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3-28-2023

Redbird Buzz Episode 20: Sarah Gerson, March 28, 2023

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Recommended Citation

Twork, John and Gerson, Sarah, "Redbird Buzz Episode 20: Sarah Gerson, March 28, 2023" (2023). *Redbird Buzz*. 28.

<https://ir.library.illinoisstate.edu/redbirdbuzz/28>

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Redbird Buzz

Episode 20: Sarah Gerson

March 28, 2023

John Twork 00:10

Welcome to *Redbird Buzz*, I'm John Twork from University Marketing and Communications. Our guest today is Dr. Sarah Gerson, a developmental psychologist at Cardiff University in Cardiff, Wales. Sarah earned a bachelor's degree in psychology from Illinois State University in 2006 and later received a PhD from the University of Maryland. She's now in her seventh year researching and teaching at Cardiff and she is featured in this spring's *State* alumni magazine.

John Twork 00:44

It's my pleasure to welcome Dr. Sarah Gerson to Redbird Buzz. What's the word, Redbird? Tell us a little bit about yourself and what you're up to nearly four thousand miles away from campus at Cardiff University.

Sarah Gerson 00:56

Hi, there. Thanks for having me. Well, currently I'm readjusting to being back in the UK after having returned to the US for the holidays, so getting over jetlag and things like that. But otherwise, that digging back into my research and also doing some grading, we have students' exam period is coming up here.

John Twork 01:15

Okay. Yeah, so it's a little bit different in the UK, the exam period comes after the holidays, huh?

Sarah Gerson 01:21

Yeah, the students are in that panic before the exam mode so I'm doing things, I'm grading work they did prior to exams and then anticipating the incoming of their work. I know, I feel bad they have to study over the holidays, but [inaudible].

John Twork 01:37

And so you're in your seventh year at Cardiff and you have a balance between teaching and researching. Can you talk, just give us an overview of the research that you do over there at Cardiff?

Sarah Gerson 01:48

Yeah, so I'm center manager for a developmental center we have called Cardiff University Center for Human Developmental Science. And the center actually is kind of the work of a lot of different faculty members, so I kind of do some admin for it but my particular research group, we call ourselves Tiny to Tots and we study early childhood in particular, mostly in typical development, so children who don't

have any known disorders, diagnoses, or developmental delays. And we're interested in kind of how they learn and particularly how they learn socially, so how do they learn about other people, how do they learn from other people, and how do they practice these kinds of social interactions even when they're playing on their own?

John Twork 02:33

I checked out your Tiny to Tots Research Group Facebook page, I saw there was an opportunity for four- to seven-year-olds right now to come and play exciting robot games. So let's take that for an example. What if I - well, I do have four-year-olds - what if I sent them off to your lab? What would they do and what would you be studying in this particular study?

Sarah Gerson 02:53

Yeah, so that is a project of one of my PhD students, Amy Hughes, and we're working together and looking at how young children engage with programming. And I think when you say programming, or coding, or robotics, people think it's going to be really complex - and I personally am not great at programming myself - but what we actually mean are things that are really basic and easy for children to do, so it's very basic kind of sequencing and learning patterns and very basic algorithms. So we have a little tangible robot that we got through a collaboration with a startup tech company in London called Primo Toys and this robot is named Cubetto and what the children can do is program the robot, tell the robot what to do simply by putting little buttons in a function board. So we have a button that tells it to go forward and a button that tells it to turn left and a button that tells it to turn right and we kind of set goals for the children of trying to get the robot to go certain places and see if they can learn how to make predictions about what the robot's going to do, solve problems when things go awry, and kind of bring the robot on these journeys with them to learn very basic programming.

John Twork 03:59

If you weren't four thousand miles away I'd send both of my sons over. Sounds fascinating.

Sarah Gerson 04:02

That's a really popular one, people are really into playing with robots.

John Twork 04:07

And so I know that you conduct research through observation and then also you have the neuroscience aspect of things. Is this particular project just observational or is neuroscience involved in this as well?

Sarah Gerson 04:23

So this one in particular, we don't currently have any neuroimaging kinds of measures, partly because we're interested in kind of behavioral outcomes in this one and also because we've been bringing it into schools. So the one that you saw advertised on our page is one that my student is bringing families to our center for, but last year we spent a lot of time in elementary schools, primary schools throughout Wales, bringing these to the classroom and seeing how children could play with them there. So it's a bit trickier to bring neuroimaging equipment with us there so we simply brought the robots and our kind of behavioral tasks instead.

John Twork 04:58

Sure, now, a major study that, from which you were lead author on, and you use both the neuroimaging and the observational research methods on, was a study that you were, like I mentioned, lead author on, in *Frontiers in Human Neuroscience* is where it was published and it studied doll play and the impact of doll play on children and that's a major part of the *State* magazine article as well. Can you tell us just about that study, how it started? There's multiple phases of that study, so kind of walk us through that whole process and what your findings have been so far.

Sarah Gerson 05:35

Yeah, so that study, I'm trying to think of what year it even is now, I think it started two years, three years ago, over three years ago, because it was before my daughter was born, it was nearly four years ago that I first started discussions about it. And the way it started, actually, is that Mattel, who makes Barbie, contacted us because they were interested in whether we thought there might be any benefits of doll play on a kind of neural level. So whether, you know, people, their view from their market research, and I think this is a really common one, was that parents typically think of, you know, STEM-based science toys and construction toys as beneficial to their kids, but parents tend to be wary to buy their children dolls because they don't see them as kind of educationally beneficial. And because I do research on social learning and social skills and things like that, they approached us knowing of our research area saying do you think they'd be helpful? And we said, well, you know, there's no reason they shouldn't be helpful in facilitating these kinds of social skills and we could look at this in both the behavioral level and the brain level. So the first thing we did is we brought children in between four and eight years of age - and importantly, we wanted both boys and girls to engage with this - and we just had them play both with dolls and with some tablet games that we thought both are kind of creative kind of endeavors, where children can do what they want without set rules or goals in mind. And we put a cap on them called a functional near-infrared spectroscopy cap, so we call it fNIRS for short, and this allows us to measure brain activity based on blood flow. And we were particularly interested in what was happening in children's brain when they played in these different kinds of ways, but particularly in an area of the brain called the superior temporal sulcus. And what we can find with that is that it's related to social processing, so it's active when children or adults think about other people and their goals when they engage in empathy and think about others' emotions and when they interact with other people. And we thought this area might be particularly interesting if children are treating dolls like other people. And this is actually supported with our findings, what we found was that when children are playing with dolls they show activation in this pSTS region, similarly to how the activation looks when they're playing with another person and this wasn't true when they played alone with tablets. So we think that this brain activity suggests the children are kind of practicing social skills, they're treating these dolls like other people, thinking about kind of what's going on in their minds and able to practice social skill. And this came out right around the time that the first set of lockdowns were happening, so it was kind of surprising because we had done this research prior to all of the COVID-19 chaos and didn't know that thinking about how children could practice social skills playing alone would be so important. So it was kind of timely in a way that we were able to say actually, you know, even though your child can't go on all those playdates or interact with their peers in the same way, here's a way they might be able to engage in their same kinds of skill development.

John Twork 09:07

Yeah, amazing that a 60-year-old toy, you know, that's when Barbie, I think, originated, could be such a valuable tool in the toolkit of parents as far as social-emotional learning goes. And then phase two, you reviewed video and you investigated internal state language, correct?

Sarah Gerson 09:30

That's right. So because we were then in lockdown and couldn't bring children into the lab, what we did is we made use of those videos we had of the children playing while they were wearing that cap to measure their brain activity, and we recorded all of them, so what we did was we transcribed everything that the children said when they were playing. And as I said, we didn't give them instruction so it's just kind of how children naturally spoke and played, and what we found was that when children were playing with dolls relative to when they were playing with tablets, they were using more of what we call internal state language. So internal state language is talking about others' internal states, so things like desires and wants and emotions and needs, so things like, this doll wants to do this, or she thinks that this is happening, or she believes something, et cetera. And this is the kind of language that we use when we're thinking about other people's thoughts, when we're thinking about other people's emotions, and when we're really kind of enhancing our social skills by considering others' perspectives. So it was kind of in line with our findings of what was happening in the brain, and actually, the instances when children were using more of this internal state language were associated with more activity in this brain region, so that was a really nice kind of add-on.

John Twork 10:50

Absolutely. And the research is ongoing, right, you have a couple more phases that you're working on for the next few years?

Sarah Gerson 10:58

That's right, yep. I'm currently, in addition to doing my grading and getting back into things, I'm trying to get some preliminary findings this month back to Mattel about our next stage. So one of, we're doing, I think, three different ones right now. One that I'm currently working on is about neurodiversity. So as I said, my lab group does mostly research with what we call typical, neurotypical children, children who have no diagnoses, but, of course, social communication and empathy are particularly important skills for children who might struggle with these things. And in collaboration with another group in our research center we're bringing in children who don't yet have a diagnosis but have been flagged by their teachers or their parents as having some difficulties in school and who are scoring high on being potentially at risk for something like autism, so they're having social deficits, they're having communication deficits. And we're bringing those children back into our center and doing the same thing, so we're having the play with dolls, we're having them play with tablets, and we're measuring their brain activity. And so we're really curious to see in the next few months here whether they're doing similar things, whether they similarly benefit from dolls, whether they're using that internal state language, whether their brain is active in the same ways when they play with dolls, or whether this relates to the severity of their kind of social issues or communication issues.

John Twork 12:23

Can you talk a little bit about, you know, this research is notable for a number of reasons, but one of those reasons is it's the first time that neuroscience has been used to investigate the impact of doll play, and just the relationship between observational research and then using the neuroimaging technology and how those go hand-in-hand and how this is groundbreaking because of that?

Sarah Gerson 12:46

Yeah, it's a really tricky thing, because there's been a lot of developments in the field in recent years that have allowed us to do this. So often the ways that we measure brain activity are slightly more invasive. So as I said, we put a little cap on a child and it's connected to some cables, but they can move around a little bit. A lot of previous neuroimaging techniques, MRI many people are familiar with in a medical setting, but it's used in research as well to measure brain activity. It's really constrained, you're stuck in a little tube so you can't play freely and it's really sensitive to motion, so if you move then it disrupts the brain, the ability to measure the brain activity. And even EEG, which is another measure we use in our center, uses a cap so it's easier to use, but again, moving around really disrupts the brain signals you can get. So fNIRS, which is relatively new to the field, allows us to do more of a natural interaction. So it's really rare, I think. And I'm not going to say that it was completely natural to have children sitting with this cap on their heads playing in the room with Barbies, but we tried doing something that was more akin to what they would do at home. So often previous neuroscientific studies have had children watch something for 20 seconds and then watch something else for 20 seconds, et cetera, whereas here we said go play for five minutes and see what happens. And that's really unique and I think exciting to be able to see what's happening when they do something more natural.

John Twork 14:15

We're speaking with Dr. Sarah Gerson, a developmental psychologist at Cardiff University. And this is *Redbird Buzz*, our guest today is Dr. Sarah Gerson, a class of 2006 alum and a developmental psychologist at Cardiff University. This doll play research that you did gained international publicity, I saw you quoted in *The Daily Mail* to *Forbes*. Can you talk a little bit about, from your perspective as a psychologist, you didn't necessarily pursue a field in communication but you kind of were thrown into the deep end so to speak in terms of having a ton of media interviews and, you know, what was that like and I guess why was it important for you to participate in all of those interviews?

Sarah Gerson 15:06

Yeah, it's something that, in some ways, it's something that I think scientists want to do but a lot of us struggle with. So as a scientist, I'm very particular about how I present my findings and I'm very careful to conclude anything and I don't want people to get the wrong impression or think that anything's definitive or that I've proven anything. I'm always aware of the nuances and the weaknesses of my research. So I think - I received some media training for one thing, but also kind of had to, like, change my expectations about what I can say, how I can caveat it, and still make it exciting without saying, well, but it's really only this, we still need to show that, et cetera, et cetera. So I think it took a lot of practice and finessing and I think forced me to think about my work in a different way. Because I work with children and with parents, I'm used to talking about my work in simpler terms, in some ways, to be able to explain to the families what they're doing when they come into our research center but I think

explaining the findings, especially brain findings, in a way that's accessible to people is really tricky to do without allowing room for misinterpretation of what we found.

John Twork 16:20

And based on all of the press that you received, have you received feedback from actual parents who have read your research, or maybe even parents who are just in your research group, who are aware of what you're doing, but, you know, certainly, as you said, you were able to provide some comfort in a time of chaos and kind of a scary time to be a parent, you know, right at the beginning of the Pandemic. What has the feedback been from parents regarding this research?

Sarah Gerson 16:50

You know, it's interesting, I haven't heard a ton from parents personally, except that that because, you know, Mattel kind of took over advertising and in their advertising campaign they refer to research at Cardiff University, and friends of mine who didn't know I did this research sometimes posted that and said, oh, this is really cool, did you know this? And I said, um, that was me, and they were like, that's so cool. So it was really kind of nice to see that without the bias that people think, you know, my friend did that, of course, and I think it's cool, that people really were drawn to it and then realize that I was the one who did it. So that was kind of nice to see. And as well, like, there was a lot of media attention, specifically in Europe, and even Asia, but I think there were slightly less of it in the US. But some of my friends and family members in the US were like, I just got an ad that talks about your research, so it was really nice to see that aspect as well.

John Twork 17:51

And even when you're away from Cardiff Center for Human Developmental Science and you head home with your husband and your three-year-old daughter - by the way, your husband is also a developmental psychologist -

Sarah Gerson 18:02

Yeah, he collaborates with me on this doll play research, actually.

John Twork 18:04

Oh, wow. So you just can't get away from it, though, because you have your three-year-old daughter Penelope at home. And so I'm curious, you have this unique perspective as a developmental psychologist who has a three-year-old, does Penelope influence your research, or do you see some of your research in her? How does that all play out?

Sarah Gerson 18:26

Yeah, it's interesting because we started this project, I think I was in the very early stages of pregnancy when we started it. And our first findings, we were literally wrapping up kind of while I was in labor, so she's been developing with this project. And so it's been really interesting to see her though, because, you know, we talk about how dolls can help children practice empathy and social skills, et cetera, and she's a COVID baby in that she was about five months old when the Pandemic started, so didn't start nursery daycare for quite a while, and she's one of the most social toddlers I know. But I see her carry this out with her dolls all the time, whenever something new happens she kind of practices it with her

doll. So the first time we had to kind of scold her for doing something wrong when she was acting out, she was practicing with her little monkey and she said, "Monkey sad because he was told off but he was unkind so he needed to be told off," and she kind of went through this whole process and was comforting her monkey, which was like comforting to herself and kind of practicing these skills. And her dolls are constantly, her baby is sad because her baby misses her mummy and her baby's mummy is going to comfort her, and she's constantly doing these things just naturally. Obviously, I'm not, you know, putting it on to her, but it's been really fascinating to watch in real life. This does just kind of happen automatically, spontaneously, in at least some children, and that, I think, makes me really interested in whether, you know, one of the things we're looking at now is whether dolls promote this or whether certain children are drawn to dolls because they're already interested in these kinds of things. And I don't think we know that yet but it's a really interesting question.

John Twork 20:18

Reflecting on your own childhood, you know, how did you, how did your path lead you into developmental psychology? Was it something you were drawn to early on, and if so, how?

Sarah Gerson 20:32

So I actually went into ISU undecided. So I came from a family of educators, so my mom, three of her siblings, and one of her sibling's wives at the time all taught in the same district in the Chicago suburbs between elementary school and middle school and everyone assumed I would be a teacher because I was really interested in children and really liked engaging with children and babysitting and things like that. And I wasn't really sold on it yet but I thought, well, ISU is good for education so if I decide to go into that, that'll be fine. But I took, you know, some of my general education classes my first year there and I had to decide on a major relatively quickly because I was a Presidential Scholar and I had to find a supervisor in my field. And I think it was only during my undergraduate that I learned that instead of teaching children I could do research about children and learn about how children learn, and that really excited me and fascinated me so I began to work with some of the professors in psychology to think about how can I pursue this, what other skills do I need to gain, you know, what can I do at ISU and what do I need to seek out elsewhere?

John Twork 21:48

And you had a very impactful internship at Harvard, right?

Sarah Gerson 21:54

That's right. So because at the time there were no infant research centers at ISU - I did find out at my alumni event that there are some people studying infants there now, which is really exciting to me - but there was no one doing it at the time. There were some people researching adolescents and some researching school-aged children, but I was particularly interested in infants at the time. And so my supervisors there helped me look into possible internships and wrote letters of support for me. And I found, I can't remember, maybe eight- or ten-week internship at Harvard University in the lab for developmental studies there. And so I worked with a PhD student and a postdoc and got to collect data with infants, read a lot of journal articles, interact with the lab members there, and really get an inside view, which I think was critical to find out whether a PhD was the right path for me and to help me kind of make the connections and gain the knowledge to apply for PhD programs as well.

John Twork 22:52

You graduated as a Bone Scholar, went on to get your PhD, and you've been in Wales for seven years now. You returned to Illinois State last fall though to accept the Department of Psychology's Alumnus of the Year Early Career Award and I spoke with one of your mentors, Professor of Psychology Dr. Corinne Zimmerman, who said, she called it, she wrote a letter of recommendation for you when you were still a student and she led off the letter saying that you're going to return to campus someday to get that very award, which you did. Just can you tell me what it was like to be back on campus and what that award meant to you?

Sarah Gerson 23:29

Yeah, it's really funny because when I told CZ, Corinne, that I, I emailed her when I first heard I got this award and she said, I knew it when I wrote your Bone Scholar letter, I told them you'd be back! So it's really nice and also really flattering, of course. It was my first time back since - I went back a few summers ago, but not onto campus, so it's been a good many years, and campus has really changed. So I went to, I lived in Atkins-Colby, which no longer exists, the dorms have all been knocked down. It was hard to orient myself to what was where. But it was really nice just being back in Degarmo Hall, which is where psychology is, kind of seeing some familiar faces, being in the Bone Center and seeing things that were familiar but also the updates. It was really kind of comforting and exciting to be back there and see it all.

John Twork 24:22

Sarah, thank you so much for taking time today to speak with us, one last question before I let you go: as a developmental psychologist and as a parent of a three-year-old yourself - so you can certainly include your personal thoughts in this - what advice do you have for fellow parents, myself included, but parents who are listening to this podcast as they strive to foster social and emotional learning?

Sarah Gerson 24:47

I think my main advice is to follow children's lead, so let them play, let them guide you. My child is much more imaginative and creative in her play than I am and they will lead the way and teach you things and I think allowing them the space and the opportunity to do that is really the best thing that the parents can do.

John Twork 25:05

I know I have a lot of Lego building in my future, so I [inaudible] - and doll play too. Dr. Sara Gerson, thank you so much.

Sarah Gerson 25:14

Thank you.

John Twork 25:26

That was Illinois State alum and developmental psychologist Sarah Gerson. You can read more about Sarah in this spring's issue of *State* magazine. Thanks for listening to *Redbird Buzz* and be sure to tune in next time for more stories from beyond the quad.