they were a little bit older.

So as you probably have already figured out, the training didn't make a difference on our outcomes of interest, the research orientation, the types of interactions, or the use of research. It was really about demographics. So if someone held a CRC, if they had worked for a VR longer and had more tenure, they had higher levels of education, or if they were older.

So I took you down the path of where, when people, how they flowed through our study. We had 110 sign up. And when all was said and done, we'd lost 65% of our enrolled supervisors. Some of them never did the training or they never did the final survey.

As far as the counselors, by the end of the study, we retained 27 of them. So we only had 28% of the counselors who stuck with us till the end. So that is never good. Even though we did that Lever Analysis, it just means you have that much less sample to work with.

Also, there was a ceiling effect. So when, remember, there was that four point scale. So people would say either strongly agree, agree, disagree, strongly disagree. That doesn't leave a whole lot of room for growth.

And we found that people were already scoring fairly high in the three outcome domains. And that may be because we didn't sample randomly. If you remember, we invited VR supervisors to do this. So we only had people coming in the door who were already interested in doing this training to begin with. And we did the random assignment after they came in.

But if there was a supervisor out there who really was not very interested in research, they're not even going to sign up for this training. So that's the downside of not having done, from a scientific perspective, a random sampling of all the VR supervisors nationwide. So if you've got people coming in and they're already scoring high on your scale, there isn't a whole lot of room for your training to do anything to show growth.

ANN OUTLAW: Thank you very much, Dr. Murphy. Now I'll turn it over to Dr. Melissa Scardaville, who is a researcher and qualitative sociologist with the KTER Center. She had the opportunity to interview VR supervisors participating in the study to get a more in-depth understanding of their experience. Dr. Scardaville, thanks so much for joining us today.

MELISSA SCARDAVILLE: Thank you.

ANN OUTLAW: Can you tell us what you learned?

MELISSA SCARDAVILLE: Certainly, we learned a lot of really interesting things. I talked to 12 VR supervisors from seven states. Seven staff had completed the pre-transition services module. And five staff had completed the autism spectrum disorder module.

The goal was to conduct one interview per staff member every month from January to June. However, most staff did not respond to the request. So we did end up interviewing, as I said, 12 supervisors many multiple times. But unfortunately, we were not able to interview everyone who participated in the trainings.

We first started the interviews asking a series of quantitative questions. We wanted to get, what was their reactions to the trainings? The reactions across both of the modules ranged from, everyone thought it was either very positive or positive, as you can see, both in terms of the overall training, the format of the training, having it be online, and self-paced.

People were responding to that. And also the summary document, which summarized a lot of the evidence-based research. So across the board, everyone had a very positive reaction to the training.

We also asked about experiences after the training, how they were able to implement what they learned during the training. As you can see, everyone who I interviewed who took the pre-transition services module, 100% of them shared information with the staff. And the majority of those who took the autism spectrum disorder module also shared information with the staff.

We also had, in terms of the pre-transition services module, about 55% use the information they learned to actually hold that specific, formal trainings for the staff. About 50% of those who took the autism spectrum training module also had specific trainings for the staff. When it came to offering additional coaching to the staff, most of those who took the pre-transition services model did not say that they did that type of implementation.

In contrast, about 50% of those who took the autism spectrum disorder module said that they did offer additional coaching to the staff. And as you can see, fortunately, people across both of the modules did not encounter, said they did not encounter resistance to implementing any of the training that they learned into their supervisory experience or into their agency.

So one of the things that we looked at when we did the interviews was looking at change at two levels. One, the individual level, what were the individuals able to change, and then at the organizational level. So fortunately, a lot really occurred at the individual level.

All participants across both modules said that the training increased their awareness about these topics, or it positively reinforced knowledge that they already had about the topics. We also had, as Kathleen mentioned earlier, a module about adult learning principles. And what was interesting in the interviews is that a lot of people talked about how important that module was, as well.

So it wasn't about the content about pre-transition services or autism spectrum disorder, but that learning those adult learning principles was very valuable to the work. And about 75% of the participants said that they used those practices when they conducted internal trainings. Also, on an individual level, those who took the autism spectrum disorder training module noted that they really appreciated the statistics about autism and that they shared them with the staff.

Both in the autism spectrum module as well as the pre-transition module, and this goes back to the summary document earlier, people really appreciated having evidence and empirical research. They were able to be able to share concrete findings with their staff. So instead of just saying, "anecdotal experience," be able to share evidence-based or best practices. And they really appreciated that in the training, that a lot of time was taken to be able to focus on the empirical research.

All the VR counselors who took the pre-transition service module, they were more likely to talk about the benefits of the adult learning principles than the content of the pre-transition services. And during the conversations, as I probed a little deeper, a lot of that really stemmed from the fact that most of these agencies already had a focus on pre-transition services. It wasn't necessarily new. So again, it was reinforcing knowledge that they already had. And so what was more new to them was the adult learning principles and that they could really implement them in terms of improving their internal trainings.

So when we looked at change across an organizational level, as you might expect, participants noted that it was very hard to enact change at that level. And the reasons really clustered into three groups. A lot of participants talked about that in their agencies, there was really high staff turnover. So it would start, they would be there for six months to a year, and then they would leave, or they would transfer or get another job.

And when you have this high staff turnover, it makes it very difficult to impart the lessons that they learned during the training. So some of them talked about how after they participate in the training, they held an internal training to share what they learned. And then many of those people who were at the training ended up leaving the agency.

And so that knowledge that you imparted also went with them. So it's very hard to change things on a cultural or organizational level when the individuals involved aren't consistent across the organization over a period of time. So high staff turnover was certainly an issue.

The counselors that we talked to also mentioned that a lot of their jobs was about putting out fires. That they wished that they had, one of them talked about the luxury of being able to sit back and think about the intellectual best practices based on research, but that that wasn't what their job was. Their job was about putting out fires and addressing immediate crises. And that type of urgency does not necessarily go hand in hand with being able to have a thoughtful, proactive approach that's based on evidence-based research. So in short, most of the counselors talked about that implementing a lot of the best practices was their goal and they would love to do that, but that the mechanisms of their job didn't necessarily allow that to happen.

The third reason that people talked about it's hard to have change on an organizational level, is that the counselors have a lot of competing demands. They just didn't have one hat that they wore in their job. They wore multiple hats and were pulled in all of these different directions. And so even if they weren't putting out fires, even if they did have the space to be able to reflect and proactively plan or train, they didn't actually have the time to do so because they were doing so many different things. And so many of them talked about that if they had more time in the day or more energy or more bandwidth, they would be able to put new ideas into practice.

So despite these challenges, there were some success stories. And I wanted to share a few of them today. Several of the participants talked about that the materials that they received during the training really helped spur dialogue, both within their agencies and sometimes even at the state level, about pre-transition services or autism spectrum or even adult learning principles.

And so it wasn't necessarily codified into a formal training, but that they were able to coalesce discussions around these important topics, and that the trainings were an important impetus to that. So not necessarily something that would change organizational culture, but certainly at the beginnings of starting that change. So a lot of participants said that change is slow. But being able to have these trainings and have these actual materials to be able to share within their agencies was helping to be able to form conversations that they were very hopeful have change happen down the road.

One particularly meaningful success story is that one VR counselor who had attended a pre-transition services training took that information that she learned during the training to her our agency and talked about the real importance of this population. And so the agency created a new job category that specifically works with youth in this population. And once that job category was added, they were able to add three new staff specifically able to work with pre-transition services.

And the counselor shared that it was really, her agency already knew that it was important. It wasn't that people disagree that it was important. But it was having the information and the material and the evidence that was presented during the training, being able to take that back into her agency. People were able to get on board and add this new position to be able to better serve this population.

So as all good qualitative research, it asks additional questions. So as I mentioned earlier, most of the VR counselors who attended the trainings did not respond to our follow up requests. And as we look at the issues that people had creating organizational change, we can see why.

People are really busy and pulled in lots of different directions and putting out fires. So they may not necessarily have the time, or believe they don't have the time, to participate in any follow up. So given these parameters, what are ways to increase participation in these follow up activities?

Also, as we saw in one of the challenges to implementation, most participants talked about staff turnover as being a barrier to implementing best practice. And so knowing that staff turnover is something that affects many VR agencies, how can we formulate our trainings to address high staff turnover? If we can't stop staff turnover, are there ways in which that we can augment or change our trainings in order to make that staff turnover isn't such a barrier to change?

And finally, what was really clear through these qualitative interviews is that different states are dealing with different challenges and have different resources at their disposal, different populations to deal with, and very different cultures around VR services. And so having a standard training may not necessarily address all of the facilitators and barriers to implementation across all state VR agencies. And so one thing to think about is, how can we use trainings to both address the wide diversity in state VR agencies, as well as develop different trainings to be able to address these different cultures, resources, and mandates? So thank you very much.

ANN OUTLAW: Thank you very much, Dr. Scardaville. Now let's hear from Dr. Bitnara "Jasmine" Park, a senior researcher at AIR. Dr. Park analyzed RSA-911 data and treatment in control states. Dr. Park, would you like to share with us?

BITNARA "JASMINE" PARK: Sure, thank you, Ann. So during this presentation, I'd like to discuss what we have found from the analysis of the RSA-911 data to evaluate whether the supervisors who participated in our study improved the use of relevant research by their VR counselors and, in turn, improved the outcomes of consumers served by VR counselors whose supervisors received our training and support.

So what is asked RSA-911 data? It is Rehabilitation Services and Administration Case Service Report Data, which is administrative data collected by each state VR agency and reported quarterly to the Rehabilitation Services Administration, RSA, at the US Department of Education. The purpose of this data reporting system is to track the progress of VR agency services under the Rehabilitation Act of 1973.

It is also often used by researchers like myself to evaluate the impact of the services provided to individuals who receive them from the state and federal VR agencies. The data set contains an incredible amount of information about individuals receiving services from the VR agencies. This includes demographic characteristics like age, race, ethnicity, and location of residence.

Also, it includes primary and secondary disability types and sources of disabilities, employment-related information, such as their employment status, wages, number of hours worked per week, employment start and end dates, their barriers to employment, et cetera, and et cetera. In addition, it includes information about types of services that individuals received from the VR agencies, such as job exploration counseling, other training types, transportation. For each type of services provided to the individuals, the data set includes information about whether the service was provided by VR agency staff, or it was purchased and, if so, the costs associated with the purchases, and et cetera.

So as you can see, the RSA-911 data provides a tremendous amount of information about individual characteristics and services provided by VR agencies. This is a very valuable resource, especially for studies like ours. And as you can imagine, another advantage of this data set is a large sample size of individuals with disabilities receiving VR services across states and jurisdictions, including Washington, DC, as the data reporting is mandated.

So how did we obtain the data? After the treatment phase was over, we contacted the states that had VR supervisors who participated in our study, and we requested to share their RSA-911 data. We received the data from six states, three states from the control group, indicated by the red stars on the map on the right side of the slide, and three states from the treatment group, indicated by the green stars.

We asked the states to share the data from two time points, one from 2018, prior to initiation of the training, and one from 2019, one year after we initiated the training. We asked states not to disclose any personally identifiable information, such as social security numbers or any other similar information. I'd like to note that this decision was purposefully made to protect individuals' identities. However, because of this, we could not track individuals across years from 2018 to 2019, which means that we could not do cross-year comparisons.

So who is included in the analysis? For the comparison of treatment and control groups for the adults with the autism track, individuals with either primary or secondary disability source indicated autism in the RSA-911 data were selected. After excluding any individuals with the missing data on the variables that we studied, we had about 2,700 adults with autism for 2018, and about 3,200 for 2019. Within the selected analytic sample, about 90% was from the treatment state for both years.

For the employment transition service track comparison, individuals with a record for the start date of pre-employment transition services were included, regardless of type of disabilities. Again, after excluding individuals with the missing data on the variables that we studied, we had about 7,200 individuals in 2018 and 17,900 individuals in 2019. Similar to the autism track, about 83% and 90% of the analytic sample was from the treatment states for 2018 and 2019 respectively.

Just as a reminder, individuals with autism who received pre-employment transition services were considered only for the pre-employment transition track comparison. Also, the number of individuals included in the data we received from the states varied quite a bit. And this is as few as 100 or so and up to more than 55,000 cases.

Also, the amount of missing data, including the data sets we received, varied quite a bit as well. This left us with an analytic sample that is quite imbalanced in terms of number of sample size for each state. For example, about 67% of the analytic sample was from one treatment state.

So what did we study for our outcomes? There were two sets of outcome variables we studied. First, outcomes related to the individual's employment. This includes employment status, whether individuals achieved employment or not and, if so, their hourly wages and number of hours worked per week.

The employment achievement includes having competitive integrated employment or competitive integrated employment with ongoing support services for individuals with significant disabilities, or self-employment. Examining these employment-related variables help us answer the second research questions, examining the employment related outcomes of consumers served by VR counselors whose supervisors completed our training, by comparing the outcomes of consumers served by VR counselors whose supervisors were in the control group.

Secondly, we examined the variables related to various services provided by VR agencies to consumers. This includes the percentage of individuals who received any kinds of services by VR agencies and the percentage of individuals who received specific type of services. Examining these variables help us answer the first research questions indirectly in a way because we may be able to examine the changes in VR service deliveries for VR counselors whose supervisors completed our training.

So how these fire service-related variables were created? For each variables related to VR services, including the RSA-911 data, we created a binary variable. In other words, we divided the consumers into two groups, one who had received a particular service type, and the other who did not.

In the data set, there are four major categories of VR services. First category is pre-employment transition services, which includes five specific types of services, such as job exploration counseling, workplace readiness training, counseling on opportunities for enrollment in comprehension transition, or post-secondary education program. And these variables are only required if an individual is receiving pre-employment transition services. So individuals who are not receiving pre-employment transition services or who may not be eligible for such services would not have any valid records.

Second category is training services, which includes any training services designed to help individuals improve educational or vocationally or to adjust to the functional limitations of their impairments. Specifically, this category includes enrollment in graduate school, four year colleges or universities, or community colleges, or occupational or vocational trainings, base academic remedial or literacy trainings, or disability related skills training, and et cetera. Third category is career services, which includes assessment performed for various reasons, such as to determine an individual VR service eligibility or the nature and the scope of VR services to be included in the individualized plan for employment.

These assessments, include but not limited to psychological evaluation, medical exams, or et cetera. Also, this category includes any diagnosis and treatment of impairments. VR counseling and guidance, job placement assistance, which is a referral to a specific job resulting in an interview, whether the individual obtained the job or not. The fourth category is other services, including transportation necessary for individuals to participate in VR services, maintenance support, providing expenses for food, shelter, clothing that are necessary for individuals to participate in VR services and activities, sign language interpreter services, et cetera.

So how did we analyze the data? First, the data were examined descriptively by a treatment status and by each topical track. Then, the averages of outcome variables were compared using the independent sample t-test to see if the averages varied statistically significantly between the control and the treatment state.

Before we look at the results, I'd like to emphasize that we cannot make any causal conclusions about cross-year comparisons because we could not track the same individuals across the years, as I mentioned earlier. Having this in mind, let's take a look at the employment status first. For the autism track, as you can see, the percentage of adults with autism who were employed was higher for the control states, represented by the gray bar in both years, compared to the treatment states, represented in the darker blue bars for both years.

For the pre-employment transition check, you can see a similar pattern that the central states showed a higher percentage of individuals who are employed compared to the treatment states in both years. One thing I'd like to note here is that you may be surprised that the percentage of employed individuals in this track for the treatment group is very low. And this is likely driven by one of the treatment states with a large sample size and many individuals. In fact, about 2/3 of individuals in this state were students in secondary education or other educational institutions.

So how about hourly wage? We see that for autism track, there was no difference in the hourly wage for those who were employed across both groups for both years. For the pre-employment transition track, the hourly wage was higher for the control states for both years.

One thing I'd like to note here is that the average hourly wage for both years across both groups of states was above the federal minimum wage. The table on the right shows the number of hours worked per week. Similar to the hourly wage for the autism track, there was no significant difference. And this was significantly higher for the control states for the pre-employment transition track for both years.

So looking at all three employment-related variables, we really could not find an impact of our study. In fact, the averages of employment-related outcomes were generally higher for the control states for both years. And this is highly likely related to the sample included in our analysis and not an indication of effectiveness or lack of effectiveness of our training.

So let's take a look at the VR service delivery practices. When you look at the percentage of individuals received and the types of VR services, for the autism track this number is higher for the treatment states for both years, as you can see. For the pre-employment transition track, this is higher for the states for both years.

But I'd just like to point out how high this number is. In 2018, almost nine out of 10 individuals in this track received some sort of VR services, compared to 39% in the control state. In 2019, this number is 97%, which is incredibly high.

If you break down this data by the service type, for the autism track, you see that there was a significant difference for the career services for both years, with the treatment states showing the higher percentages. In 2019, the percentage of outcome consumers receiving other types of services was higher for the treatment states. And please note that the pre-employment transition service category was not analyzed, as the individuals in this track would not have been eligible for this service type.

For the pre-employment transition track, the percentage of individuals receiving pre-employment transition services and career services were higher for the treatment states in both 2018 and 2019. And similar to the autism track, the percentage of individuals receiving other types of services was higher for the treatment states in 2019. Even though we see the higher percentages of individuals receiving the VR services, most likely we cannot attribute this to our study effect because we see these percentages are higher in both 2018 and '19, meaning that before and after our study took place. However, the fact that we see the higher percentage of individuals receiving other types of services was higher in 2019 for the treatment states, this may be an indicator of positive effect of our study.

So I kept reminding you that a large proportion of our analytic sample came from one treatment state. And I just want to take a deeper dive around this. So as you can see here, when you look at the hourly wage and number of hours worked per week, we really don't see much difference between the state and the rest of five states included in the analysis.

But when you look at the percentage of individuals receiving pre-employment transition services, you notice a huge difference. When you look at the number of VR supervisors participate in our study and completed in our training, we had the most number of VR supervisors from this state. And also, the largest number of VR counselors participated in the counselor survey, as well. This could indicate that the state is emphasizing a lot on the research and VR services related to the pre-employment transitions, and how state leadership and commitment can make a big difference in the VR services delivery practice.

So just to sum up, for both tracks, percentage of individuals employed was higher for control states for both years. And no significant difference was observed in the hourly wage and number of hours worked per week for the autism track. Hourly wage and number of hours worked per week was higher for the control states for both years. But any significant differences are not likely related to our study treatment effect.

For VR service-related outcomes, for both years, percentage of individuals who received VR service was higher for the treatment state. And for the autism track, percentage of individuals who received career services was higher for the treatment state. And for the pre-employment transition track, percentage of individuals who received pre-employment transition services and career services was higher for the treatment state. However, it is important to remind that any causal conclusion should not be made, even though we saw some significant differences.

Just like any research studies, our study has limitations, as well. First, we were not able to conduct cross-year comparisons because we could not track the same individuals across years. Second because of a small study sample, that is, number of VR supervisors participate in the study, and the number of VR supervisors and counselors completed the survey, as mentioned previously, by Dr. Murphy, we cannot link the individual consumers in the RSA-911 data to their counselors whose supervisors participated in the study. This means that we could not evaluate the effect of our training directly.

On a related note, this means that we may have spillover effect, meaning the consumers and VR counselors may have benefited from our study, even though their VR counselors and VR supervisors may have not participated in our study. Although this is a limitation from the research point of view, however, in practice this is essentially what we want to see. Even though not all the supervisors in the state may have not participated in our training, they talk to their colleagues and counselors. And the counselors talk to each other. And hopefully, the spillover effect ultimately can benefit counselors' practice and, in turn, improve consumers' outcomes.

Fourth, using the existing data set, such as RSA-911 data or caseload data that the state agencies collected instead of using the data that our research team collected, was a limitation. Even though I mentioned some of the advantages to using these existing data sets, one limitation of doing so is that when there are potential data entry errors or outliers, we cannot verify the accuracy. Another limitation is that because we only work with what's included in the existing data set, we could not get additional information about the services and programs delivered to the individuals, such as quality of the programs, the content of the programs, and et cetera.

So how can you improve the VR practices based on what we learned from this study? Although employment outcomes may be more difficult to change, the service delivery practice could be improved if state agency leadership and VR supervisors emphasize the use of evidence based practices. In addition, collecting valid and reliable data on a regular basis that gives a comprehensive picture of VR services delivered to the consumers and their employment outcomes and analyzing such data can provide more concrete evidence about the progress of consumers making. And this can help VR counselors make more informed decisions that improve services and better support their consumers. Thank you.

ANN OUTLAW: Well, thank you, Dr. Park. And thank you to Dr. Murphy and Dr. Scardaville, as well. And of course, thank you to all of our listeners.

Please take a moment to complete the evaluation, which will be emailed to all of our registrants. You can also find it on our website. I also would like to thank NIDILRR for providing funding for this webcast. Thank you, and have a great afternoon.