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Abstract	Applied behavior analysis is an evidence-based early developmental intervention. Lovaas (1987) clearly showed that early intensive intervention using discrete trial teaching method (DTT) drastically improved development of children with autism spectrum disorder. Junichi learned DTT from Takafumi Miyoshi who stayed Lovaas's Lab at University of California Los Angeles (UCLA) after the graduation from Department of Psychology at Keio University. Junichi concerned about research of experimental psychology, applied behavior analysis, and developmental science in parallel and extended the scope of innovative research. At his interest, he stayed sabbatical years (2007–2008) at Laura Schreibman's Lab in University of California San Diego (UCSD) as a visiting scholar. At 2010, Junichi invited Laura to Graduated School of Human Relations, Keio University as a visiting professor to receive intensive lectures and academic interaction with graduate students. Mikimasa Omori, Waseda University, attended the lectures as a master student. Schreibman et al (2015) after that integrated applied behavior analysis and developmental science and conceptualized naturalistic developmental behavioral intervention publishing a high impact article. In this interview, Laura, Mikimasa, and Junichi talk about past and future research of early developmental intervention for children with autism spectrum disorder in US and Japan.
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Past and future of Dr. Yamamoto

Laura Schreibman¹, Mikimasa Omori², & Jun-ichi Yamamoto³

¹ Emeritus Distinguished Professor of Psychology at University of California, San Diego,

² Faculty of Human Sciences, Waseda University, ³ Department of Psychology, Keio University

Applied behavior analysis is an evidence-based early developmental intervention. Lovaas (1987) clearly showed that early intensive intervention using discrete trial teaching method (DTT) drastically improved development of children with autism spectrum disorder. Junichi learned DTT from Takafumi Miyoshi who stayed Lovaas' s Lab at University of California Los Angeles (UCLA) after the graduation from Department of Psychology at Keio University. Junichi concerned about research of experimental psychology, applied behavior analysis, and developmental science in parallel and extended the scope of innovative research. At his interest, he stayed sabbatical years (2007–2008) at Laura Schreibman' s Lab in University of California San Diego (UCSD) as a visiting scholar. At 2010, Junichi invited Laura to Graduated School of Human Relations, Keio University as a visiting professor to receive intensive lectures and academic interaction with graduate students. Mikimasa Omori, Waseda University, attended the lectures as a master student. Schreibman et al (2015) after that integrated applied behavior analysis and developmental science and conceptualized naturalistic developmental behavioral intervention publishing a high impact article. In this interview, Laura, Mikimasa, and Junichi talk about past and future research of early developmental intervention for children with autism spectrum disorder in US and Japan.

Start interviewing with Dr. Laura Schreibman (**L**, following section), Dr. Jun-ichi Yamamoto (**J**, following section), and Dr. Mikimasa Omori (**M**, following section).

M: First of all, I would like to thank you so much for attending this interview for Jun-ichi's retirement. When I first thought of this project, I really wanted to invite you. Anyways, let's start with easy questions. So, Dr. Laura Schreibman, please tell us your area of expertise and research area of interest.

L: I'm retired now so I'm not currently doing research. Yes, so my area of research has always been applied behavior analysis and also the experimental analysis of behavior as applied to autism. And I started way back in the 1960s, as an undergraduate student at UCLA, and I worked as a graduate student and undergraduate with Ivar Lovaas who was a pioneer in the world of applying behavioral principles to this population. And I was completely hooked, and I continued my research in the area primarily clinical research on treatment procedures for autism.

So, I actually have two areas of research that I focused on. One was the applied area, looking at treatment procedures, developing naturalistic treatments. Parent training was a big part of what

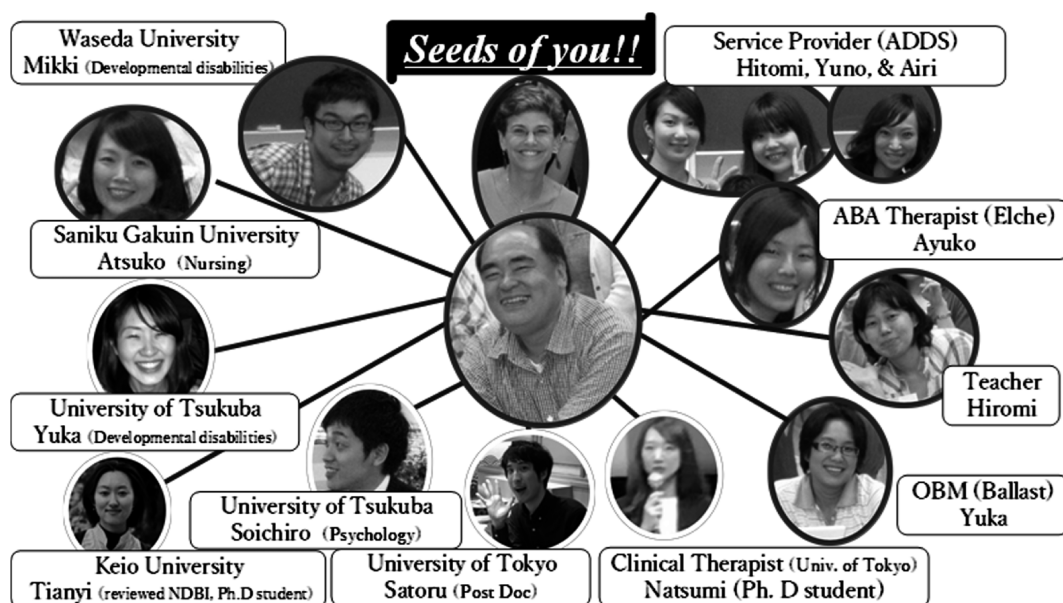


Figure 1. What Jun-ichi's students from Laura's class doing

we did. I also conducted some non applied work looking at attentional deficits, specific language deficits, and specific language abnormalities. I just kept my focus on these areas all the way from an undergraduate student until I retired. So, you can see that I didn't venture out too much.

M: You did lots of works. I just found that you recently wrote a paper with genetics, like gene expression (see Lombardo et al., 2021).

L: Yes. But you know, I'm not a geneticist. Those data came from a research project called an ACE (Autism Center of Excellence) Grant with Eric Courchesne and Karen Pierce. What we were looking at was, could you see brain changes as a function of treatment when you have these very young kids? So, we were doing a study of doing intensive early intervention with very young kids and the Courchesne's lab was also taking scans of these kids' brains. That's where those data came from. So primarily it was my data, and we were collaborators but don't ask me any genetics.

M: OK, I won't. I used to work with medical doctors, and we wrote paper for children with Williams Syndrome (Yagihashi, et al., 2014). And I learned a lot from them but not gene expression. Remember you came to Japan in 2010. Let me show you some pictures. This is a picture from 2010 of your class in Keio (see Figure 1). I was in a master's course. We all grew up and had some good work like Jun-ichi did. After we graduated, he still taught a lot of students.

In Figure 1, four students on the left side from your lecture are teaching at college. Six students on the right side are working as practitioners. Three students on the bottom are working as Post Doc or attending doctor's course now. We are very glad to have summer class from you and we learned a lot. We are still trying very hard to follow you and Jun-ichi's work. You inspired us a lot

and we really impressed with what you've done.

L: Well, I learned a lot too, so it's wonderful. Look at all those happy faces. One thing I wanted to say is that the best way to tell, in my opinion, how good a teacher is, or how good a mentor is, is what happens to their students. The fact that you can look at Jun-ichi's record, they go on to very productive distinguished positions. That's a nice reflection on Jun-ichi and on his abilities and on his style of mentoring.

There are two parts to being a good mentor. One is picking students that will do well. And they have to pick you. They want to come and work with you, so they pick you. You pick them so you have a nice match and then you have the actual mentor. I could tell when I was there (in Keio). I noticed that the students were being encouraged to follow their own ideas and follow their own path, and that's something a good mentor does. If student wants to try and study something that's a little bit out of the main area, I think that's great, and I think some of the best work that's ever come out of my lab has been initiated by graduate students.

The other thing is if the student is going in a direction that you pretty much know is not going to be fruitful, you may need to provide some redirection. But Jun-ichi, I could tell by his interactions with students how encouraging it was of their own ideas to pursue ideas, and he was encouraging as a matter of fact. When I pictured out to Jun-ichi in my mind, I see him always smiling. THAT'S NEAT!! That means that he's enjoying it, and if he's enjoying it, it's more likely students are, too. If you're a behaviorist like we all are, you look at their behavior. Where are these students going? What are they accomplishing after they leave his lab? I'm sure he is very proud of what he's done, and all students have done. LOOK AT YOU!! Mikki. You're a classic example.

Last, the best mentors are ones I think that encourage students to think for themselves rather than say, "OK, this is the study I'm going to tell you to do, and this is what you're going to do. And this is how you're going to do it". I think that inhibits creativity. I think just by the variety of research that comes out Jun-ichi's lab shows how new and novel methodology, such as robotics and match-to-sample methodology, can be so helpful in this research. All kinds of different things that are related in general to the field. It's not just a single track in this world.

J: I remember that during my staying in UCSD (University of California, San Diego), in your lab meeting, every student enjoyed doing their research and talking about their research. It encouraged me to use this methodology in my lab. Like smiling methodology!! Other impression on your lab, you instructed students to be a best practitioner and a best experimental psychologist. It is your direction of teaching method and I also tried to use this method in my lab as well.

L: Well Jun-ichi, you kept us honest on several occasions where you brought us back to reality sometimes, because sometimes we would kind of go spinning off into fantasyland. Jun-ichi would bring us back to the real world but his input was always super helpful, and I noticed students just really enjoy having you there. I think one of the most rewarding things about doing research is collaboration. I always had good collaborators, I just think it's so much more interesting, and it's so much more productive to get fresh ideas.

J: I have one question. I'm very impressed with your article in 2015 about *Naturalistic Developmental Behavioral Interventions* (NDBI; Schreibman et al., 2015). I'm really impressed because it involved kind of dream team of autism research.

L: Let me tell you, how this came about. We (Dr. Dawson, Dr. Stahmer, & Dr. Kasari) were talking about problems that people, especially parents of children with autism, were saying, "OK, I have to get PRT (pivotal response treatment)" or "I have to get something else and another treatment". Parents, teachers, and clinicians were getting hooked on specific named interventions. But what we noticed was that many of these treatments shared a lot of the same features. Wouldn't it be great if, rather than people worrying about getting PRT, JASPER (Joint Attention, Symbolic Play, Engagement and Regulation), ESDM (Early Start Denver Model) or any of these other specific names (of treatment) there was one general term for various empirically-validated procedures or various treatment programs that employ these naturalistic strategies? The funny thing I remember was Sally Rogers and I arguing about whether it should be called *Naturalistic Behavioral Developmental Interventions*, which was my choice or *Naturalistic Developmental Behavioral Interventions*, which of course was her choice because she's a developmental psychologist. So, we arm-wrestled for it, and she won, but it's fine. But that's the first appearance of that term and it so rewarding for us to see now that term is now being used in other people's research, and now it's becoming generally used terms. NDBI is the gold standard. We all worked together and it took a while but we are very happy with.

J: I was also impressed that NDBI is not trademarked. It is more like a public domain!!

L: It's in the public domain. Absolutely, it's not trademarked. We want other people to use them!! That's our goal. Our goal is to have it widespread. So that, it wouldn't be so hard on parents and teachers and clinicians to look for. I think that's probably the thing that I'm most proud of in my career is NDBI. I mean, I went out on a high note.

J: I tried to apply the NDBI in large area of Japan. So, I want to show you one case. I taught a speech therapist living far from Tokyo (Mr. Morishita: a president of child development office in Kochi). He learned NDBI method and tried to apply to one child with ASD.

—Watched the Mr. Morishita's case video—

L: OK. Yeah, that's great!! Everybody is having fun and the child is learning.

J: The therapist also tried to apply the discrete trial teaching (DTT), but it was hard for both therapist and child to teach and learn in the tabletop settings. So, I instructed him to use enjoyable materials, make the child smile, and try to get more interaction. And he made it and that's the power of the NDBI, I thought.

L: It is so POWERFUL!! The child just stays motivated, and the child is involved and continues to participate in the therapy session as opposed to running away or fighting you or screaming or whatever. It's so much better for parents. It's so much more fun for them. It's less structured and rigid. It's more like how you would normally interact with a child

J: I also tried to disseminate the NDBI to many areas in Japan. My collaborator and students tried to establish the core component of NDBI. So, I want to show you Dr. Yuka Ishizuka's presentation, mainly about the research of contingent imitation for children with ASD.

— *Watched the Dr. Ishizuka's presentation video*—

L: That's FANTASTIC!! Look how happy she is and she's doing great things just doing great. That's fascinating with the eye tracking. Excellent work, excellent.

M: She really wanted to talk with you today, but she has another work.

L: Well, maybe some other time, because this (meeting online over the seas) is pretty easy. Well, I'm so glad that she got to meet with Brooke (Dr. Ingersoll) and Aubyn (Dr. Stahmer). You see the these are my former students that I can be proud of. Tell her how impressed I am. I mean, that's really nice work, important work, and it helps to validate the components of an NDBI. It's perfect and her English was quite good. Please tell her, I'm genuinely impressed by her research and her English.

M: I will be sure to tell her and start another meeting!! Speaking of IMFAR, I prepared some pictures from our visit to San Diego for attending the IMFAR 2011. We also visited you to UCSD and had great meeting there. In UCSD, Jun-ichi took us around. In IMFAR 2011, you were the program directors, right?

—*Talking with seeing pictures including Dr. Koremura, Dr. Matsuda, and Ms. Kondo*—

L: Oh, there I am. Oh my gosh, this is when we surprised everybody. Remember this group of kids with autism singing. That was fun!! See, Jun-ichi is always smiling. It's your nature. Oh, I'm so glad you have so much fun.

M: I also want to show you pictures of your visiting to Tokyo.

—*Talking with seeing pictures of Dr. Schreibman's summer class in Keio in 2010*—

L: In open class and Jun-ichi was translating. Yeah, that was so much fun.

M: This is the one I like the most (see Figure 2).

L: Oh yeah, I like that picture. Oh, we had dinner with your (Jun-ichi's) family.

J: My daughter is now a university student. She is majoring risk management.

L: Oh wow!! Such a good time. You know, I remember this like it was yesterday.

M: This is another picture (role playing PRT by Dr. Kuma as therapist and Ms. Takeuchi as a child with ASD) I wanted to show you.

L: Look how serious I am. I like that picture.

M: Now they are running the nonprofitable organization called ADDS (Advanced Developmental Disabilities Support), to provide the early intervention services for children with developmental disabilities. Although they are working in public, they still get a grant to conduct the research!!

L: Wonderful. So, it seems pretty easy to Jun-ichi to get money from the government. Just so nice that the Japanese government is so supportive group this kind of stuff.

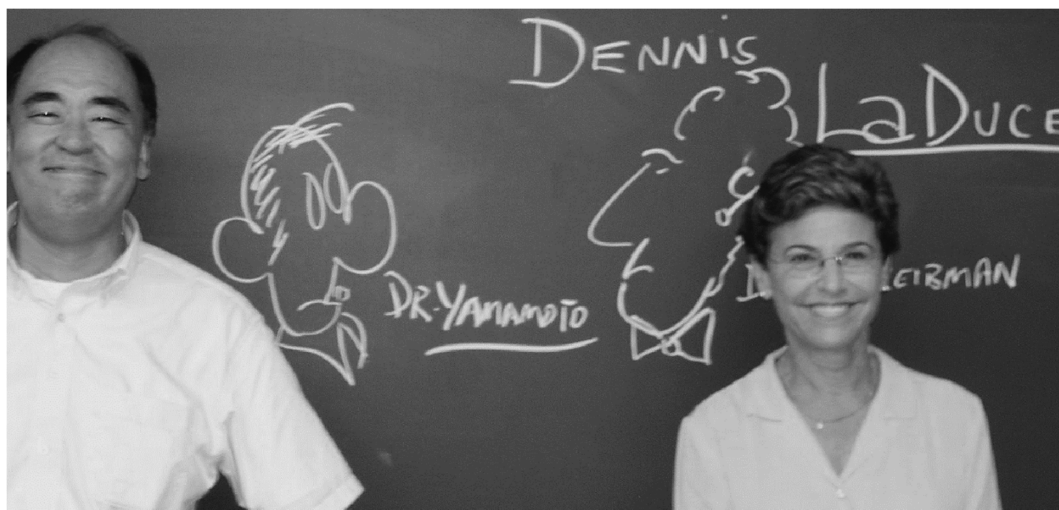


Figure 2. A picture of Jun-ichi and Laura from Summer Class in Keio 2010 drawn by her husband.

M: We also enjoyed talking with your student, Dr. Joe McCleery and the student from Dr. Fantio's Lab, Dr. Paul Romanowitch during their visits in Japan in winter.

L: Yeah, both of them were very good students. You'll always have a connection with me. Now Jun-ichi, I have a bone to pick with you. That is, YOU NEVER ANSWER ANY OF MY E-MAILS!! Mikki would write to me, and I would say, "Do I have the right e-mail address for Jun-ichi because he never responds?" (M: I said Yes!!)

J: I'm Sorry. Yeah, I want to be in touch with you.

L: I could depend on Mikki. I thought maybe you changed the address or something. You have to send me for sure his email!! Mikki, send me his e-mail address and then you will never be rid of me, Jun-ichi. I'll always be there to hunt you. Well, we should do this (meeting) on a regular basis!! I would really like to hear more about some of that research on contingent imitation and the added the eye tracking stuff. Instead of waiting to read it in the journal, get it from the horse's mouth, meaning right from the source.

M: How nice!! We should do that.

L: Yes, absolutely. And I'll write to Jun-ichi to remind him. Well, let me ask you quick question. Jun-ichi, what are you going to do now that you're retiring? You're going to keep your position at Keio and just continue?

J: I'll be emeritus professor. (**L:** Oh OK, that's great, good for you.) I want to continue to research and of course. I'm writing the paper about meta-analysis and experimental study of NDBI or something with my graduate students. So, I want you to consult our paper.

L: I would be happy to as long as you don't send it to me in Japanese. That's the problem. No, I would be happy to help in any way.

M: Let me ask you again, Laura. What do you expect to Jun-ichi to do next except research?

L: Well, I think he'll definitely continue research. I think he's going to take up dancing. Because I noticed he really liked dancing. When we were there, there was some holiday or some summer festival where we all went and Jun-ichi was really dancing a lot and he seemed very happy. So, I think my prediction is he's going to continue research and he's going to take up dancing. One of the pictures I sent you and maybe you have it already is that festival and Jun-ichi's out there dancing!! I bet you nobody else predicts that of all the people you interview. I'm the only one that predicts the dancing.

M: That's great prediction. I wanted to ask a couple more questions. How do you evaluate his work which means like how Dr. Yamamoto influenced your work?

L: It's difficult because we do so many things kind of the same anyway. I like the fact that he is not rigid in his research area and that he spreads out. He's not afraid to try new things. I always remember discussing the students in all different kinds of things, that they did, and I thought that's a great approach. You know, just to be open to new ideas and to just try different things. I think he really impressed me with that.

M: I say he is very flexible and curious!!

L: You have to be FLEXIBLE, or you're not going to ever find anything new!!

M: That's true. That's why his students are so flexible.

L: Yeah, and that's why they're so productive. That's really important.

M: OK, so let me show you some of my recent work.

—*Seeing Mikki's presentation about his recent work*—

L: Fantastic. I'm sure Jun-ichi is super proud of you. I'm proud of you and you're not even my student. And you do very creative work too. I remember your work on reading and writing. You've done that with the kanji character, yeah? And I loved your use of eye-tracking. That's such a useful tool, isn't it?

M: Yes. I wanted to use the data from eye-tracking system not only to find the differences, but also for creating the intervention method (Omori & Yamamoto, 2022). I was very lucky to work with many kinds of children with developmental disabilities. This is what I'm most proud of what I've done. And these are my students and they're having fun with starting their own research as I was.

L: Oh, my goodness. So, those are like my academic grandchildren? Good for you!! Actually, they're Jun-ichi's academic grandchildren. Not mine.

M: So are they, I say! Well, Jun-ichi also prepared his slide and please go ahead and talk.

—*Seeing Jun-ichi's presentation about his recent work of NDBI dissemination*—

J: This is the dissemination study of NDBI in Japan working with my previous graduate student, Dr. Matsuzaki. I'll show you the video of tele-health method and apps created by her. By using this apps for two months at home, parents' intervention skills to their children improved and children increased

their comprehensive and productive vocabulary. Then, I applied these programs to one psychologist. So, she intervened parents as the next generation therapist. The preliminary results showed children increased their comprehension and vocal production as you mentioned in your paper (Schreibman et al., 2015), that the NDBI is the most powerful tool for developing social communication skills for children with ASD.

L: That makes perfect sense!! Great and makes me feel so good!! I've enjoyed our collaboration.

M: We are running out of time. Do you have any comments to Jun-ichi on his retirement?

L: My advice to you is what I've done and that is only do exactly what you want!! You can now say NO if someone asks you to do something you don't want to do. For me, I'm only working on things that interest me. So, if you send me stuff on NDBI, I'm interested to work on that and other stuff. And learn new skills!! That's important for older brains and it's very important to learn new skills. Dancing would be a good one!! I'm so proud of you and everything what we've done. I want to continue interacting with you.

J&M: Yes of course!! And we need to bring Yuka here!!

L: I would love to meet her.

M: Well, thank you very much for giving us great time, Dr Schreibman. So, when should be the next meeting?

L&J: Ha, ha, ha...

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