

AJP Audio – Dr. Drew Rothenberg – March 2024

Aaron van Dorn ([00:07](#)):

Welcome to AJP Audio for March, 2024. I'm Aaron Van Dorn. Today on the podcast, I spoke with Dr. Drew Rothenberg, a research scientist at the Duke University Center for Child and Family Policy. Dr. Rothenberg and colleagues have a paper in the March issue of the American Journal of Psychiatry, looking at the long-term, intergenerational effects of the Fast Track program, an intervention among parents and children in the early 1990s that sought to improve mental health outcomes among children, and whether those benefits accrued in their own children down the line. Afterwards, I'll speak with Dr. Ned Kalin, editor-in-chief of AJP, about the rest of the March issue and what draws it together.

([00:38](#)):

Dr. Rothenberg, your study looked at the effects of children's mental health interventions, not just on the children themselves, but on the impact of the mental health of their children. What can you tell us about the Fast Track trial, and what did your study find about its efficacy?

Dr. Drew Rothenberg ([00:49](#)):

That's a great question. The Fast Track trial itself is a rather remarkable intervention, or really, set of interventions that was developed in the early 1990s, but it's a really innovative intervention even still today. The Fast Track trial started by enrolling students identified in kindergarten at high risk for conduct problems, and its whole point was to help students avoid those conduct problems and subsequent antisocial behavior so that they avoid being put into prison, criminality and associated issues in adulthood. There were a couple of different components to the Fast Track trial, all of which were pretty amazing, so I'm excited to tell you about them. First, the Fast Track trial started in elementary school, and had three major interventions that it provided these kindergartners in elementary school. One was parent behavior management training, which really trained parents to be able to provide basic positive reinforcement skills and limit setting to their children.

([01:45](#)):

Another was a child's social cognitive skills tutoring program, and a third was a teacher-implemented universal social emotional learning curriculum. That fast track intervention started in elementary school, and then continued into middle school and high school with a few additional components, things like a transition into a middle school program that included for parent youth group sessions about things that could trip adolescents up as they began to transition to middle school, alcohol, tobaccos, drugs, making good decisions. It also included youth forums in middle school, things like vocational opportunities, life skills and summer employment were covered in those forums, to really help youth get on the right track as they progressed into young adulthood. Finally, in high school, the fast track intervention continued with individualized interventions, things that promoted parent monitoring, peer affiliation in pro-social ways, academic achievement and social cognition. The intervention ended at grade 10.

([02:41](#)):

This intervention was found to be really effective in preventing conduct problems and mental health problems over the years, even up to age 25. But there was this big question about whether it helped the children of those participants who started in kindergarten and were followed into adulthood, whether those children's children experienced positive impacts from the Fast Track trial later on. That's what our study looked at. We were really interested in looking at whether children of these Fast Track participants who started this intervention way back in kindergarten in the early nineties experienced better mental health and less mental health service use. We found two things in our study. First, we found that these children of Fast Track participants, even though they never directly interacted in the

trial, they still experienced reduced general inpatient, and inpatient and outpatient mental health service use.

[\(03:34\)](#):

They used inpatient and outpatient mental health services less than children in the control group in that trial. We found out that there might've been two ways those improvements in general inpatient and outpatient mental health services, those effects were conferred. One was that it seems like it improved their parents' corporal punishment, and it improved their parents' depressive symptoms. Those children of Fast Track participants were able to grow up in healthier home environments, and as a result, they used less of those inpatient and outpatient mental health services that they might've had to use otherwise to experience mental health.

Aaron van Dorn [\(04:10\)](#):

Well, your study found that generation two children, that is, the first cohort of children from the early 1990s that were introduced to Fast Track, had decreased corporal punishment used and lower depression, and that their generation three children, that is, their children, had lower inpatient and mental health service use. The intervention did not significantly improve the mental health of the generation three children. Their measures were, in fact, similar to the comparator group for generation three children. This is null result from your group's first hypothesis, but what should we take from it?

Dr. Drew Rothenberg [\(04:36\)](#):

Another great question, and that's right. With our study, what we found was, children of those Fast Track participants did use less mental health and inpatient service use, but their mental health wasn't necessarily improved compared to the control group, and we wondered why. Of course, we were hoping to find that the mental health of those children in the Fast Track intervention group was better compared to those in the control group, but we didn't find it, and we wound up digging into the data a little bit more and finding a really intriguing reason as to why that might've been the case. Specifically, these children of Fast Track participants, we call them G three children, in both the treatment and control group, were relatively mentally healthy. In fact, according to our measure of mental health, both groups fell well within the normative range of mental health functioning.

[\(05:27\)](#):

They felt like, "We're experiencing good mental health." We began to ask, wow, why are both groups so healthy, and came to some intriguing conclusions. The Fast Track group might've been mentally healthy because parents applied the skills they learned in Fast Track to reduce their own conduct problems, their own corporal punishment and depression in their home environment. Fast Track created this better home environment that led to better mental health for participants of Fast Track's children. The control group didn't get to learn those skills. Remember, they never were actually in the Fast Track intervention, so they might've used increased mental health services at higher rates to achieve those same outcomes. This null result might've resulted from these two different groups finding different ways to get their children to those typically developing mental health levels that we want all of our children to thrive at.

[\(06:23\)](#):

In Fast Track, those parents might've used the fast track skills they learned as children to be able to create healthier home environments. In the control group, they used increased mental health services. I also want to note, there's another study like Fast Track that looks at, instead of children at high risk for conduct problems, it was a universal intervention and prevention program called the Raising Healthy

AJP Audio – Dr. Drew Rothenberg – March 2024

Children Project, and that group did find effects on children's mental health. There is also some evidence that, with universal prevention programs, we're seeing benefits in children's mental health across several generations, which I think is really encouraging and notable.

Aaron van Dorn ([06:59](#)):

The children who were originally put into the Fast Track program were at risk for behavioral problems, correct?

Dr. Drew Rothenberg ([07:05](#)):

That's right, absolutely.

Aaron van Dorn ([07:07](#)):

Were the children who were in the control group in a similar situation of being at risk for mental health problems at school?

Dr. Drew Rothenberg ([07:13](#)):

Yes, that's exactly right. That's a really good observation, and thing to mention, actually. What we wound up doing... well, I say we. Just like there's two generations, or three generations in this study, I'm a second generation researcher in this study. The original project investigators, what they wound up doing was recruiting from elementary schools in high risk neighborhoods and identifying the children in those elementary schools at the very highest risk for conduct problems, or conduct disorders, and then splitting them equally into the treatment and control group. They randomized them into the treatment and control group in that way, and that's how we have children who are at high risk for conduct problems in both the intervention and control group at the start of this Fast Track intervention, who were both followed over time.

Aaron van Dorn ([08:00](#)):

What were the limitations of your study?

Dr. Drew Rothenberg ([08:01](#)):

I think the biggest one was that, with our particular intergenerational study, the participants in Fast Track reported on their own children's mental health using a single measure. In the future, it might be a really good idea to get multiple perspectives from other observers, like teachers, on those children's behavioral problems. We'd also love to measure those children of Fast Track participants behavioral problems in multiple ways, like with observational measures, where you could perhaps go directly in the classroom and observe those children, perhaps several different behavioral health questionnaires that we could use to examine different types of conduct problems. Encouragingly, we hope to do all of this in our next grant cycle. We're keeping our fingers crossed that we can get this grant funded again, to continue to look at those intergenerational effects with new ways of measuring generation three child mental health.

Aaron van Dorn ([08:58](#)):

Of course, in the background of your studies, the enormous demand for children's mental health services, both in the U.S. and around the world, it's something that was especially highlighted by the COVID-19 pandemic, and the limited resources available to meet that demand. Does your study have

any immediate clinical implications for those providing children's mental health care currently, or for policymakers who are looking to increase access to children's mental health services?

Dr. Drew Rothenberg ([09:17](#)):

Absolutely. There's implications for both of those things, so I'd love to start with a policy perspective first. I think what our study and other studies like it really demonstrate are that investment in early childhood mental health services doesn't just help children and reduce costs as they become adults. It also helps their children's children, and reduces the cost and burden of medical care for those children as well. Expansion of access to free or low cost mental health services isn't just great for mental health, it's also great for a cost benefit perspective, too. It may even relieve need for services multiple generations into the future. If policymakers invest in early childhood mental health programs today, they're probably going to see a return on that investment for several generations to come, either in service use, as is demonstrated in our fast track intervention, or in improved child mental health problems, which has been seen in the Raising Healthy Children Project, which I think is an encouraging thing to see.

([10:15](#)):

Clinically, the legacy of this Fast Track project is already apparent in many clinical applications. Some of the behavioral parent training programs that came out of this, like helping the noncompliant child, are now gold standards in the field as ways to prevent early childhood conduct problems. Same with the social emotional learning classroom curriculum that was deployed in Fast Track. That's evolved into the PATHS curriculum that's used in many different schools across the country. Finally, the social cognitive skills training program that was part of Fast Track has really become a mainstay as a CBT treatment for externalizing behavior or conduct problems in kids. These are all gold standard evidence-based programs now, and I think the key clinical implication is trying to figure out the best way to expand access to programs like these by being able to train clinicians in these types of programs, and help them feel comfortable deploying them for children at risk of conduct problems.

Aaron van Dorn ([11:07](#)):

You already mentioned the next grant cycle, but what's next for your research in light of that?

Dr. Drew Rothenberg ([11:10](#)):

Yes. Oh, great question that I'm super excited about, so I'm probably going to talk really quickly about it. Too quickly, so I'll try to calm myself down.

Aaron van Dorn ([11:19](#)):

Sure, take your time.

Dr. Drew Rothenberg ([11:20](#)):

There's three specific directions that we hope to take this research next. First, the amazing fast track team I work with at Duke, which includes Jennifer Lansford, Ken Dodge, Jennifer Godwin, and all the Fast Track PIs at our different sites across the country, we're really hoping to be collecting data from multiple reporters on a new five-year study of these children of Fast Track participants. What we really want to do is exactly what I was talking about in the limitations, examine these children of Fast Track participants as they get older, to see if Fast Track is able to benefit these children's mental health as they enter adolescence and young adulthood, and things like depression, substance use and other

AJP Audio – Dr. Drew Rothenberg – March 2024

mental health difficulties really become more common. What we're thinking is that if we can use multiple different ways and multiple different reporters to capture those children's functioning in young adulthood and late adolescence, we might be able to identify those mental health benefits of Fast Track, because mental health difficulties might become more prevalent, so it might become more easy to detect the benefits of Fast Track on those mental health difficulties.

[\(12:29\)](#):

A second way that I'm interested in examining how to increase the benefits of Fast Track intergenerationally is to understand how we can roll early childhood prevention programs like this out in minoritized or underserved families. I'm working with Nellie Garcia, Miya Barnett, Jason Gent, Eileen Davis, and a team at the University of Miami Miller School of Medicine to try to develop digital versions of parent training interventions, and recruit paraprofessional [inaudible 00:12:55] helpers from communities, to be able to help families from minoritized or underserved communities be able to have access to the types of interventions that make Fast Track such an effective intergenerational treatment.

[\(13:07\)](#):

Finally, I'm also incredibly excited to be able to learn more about an upcoming initiative led by Sanne Geeraerts, Susan Branche, David Kerr and Deborah Capaldi at the Oregon Social Learning Center. They're actually taking a whole bunch of studies like Fast Track, that followed participants longitudinally, and starting an international consortium of intergenerational transmission of parenting studies. As you can imagine, there's very few studies out there that are able to examine the effects of parenting on the next generation of children as they grow up, and those researchers are really bringing those programs together, to be able to look at the combined effects of all of those studies, and understand exactly how parenting and family environments are passed across generations. I'm just super excited to learn from them as well.

Aaron van Dorn [\(13:55\)](#):

Dr. Rothenberg, thank you for taking the time to speak with us today.

Dr. Drew Rothenberg [\(13:57\)](#):

Absolutely. Thank you.

Aaron van Dorn [\(13:59\)](#):

Up next, Dr. Ned Kalin.

[\(14:01\)](#):

Dr. Kalin, welcome back to AJP audio for March, 2024.

Dr. Ned Kalin [\(14:03\)](#):

Thank you, Aaron.

Aaron van Dorn [\(14:04\)](#):

This month I spoke with Dr. Rothenberg, looking at an interesting study following up on the Fast Track intervention on the intergenerational outcomes of children. What can you tell us about it?

Dr. Ned Kalin [\(14:12\)](#):

Yes, Aaron, this is a really interesting and unique study, because it looks at the intergenerational effect of an intervention, initially in children that were at risk for aggressive tendencies. This is an intervention called the Fast Track Program, which was very comprehensive and was administered to kids at risk, that had aggression related issues, from first to 10th grade, as well as involving their parents in the intervention. It was demonstrated that this intervention had very positive effects on the children directly, but what this study does is actually studies the effects that it might have on the offspring of these children that initially had the intervention. What's quite interesting is that the hypothesis that was explored was the idea that this intervention would have intergenerational effects on reducing mental health symptoms and problems in the offspring of these kids that had the initial intervention. They actually studied 476 offspring of these initial children that had the interventions, and compared that to control children.

[\(15:17\)](#):

What they found was a little bit surprising. They did not find a major effect on reducing mental health symptoms, or in other indicators of mental illness, such as psychiatric medication use or behavioral mood problems. But they did find a significant effect, that is that the children that were offspring of the individuals that had the Fast Track intervention were less likely to be hospitalized overall, and less likely to get inpatient mental health treatment, and less likely to engage in outpatient mental health treatment. Some indications that this had long-term effects on mental health and wellbeing, but others that it was not as profound as they, perhaps, had initially hoped, or hypothesized. It also looked like there was less physical punishment by parents that received this intervention, and that may have been related to less internalizing symptoms in the children.

Aaron van Dorn [\(16:08\)](#):

Up next, we have Haller and colleagues, who looked at pediatric anxiety disorders. What can you tell us about them?

Dr. Ned Kalin [\(16:12\)](#):

This is an interesting study, and I should note, before I go into this, that I have a bit of a conflict here, as I was fortunate to be a co-author on this study. This was done primarily at the National Institute of Mental Health. It looked at the brain changes, using functional MRI, in children that were undergoing cognitive behavioral therapy, which is a gold standard treatment for anxiety disorders. Basically, what the investigators did here was that they looked at imaging parameters before and after 12 sessions of cognitive behavioral therapy treatment in the children that were suffering from one of the disorders, which included social anxiety disorder, generalized anxiety disorder, separation anxiety disorder.

[\(16:55\)](#):

What the findings demonstrated was, one, that the treatment was effective, but two, that there were interesting changes in functional MRI data, or brain activation, that was associated with treatment. Some of the brain regions that were elevated prior to treatment in anxious children, such as some of the cortical regions, especially in the frontal part of the brain, and also in the back of the brain, the parietal regions, these overactive regions seem to normalize with treatment, suggesting that the treatment was, at least in part, having not only effects on behavior and anxiety, but also on brain function. Also interesting and important was that there are other brain regions that didn't change, and one of these regions is a region that we call the amygdala, that we've talked a lot about. This is a region that is fundamental to the initial experiences of many emotions, including fear and anxiety. The fact that this didn't change suggests that some parts of the brain that are overactive in relation to anxiety are amenable to change and others are not, in relation to cognitive behavioral therapy.

[\(18:00\)](#):

Now, what this means is not clear. It could be that these brain regions that didn't change will change over time, and reduce their activity, and look more normal. It also could be that this is a marker of the chronicity of anxiety disorders, because typically, when people are treated for anxiety disorders, they do get better, but they tend to have a longer term course with relapse and chronicity. Maybe this lack of the amygdala, for example, of normalizing, may be related to that type of a long-term outcome. More studies need to be done, but again, this is a very interesting finding related to this behavioral and psychotherapy treatment resulting in reductions in brain activation in certain critical regions but not in others.

Aaron van Dorn ([18:44](#)):

Poirot colleagues looked at the use of MRI in predicting treatment response in major depressive disorder.

Dr. Ned Kalin ([18:49](#)):

The age-old question is, how can we get better at selecting different antidepressants for individuals in personalized treatment kinds of ways? This is related to whether or not we can predict outcomes, or treatment responses. This is a study called the EMBARC Study, which stands for Establishing Moderators and Biosignatures of the Antidepressant Response in Clinical Care. It was a double-blind, placebo controlled clinical trial for patients with early onset, recurrent major depression, were either given eight weeks of sertraline treatment or a placebo. If the placebo group didn't respond, they were then treated with sertraline, and if the sertraline group didn't respond, they were treated with another antidepressant such as bupropion. In general, the major question that was asked here was the imaging data that was collected, which was multimodal, meaning it looked at different structural and functional measures, whether that could be used to predict outcomes in relation to sertraline treatment.

[\(19:46\)](#):

To make a long story short, what the investigators found, using artificial intelligence and machine learning methods with these data sets, was that they could pretty accurately predict individuals that were going to respond to sertraline treatment by using a number of the different imaging measures, which included measures of gray matter, white matter, and also, resting state functional connectivity, and a measure called perfusion MRI, which is actually a measure of blood flow. Again, this is a study that demonstrates the ability to make pretty good predictions about whether or not individuals will respond to sertraline. It's interesting because it uses a variety of imaging measures, and also combines that with artificial intelligence and machine learning. The brain region that was most predictive of the sertraline response was the anterior cingulate cortex, when they were measuring blood flow, or arterial spin labeling. The behavioral measure that was most predictive of likelihood of responding was anhedonia, measures of lack of interest in activities, or lack of pleasure.

Aaron van Dorn ([20:50](#)):

Staying on treatment of depression, Ainsworth and colleagues were looking at the outcomes of pharmacotherapy in late life depression.

Dr. Ned Kalin ([20:55](#)):

This is particularly focused on cognitive changes in late life depression and its treatment, and this is basically a study that is a review. It looks at a lot of different papers, to try to summarize the literature about what our understanding is of the relation between successful antidepressant treatment and

cognitive changes in elderly getting better. Also, there was a subset of the studies that were used then for a meta analysis, which was to put all the different studies together and then to make predictions about the strength of the data in relation to that. What the basic findings were... well, first of all, let me just say that cognitive changes are not uncommon in individuals who are elderly and have depression. Cognitive changes are not uncommon in elderly individuals, as we all know, and they tend to worsen with depression. They also can be complicated with ongoing other types of neurological problems, or neurodegenerative problems that individuals develop when they're aging.

[\(21:54\)](#):

Sometimes it's hard to sort out what's depression and what is cognitive impairment related to, for instance, early dementia. This looks at this complex relationship, but the bottom line is that by looking at the systematic review, and also performing the meta-analysis, they did find what most clinicians have impressions of, which is that successful antidepressant treatment is associated with improvements in cognition in the elderly. However, some of these effects were not particularly strong. Also, it looked like, when comparing the SSRI and non SSRI antidepressants, that the SSRIs may have had an advantage, but again, this is a relatively small number of studies, and I wouldn't draw any major conclusions from that.

[\(22:39\)](#):

The effects that seem to be most prominent were specific to memory and learning, and less effects on reaction speed, processing speed in the brain, and also, more complicated executive function alteration. There's a really nice editorial by Dr. Steffens from the University of Connecticut, who's an expert in geriatric depression, and he really lays out and talks about the complex interplay between depressive symptoms, reversibility of cognitive alterations that are associated with depression, cognitive impairment and dementia at the elderly.

Aaron van Dorn [\(23:14\)](#):

Finally, we have a paper from Rosenqvist and colleagues, looking at the long-term effects of benzodiazepines and related drugs in a Danish cohort.

Dr. Ned Kalin [\(23:20\)](#):

This is, again, I think a really important study, and one that I think is important that we included in the journal. There's been a lot of recent, and maybe not so recent controversy around the use of benzodiazepines in psychiatry. Many doctors and psychiatrists are not excited about using benzodiazepines, for a whole variety of reasons, including the fact that they can be difficult to get patients off of. They can be seen as addicting for some individuals, but for those reasons, and also for medical legal issues, and whole host of other societal issues, benzodiazepines have, in my view, not been used as much as they should be for patients that are suffering from significant anxiety. Unfortunately, I think many patients end up having to suffer unnecessarily, because benzodiazepines can be extremely effective. This particular study used a very large sample. It was over 4 million individuals from the Danish registry, patients that were in the registry for data from 2000, and over the next 20-year period, to 2020.

[\(24:23\)](#):

What the investigators looked at was the use of benzodiazepines, and also related to the so-called related Z drugs, drugs that are frequently used for insomnia. For example, ziprasidone is one of those drugs. What they did was, they then looked at questions as to whether or not individuals were using these drugs over the long-term once they were prescribed, and whether or not they were using them excessively, or inappropriately, to get at this idea, or the question of whether or not how safe these

drugs are from the standpoint of long-term use. What they found was that, of this sample of about over 4 million, almost about a million individuals were prescribed a benzodiazepine, or a Z drug during this period of time. When they looked at one year, of those individuals, roughly 950,000 individuals that were prescribed these drugs, roughly 15% of them were only still taking or getting prescriptions after one year.

[\(25:17\)](#):

Most of the patients did not use these drugs over the long term. It was less than a year, as prescriptions from their doctors. When they looked at those individuals that were using them longer as compared to those that weren't, it was clear that the individuals that were using them longer tended to have psychiatric diagnoses. Again, these effects were not very strong effects. Now, when they followed individuals over a seven-year period, and they looked, for example, for the seven years, only 3% of the individuals that were initially prescribed these drugs were still taking them. Again, indications that at one year, there are not a whole lot of people that are taking these drugs, and at seven years, only 3% of the initial individuals getting prescriptions were still getting them. They also looked at the question of whether or not individuals were escalating the dose on their own in ways that were not consistent with the prescriptions that they were given.

[\(26:16\)](#):

Here, what the researchers did is that they used a subgroup of individuals, roughly 3,500 individuals, that were continuously taking these medications for at least three years. They had to be taking them for a longer time. What they found was that only 7% of those individuals were found to inappropriately escalate their dose. The other way to look at that, of course, is that 93% of the individuals were taking them appropriately and not escalating their dose. Overall, what these data show in this very large, naturalistic survey is that benzodiazepines, when prescribed, are used appropriately in general, that there's some likelihood of psychiatric patients using over the longer term, the non-psychiatric patients, which is not surprising, and that a really small percentage of those that are taking them over the long term get into using them in ways that are not consistent with how they're prescribed. This is generally supportive, again, of the relative safety, I think, and lack of concern that practitioners need to have in relation to using these drugs in psychiatric patients.

Aaron van Dorn [\(27:22\)](#):

Well, Dr. Kalin, thank you once again for joining us today.

Dr. Ned Kalin [\(27:24\)](#):

You're welcome. It's my pleasure. It's good to be with you.

Aaron van Dorn [\(27:27\)](#):

That's all for this month's AJP audio, but I hope you'll check out the other podcasts on author from the APA, and psychiatryonline.org/podcasts, or wherever you get podcasts.

[\(27:36\)](#):

The views and opinions expressed in this podcast are those of the individual speakers only, and do not necessarily represent the views of the American Psychiatric Association. The content of this podcast is provided for general information purposes only, and does not offer medical or any other type of professional advice. If you're having a medical emergency, please contact your local emergency response number.

