

“Understanding the Terrorist Mind” with Emile Bruneau

Transcript of Cerebrum Podcast



Guest: Emile Bruneau, Ph.D., is a researcher and lecturer at the Annenberg School for Communication at the University of Pennsylvania. Prior to his formal training in neuroscience, Bruneau worked, traveled, and lived in a number of conflict regions: South Africa during the transition from Apartheid to Democracy, Sri Lanka during one of the largest Tamil Tiger strikes in that nation's history, Ireland during "The Troubles," and Israel/Palestine around the Second Intifada. Bruneau is now working to bring the tools of science to bear on the problem of intergroup conflict by characterizing the (often unconscious) cognitive biases that drive conflict, and critically evaluating efforts aimed at transcending these biases. In 2015, he received a Bok Center Award for teaching at Harvard and was honored with the Ed Cairns Early Career Award in Peace Psychology. His work has received funding from the UN, US Institute for Peace, Soros Foundation, DARPA, ONR, and DRAPER Laboratories. Bruneau received his doctorate from the University of Michigan.

Host: Bill Glovin serves as editor of *Cerebrum* and the *Cerebrum Anthology: Emerging Issues in Brain Science*. He is also executive editor of the Dana Press and *Brain in the News*. Prior to joining the Dana Foundation, Mr. Glovin was senior editor of *Rutgers Magazine* and editor of *Rutgers Focus*. He has served as managing editor of *New Jersey Success*, editor of *New Jersey Business* magazine, and as a staff writer at *The Record* newspaper in Hackensack, NJ. Mr. Glovin has won 20 writing awards from the Society of Professional Journalists of New Jersey and the Council for Advancement and Support of Education. He has a B.A. in Journalism from George Washington University.

Bill Glovin: Terrorism in the brain is one of the more fascinating topics we've covered this year in *Cerebrum*. Hi, I'm editor Bill Glovin and welcome to the *Cerebrum* Podcast. Our guest this month is Emile Bruneau, author of our November article, "Understanding the Terrorist Mind." Emile is a researcher and lecturer at the Annenberg School of Communication at the University of Pennsylvania and has taught at Harvard and MIT.

A former high school biology teacher, he received his doctorate in molecular biology, but shifted gears and joined the cognitive neuroscience research lab at MIT. He's now working to bring the tools of science to bear on the probe of inter-group conflict by characterizing the cognitive biases that drive conflict and critically evaluating efforts aimed at transcending these biases. Welcome, Dr. Bruneau.

I noticed that you received your doctorate in molecular biology, but you put it aside to join the cognitive neuroscience research lab at MIT. Why the shift?

Emile Bruneau: I had a longtime interest in science, and the brain in particular. I was a science teacher for a number of years, and I was a biology major in college, so I went to grad school because of this interest in biology. But at the same time I was traveling a lot overseas and that's when I traveled to all these conflict regions and I found that the questions that arose for me on those trips, I mean observation that despite vast differences between the conflicts and the processes that seemed to be driving people into conflicts seemed to be incredibly similar. Those questions just didn't let me go. So, while I was having a totally delightful time nerding out in the lab, working on molecular neuroscience, I realized that when I went home, my thoughts were occupied with inner-group conflict. And I realized that in order to kind of move forward and make it a career, I needed to bring that stuff of my research together with the stuff of my thoughts. And that's when I decided to start researching how the brain responds to inner-group conflict.

Bill Glovin: This is a subject that can be difficult, controversial, and inspires passionate views. As evidence in the comment section under the *Cerebrum* article that we just published. First up is the problem of defining terrorism. How do we even define it?

Emile Bruneau: Yeah, it is tough. I think that, in general, there is a concern that we have enough processes going on in our brain that drive us to think about people who are different from us, to exaggerate the differences. To think of them as inherently different from us. And not just different from us based on circumstance. That people living half way around the world who we're fighting against is somehow completely and fundamentally distinct. And so I know that we have all of these psychological tendencies, that they are kind of baked into our biology, so I'm weary of a knee-jerk response to think and to define terrorist only as somebody else.

And so what I've tried to do is, and this is just for myself, there are many different ways that you can define terrorism, but for myself, if I look at a group that is generally considered by everybody to be a terrorist group, say ISIS, who are specifically targeting civilian groups and killing people, for me then it's a matter of working backwards and figuring out well what defines them. What makes them a terrorist group and not somebody else. Through that process I think I've come to a definition that includes both an ideological commitment, that you're fighting for an idea and willingness to commit violence against people who are non-combatant. So people who are not sort of military and I think there are many other definitions of terrorism that could be used, but that's the one, that's my working definition going forward.

Bill Glovin: Would you describe Assad and his assault on the Syrian people who oppose him as terrorism?

Emile Bruneau: Well, let's see. I think often times it seems like terrorism is defined by the tactics used, whether they're indiscriminate violence, when we have, especially when

we have the potential to not view violence indiscriminately. And it seems like there's good evidence that Assad has either targeted civilians, or used munitions that are indiscriminate enough that it's clear that it would kill civilians. So he seems to be doing it, I'm not sure, but he seems to be doing it more to maintain power rather than through a specific ideology, so he seems to use the tactics of terrorism, but I don't know if my own definition would apply to him because I'm not entirely clear about his ideological bent.

Bill Glovin: If two brothers grow up in the same household that follows the same ideology, why might one become a terrorist and the other not?

Emile Bruneau: Yeah, well this is a classic debate, right? In many ways the classic debate between nature and nurture. You could even make it better than that and make them identical twins, so they're genetically identical, and they grew up in the same household, and you can still have big differences between them. For example, Claude Steele, who is a famous social psychologist, he's liberal leaning and he's African American and his research is all about the processes that drive prejudices and discrimination. His identical twin brother, Shelby Steele, is conservative, Republican and is a proponent of the idea that black people are complaining too much in the US, and need to pull themselves up by their bootstraps. So their ideologies are actually diametrically opposed to each other, even though they are genetically identical.

Why this happens? Now we know that people respond to their environments and even though the environments are very similar for kids growing up, they're not identical. Each kid has a different experience. One kid gets in an argument with somebody who the other kid doesn't, and maybe that shapes how they think about things. All we know is that it happens and the interesting thing for psychologists and for biologists is to figure out what the trigger might be to cause somebody to go down a completely different path.

Bill Glovin: How about gender or sex differences in the brain, does that matter?

Emile Bruneau: Matter for conflict?

Bill Glovin: Matter in terms of the idea that someone might become a terrorist. I mean, are we finding that there's a lot of males over females? Well, I think there are, but is there a particular reason that we found through imaging that shows why more males tend to become terrorists?

Emile Bruneau: Well, it's not through imaging. I think the tempting answer is to say empathy. And there are gender differences for empathy that women tend to espouse more empathy than men. But this is one of the things that I wanted to point out in my article, which is that I think you have to contend with anecdotes like Wafa Idris, who was the first female Palestinian suicide bomber and she, a woman, was very empathetic. She volunteered as a paramedic. She took care of children of families who were in need in the Palestinian village that she grew up in. And

yet, she still decided to become a suicide bomber. And I think the interesting aspect of the tragedy is that empathy might not have not only shielded her from becoming a suicide bomber, but it might have actually been one of the motivations to get her to do so. Because if the empathy is directed at her own group, if she feels a lot of empathy for the Palestinian children, who she sees suffering, and she sees, she perceives it's at the hands of Israelis, then that might actually motivate her to engage in suicide bombing.

So, gender differences, yes, men are more often suicide bombers, but I think men in general engage in violence more than women, so there might be both a normative pressure, normative meaning we humans are really influenced by what we think we should be doing. So the type of way that we expect ourselves is profoundly influenced by how we think we should expect ourselves. I think a good example of this is going postal, back in the '80s a disgruntled postal clerk came in and shot a bunch of his co-workers and then killed himself. And then after that moment a number of disgruntled postal clerks did the same thing. So this copy-cattening behavior it opens like, it became a normative way to express your extreme rage if you were a postal worker.

And we see similar things with high profile suicides. If a celebrity, who is high profile, commits suicide, you actually see a lot of kids about the same age commit suicide as well. So we're affected by these pressures and one concern right now is that, for example, in the US there have been enough attacks, kind of lone wolf attacks, by angry or disgruntled Muslim men, that seem to be loosely inspired by ISIS. But they're concern is that it would be a normative pressure that's driving to this. That if now you are an angry, disgruntled, alienated Muslim man in the US, you have the normative way to express that. Maybe just like angry, disgruntled white men in US might express it by mass shootings.

Bill Glovin: I mean, as you point out in the article, the presidential elections turned up a lot of bias, how do you think this will play out with the election of Donald Trump?

Emile Bruneau: So there's three themes for me, three things that my research brings up to me about the election. One is kind of anger and frustration. Two is humility and then three is hope. And so the anger comes from all the research I've been doing on extreme bias. So, blatant dehumanization being one of them. And realizing from all this research that I've been doing a longitudinal study of this last year, that there is just a really strong correlation between support for Trump and dehumanization of Muslims in particular. So for example, 50 percent of Trump supporters rate African Americans as less evolved and civilized than white Americans. And 75 percent of Trump supporters rate Muslims as less evolved and civilized than white Americans. So that's not saying that every Trump supporter is racist. But it's saying that that is part of the constituency that elected Trump. And that makes me angry, because that puts people at risk. It puts my friends and my fellow Americans at risk. And that's frustrating to me.

And there's another side to that, which is that the groups that are dehumanized feel this dehumanization that has been sparked by the presidential campaign. And in response they're less likely to be willing to co-operate with the authorities to prevent things like home grown terror. So not only does it increase hate crimes towards marginalized groups, but it also puts all of us at risk for an increase in violence in the future. So that's the anger part. That's the part of my research that's made me angry.

The part that has made me contrite, or made me humble, is the realization that part of the biases that drive us to extremism are present both for democrats and republicans. So I've done a lot of research on democrats and republicans, how they view each other and how they view ideological issues in the scanner with a reaction, time based, implicit measures and with explicit measures. And I basically used the same measures with democrats and republicans that I do with Israelis and Palestinians. And I remember thinking a couple of years ago, looking at the data, that the neuro-imaging, the implicit bias and the explicit bias, were all pretty comparable for democrats thinking about republicans and republicans thinking about democrats. As they were for Israeli/Palestinians thinking about each other.

So the ideological divide, and the biases that are driving this, are incredibly strong across both sides. And I remember feeling it during the election because, especially in my social media feed, I would keep seeing the same negative clips of Trump playing over and over and over again. And I realized this when a conservative friend of mine posted a ten-minute clip of Trump saying and doing truly decent things for other people, and I realized that I had never seen a single one of the clips that was in that ten-minute compilation. So, that's what we call confirmation bias. By you seeking out and pay attention to the information that confirms what you believe to be true, or you want to be true, and you ignore and don't seek out information to the contrary.

If anything, I feel like democrats, at least from my research, democrats are a little bit more subject to these biases, that make them ideologically extreme. And I think that that is a bad thing for everybody. So my research going forward is going to try and look at this and the hope comes realizing that it is possible to, for example, figure out empirically what types of approaches can open each other up to the other sides views. So how can we make people more open minded towards opposing viewpoints? That, at least what I've seen so far, is an empirical question. Meaning you can have ten different intuitive approaches, and you can test to see which one is most effective. And the other part of that, that I think is really important is, I've done this with a video that tries to change peoples perceptions of Muslims, for example. And I've found that the winning video, the video that does this best, is not the most intuitively appealing one.

So, I have a group of people forecast, which of the ten videos they think will be most effective, they don't pick that one. In fact, that's one of the last ones they picked. So, the importance of doing the research is that it can reveal something

that we can't figure out just through our intuitions. And hopefully our imaging will take us even a step further by revealing directly what's going on under the hood as people are thinking about these other groups and as they're thinking about these ideological issues.

Bill Glovin: It's really interesting. Some people might say that certain cultures have an ideology which lead to producing a higher number of terrorists. Is that the case?

Emile Bruneau: Well ideology, so are you getting at that being Muslim kind of predisposes one to terrorism?

Bill Glovin: Not necessarily Muslim. I mean ...

Emile Bruneau: That's the only group I've kind of heard that referenced towards. Are there other groups that ...

Bill Glovin: Well there was the situation in Ireland, Protestants versus the Catholics, so that would be another one. But I'm wondering if there's certain things in a culture, the way people are brought up, that lend themselves to being more passionate politically. I don't know. I mean maybe we hear things, we feel things, we're politicized, so I guess we don't all start on an even playing field is what I guess I'm trying to get at.

Emile Bruneau: Yeah, and I think, so, certainly if you include education as a cultural variable, you could definitely educate people to try to protect themselves against these types of biases. You can educate them to try and be open minded and to be accepting of alternate viewpoints. Or you can educate them to be incredibly dogmatic. And to trust people who are in power without being circumspect about what they say. And the latter approach seems like it would make people much more pliant to terrorism. So, I don't think ... If you think just in terms of religion, I don't think the religion argument is particularly compelling to me because it seems like, even Buddhists, who specifically have written into their language compassion and equanimity, even Buddhists engage in terrorism around the world. So, it's hard to, some of the largest terror attacks in the Middle East in the early part of the last century were by Jewish extremists.

And now Muslim extremists are kind of the ones who have been used by anarchists in the past. They were the ones who killed Lincoln, for example. Some of them are aligned with cultural groups, like the PKK. The Kurdish group, they engage in terror tactics in Turkey, so there doesn't seem to be kind of a clear delineation. It seems that terrorism is committed generally by, and I think almost exclusively, by groups that are disempowered relative to a powerful enemy. And often times it seems like terror is, for them, what they see as one of the only options for resisting the dominant group.

I think it's important to remember, for example, that Nelson Mandela, when he was arrested, he was arrested with weapons and money to buy explosives, on

him. So he was about to engage in terror. But he started off very committed to a nonviolent campaign. But that kind of crumbled when the nonviolent strategies like school children protesting against the apartheid government, when the school children were massacred in the street, were shot in the back as they were running away by the apartheid regime. So, they kind of started strategically with nonviolence as the best approach, but then when they met overwhelming, and what they saw as totally indiscriminate violence from the South African government, they switched tactics. And the next approach was to blow up infrastructure. And if that didn't work, then they'd go to violence against people. So, from that view, I don't think anybody would argue that Mandela is a religious zealot, or kind of an ideological extremist. For him it was kind of a deliberate choice to engage in this. If I go back and put myself in his shoes, it's difficult for me to think of a logical argument against his systematic approach.

So that's maybe a digression, but I think for myself, I always try to go back to Mandela to check myself when I'm making kind of sweeping generalizations against terrorists in my mind.

Bill Glovin: In the beginning of your *Cerebrum* article you write that after the Boston Marathon bombings, and Paris attacks, searches for the word terror increased three and then six-fold. Yet other attacks afterwards were not followed by any increase in searches. What does this suggest?

Emile Bruneau: I think it's that attacks afterwards that weren't accompanied with searches with terrorists were, like the Anders Breivik attack, if anything, would count as terrorist, I think, or at least callous kind of violence against others. He went with automatic weapons to a camp for children in Norway and he started massacring these children and he was dressed as a security guard, so when the children ran and hid, they didn't know what was going on, they were hiding, he would coax them out by saying, "Oh, I'm the security, I'm here to help you." And then when they came out he would shoot them. So that seems, since he had a clear manifesto that he had written and published, he was committing the acts because of his identity. So that seems like a pretty clear case of terrorism, and yet that attack, which is one of the major mass violence attacks of the last couple of decades, was not accompanied by any increase in searches for the word terror or terrorism or terrorist. So, to me, that means that people have an association in their mind between indiscriminate violence committed by Muslim people for an ideological purpose, against civilians, as terrorism. But ideological violence committed by white people, mass violence against civilians, as not terrorism. Just as mass violence.

And I just think that that's important for us to acknowledge. That we have a bunch of associations in our mind with terrorists. And right now we're linking terrorism and Muslim indiscriminate violence and not white people and indiscriminate violence.

Bill Glovin: So does the media play a role?

Emile Bruneau: Oh absolutely, yeah. I mean I even remember, gosh where was the attack, after Anders Breivik in Europe, that a number of the media outlets said that this is the worst terror attack on European soil since like the London bombings? So, they, even in the media, ignored Anders Breivik as a terrorist attack and cited the last terror attack by Muslim extremists. So certainly there's a strong association in the media and I think part of it is even driven unconsciously by the people who are writing the media. But it might not be intentional deception, it's just for them also, the idea of terrorism is linked to Muslims and they might not even realize that they have this strong association in their mind.

But that's why I think it's just really important for us to try to figure out what terrorism means to us. Like what is your definition? And then once you've decided on your own definition, then just apply it. Evaluate a situation, Anders Breivik, if you don't consider Anders Breivik a terrorist attack then you need to figure out what it is about his situation that doesn't make him a terrorist. And if you can, then great, but I just think it's important for us to be careful about how we define this term so that we can apply it equally across different groups. Because we have all this psychological machinery in place that drives us to think in terms of us and them. And to otherize Muslims and to think of them, therefore, just as terrorists. So, I think we owe it to ourselves to protect against these psychological biases.

Bill Glovin: In the book, *The Black Flag; The Rise of ISIS*, I don't know if you've read it, it traces the rise of ISIS founding father, al-Zarqawi, that he was a Jordanian street thug who finds religion; begins thinking of himself as a man of destiny. And builds ISIS from the ground up. How much can one individual's influence play a part in turning other people into terrorists?

Emile Bruneau: I don't know. Everything I would say would be speculation because I don't know of any research that speaks to this. My speculation is that it has a huge influence. That leaders can have a massive effect on people. And I just see the research I do have, is just looking at the association that I mentioned before, between support for Trump and kind of these extreme negative views of other groups. And I've seen similar things actually in Hungary, that they have a pretty far right-wing government there and their government has kind of launched a full-tilt campaign against Muslim immigrants in Hungary. They've had, over the past year, a bunch of billboards up around the country that say things like, "If you come to our country you can't change our culture. If you come to our country you can't steal our jobs." But the signs are all in Hungarian. They're directed at refugees, but they're unintelligible to refugees. So obviously they're actually directed at the Hungarian populace. And over this same amount of time, over a six-month period, when they launched this campaign, blatant dehumanization of Muslims actually doubled in Hungary; were as blatant dehumanization of other groups, like their Roma minority group, remained the same.

So, it seems like, it's hard to isolate that to one individual, but the leadership in Hungary is certainly very anti-Muslim immigrant and have been very vocal about it. And it seems like that's reflected in these dramatic shifts in dehumanization of Muslims. And I imagine, the other is to, one of my favorite quotes is from the past president of Ecuador, who managed to negotiate a treaty with Peru over the contested land that had been contested for generations, and his view is that for something like a peace treaty, it is the leaders that make the peace. But it's the people that keep the peace. And there seems to be a lot to that. The leadership has a big role to play in coming to a formal peace agreement, or driving people towards xenophobia, but the people often have a lot of power there as well.

Bill Glovin: Your work in Hungary, and overall, was featured prominently in a March 2015 *New York Times* magazine article titled, "The Brains Empathy Gap." In that article you're quoted as saying that, "The link between (f)MRI data and behavior has been tenuous." Are we any further along almost two years later?

Emile Bruneau: Not specifically for empathy. It's hard. And the field is very young. And the first (f)MRI picture was taken about 20 years ago. When I was an under grad, I didn't do neural imaging because it actually didn't exist. The first image was taken the year I graduated. So, it really hasn't been around long and we're still really trying to figure out how to get a strong signal from the brain that we can believe in; that's reliable. At the same time, we're trying to push it as far as we can to see if the signal can relate to behavior. There's always progress, but I don't think for the link between empathy and behavior. I don't think that's too much stronger yet. And part of it is just that we haven't done the studies to test that. That, I think, is something that the field needs to do. Like we as scientists need to take the research a little bit further. We need to make sure that we have a procedure that we're measuring in the studies.

Part of the reason for it is that it's really hard to experiment and measure actual behavior. It's difficult. You can set people up in the labs, you can plant someone outside of the building when they're done with the study who is in need of help at that moment. And we can see if the person goes to help them or not. But that's just messy. There are a lot of other variables there. The person could be late for their class. Or the other piece of the puzzle, specifically control the environment so that the one person they see is the person we want them to engage with. There are other people on the street who are there as well.

So, part of it is just that it's difficult to do. And part of it is that, I think, we as scientists need to tackle that challenge and really push the neural imaging to show that it can actually predict behavior. I think that that what is, what has been really encouraging is that other fields within neural imaging have been showing that it can be used to predict behavior. So, for example, in health communication research a number of researchers have shown that there's a measurable neural signature that can predict people's willingness to quit smoking. Or use sunscreen. Or engage in other healthy behaviors. But you can't

predict by acting them. And so this using the brain as a predictor of the efficacy of intervention has been used in health related applications.

Also, for example, in dyslexia. So, people who are dyslexic, there are a bunch of different interventions you could use but some of them are going to work and some of them aren't. How do you predict, how do you kind of specialize a treatment for an individual where one hypothesis is the neural imaging might be able to allow to you to perspective determine what will work best for this person? And there's some evidence that that actually does work. But if you give them another test, if you ask them which why they'd want to do, that doesn't predict which one is best for them. But their brain can. And these are really hopeful signs that we can use MRI imaging signals to predict behavior on into the future. And I think one of my goals is to start applying that type of approach to inner-group research.

- Bill Glovin: But are you more or less on an island when it comes to studying empathy and dehumanization through the lens of terrorism?
- Emile Bruneau: On an island?
- Bill Glovin: I mean, I know that there are other neuro sciences out there studying empathy certainly, but I don't know about specializing in trying to get to the roots of what causes terrorism.
- Emile Bruneau: No. There aren't many people at all doing neural imaging with groups that are in conflict. I think there's some groups that are doing neural imaging on groups that are in ideological conflicts, like democrats and republicans. And you'll probably see an uptick of that in this coming year. And I think that is really useful. But they're very few neural imaging studies looking at groups that are actually in conflict with each other or actually kind of would consider political violence against somebody else. And again, it's really difficult to do that research in a scanner and compounding that difficulty is recruiting those participants due to the fact that scanners aren't everywhere all around the world. That you have the scanner in Boston, but the population you might be really interested at is in the Middle East. And getting these two together is a non-trivial issue. So, I think it's a hard task for many reasons. But it's one that I think is very important and, this is why I'm in science, so that's why I'm doing it.
- Bill Glovin: Okay. Just a few more things. Do high rates of terrorism lead to indifference? Do you think?
- Emile Bruneau: Do high rates of terrorism, you mean, indifference among the population?
- Bill Glovin: Yes. People sort of get immune to it after a while. I mean, there are shootings every week now. There seems to be terrorist acts, I mean, just two days ago in Ohio State. It just becomes same old, same old after a while. And then do people care less about it? Or ...

Emile Bruneau: Well, I think not. There was just a survey released recently about people's fears in the world. And I think either number one or number two was the fear of terrorism. So, the likelihood that you will be harmed in a terror attack as an American is incredibly small. It's probably below tornadoes and lightning strikes. And yet that's one of people's very top concerns. Above, for example, getting cancer. Which is incredibly likely. So, it doesn't seem like people aren't concerned about terrorism in the US. And I think it's also, this is probably another aspect of the media, but there are also statistics on the rates of terror attacks in the US, and in the 1970s there were a lot of attacks. I think the statistics show there's like 20 times more attacks that were motivated, you know, violent attacks that were motivated by ideology in the '70s in the US. And they are very few, comparatively today. So there's also this perception that terrorism is incredibly likely now, when the reality is it might be much less likely.

I think it is true that the terror attacks today probably involve more casualties, certainly 9/11, right? So that might be an aspect of it. It's like people concerned about airline crashing being so much more than car crashes because they're such big, dramatic events. Even though the likelihood of getting killed in an airline crash are much less than getting killed in a car crash. So I think there are a lot of factors that play into it. But I don't think that people are becoming inured to terrorism. I think, if anything, they're kind of increasingly concerned about it.

Bill Glovin: In your view, do conflict resolution programs accomplish anything? And if they do, do we need more of them?

Emile Bruneau: I think that is the question. My direct motivation for switching tracks and going from molecular neuroscience to cognitive neuroscience and psychology was volunteering at this conflict resolution camp in Ireland. And what really struck me was after the camp a fight broke out between two boys. And it immediately split the groups down partisan lines and there was a full scale 100 child brawl between protestant and catholic children. And so I went away from that experience wondering what the hell we had just done. Here was a bunch of people with great intuitions, all of the best intentions, and I think we managed to make things worse in Ireland, during the troubles, for those kids. So my concern is that some of these programs work, they're effectively making things better between groups. Some of them are ineffective. And some of them backfire. But, since we don't generally evaluate any of the programs, we have no idea what the best approaches are.

And so we're left investing all of this social capital, and some of it takes us forward and some of it takes us back. And the net effect, I don't know. The net effect might be positive. It might be zero. But it could be much better than it is. Because you could put all of your effort into the programs that actually work and not put your effort into the programs that don't.

And there's a really nice approach right now, driven by the Poverty Action Lab which is looking at the same question with anti-poverty programs in Africa. And people have the same question about the entire poverty programs. Are they working? And if so, do we need more of them? And their approach has been to critically evaluate all of these efforts. You want to get kids in Kenya to go to school, there are a bunch of different approaches to do that. Some of them involve trying to educate the parents about the benefits of education. Providing kids with secondary school uniforms. Providing families with money so they can send their kids to school.

There are all of these different programs but we have no idea what effect they're having. So the Poverty Action Lab has pitted them against each other to see how many extra years of schooling you get for each of these programs. For each \$100 invested. And what they found is that there's a 400-fold difference between how affective one approach is versus another. That giving kids de-worming medicine, for each \$100 you spend on de-worming kids, you get ten years of extra schooling. So to see that secondary school uniforms gives you like .02 years of extra schooling for every \$100 invested. So it's not that the secondary school uniforms are totally ineffective, it's just that the de-worming is so much more effective that it's silly to split the money between these two programs. And if you can instead put the bulk of your money in de-worming you're going to get a lot of bang for your buck.

And I think the same could be true for conflict resolution programs. We just need to do that research. We need to be able to evaluate these programs to figure out which ones are having the biggest effect. And which ones are effecting whom.

Bill Glovin: So, then I guess you're a firm believer in the idea that we can reduce terrorism by studying it?

Emile Bruneau: Yup. Absolutely.

Bill Glovin: Yeah.

Emile Bruneau: I mean, that's my hope. That's why I'm here.

Bill Glovin: Sure. Is there anything else that you're working on now, or you want to mention, that I might have left out? That you think is important?

Emile Bruneau: Well I do think it's worth highlighting that this idea that I just brushed on, which is the idea of meta perceptions. This idea is not what you think about other groups or other people, but what you think they think of you. And I think that this is incredibly important. I think we've seen it among attitudes of democrats and republicans in this presidential race. That a lot of negativity towards the other group is driven by how you think they think of you. How you think they disrespect you or think of you as less than them. And these meta perceptions,

we know from our research, are really strong drivers of behavior. And also these meta perceptions can be incredibly wrong. That Americans generally think that Muslims dehumanize Americans. And the degree to which Americans think that we are dehumanized by Muslims predicts things like people's resistance to the Iran nuclear deal. So, there are many reasons why you could oppose that, but this is one of the factors, the major factor, is how much you think Iranians dehumanize us.

But when we've actually have told people in the Middle East, if anything, they dehumanize themselves, relative to Americans. So, the perception is driving our behavior, and the perception also is completely wrong. And I think this is, you can think of this as meta perceptions between the police and African Americans. Between African Americans and white Americans. Between Muslims and white Americans. So, there are many different groups where I think this idea of how they think of us is driving our behaviors and I'm hoping that by developing interventions, where we can get people to understand what the other group actually thinks of them, that that will ameliorate some of this. That's the hypothesis. We'll see if that's true.

Bill Glovin:

Yeah. All right, well thank you Emile, this has been fascinating.

And thank you listener. To read Dr. Bruneau's article, "[Understanding the Terrorist Mind](#)" go to dana.org. And stay turned for [next month's Cerebrum podcast](#) when we talk to [Irene Tracey](#) on treating neuropathic pain through imaging.

This podcast was brought to you by the Dana Foundation. Visit us at dana.org for the latest on brain research and education.