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INSIDE BEHAVIOR ANALYSIS

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VOLUME 2
No 3
NOVEMBER
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ON THE COVER: *American Gothic* statue in Chicago, host city for ABAI's 2010 Autism Conference: Translational Science and Effective Practice.
Photography: MARTIN BURCH

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A Letter From the President of SABA

BY RAYMOND G. MILTENBERGER

Greetings ABAI Members: As the 2010–2011 president of the Society for the Advancement of Behavior Analysis (SABA), I am writing to update you on SABA activities and ask you to consider a donation to SABA to help support its many valuable activities.

If all ABAI members donated even a small amount to SABA, this charitable organization that supports the field of behavior analysis could provide even more support for worthy behavior analysts. Even in these challenging economic times, it is important for behavior analysts committed to our field to find a way to support SABA. When you renew your ABAI membership you can use the membership form to add a donation to SABA. It is easy and convenient and *greatly appreciated*.

Society for the Advancement of Behavior Analysis

For 20 years, SABA has provided financial support for the field of behavior analysis. Through awards, grants, and fellowships, SABA has recognized behavior analysis leaders, promoted the international growth of the field, sponsored research, and supported students. However, SABA would not be able to play such an important role in the field without the contributions of passionate members like you. I hope that, as you read the following overview of SABA's activities, you will take a moment to reflect upon just how important they are to maintaining the robustness of our field and consider the role you wish to play in supporting such projects.

Photography: MARTIN BURCH

SABA was chartered in 1980 as a 501(c)(3), nonprofit organization that secures and administers private funds in support of the field through tax-deductible donations. It distributes those donations through grants and fellowships, and helps ensure the future of the field through the sponsorship of student presenters at the ABAI annual convention.

Awards

SABA awards benefit the field by recognizing leaders in behavior analysis and by promoting their works and accomplishments at ABAI's annual convention and in *Inside Behavior Analysis*. Awardees have an opportunity to present their work during the SABA Awards Ceremony, which serves as the opening event at each annual convention.

Distinguished Service to Behavior Analysis

This award recognizes individuals who have demonstrated sustained, valuable contributions to behavior analysis over several years of teaching, research, or practice. Past winners include Brian Iwata (2009); Edmund J. Fantino (2008); Teodoro Ayllon (2007); James Dinsmoor (posthumously, 2006); Jon Bailey (2005); Beth Sulzer-Azaroff (2004); Victor Laties (2003); Jack Michael (2002); Murray Sidman (2001); Sidney Bijou (2000); Ogden Lindsley (1999); Montrose Wolf (1998); and Donald Baer (1997). Winners under the ABAI Award Committee: Joseph Brady (1996), Victor Laties (1995), and Philip Hineline (1994).

International Dissemination of Behavior Analysis

This award plays a key role in the growth of behavior analysis outside the United States by recognizing individuals who have demonstrated a significant and sustained contribution to international dissemination/development. Past winners are: Steven C. Hayes (2010), João Todorov (2009), Linda J. Hayes (2008), Eitan Eldar (2007), Joseph Morrow (2006), R. Douglas Greer (2005), Michael Davison (2004), Maria E. Malott (2003), Paolo Moderato (2002), Carolina Bori (2001), Liliana Mayo (2000), Comunidad los Horcones (1999), Emilio Ribes-Inesta (1998), and Masayo Sato (1997). Winner under the ABAI Award Committee: Murray Sidman (1996).

Enduring Programmatic Contributions to Behavior Analysis

The Enduring Programmatic Contributions to Behavior Analysis award is given to an agency, department, or facility of an organization that contributes to the ongoing and enduring development of behavior analysis. Past winners of this award are: University of Nevada, Reno Behavior Analysis Program (2010); Experimental Analysis of Behaviour Research Unit, University of Auckland, New Zealand (2009); Kennedy Krieger Institute (2008); The May Institute (2007); Behavior Analysis and Therapy Program of Southern Illinois University (2006); The New England Center for Children (2005); West Virginia University Department of Psychology (2004); Society for the Experimental Analysis of Behavior (2003); University of Florida (2002); Eunice Kennedy Shriver's Behavior Technology Group (2001); University of Kansas (2000); Princeton Child Development Institute (1999); and the Department of Psychology at Western Michigan University (1998).

Effective Presentation of Behavior Analysis in the Mass Media

This award is presented to an individual who writes or produces printed, audio, or video information that informs the public about a scientific discovery or important application in behavior analysis, and in doing so, presents an accurate analysis of the principles involved and the effects achieved. The following people have received this award: Alan E. Kazdin (2010), Amos Rolider (2009), Amy Sutherland (2008), James M. Kauffman (2006), Ivar Løvaas (2004), Richard Foxx (2003), John Palfreman (2002), Roger McIntire (2001), James Partington (2000), Scott Geller (1998), and Karen Pryor (1997). When ABAI administered the award, recipients included: Catherine Maurice (1996), Gary Wilkes (1995), and Paul Chance (1994).

Scientific Translation

The Award for Scientific Translation is given in either of the following categories: 1) Impact of Science on Application, which is for experimental/theoretical innovations in behavior analysis with significant impact on applications, or 2) Technology Transfer, which is given for addressing socially significant problems using methods directly linked to behavior analysis or which effectively incorporate behavioral principles. William J. McIlvane received the inaugural edition of this award in 2010. Recipients when the award was called Impact of Science of Application: Travis Thompson (2009), Murray Sidman (2008), Steven C. Hayes (2007), Nathan Azrin (2006), Howard Rachlin (2005), and Tony Nevin (2004); and under "Public Service in Behavior Analysis": Thomas McKenzie (2009), Michael Keenan (2008), Henry Pennypacker (2007), Robert Horner (2006), Robert Mager (2005), Michael Hemingway (2004), Douglas Carnine (2003), Richard Malott (2002), Kent Johnson (2001), Charles Schuster (2000), Gerald Shook (1999), and Aubrey Daniels (1997). Previous winners under the ABAI Award Committee: Brian Iwata (1996), Gina Green (1995), and John Jacobson (1994).

Fellowships and Grants

SABA provides annual grants to support experimentation in and the development of behavior analysis. SABA has awarded thousands of dollars each year for the past several years, with $20,000 in grants given out in 2010

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and another $20,000 planned for distribution in 2011. Fellowship and grant applications are accepted every year in August and September. Keep an eye on the SABA website for details in the summer about the application requirements. The following grants, based mostly on endowments, are given annually.

The Experimental Analysis of Behavior Fellowship
This fund provides financial support for students doing research in the experimental analysis of behavior. Twelve students have received a total $23,000 since its inception in 2002. Our 2010 awardees of grants of $2,000 each are Jeff Stein, University of Kansas and Monique Udell, University of Florida.

The Sidney W. and Janet R. Bijou Fellowship
The Sidney W. and Janet R. Bijou Fellowship Fund is the result of generous donations by the Bijous. The fund provides grant support for students doing research in child development. Since 1998, 21 students have been awarded nearly $107,000 from the Sidney W. and Janet R. Bijou Fellowship. Our 2010 awardees of grants of $5,000 each are Jade Hill, Arizona State University and Allison Tetreault, West Virginia University.

The International Development Grant
This fund was started to ensure ongoing support for the international development of behavior analysis. Since 1999, there have been 31 International Development Grant recipients receiving $36,000 in support. Our 2010 awardees of $1,000 grants are Smita Awasthi, Association for Behavior Analysis India; Veneta Dimitrova, Columbia University; and Monika Suchowierska, Warsaw School of Social Sciences and Humanities.

Master's Thesis and Doctoral Dissertation Grants
SABA offers annual Doctoral Dissertation and Master's Thesis Research Grants to support two student thesis projects in the amount of $500 each and two student dissertation projects in the amount of $1,000 each. Awardees of the 2010 Master's Thesis Grant were Adam Fox, Western Michigan University and April Becker, University of North Texas; Doctoral Dissertation awardees were Paul Guinther, University of New Mexico and Steven Meredith, University of Florida.

The Student Registration Grant
SABA provides complimentary registration for qualifying students who are presenting authors during ABAI events. This fund is widely supported by donations from the ABAI members, with over 150 members supporting almost 200 students. Since 1996 the SABA Student Presenters Fund has provided over $96,000 in registration grants to more than 1,140 student presenters.

Support for the Division 25 Don Hake Basic/Applied Research Award
Another exciting development is SABA's support of the Don Hake Basic/Applied Research Award presented annually by the American Psychological Association Division 25: Behavior Analysis. With SABA's annual support of this award, it is now officially named the Association for Behavior Analysis International's Don Hake Basic/Applied Research Award.

SABA Funds

To support its grant efforts, SABA has raised (and continues to raise) funds for three endowments.

Doctoral Dissertation and Master's Thesis Research
To foster long-term development of doctoral dissertation and master's thesis research in behavior analysis, ABAI has generously agreed to support the $3,000 annual amount awarded in this grant until the endowment reaches self-sustaining status, which SABA's financial advisors tell us is at least $100,000 for modest annual awards. We need your support to meet this goal (and of course a larger endowment means larger awards).

Student Presenters Fund
All donations to this fund are given out within the year of the donation. We need your support to keep this fund replenished so SABA may continue to support student participation at ABAI events. Please consider joining hundreds of your behavioral colleagues by making a tax-deductible donation to this fund.

Unrestricted Fund
Unrestricted donations, those which are not designated for a single specific purpose, are also welcome. The SABA Board of Directors determines how the unrestricted funds should be allocated (sometimes to support a restricted fund) and what activities unrestricted funds should support.

SABA exists solely for the benefit of behavior analysis and I hope that in reading about all the good work the Society does, you feel inspired to join the long list of your colleagues who have already contributed (for a list of 2010 SABA donors, please see page 23). You may make a donation to SABA by visiting www.abainternational.org/saba/donations.asp.

Thank you in advance for your generosity. ❖

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Updates from SABA Grant and Fellowship Recipients

2010 Master's Thesis Grant

BY APRIL BECKER

April Becker

For a student undertaking the challenge of building a new repertoire, it can be exigent to attend at once to all the important nuances of scientific practice. Burdened with the enormous task of learning both the conceptual precepts of behavior analysis and the practical skills involved in its performance, the student leans on the authority of the past and of the social system; those authorities are like a candy store with enormous temptations for hungry learners. Yet the socially provided wisdom in the scientific community is not the most important food for the student to consume. Seasoned mentors shift the focus of a student from the intraverbal insights that we learn in school to the natural world that supposedly built those insights in the first place. They teach us that the best scientists are primarily sensitive to the feedback from nature herself to the point of neglecting the institutional machine that originally provided instruction and which continually provides feedback. That sensitivity can be passed on to students who are lucky enough to have mentors who know how to expose students to nature's fruit, even during the consumption of mass quantities of academic candy.

Take, for example, the very basic concept of the Skinner box. This tool is described well in textbooks and its workings are largely automated by manufacturers. Yet such convenience may not always provide the student with an understanding of the nuances of the behavioral environment provided by the operant chamber. I've been lucky enough, with the help of incredible mentors and of a generous grant from SABA, to enrich my understanding by constructing such an apparatus. The results have been ground-breaking for my personal development. I believe that it has lent invaluable depth to my otherwise high-quality study at the University of North Texas.

For my master's thesis, I wanted to study a practice that is common among avian trainers in zoos and aquariums. Since this practice is often conducted in a chaotic environment where many incidental variables could be responsible for bringing about supposed effects, it was important to try to study it in a tightly controlled operant chamber. I had to build such a chamber in order to proceed. Since I was completely new to electronics and programming, this was no small task for me.

The process was lengthy due to my ignorance. Despite massive help from my brother Damon Becker (who is an extremely capable engineer) and incredibly supportive mentors, my construction efforts were neither efficient nor optimized. I was lucky that it was so. Neither efficiency nor optimality would have provided me with the important environment which I had the pleasure to experience. For example, when my first bird learned to peck, the key I'd constructed was ever-so-slightly imbalanced. On a verbal level, I was aware that slight changes in force requirements on a key can be important, and my key seemed sufficiently balanced when tested crudely. Yet the fact that I had assembled it myself meant that I did not entirely trust what otherwise appeared to be a sturdy construction. Thus, I had my bird make the final judgment. He informed me that the key was imperfect by eventually pecking almost exclusively to one side. He also told me when the key had slipped, when a bolt was loose, or when a beam was set crooked because his behavior changed. The process of building my own apparatus taught me that to evaluate the environment, I needed to look first at my organism and not just at the equipment itself.

This lesson was one benefit among many that I garnered through this process. I will provide one more example from the list of such benefits. In the process of exploring different inexpensive ways to control the chamber, I became exposed to the potential of microcontrollers. These little portable computers are cheap (mine is worth less than lunch for two) and provide enormous possibilities for the construction of nontraditional behavioral environments and interesting, precise forms of measurement. My microcontroller controls one key, an infrared beam, and a pellet dispenser. Yet it is capable of much more—such embedded systems control jet planes as they quickly and exactly compensate for unpredictable variations in external conditions to provide incredibly smooth rides (while still allowing a passenger to turn on a reading light once sleep in a tight coach seat proves impossible). For my experiment, which initially suffered from timing problems due to a low-quality computer, the precision of the microcontroller and its ability to work

autonomously was ideal. It made a lagging, slow PC unnecessary in the control loop, without any loss of performance. Microcontrollers are in some cases precise up to 1/200 millionth of a second. They could conceivably process complicated instructions such as those of a percentile schedule with ease. They could deal with data input from a matrix of infrared beam emitters, potentially providing a measure of the position or body posture of an animal in the chamber. They might even be rigged for simple point-detection for that same purpose. Best of all, they can be embedded—if I wanted to bring an apparatus into a natural environment, I could hook it to a saucer-sized microcontroller rather than dragging a computer awkwardly into the real world. Perhaps none of these ideas will ever come to fruition. Yet the simple experience of building a one-key operant chamber has opened an avenue of freedom and creativity in research which may potentially be utilized in the future.

The experience of building my chamber produced many other benefits for me, perhaps the least of which was the ability to conduct the experiment I wanted to conduct (which is still underway). I don't have room here to relate them all, but suffice it to say that I am forever in the debt of those incredible people who gave me the chance at such a learning experience. I could never have predicted the benefits, or the subtle ways in which the practice would connect my textbook learning with the real world in all her beauty. I am indebted to my mentor Dr. Jesus Rosales-Ruiz for patiently and unwaveringly supporting my project from the outset, to Dr. Manish Vaidya for providing his valuable time and feedback, to Dr. Allen Neuringer for munificently lending me advice and a dispenser (when my best version still proved too clumsy to be consistent), and to Dr. David Palmer for his invaluable support, feedback, encouragement, and inspiration. My thanks especially are with the SABA donors who provided vital resources. I truly count myself among the luckiest of students.

2009 Experimental Analysis of Behavior Fellowship

BY CARLOS CANCADO

I am honored to have been selected as one of the 2009 Experimental Analysis of Behavior (EAB) Fellowship awardees. I would like to take this opportunity to once again thank the Society for the Advancement of Behavior Analysis (SABA) for making this fellowship possible.

As graduate student at the Psychology Department at West Virginia University (WVU), I am currently working on my Ph.D. dissertation under Dr. Andy Lattal's supervision. I recently defended my master's thesis, also under Dr. Lattal's supervision, of which the experiments were conducted, and the thesis written, with the support of the EAB Fellowship. These experiments were an attempt to study the resurgence of more extended temporal patterns of responding previously established by fixed- or variable-interval schedules of reinforcement or when such patterns were directly reinforced. Resurgence of operant behavior has been a main topic of interest since I started working in Dr. Lattal's laboratory. I would like to take the opportunity also to thank him for supporting me and for establishing the conditions so that I can keep studying resurgence for my dissertation.

Current research projects in Dr. Lattal's laboratory that I have been involved with are the study of processes of response recovery (resurgence and reinstatement studies with pigeons and also with Siamese fighting fish) and behavioral history, the study of the effects of response-independent events and delay of reinforcement on operant behavior, and the analysis of different procedures to arrange visual reinforcement for operant behavior of Siamese fighting fish. I am also grateful to Dr. Michael Perone for being able to participate in research on human operant behavior in his laboratory. My interest in human operant behavior is fostered by a continuous collaboration with professors Paulo Guerra Soares, MS, and Dr. Carlos Eduardo Costa, from Universidade Estadual de Londrina (Brazil), in projects assessing the effects of various histories of exposure to schedules of reinforcement on current performance of humans under controlled laboratory conditions.

My interest in studying and understanding basic behavioral principles is constantly deepened as I progress through my graduate career. I feel very privileged to know that I will come in contact with such contingencies everyday while studying and working as a graduate teaching assistant in West Virginia University's Behavior Analysis Doctoral Program. I hope that I can continue to pursue the activities of research and teaching after graduating and also to be able to arrange contingencies for others to conduct research, learn, and apply basic behavioral principles.

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Carlos Cancado

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Like the other fellowships offered by SABA, the EAB Fellowship exemplifies an arrangement of contingencies to manage the behavior of those students pursuing a research career in our field, and especially for those that study basic behavioral principles. I am honored to be a member of a community in which such practice is maintained.

2009 Master's Thesis Grant

BY CHARLOTTE CARP

Charlotte Carp

The inspiration for my thesis came from a study that Perez-Gonzalez, Herszlikowics, and Williams conducted that was published in *The Psychological Record* in 2008. They demonstrated the emergence of novel conditional stimulus control over intraverbal responses with typically developing kindergartners following two training conditions that taught simpler intraverbals. I thought this was very interesting because (a) very little research has been conducted on the intraverbal relation, (b) intraverbals often do not emerge from other verbal operants and have to be trained directly, and (c) the research regarding the intraverbal relation has typically focused on simple discriminations rather than conditional discriminations. I feel that research on conditional discriminations in the intraverbal relation can have many important benefits for children with language disabilities. Auditory conditional discriminations skills are necessary to be able to engage in successful social interactions and conversations with other individuals.

My thesis extended the Perez-Gonzalez et al. (2008) study by assessing the separate effects of the two training conditions to evaluate whether both conditions were necessary for novel intraverbals to emerge, or if one type of training would be sufficient. Six typically developing children ages 6–7 were first taught A-B (i.e., state to city) and B-C (i.e., city to park) verbal relations (e.g., "Name a city in Florida/Utah"; "Name a park in Branford/Midway") and then probed on 12 A-B, B-C, B-A, C-B, A-C, C-A verbal relations. If novel intraverbal relations did not emerge, each participant received either exemplar-name training or category-name training. In exemplar-name training, participants were trained to name examples of states, cities, and parks. In category-name training, participants were trained to respond with "state," "city," or "park" given names of states, cities, and parks. If novel intraverbals did not emerge, then the participant was also exposed to the other type of training.

Grace Cho

For the participants that were exposed to the training conditions, the results indicated that both trainings were needed for novel intraverbals to emerge; however, it is not clear whether this was because of the specific training conditions or if these results are just simply due to additional training involving simple intraverbals.

The money that I received from SABA's Master's Thesis Grant helped me considerably with conducting my study. The money was allocated to help me get supplies for the study (e.g., printing and copying data sheets, office supplies, etc.), travel expenses to and from the testing sites, prizes that the children received every Friday for participating in the study, and toys for the children to play with when the sessions were over. The children earned tokens throughout the session for various tasks. They placed the tokens on a token board, and when the token board was full the children received 5 minutes to play with a box of toys that we would bring to the session. The money from the grant helped to provide me with a wide assortment of toys to include in the toy box.

I plan to continue my research on the intraverbal relation, specifically the variables that affect the emergence of novel intraverbal behavior as well as the variables that effect intraverbal training. I am very grateful to SABA for helping me be able to conduct this research, and I hope that it will contribute to our knowledge of verbal behavior in the future.

2008 International Development Grant

BY GRACE CHO

My main inspiration for applying for the Society for the Advancement of Behavior Analysis (SABA) International Development Grant was the need to create teacher workshops in Korea to provide instruction in behavior interventions, as many teachers had still been adhering to punitive measures to manage their classrooms. In fact, at that time, some teachers still believed in the practice of hitting a student's hands with a stick or ruler over 200 times.

Obviously, this was very severe punishment and, in its severity, it only represented a small part of what was generally practiced in traditional Korean society. Of course, there were lesser and gentler variations of this punitive approach, which adhered to past beliefs. Korea was unfortunately several steps behind most of the world in this respect. Since I was born and raised

in Korea, and had most of my undergraduate education there, I was determined to bring about a change in the Korean school system.

As the founder of a board-approved BCBA graduate program at Nam Seoul University (NSU), which is the first of its kind in Asia, I believed that it was my obligation to my homeland to bring Korean teachers a better understanding of the positive approach of behavior intervention. I wanted to help them understand that they could achieve better and more long-lasting results by learning the methods of behavior interventions. Therefore, I set up a series of in-service training workshops for teachers in Korea. In order to do this, official permission from the Ministry of Education was required.

In 2007, I received an official grant from the Korean government to provide mandatory in-service training workshops throughout Korea during the summer and winter for 30 hours, respectively. One drawback was that I did not have the necessary training materials in the Korean language for these teachers. NSU provided a grant of $2,500 to cover the cost of translating *Classroom Management: A California Resource Guide*. This book was developed and produced by the California Department of Education and the Los Angeles County Office of Education. It is a practical how-to manual that can be used with in-service training or as a teacher resource guide. Dr. Roy Mayer, the principal author, has secured authorization from the Los Angeles County Office of Education to publish a translation of this book in Korean. His goal is to improve the Korean school environment. The grant from NSU, however, did not cover the cost of publication for this translation.

I therefore secured a grant from SABA, which allowed us to publish 500 copies of this manual for the workshops and for extra curricular purposes. I was also lucky enough to chair an applied behavior analysis international conference in 2008, where I was able to disseminate over 200 copies of *Classroom Managemen*t in Korean. Dr. William Heward, who is a well known scholar in Korea, was a main speaker at this conference. The conference drew not only teachers but school administrators, superintendents, and parents of children with disabilities from throughout Korea.

After the conference, I received requests from three superintendents from different provinces and several school principals for in-service training for their school teachers. They also requested additional copies of *Classroom Management* for their teachers. We were able to publish another 500 copies and distributed them.

My future plans in this field will continue to include *Classroom Management* as a valuable tool for teachers, and other professionals who would like to learn more about positive behavior intervention. The SABA grant provided us with the ability to distribute the knowledge of behavior intervention where it was most needed. Now that we have this Korean translation, *Classroom Management* will be able to touch the lives of many students and teachers in the future in Korea. The manual offers teachers valuable information that can change the way they approach discipline in the classroom.

None of this would have been possible without the aid of the SABA grant. I encourage anyone with a dream of their own to explore the possibility of acquiring a SABA International Development Grant to realize that dream. I was very honored to receive this grant and excited to have the opportunity to provide the necessary training for teachers with the proper materials.

2009 International Development Grant

BY VENETA DIMITROVA

Bulgarian professionals in the field of education and psychology now have access to two applied behavior analysis (ABA) resource libraries that were established with the financial support of the Society for the Advancement Behavior Analysis (SABA) 2009 International Development Grant. The libraries contain seminal literature on behavioral theory and practice and are open to teachers, psychologists, speech pathologists, university faculty members, and researchers. The main goal of this project was to expand the community of educators who use behavior science as a foundation for their pedagogical methods.

More than 60 professionals working in elementary and secondary schools, resource classrooms, nonprofit organizations, centers for students with autism, universities, and municipal offices attended the libraries' opening events. These events included introductions to the basic principles of behavior and the technical language of the analysis of behavior, brief descriptions of the groundwork texts donated to the libraries, hands-on training on managing existing behaviors and teaching new skills within the classroom settings, and round-table discussions. During the discussions, professionals shared ideas on ways

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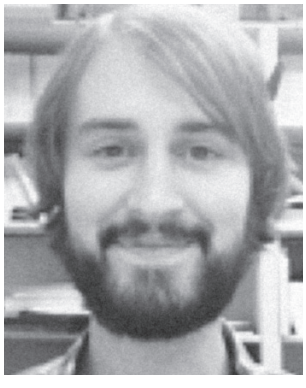
to create a sustainable network among educators willing to utilize the principles of ABA and outlined the next steps necessary for the successful establishment of evidence-based methods in the Bulgarian school system. Most professionals agreed that the project should continue to work toward finding sponsors for the translation and publication of fundamental scientific texts in the Bulgarian language, the organization of practical trainings on the principles of ABA and its applications to pedagogy, and comprehensive in situ trainings for the professionals who work directly with students with intellectual, language, and developmental disabilities.

The 2009 International Development Grant funded the opening of two small resource libraries, yet this initiative had a large impact on the Bulgarian community of educators. Currently the Faculty of Education at Trakia University and the Center for Students with Autism in Gabrovo are applying for grants that would sponsor the Bulgarian translation of the books purchased for the libraries; a website is being designed to function as a communication tool among ABA professionals and is scheduled to launch in the spring of 2011. Another promising outcome was the proposal for the creation of an ABAI chapter in Bulgaria whose mission would be to coordinate the translation, publication, and dissemination of scientific literature; the organization of national discussions regarding professional education; licensing and certification; and the engagement of the scientific community in behavioral research. I would like to thank the SABA Committee and all donors who supported my initiative.

2010 Master's Thesis Grant

BY ADAM FOX



Adam Fox

The research project that the SABA grant helped to fund was my master's thesis, entitled, "The effects of punishment on instructional control of human choice." The research and data analysis has since been completed, my thesis successfully defended, and the manuscript is in preparation to be submitted for publication. I have since begun pursuing my Ph.D. at West Virginia University and hope to continue this work.

Rule-governed behavior and punishment in humans were of interest to me early in my graduate career at Western Michigan University. However, human operant research is difficult to do in part because of the high financial cost associated with paying participants. The SABA Master's Thesis Grant not only made completion of my research goals possible, it has helped cultivate much more in a young scientist: It has increased the passion for my work and has given me new ideas for the future.

The thesis research was a systematic replication of Hackenberg and Joker (1994). It sought to extend their findings by assessing the effects of a response-cost punisher on instruction-following in a choice (diminishing returns) procedure. Specifically, Hackenberg and Joker found that if participants are given a rule they will follow it when doing so results in increasingly lower rates of reinforcement. At a certain rate of return, however, participants broke with the rule and responding shifted to optimality. Our study investigated whether a response-cost punisher delivered contingent on breaking the rule would affect responding in the task. The punisher (penalty) magnitude was designed so that even with the punisher in place it was still optimal to break with the rule. We exposed participants to both penalty and no-penalty conditions in a counter-balanced order. We found that although the penalty did not affect the point in which participants would break with the rule (the break point was approximately the same in penalty and no-penalty conditions within and between subjects, and was consistent with break points in the Hackenberg and Joker study), the penalty increased the amount of rule-following at other times (i.e., there were fewer deviations from the instructed pattern when conditions were replicated after the initial break with the rule).

I'm looking forward to pursuing some of the questions raised by this research. Some of them are: If given an initially inaccurate rule (the rule was initially accurate in the above studies), will human participants still follow it? Are humans more likely to break a rule in relatively aversive conditions versus relatively positive conditions? Does the probability of the penalty affect rule-following? Would a large penalty at a lower probability have the same effect as a small penalty at a much higher probability? These studies are likely to give rise to many new questions.

I believe the laboratory study of rule-governance and punishment in humans is an area of research that has been relatively neglected—especially in the recent past—and my aim is to help change that. Thanks to SABA, I have been able to start.

I feel very lucky to not only have received the Master's Thesis Grant, but to have been

surrounded by so many great scientists and friends at both Western Michigan University and now at West Virginia University. SABA's grant and fellowship opportunities for graduate students are truly a treasure and they allow for so much great research and opportunity in places where it might not have otherwise been possible. Thank you to SABA and all of the donors that make such things possible.

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2009 Doctoral Dissertation Grant

BY DIANN GAALEMA

Standing in my proposal meeting I wait to hear the comments my committee will hand out. All seems well, but then, a seemingly innocent suggestion turns my stomach. "I think you should have two control groups." This may not seem like an insurmountable problem, but my subjects were not run of the mill. You see, I was proposing to study sexual conditioning in a poison dart frog. My current pool of subjects was being lent to me by the good people of the Atlanta Botanical garden, and there just weren't enough of them to make three decent sized groups. So I resigned myself to the reality that somehow I would need to find some more subjects. It turns out there are more dart frogs out there, but I was going to have to buy them, and they aren't cheap. So I decided it was time to do some grant writing. Luckily SABA had recently sent out grant announcements and had a dissertation grant available that looked just right for what I needed. So I delved into my proposal, sent it off, and crossed my fingers. Thankfully, the good folks at SABA deemed my proposal worthy and I was able to fund the subjects for the extra control group that my dissertation committee requested.

Now here I am, a year later. I've graduated and secured a wonderful post-doc position in a behavioral pharmacology lab. I know my success thus far is definitely due in part to the dissertation grant I received. Not only did it fund the extra subjects I needed for a successful project, but it also showed my future employers that I had the potential to write fundable grant proposals.

2009 Bijou Fellowship

BY KEVIN LUCZYNSKI

Diann Gaalema

In 2003, the Early Childhood Research Network of the National Institute of Child Health and Development reported that experiencing extensive non-maternal center-based care during the preschool years was associated with increased levels of problem behavior in school-aged children. This finding served as the impetus for a set of studies aimed at developing a skills-based preschool curriculum that could *prevent* the development of problem behavior when children transition across educational contexts (Hanley, Heal, Tiger, & Ingvarsson, 2007). In 2009, I was privileged to receive the Sidney W. and Janet R. Bijou Fellowship in support of a study aimed at (a) increasing social skills and decreasing problem behavior with typically developing preschool children, (b) promoting generalization of the skills across educational contexts, and (c) promoting maintenance of the skills over time (3- and 6-month periods). With the ultimate goal being one of developing a large scale model for preventing the development of problem behavior in young children, a necessary prerequisite goal was to identify whether the acquired skills would generalize and maintain across relevant people and settings.

Twelve typically developing children participated, and these children represented those for whom more intensified teaching was warranted, per teacher nomination. Similarly ranked pairs of children were randomly assigned to either the test or control group. This produced two test groups and two matched-peer control groups, with each group composed of three children. Assessment and teaching took place during child-led small-group activities across groups of three children. This approach resembled the response to intervention (RTI) model applied in elementary educational settings, which determines the intensity of services based on problem severity within a three-tier hierarchy. Assessment and teaching took place with a group of three children during child-led activities that could be described as a Tier 2 model in RTI, which is characterized by discrete learning opportunities for specific skills among several children shown to be less responsive to their classroom's general, class-wide curricula (Gresham, 2004). A multiple-probe design across skills was used to determine

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Kevin Luczynski

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the effects of teaching on skill acquisition and problem behavior reduction with each child. We also thought it was important to conduct a between-groups comparison to assess whether factors associated with the passage of time (e.g., stimulating social environment, high-quality interactions with adults) would produce an increase in the targeted social skills. The children in the control group experienced the same activity-related materials and interaction with experimenters as children in the test groups, but not the group-based teaching strategies.

Children were taught functional communication and self-control skill repertoires that involved requesting attention, assistance, and preferred materials from an adult and tolerating instances in which access to these preferred events were delayed or denied. To promote generalization and maintenance, we expanded the functional communication skills to include the explicit teaching of precursors for the target skills (i.e., stopping, looking, and raising hand) and we taught several functionally equivalent vocal responses to increase the likelihood that these skills, and not problem behavior, would be at strength under relevant evocative situations and contact naturally occurring consequences. In addition, the functional communication skills were taught across many exemplars involving more than 100 different art-, manipulative-, and craft-activity materials. Self-control skills were also taught across the same amount of activity exemplars and across a variety of teacher cues (e.g., "Wait, please" and "In a little bit"). This was done to make teaching moments less discriminable so that appropriate responses would be more likely to occur under the multitude of situations teachers expect children to wait.

Capitalizing on children's motivation to obtain activity-related items during a child-led activity by assessing their pre-existing responses and teaching communication skills resembled an "interrupted behavior chain strategy" used by Goetz, Gee, and Sailor (1985) to teach communication skills to students with intellectual disabilities. The similarity is the embedding of teaching opportunities within commonly experienced activities for skills (e.g., requests for teacher attention) that produce access to reinforcers (e.g., obtaining preferred items) directly related to the ongoing activity. The value of this arrangement is the amount of assessment and teaching moments produced by simply arranging relevant establishing operations, without a high degree of teacher "directedness" (i.e., direct instruction; see Magliaro, Lockee, & Burton, 2005) or supplemental, tangible rewards such as stickers, tokens, and trinkets (Strain et al., 1992). This is in line with Bijou's (1970) view that "the critical task in most teaching is not the incorporation of more and more new reinforcers but the effective utilization of those currently available to the teacher" (p. 68). In addition, this method allowed common social and physical stimuli from the children's preschool classroom (and likely future educational classrooms) to be arranged and promote generalization and maintenance of the acquired skills.

All six children in the test groups acquired the functional communication and self-control repertoires, which corresponded with decreases in problem behavior. By contrast, the six children in the control groups did not acquire the social skills and elevated levels of problem behavior continued. Next, five teachers conducted activities during the generalization assessment, who did not have a history of supervising the children and did not have knowledge of the targeted social skills or the teaching strategies. Activity-based materials were provided to the teachers and they were asked to conduct the activities and interact with the children as they would typically behave in their own classroom. Generalization of the targeted skills was observed across all children in the test groups, which represented an improvement compared to children in the control groups, who did not exhibit the skills. However, generalization of the social skills in the test group was fleeting and problem behavior reemerged. Because the overall effects were less than satisfactory, a generalization teacher was informed of the targeted skills and teaching strategies to identify whether increases in social skills and decreases in problem behavior would occur under these conditions. It was not until the teachers were trained to apply the contingencies that generalization of the social skills was observed. Sufficient levels of the social skills were observed in 3- and 6-month maintenance observations. These results indicate the importance of the teachers providing differential consequences for the targeted social skills and problem behavior to achieve generalization and maintenance. Research is being conducted to determine whether other generalization methods such as peer mediation may also lead to improved generalization and maintenance outcomes.

2010 Doctoral Dissertation Grant

BY STEVEN MEREDITH

As an undergraduate research assistant, I began conducting both basic and applied research in Dr. Jesse Dallery's behavioral pharmacology lab at the University of Florida. My interest in behavior analysis and behavioral pharmacology grew from a desire to uncover basic behavioral principles by investigating the effects of drugs on nonhuman animal behavior in the lab. It was my work on Dr. Dallery's Internet-based contingency management program, however, that inspired me to pursue a more applied research track in graduate school at the University of Florida.

My primary research interest is in developing practical and powerful interventions to promote smoking cessation. Cigarette smoking, arguably the most socially significant problem behavior in the United States, is the leading preventable risk factor of morbidity and mortality in the country. Over 443,000 deaths each year and $193 billion in annual health-related economic losses are attributed to smoking. Treating the behavior has proven particularly challenging. Despite the availability of numerous over-the-counter nicotine replacement therapy (NRT) products and an increasing number of alternative pharmacological treatments, one in five American adults continues to smoke. Consequently, some researchers argue more intensive interventions are needed to treat the epidemic. Internet-based group contingency management is one such treatment.

An important feature for many contingency management (CM) interventions is rigorous monitoring of breath carbon monoxide (CO). Requiring clinic visits to collect CO samples frequently over a sustained period, however, involves considerable response effort. Further, frequent visits would not be feasible for many subjects due to distance, lack of transportation, disability, clinic hours, and other practical constraints. To overcome these obstacles, Dallery and colleagues developed an Internet-based CM program to promote smoking cessation. Participants submitted video CO samples twice daily via user-friendly Internet technology, and abstinence was reinforced with vouchers exchangeable for goods from various Internet vendors. The Internet-based system successfully overcame distance as a barrier. Some smokers who participated in the program did not quit, however, or relapsed following withdrawal of the voucher-based contingencies. Thus, we have been investigating ways to enhance the intervention.

One promising strategy is to incorporate group contingencies into the Internet-based CM model. Research on the effects of group contingencies on various forms of behavior change has shown the method is at least as effective as individual contingencies of reinforcement. One advantage group contingencies have over individual contingencies is that they promote social interactions such as praise and cooperation—social support that could play an important role in desirable behavior change.

Steven Meredith

In 2009, I proposed a study that would allow us to evaluate the feasibility, acceptability, and preliminary efficacy of the first behavioral intervention to employ group contingencies to promote smoking cessation. We integrated group contingencies and an on-line peer support forum into our existing Internet-based CM program. The 2010 SABA Doctoral Dissertation Grant allowed me to conduct this study. The funds were used to pay the monetary vouchers that were used to reinforce abstinence.

The study showed that Internet-based group CM is a feasible method for promoting abstinence from cigarette smoking. Further, the results suggest the treatment is efficacious. Reductions in breath CO were reliably observed across participants during treatment conditions relative to baseline. Indeed, 10 out of 13 participants who completed the study demonstrated some sustained period of abstinence during treatment. The SABA award not only permitted me to conduct this initial feasibility study, the funds are currently being used for a follow-up experiment. Data from these projects will be used to design studies aimed at demonstrating long-term sustainability of Internet-based group CM, comparing the efficacy of various contingency arrangements, identifying the characteristics of social interactions and social networks (e.g., group cohesion) that promote behavior change, and, overall, developing effective strategies to reduce smoking prevalence in the United States.

The SABA Doctoral Dissertation Grant helped stimulate a line of research that will keep me busy for years to come. For this, I am very grateful to the donors. Although CM has already proven efficacious in the treatment of cigarette smoking, the treatment enhancements we are integrating and evaluating in our research represent a promising step in the evolution of

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smoking interventions—a step that should improve efficacy without increasing cost. Further, because our Internet-based system will allow us to monitor and record all social interactions, the research will provide us with unprecedented access to collateral social behavior that occurs within social networks and group-contingency-based interventions; thus, providing us with a better understanding of the role social contingencies play in behavior change.

Sunk Costs and Escalation: Justification or Information?

BY BESS J. PUVATHINGAL

Bess Puvathingal

With the support of the Society for the Advancement of Behavior Analysis (SABA) Master's Thesis Grant, I was able to contribute to the behavioral economic literature exploring rationality in decision-making, specifically focusing on *escalation of commitment*. Rational choice theory from classical economics posits that if decision-makers receive feedback that their investment is failing, they should withdraw from that situation immediately. But escalation occurs when people recommit resources in the face of failure, a direct violation of rational choice theory. This apparently irrational behavior led social psychologists to conclude that people continue in a failing situation to justify their past decisions and to avoid cognitive dissonance. Decades-long research initially focused on such self-justification, but more recent empirical evidence provides the strongest support for the equivocality of available information as the primary variable contributing to escalation. Highly equivocal information is associated with increased escalation. In a behavior analytic paradigm, high *equivocality* is most closely related to a random reinforcement schedule, while escalation resembles a partial reinforcement extinction effect (Bragger et al., 2003; Goltz, 1992).

Sunk costs are also associated with escalation, so much so that the *sunk cost effect* has often erroneously been used interchangeably with escalation. Rational choice theory dictates that prior investments should not influence future decisions, but the sunk cost effect, or "throwing good money after bad," is an irrational economic behavior observed when people are more likely to continue with a project once they have invested in it. And again, sunk costs are assumed to influence decisions due to a desire to justify past decisions. While much empirical evidence suggests that sunk costs do influence decision-making, it is unclear when and to what extent. Our lab's behavior analytic perspective suggested that exploring the influence of reinforcement history (i.e., equivocality theory) would shed light on the intricacies of the sunk cost effect.

My study, guided by this behavior analytic perspective, sought to extend escalation research by focusing on these two key variables: sunk cost and equivocality. The two had been studied separately, but had not been studied simultaneously in an experiment. Specifically, we were interested in how the interaction between incurred sunk costs and feedback history influenced financial decisions to invest in a new drug, and how those influences changed over time.

Following the protocol of previous research, we brought undergraduates into our lab and asked them to assume the role of a pharmaceutical company's vice president, responsible for allocating research and development (R&D) and marketing funds for a new drug. In this computer simulation, their marketing decisions were based on the R&D funds they initially allocated toward the new drug (i.e., sunk cost) and the feedback they received over time (i.e., sales revenue per investment period). Participants were exposed to either equivocal feedback (i.e., inconsistent sales revenue) or unequivocally positive feedback (i.e., continually increasing sales revenue) before experiencing failure feedback (i.e., continually decreasing sales revenue). We were interested in how much participants continued to invest in the face of failure.

First we looked at the joint effects of equivocality and sunk cost on escalation. Results were consistent with the equivocality theory of escalation and inconsistent with the sunk cost effect. That is, sunk cost was neither a necessary nor sufficient condition for escalation to occur. Instead, high sunk costs engendered escalation *only* when there had been a history of equivocal sales revenue.

To further understand the influence of sunk costs on investment behavior, we analyzed investment amounts and trends as a function of one's environment. We found that in a *non-failing* environment, participants who incurred a high sunk cost invested more money, but not differently. In other words, when exposed to positive or intermittent feedback, participants who incurred a high sunk cost invested more of their marketing funds compared to those who incurred a low sunk cost, but their investment

trend over time was a similar curvilinear line. These results suggest that sunk costs influence the initial amount one is willing to invest, but have a lesser influence on the subsequent investment pattern over time. In a *failing* environment, however, participants who incurred a sunk cost invested differently but not more. That is, those who incurred a high sunk cost had a different investment pattern from those who incurred a low sunk cost. Taken together, these results suggest that the sunk cost effect is a dynamic effect and, depending on the environment, exerts its control in different ways.

Both escalation and the sunk cost effect appear to be influenced by the past, but not in the way it is often assumed. It is the pattern and equivocality of past information, not the mere fact of a prior investment that influences escalation. From an economics standpoint, future prospects (i.e., expected utility) should guide rational decision-making; going one step further, it is irrational to consider prior costs in current prospects. Herrnstein (1990), however, made an important distinction between prescriptive and descriptive economic theory. Rational choice theory is prescriptive, telling us what we should do. Herrnstein suggested that rather than describing what decision-makers *should* do, it is more useful to analyze what decision-makers *actually* do, descriptively. Viewed through this framework, it may not be "irrational" that people use the past to guide current decision-making. In stark contrast to the traditional economics perspective, the behavior analytic perspective suggests that prior events set the stage for decision-making.

This study contributes to behavior analysis in a variety of ways. Firstly, it extends the experimental analysis of human behavior to complex decision-making, which can be generalized to executive decisions and other administrative contexts. Moreover, it provides further integration of behavior analytic and economic theory. Indeed, this study works towards a true *behavioral* economics. Finally, it heeds the call to provide additional data that inform the growing concerns of applying organizational behavior management analyses to managerial decision-making and executive behaviors. As such, it is a translational research project, consistent with the current emphasis on such research by ABAI and funding agencies. I extend a special thanks to SABA for allowing me to contribute my grain of sand to the experimental analysis of behavior.

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An Opportunity for Experience and Growth

BY MONIQUE A. R. UDELL

Monique Udell

This past year I was awarded with a 2010 SABA Experimental Analysis of Behavior Fellowship. This was a great honor and milestone that has supported the growth and maturation of my research while reminding me how far I have come over the last 4 years. I became fascinated by the social behavior of humans and nonhuman animals early on. As an undergraduate student at Stetson University, I was fortunate to have mentors that helped me peruse independent research questions on the social behavior of mice (Dr. Michael King) and avian communication (Dr. Peter May). However, it was not until after I obtained my bachelor's degrees in biology and psychology that I learned about behavior analysis and the impact the field would have on my work.

In 2006, I came to the University of Florida to pursue my Ph.D. in behavior analysis under the supervision of Dr. Clive Wynne. Not only was I entering a new field of study, but I had chosen to pursue a line of research new to my advisor's lab: the social behavior of domestic dogs. I quickly recognized that the methodology and functional explanations central to behavior analysis provided a new and valuable approach to the study of canine behavior. I began empirical investigations on the behavior of pet domestic dogs with respect to their environment, especially behavior predicted by the presence of human stimuli. A year later I expanded my research by incorporating the behavior of different dog populations (shelter dogs) and closely related canid species (wolves and coyotes) into my research.

Since receiving the Experimental Analysis of Behavior Fellowship, I have been able to explore several new dimensions of canid social behavior including early life experience. Before receiving the fellowship, much of my research had demonstrated the importance of individual experience in shaping a domestic dog's response to human behavior. However assessing the effect of early life events on the behavior of my subjects

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was an ongoing challenge. Because it is often difficult to quantify the rate of life experiences that contribute to a domestic dog's response to human attentional state or a tendency to follow human points, these behaviors had previously been attributed to theory of mind or a human-like social cognition in the literature. My previous work had demonstrated that adult wolves socialized by humans performed well on these same tasks and I believed that participating in wolf pup rearing and socialization would provide a source of control difficult to achieve with dogs raised in human homes. Wolf pup socialization requires around-the-clock supervision by human caregivers throughout puppyhood, creating an opportunity to carefully introduce and record specific experiences with humans during early life. Working with wolves also had the advantage of avoiding possible confounds between effects that might be attributed to domestication versus those predicted by life experience. Over the summer of 2010, I traveled to Wolf Park, located in Battle Ground, IN, to help raise four wolf pups and carry out this research.

Nigel Vahey

In one experiment, each pup was exposed to a human elbow covered in formula or food five times each day for roughly 6 weeks. At the end of this period, the wolves were successful in following a point made with a human elbow to a nearby target. In comparison, wolves and dogs without this history do not follow the same point. This provided a controlled model for how socialized canids may come to respond to many human gestures. Since human hands are often a source of food, toys, and other appetitive stimuli this result provides an alternative behavioral interpretation for canid success on the traditional pointing task.

In another experiment I controlled the wolf pups' exposure to a human reading a book or wearing a bucket over her head. During daily exposure sessions the human reading the book ignored the pups, while an attentive human sat nearby. During the bucket condition, the person with the bucket on their head was attentive and readily played with the pups, while an inattentive but unoccluded person remained in near proximity. This was done almost every day for over 2 months. In late September, I will be conducting the final experiment to determine the effect of this early exposure on the choice behavior of these individuals. In this task, each wolf will have the opportunity to approach one of two experimenters (a reader versus an unoccluded individual or someone wearing a bucket versus an unoccluded individual) for access to reinforcers. This will serve as a modification to the traditional attentional state tasks that typically do not control for experience with relevant human stimuli. These experiments provide a new way of looking at canid social behavior, emphasizing the importance of experience and developmental history in addition to phylogenic selection.

I am grateful for the support I received through this fellowship. I appreciate those that believed in the significance of my work and the direction I wished to take it. While this fellowship has already had an important impact on my research, I know that the experiences this support has provided me will continue to have a positive influence on my work for many years to come. Thank you to the ABAI community for making all of this possible.

2009 Doctoral Dissertation Grant

BY NIGEL VAHEY

I would like to express my deep gratitude to the generous members of the Society for the Advancement of Behavior Analysis (SABA), for the invaluable support that they have provided me in my Ph.D. research during the past year. For me it was a great privilege to receive a SABA Doctoral Dissertation Grant. At no time was this more apparent for me than at the opening event for the 2009 ABAI Annual Convention in Phoenix, AZ. Having listened to the inspiring acceptance speeches of many great scholars of behavior analysis at the preceding SABA Awards ceremony, I found myself being introduced to a very large audience as the recipient of an inaugural SABA Doctoral Dissertation Grant. Suffice it to say that I was extremely proud to feel part of the ABAI community; the experience was, and continues to be a potent source of inspiration in my research.

Of course, the SABA Doctoral Dissertation Grant also provided me with invaluable financial support that contributed towards both my data collection costs and to the purchase of a Smokerlyzer™ carbon monoxide monitor. The Smokerlyzer™ allowed me to both verify tobacco smoking-status and to biologically verify experimental manipulations involving nicotine deprivation. My research employed a relatively novel measure of verbal response biases called

the Implicit Relational Assessment Procedure (IRAP; http://psychology.nuim.ie/IRAP/IRAP_1.shtml). Whereas traditional behavioral measures of verbal behavior such as matching-to-sample procedures were designed to index the appearance of experimentally induced verbal behaviors, Prof. Dermot Barnes-Holmes designed the IRAP to extend this remit by measuring the strength of pre-experimentally verbal biases.

Implicit beliefs as operationalized by the IRAP are largely driven by immediate and relatively brief relational responses; they are conceptualized in contradistinction to self-report measures which reflect extended and coherent relational response networks. In more colloquial terms, the IRAP captures spontaneous and automatic evaluations, whereas self-report measures capture more carefully considered deliberative reactions. The participant in an IRAP study is required to respond under strict time constraints in accordance with relational networks that are either consistent or inconsistent with his or her behavioral history. Differences in average reaction times to *consistent* versus *inconsistent* tasks are thought to provide an indication of the extent to which the participant historically practiced a consistent belief over its mutually exclusive counterpart (i.e. the corresponding *inconsistent* belief).

The success of my undergraduate research with the IRAP (see Vahey, Barnes-Holmes, Barnes-Holmes, & Stewart, 2009), prompted me to continue with similar research to the Ph.D. level under the guidance of Prof. Dermot Barnes-Holmes at the National University of Ireland, Maynooth (NUIM). Given the compelling relevance of implicit measures to behaviors characterized by impulsiveness, I decided to focus my Ph.D. research toward examining the contributions of implicit processes to the psychological underpinnings of tobacco dependence.

My Ph.D. research began by providing the first evidence that implicit reinforcement expectancies support experientially avoidant processes that lie at the core of tobacco dependence. Implicit reinforcement expectancies are implicit belief tendencies about the effectiveness of smoking as a means of regulating unpalatable feelings. In other words, to the degree that smokers implicitly believe that smoking can enhance their enjoyment (positively reinforce; e.g. "I *enjoy* smoking when I'm *happy*") and reduce their emotional distress (negatively reinforce; e.g. "I *need* to smoke when I'm *upset*") then they are more likely to *automatically* engage in smoking as a means of controlling and coping with fluctuating thoughts and feelings throughout the day. Indeed, the smoking-related IRAPs that Prof. Barnes-Holmes and I developed during my Ph.D., appeared to provide superior behavioral prediction relative to comparable self-reports or alternative implicit measures (e.g. in terms of cigarettes smoked per day, years smoking, and propensity to use smoking as a means of regulating emotions).

From this foundational basis, the SABA Doctoral Dissertation Grant allowed me to deploy smoking-related IRAPs to characterize a variety of applied analytic problems. Initially, I used the IRAP to capture the evolving interactions of smoking-related implicit biases with stressors and nicotine deprivation. In brief, I found clear evidence that nicotine deprivation alone does not precipitate exaggerated pro-smoking implicit biases among smokers; in fact, the smoking-related IRAPs allowed me to identify the eruption and gradual diminution of exaggerated pro-smoking verbal biases when stressor tasks were presented to participants during nicotine deprivation. As such the smoking-related IRAPs deployed during my Ph.D. provided a good preliminary in vivo model of relapse during the early stages of smoking-cessation.

Having established that smoking-related implicit biases appear to provide relatively stable aggregate representations of an individual's smoking-related verbal history, I sought to examine their malleability in response to persuasive processes. Heuristic cognitive processes are widely influential in research examining decision making across many fields; indeed prospect theory's seminal paper by Kahneman and Tversky (1979) is currently the most cited article ever published by *Econometrica*, the premier economics journal. Yet until the advent of the IRAP, these highly fleeting spontaneous heuristic processes were not amenable to direct measurement. With the exception of the IRAP, implicit measures simply cannot capture conditionality, because they measure associative rather than propositional biases. This unique ability of the IRAP among other implicit measures, allowed me to unpack a first implicit account of the message-framing phenomena described by prospect theory. By presenting gain- versus loss-framed anti-smoking messages among

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groups of smokers under different clinical analogs, we were able to demonstrate a number of important findings. As predicted, implicit biases as predecessors of self-reports were indeed more sensitive to message-framing effects than the equivalent self-reports. Furthermore, I found clear evidence that psychological avoidance in the form of message-resistance strongly moderated the extent, and the clinical impact a week later, of these message-framing effects. In brief, whereas the message-framing effects were exaggerated when mindfulness was induced among participants, this message-framing effect disappeared in favor of improved clinical outcomes when acceptance and commitment therapy (ACT) principles were invoked.

My Ph.D. research has been an incredibly fulfilling process for me thanks in no small part to Prof. Dermot Barnes-Holmes at NUIM. The guidance and the support that Prof. Barnes-Holmes has provided to me over the years have been instrumental in my gaining eligibility for the SABA Doctoral Dissertation Grant. Having recently completed my Ph.D. research, I was fortunate enough to join the thriving Department of Psychology at the University of Limerick. There, within the context of a department with a strong pedigree in the area of implicit social cognition, I plan to continue with my examination of implicit decision making processes into the foreseeable future. With this in mind, I would like to sincerely thank SABA for facilitating the research opportunities that have brought me over the threshold, and into a new academic career. ❖

SCHEDULING, BILLING, PAYROLL
FRUSTRATION

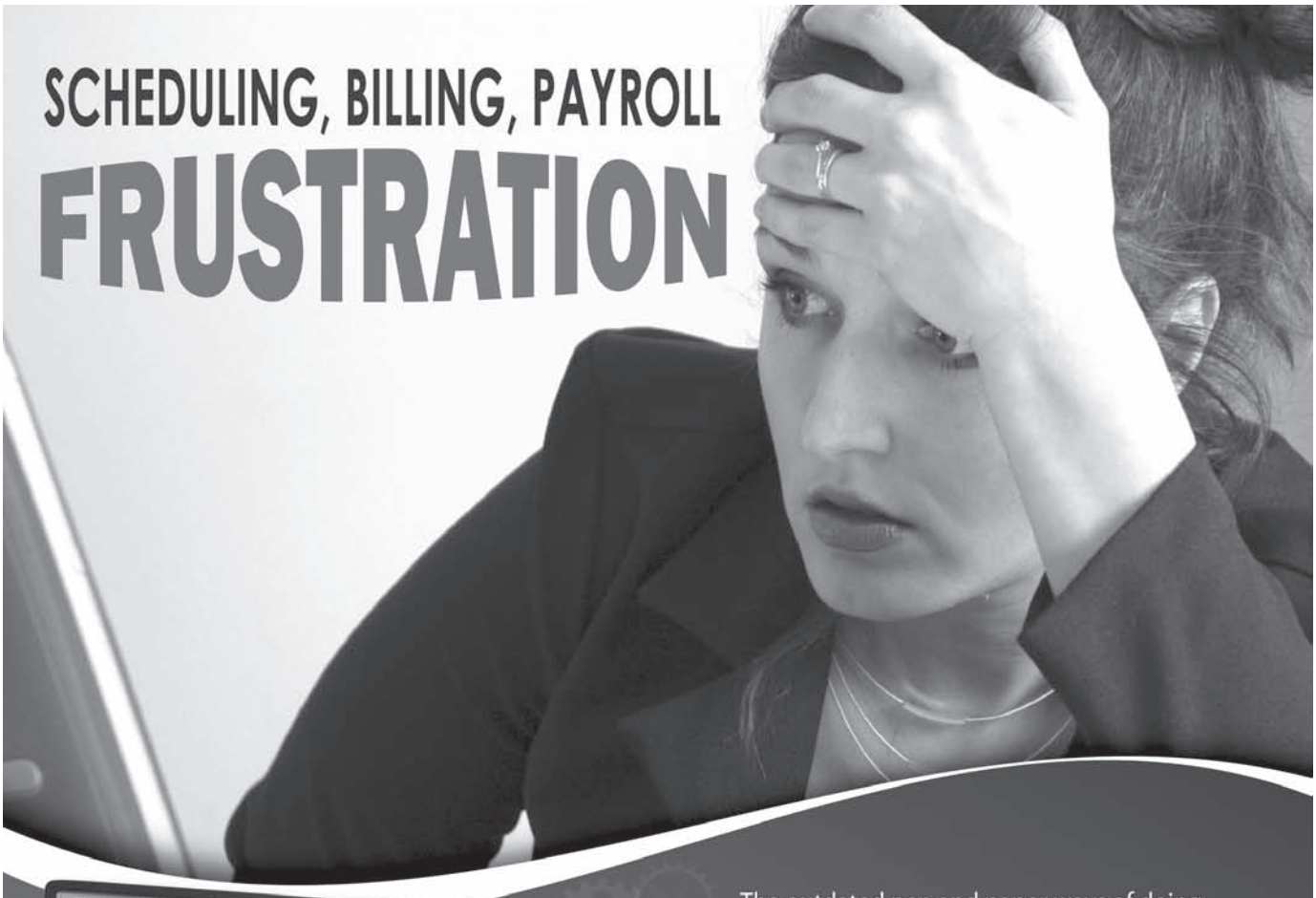

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Figure 1. Countries That Have Benefited From Projects Supported by SABA International Development Grants

SABA's Funds in Perpetuity and Financial Update

BY MARIA E. MALOTT

You might be wondering if it's worth donating to the Society for the Advancement of Behavior Analysis (SABA) and how its funds are managed and disbursed. SABA's mission is to provide financial support for the field of behavior analysis. For 30 years we have been doing just that—building funds to support dissemination of the science and to educate our most promising young scholars. About 92% of SABA's funds are restricted and can only be used for their defined purposes.

The Society has no assets other than those that come as donations from supporters; the return on those assets is used to generate grants and fellowships for specific purposes. Grants and fellowship disbursements are assessed annually based on the return on investment, preserving the principle plus an average of 3% annual growth to compensate for inflation. Before a fund can become an endowment that generates grants from its interest, it must total at least $100,000. Adherence to this strategy assures that your donation to SABA contributes to a permanent foundation in support of the field.

SABA manages three major restricted endowment funds. Our largest is the Sidney W. and Janet R. Bijou Endowment Fund, which was created by the Bijous back in 1996, with an additional gift made in 2003. At the end of 2009, this fund had over $373,000. The Bijous established this fund to support doctoral students doing research in child development from a behavior-analytic perspective. To date, this fund has generated 21 fellowships.

Our second largest restricted endowment fund is the SABA Experimental Endowment Fund, which had approximately $133,000 at the end of 2009. Since 2002, this fund has generated grants for 12 doctoral students conducting research in the experimental analysis of behavior.

The third restricted endowment fund, the International Endowment Fund, provides financial assistance for individuals and organizations pursuing the development of behavior analysis outside the United States. By the end of 2009, this fund had just over $107,100. The International Endowment Fund has generated 31 grants to date, awarded in support of projects all over the world. Figure 1 shows the geographical distribution of those who have received international grants.

We are now building our fourth fund—the Doctoral Dissertation and Master's Thesis Research Endowment Fund—to provide financial assistance for individuals pursuing dissertation and thesis research. This endowment was created in 2009 and continues to grow toward self-sustainability; it currently has $40,901. We are counting on your donations to develop this important fund. Until it reaches its $100,000 goal, ABAI will donate funds to award two annual $1,000 dissertation grants and two annual $500 thesis grants. Figure 2 shows the balances for SABA's major endowment funds.

SABA also maintains short-term restricted funds. These funds have also been donated for specific purposes. The Senior Student Presenters' Fund, which had a balance of approximately $14,000 at the end of 2009, generates grants

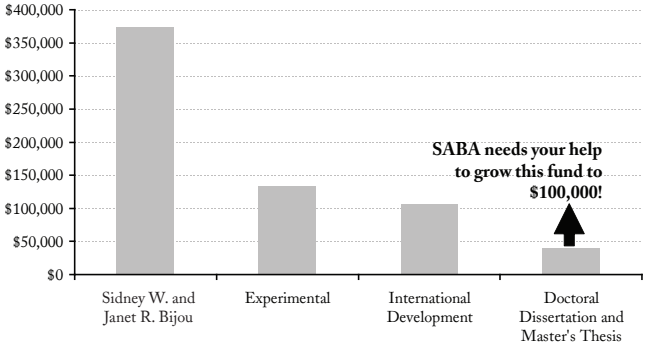

Figure 2. SABA's Endowment Funds

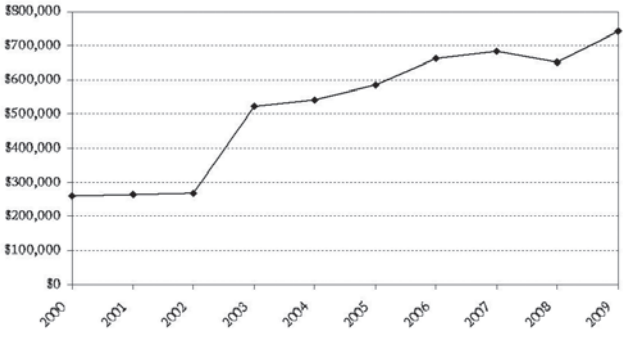

Figure 3: SABA Asset Growth

to cover the registration fees for senior student presenters at ABAI's events. Donors to the fund are paired with specific student registrants and are identified to these grant recipients. Donations to this fund are disbursed as they arrive. Senior Student Presenters' Grants have supported over 1,140 students at ABAI events since 1996. The Henry S. and Susanne F. Pennypacker Fund, created with a donation of stock from the Pennypackers, was established to eventually award a Pennypacker Lecture Prize. *The Analysis of Verbal Behavior* (*TAVB*) Fund was created by Jack Michael through the donation of his manuscript for Concepts and *Principles of Behavior Analysis*. Profits from the sale of this foundational text were allocated to support the purchase and production of *TAVB*.

So, how has SABA performed financially in the current, challenged economy? At the end of the 2009 fiscal year, assets totaled $742,250. Figure 3 shows the growth in assets over the past 10 years.

SABA assets have generated a positive return despite the economic recession. Figure 4 shows SABA's annual investment returns since 2000—the good news is that our return on investments in 2009 totaled 13.8%, a 10 year record! Our investment strategy is conservative, keeping foremost in mind the perseveration of funds.

Here are some compelling reasons to donate to SABA:

- *Purpose*: Almost all SABA funds are restricted for purposes aligned with the development of behavior analysis and can be used only for the purpose allocated.
- *Legacy*: The endowment funds are designed to exist in perpetuity so you can leave a legacy for the field. You might consider including SABA as a beneficiary in your will when doing your estate planning, so you can ensure that your gift will support the mission of SABA for years to come. If you are interested or have questions, please contact me at mmalott@abainternational.org and I will be happy to assist you.
- *Quality*: Grants are very competitive. Substantial thought and review goes into selecting awardees, ensuring that only sound proposals are awarded.

See SABA on page 22

SABA Fellowship Winners

Experimental Analysis of Behavior

Jeff Stein, University of Kansas (2010)
Monique Udell, University of Florida (2010)
Carlos Cancado, West Virginia University (2009)
Patrick Johnson, University of Kansas (2009)
Amanda Calvert, Washington University (2008)
Carla Lagorio, University of Florida (2008)
Yukiko Washio, University of Nevada, Reno (2007)
Bethany Raiff, University of Florida (2006)
Christopher A. Podlesnik, Utah State University (2005)
Shawn Charlton, University of California, San Diego (2004)
Kazuhiro Goto, University of Exeter (2003)
Christian Krageloh, University of Auckland (2002)

Sidney W. and Janet R. Bijou Fellowship Winners

Jade Hill, Arizona State University (2010)
Allison Tetreault, West Virginia University (2010)
Kevin Luczynski, Western New England College (2009)
Cara Phillips, University of Florida (2009)
Jessica Frieder, Idaho State University (2008)
Sara Kupzyk, University of Nebraska, Lincoln (2008)
Sarah Bloom, the University of Florida (2007)
Melanie Bachmeyer, University of Iowa (2007)
Elizabeth Athens, University of Florida (2006)
Sarah O'Connor, National University of Ireland, Maynooth (2006)
Claire St. Peter, University of Florida (2005)
Jason Stricker, University of Iowa (2005)
Terry Falcomata, University of Iowa (2004)
Anna I. Pettursdottir, Western Michigan University (2004)
Marleen Adema, University of Wales, Bangor (2003)
Caio Miguel, Western Michigan University (2003)
John Borrero, University of Florida (2002)
Michael Mueller, University of Southern Mississippi (2001)
James Moore, University of Southern Mississippi (2000)
Aida Sanchez, Florida International University (1999)
Hiselgis Perez, Florida International University (1998)

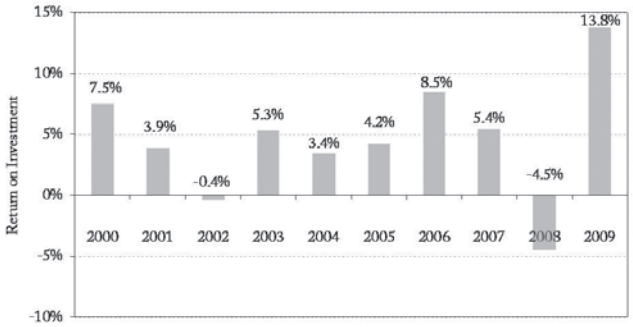

Figure 4. Annual Return on Investments

SABA continued from page 21

- *Impact*: Every dollar of your gift supports grant funding. No portion of any donation is allocated to administrative costs. All costs associated with SABA's activities are provided in-kind by ABAI.
- *Flexibility*: SABA welcomes gifts in any amount; you can decide how much to contribute. You might consider a contribution to the Senior Student Presenters' Fund or to the Doctoral Dissertation and Master's Thesis Research Fund to help build a permanent fund.
- *Tax Benefit*: All gifts to SABA are tax deductible.
- *Management*: SABA's financial strategy has proven effective in preserving funds in spite of recent market challenges.
- *Convenience*: You can make a donation whenever you register for an event, renew your membership, or make a purchase on the ABAI online store. Or you simply donate by going to **http://portal.abainternational.org/shopping/frmGroupListing.aspx?intgrpkey=14**.

On behalf of the entire SABA Board, many thanks are due to all who provide support through their donations. We want to especially thank our major donors of the last few years, who have made significant financial contributions to SABA, including Sidney and Janet Bijou, John Mabry, Greg Stikeleather, Edward Anderson, Henry and Susanne Pennypacker, and Richard W. Malott. Also ABAI, throughout the years, has also made significant contributions to SABA funds. We encourage you to make a donation before year's end to receive a tax benefit in 2010. ❖

Major SABA Donors

We would like to recognize those individuals and organizations that have made substantial donations to SABA over the years. ABAI has also donated over $41,000 to SABA over the past 16 years.

Edward Anderson

Richard Malott

Sidney and Janet Bijou

Henry and Susanne Pennypacker

John Mabry

Greg Stikeleather

2010 SABA Donors

We want to take this opportunity to thank all ABAI members who contributed to SABA in 2010 to help build our funds. This list reflects donations received from January 1, 2010 through October 26, 2010.

$1,000–$3,000

Doctoral Dissertation and Master's Thesis Fund
The Association for Behavior Analysis International

$500–$999

Doctoral Dissertation and Master's Thesis Fund
Greg Stikeleather

Unrestricted Fund
M. Jackson Marr

$100–$249

Doctoral Dissertation and Master's Thesis Fund
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Kenji Okuda
Joyce Tu

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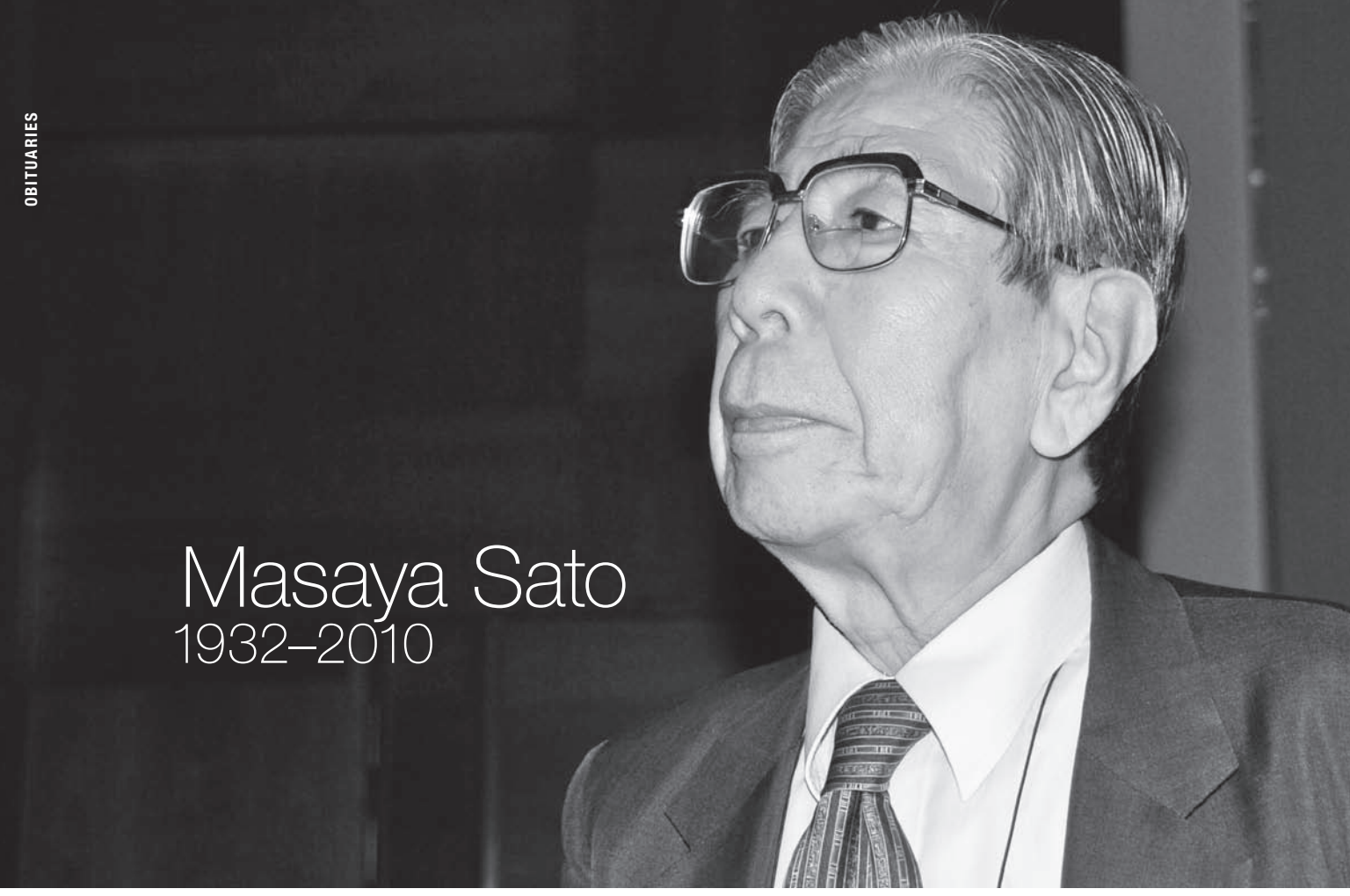

Masaya Sato
1932–2010

BY DICK MALOTT

MABA/ABA/ABAI was and is full of dream chasers, people who dedicate much of their lives to the pursuit of lofty but elusive goals. Dream chasers are heroes. But now ABAI has one less dream chaser, with the death of Sato Sensei on August 23, 2010. Masaya was 77 years old and still hard at work in pursuit of an understanding of humankind through behavior analysis and in pursuit of the international dissemination of behavior analysis.

It all started years ago when a plane from Boston's Ralph Gerbrands was flying over Tokyo, and two boxes fell out of the cargo bay to drift down through the clouds. The gods must be crazy. One box, the pigeon Skinner box, fell into the outstretched hands of young Masaya Sato standing in the perception-research lab of Professor Takashi Ogawa at Keio University. The other, a rat Skinner box, fell into the hands of Yagi at the University of Tokyo. But the gods were not crazy; they knew that few things are more reinforcing than tossing a pigeon in a Skinner box, connecting a Gerbrands cumulative recorder to it, and sitting back to listen to and see those key pecks accumulate (and oh yes, timing each of the intervals of the VI schedule with a stop watch while reading the list of intervals in his notebook; and oh yes #2 young Masaya only had a traditional event recorder at that time—maybe not quite as idyllic as I'd like to think). Nonethe-less, the young Masaya was hooked and, of course, did his dissertation on stimulus control with that pigeon in one of those magic boxes. Thus, under Ogawa's tutelage, began a major component of the experimental analysis of behavior in Japan.

And Masaya continued to explore one of the great features of the Skinner box, its function as a microscope for examining both simple and complex behavioral processes, when he studied delayed matching-to-sample and also problem-solving in pigeons.

And Masaya began to explore another great feature of the Skinner box, its role as a model for experimental research in the human-operant lab, where he studied self-control and the type A behavior pattern as well as in a more generalized lab setting where he studied observational learning (modeling) in young children.

And Masaya began to explore still another great feature of the Skinner box, its role as the foundation for theoretical extrapolation, when he studied instinctive behavior, motivation and emotion, language and cognition, conflict, awareness, self-management of diabetes, asthma, the mand in haiku poetry, and Buddhism. Thus Masaya's breadth of interest illustrates one of the great features of behavior analysis—it provides us a coherent intellectual, social, and spiritual worldview.

Over the years, Masaya read several talks at ABA wherein he presented a behavior analysis of Buddhism. And

I'd observed him frequently giving alms at Buddhist and Shinto temples. So I asked this scientist/theoretician if he was a Buddhist; he paused for a minute, as he always did, and then said, "I don't know."

The younger Masaya caught the Skinner box, and it caught him. And in 1979, the older Masaya was one of the first members of ABA, attending every annual conference thereafter. But he didn't attend alone; instead, he was always with a coterie of Japanese behavior analysts, both experienced researcher-teachers and fledgling grad students, always encouraging and supporting Japan's participation in behavior analysis. In 1984 at ABA in Nashville, a beautiful young woman, Naoko Sugiyama, was in the grad-student section of that coterie. And two years later, there appeared a photo of Masaya and Naoko, elegant in their traditional kimonos—married.

In 1998, Masaya was the first and, so far, the only ABA/SABA president not from the States. In that role, he made major contributions in helping ABA/SABA bring behavior analysis to the entire world and not just leave it confined to the land of Skinner. He established ABAI's biannual international conference, always to be held outside the States. He got a permanent position for an international representative added to the ABAI Council. And he created a SABA fund for international grants. He was also co-chair of ABA's International Committee. And Masaya was one of the founders of Japanese ABA, its president from 1985 to 1990 and executive director from 1983 to 1984, and 1991 to 2006.

And like Skinner, Keller, Bijou, and so many others before him, a still older Sato-san was required to retire from Keio at the young age of 65, as is still the custom in Japan but fortunately no longer required in the States. And like Skinner, Keller, Bijou, and so many other of our dream chasers, retirement did not stop Masaya's pursuit of the dream; instead, he taught full-time at Teikyo University and then at the correspondence school Seisa University, where he was president from 2009 to 2010.

And like many other behavior analysts, Masaya was also heavily involved in the arts. He came from ten generations of physicians/writers/poets. His father was the famous author/poet Haruo Sato. So Masaya set some of his father's words to music that he, himself, composed. He has four CDs of his own work available at **http://www.Amazon.co.jp** under his pen name Masao Kinosita (another CD will be released posthumously). Much of his music is of the 1940's Edit Piaf sultry style; and really good; but he also has a CD of songs he composed for children, Spring Day. In addition, Masaya wrote his own poetry and published under yet another pen name, Kanketsu Shishu. Isn't that cool.

The beautiful young grad student in the kimono has gone on to become a major figure in behavior analysis, working with and independently of Masaya, training students, sending them to the States for more training, facilitating their attending ABA, expanding behavior analysis and pioneering OBM in Japan and throughout the world (she wrote Introduction to Behavior Analysis, which has sold 44,000 copies). Naoko initiated J-ABA's paying the considerable expense of two Japanese students attending ABA in the States every year since 2002, an impressively effective use of donor funds, as it doesn't merely reduce the costs of students attending ABAI but, instead, allows students to attend who otherwise might not be able to. And she's implemented a program where Japanese authors at the ABAI Expo donate their books to Japanese students who started studying behavior analysis in the States with no knowledge of behavior analysis in Japan. Furthermore, Naoko and Masaya have independently been generous donators to SABA's international fund and SABA's student fund. And she served as the liaison from J-ABA on the 2001 ABA delegation to China. Also she formed the Asian Association for Behavior Analysis. In her own way, Naoko continues the chase of the dream that Masaya started.

And yes, I weep as I write. ❖

Photography: DICK MALOTT and GOEN SOUTH PHOTOGRAPHY & VIDEO

1 Introduction to Behavior Modification class, c1995.

Ole Ivar Løvaas
1927–2010

BY TRAVIS THOMPSON AND TRISTAM SMITH

Ole Ivar Løvaas was born into modest surroundings in Lier, Norway—a small agricultural village outside of Oslo—on May 28, 1927, belying his later contributions that changed the course of autism treatment. Ivar Løvaas developed a highly effective treatment to overcome most of the symptoms of autism among young children with that disability, based on the principles of applied behavior analysis. Ivar Løvaas died from complications of Alzheimer's disease on August 2, 2010, at the age of 83 in a hospital in Lancaster, CA. His death was an immeasurable loss to children with autism and their parents, teachers and therapists, and to the field of behavior analysis.

During World War II Løvaas and his family were forced to do farm labor 10–12 hours per day for the Nazis who had invaded and controlled Norway. After the war, Løvaas enrolled on a violin scholarship at Luther College in Decorah, IA. Upon graduation, he was admitted to the University of Washington's psychology doctoral program. During his doctoral training he worked as a psychiatric assistant at Pinel Psychiatric Institute, which provided care for family members of Seattle's elite who had serious mental health problems. He was disillusioned with the care provided and lack of patient improvement. His interest shifted from psychoanalysis, the predominant therapy approach of that time, to the nascent field of applied behavior analysis (ABA) based on principles promulgated by B. F. Skinner. After completing his doctorate in 1958, Løvaas stayed at the University of Washington, where he worked alongside other ABA pioneers such as Sid Bijou, Don Baer, Todd Risley, and Wont Wolf.

In 1961, Ivar Løvaas was offered a position at the UCLA Psychology Department where he became an assistant professor, and was soon placed in charge of an entire ward at UCLA's Neuropsychiatric Institute. Few professionals were familiar with autism at the time, but Løvaas was drawn to several children with autism who were being treated at UCLA and at the nearby Camarillo State Hospital. Those children (Ricky, Pamela, and several others) did not speak, display typical social interest, or play. They rocked, twirled in circles, displayed other rigid routines, and—most disturbingly—engaged in persistent and sometimes severe self-injurious behavior. Løvaas reasoned that if operant learning principles could be used to teach complex behavioral skills to laboratory rats, whose brains weigh 2 grams, surely those same principles could apply to children, whose brains were several hundred times larger. Perhaps, Løvaas thought, he could teach them to respond to adult requests, learn basic skills, and even talk. Most importantly at the time, he sought a way of overcoming their excruciating self-injury, for which there was no other treatment.

Though several earlier authors had discussed use of operant procedures with children with autism (e.g. Ferster and DeMyer, 1961; Risley, 1964), Løvaas was first to develop a consistent program of clinical research yielding substantial enduring behavioral improvements among children with autism. His earliest work focused on circumscribed skill deficits like lack of language, and on reducing self-injury. His use of aversive procedures to reduce self-injury was controversial, creating strenuous opposition to the entire applied behavior analysis approach to autism. Moreover, the first children with autism who Løvaas treated made only modest gains and often skill improvements were transient. This initially dampened public support for Løvaas's approach. He concluded his attempts had been too little (several hours per week) and too late (beginning at 7–9 years of age).

Løvaas created the UCLA Young Autism Project to address limitations of his earlier work. The program enrolled 2–3 year old children with autism, and provided 40 hours per week of treatment for up to 4 years, using behavior analysis learning principles. Outcomes were truly remarkable, with nearly half of treated children functioning within the range of their typical peers in language, social skills, and academics by 7 years of age (Løvaas, 1987). In his later work he found it was unnecessary to use aversive procedures to overcome behavioral challenges, focusing instead on promoting positive alternatives. Moreover, the gains were long lasting. McEachin, Smith, and Løvaas (1993) studied a group of children with autism who had received intensive behavioral early intervention at an average follow-up age of 11.5 years. The experimental group continued to preserve its gains over the control group.

Prior to publication of his pioneering work (Løvaas, 1987) many adolescents and young adults with autism were routinely institutionalized, languishing in large public residential programs. His work demonstrated those devastating consequences could be prevented. Though initially viewed with skepticism by many professionals, Løvaas's methods are now widely acknowledged to be highly effective. Variations on the original UCLA Young Autism Project are now used throughout the world, with numerous replication studies reporting findings very similar to Løvaas's original 1987 study (e.g. Sallows and Graupner, 2005; Remington, et al. 2007; Smith, Groen, and Wynn, 2000). By combining naturalistic behavior analytic incidental teaching methods, such as pivotal response training (Koegel, Koegel, Harrower, & Carter,1999; Schreibman and Koegel, 2005) and milieu language intervention (Warren and Bambara, 1989) with the discrete trial teaching approach that Løvaas perfected, it is now possible to individualize early behavioral intervention for children with a range of autism disabilities (Thompson, 2011).

Ivar Løvaas will be remembered as an intensely committed man who cared deeply about children with autism and their families. But merely caring about them was not good enough for Ivar, for he was very much a man of action. He was a proponent of Hannibal's view, "We will either find a way or make one." In later years he grew especially impatient with people who found excuses for sitting on their hands on the sidelines while opportunities to improve children's lives slipped away. His penchant for an active life extended to his recreational pursuits. We recall visiting him at his home in Topanga Canyon, north of Los Angeles. Both of his legs were in casts from a skiing accident and he was in a wheelchair. Undaunted, he wheeled his chair at a break neck speed about his deck, gesticulating as he spoke, thrusting his arm in the air for emphasis. On another occasion, Ted Carr, Ivar, and one of us (Travis Thompson) spent an evening discussing some of our more fascinating cases, after we managed to abscond from an autism conference in Washington, DC.

Løvaas inspired many students and junior colleagues to enter the field. Student-therapists recruited from his popular undergraduate classes were the main service providers in his clinic. Graduate students supervised the undergraduates. Many continued collaborating with Løvaas after completing their doctorates and went on to distinguished careers of their own. Eager to bring behavior analysis out of the "ivory tower," Løvaas published important treatment manuals and educational films. He also conducted workshops in which he gave live demonstrations of therapy for children with autism whom he had never met before (continuing to do so until he neared his 80th birthday).

We know of no other contribution in the behavioral sciences that has had such a profoundly positive effect on the lives of people with a mental health disorder or disability. Løvaas' work transformed the futures of many thousands of children with autism spectrum disorders as well as the field of behavior analysis.

It doesn't feel apt to write about our friend and colleague, Ivar Løvaas, within the confines of the black border of a death notice. His vitality, humor, creativity, and boundless energy led us to believe that it would be impossible for his life to slip away from us, but sadly it did. We will remember him with the deepest respect, fondness, and affection. ❖

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In Memoriam: Howard N. Sloane

BY JUDITH CRANDALL-SLOANE AND GINA GREEN

Howard N. Sloane, professor emeritus of the University of Utah and former executive director of the Cambridge Center for Behavioral Studies, died October 2 at the age of 78.

Howard received a Ph.D. in clinical psychology from Penn State University in 1959. As part of his doctoral training, he was required to teach several classes in clinical psychology. His experience in trying to explain and defend the theories and practices of that field led him to seek a more solidly scientific approach to behavior. That quest bore fruit when Howard conducted research on the effects of diet on behavior during an NIH post-doctoral fellowship in the Department of Experimental Psychology at the Walter Reed Army Institute of Research and subsequently as an assistant professor of biochemistry in the Johns Hopkins School of Public Health. Those experiences firmly cemented his commitment to a natural science approach to understanding and changing behavior, not only as the framework for his professional work but also as his world view.

In 1964, Howard joined the cadre of talented people who were working to blend the experimental analysis of behavior with research on child development under the direction of Sidney Bijou at the University of Washington's Institute for Child Development. Among those pioneer developers of applied behavior analysis were Mont Wolf, Todd Risley, Don Baer, Jay Birnbrauer, Ivar Lovaas, Bob Peterson, Rob Hawkins, Bob Wahler, Jim Sherman, and Hayne Reese, in addition to Bijou. Howard accompanied Bijou to the University of Illinois in 1964, where they extended the work that had begun in Seattle.

Howard moved to the University of Utah in 1966, where he was professor of educational psychology until he took partial retirement in 1992. At that point he became executive director of the Cambridge Center for Behavioral Studies, a position he held until 1995. After retiring as executive director, Howard continued to serve the Center as a trustee, a member of the Executive Committee, chair of the Board of Trustees, and director. He also served as executive director of the California Association for Behavior Analysis in 2004–2005.

Howard's contributions to the behavior analysis literature comprise numerous journal articles, book chapters, and books. Early publications included several studies in the *Journal of the Experimental Analysis of Behavior* and articles describing his research on the effects of diet on behavior. With Bijou and others, Howard began conducting and publishing studies on applications of behavior analysis to child behavior and language in the 1960s—work that he continued throughout his tenure at the University of Utah. In 1982, he and Barbara MacAulay edited the book *Operant Procedures in Remedial Speech and Language Training.* A research grant from the U.S. Bureau of Education for the Handicapped (1979–1982) supported Howard's development and evaluation of self-instructional booklets on solving behavior problems for parents of young children with disabilities. Those booklets were subsequently expanded into his classic, *The Good Kid Book.*

Howard was a person of immeasurable kindness, great professional and personal integrity, a wonderful (if quirky) sense of humor, and insatiable intellectual curiosity. He had many varied and interesting projects over the years. One of his favorites was a collaboration with his advertising executive father, Howard N. Sloane, Sr., and several other behavior analysts, including Bob Schuster. That "Animalated Advertising" project involved training small animals such as rabbits and a toucan to perform simple tasks in large department store display windows. The aim of the displays was to draw customers into the stores, which they apparently did with some effectiveness.

Howard is survived by his wife of 35 years, Judith Crandall-Sloane, sons Gary Sloane and Jeff Sloane, daughter Wendy Sloane, and eight grandchildren. ❖

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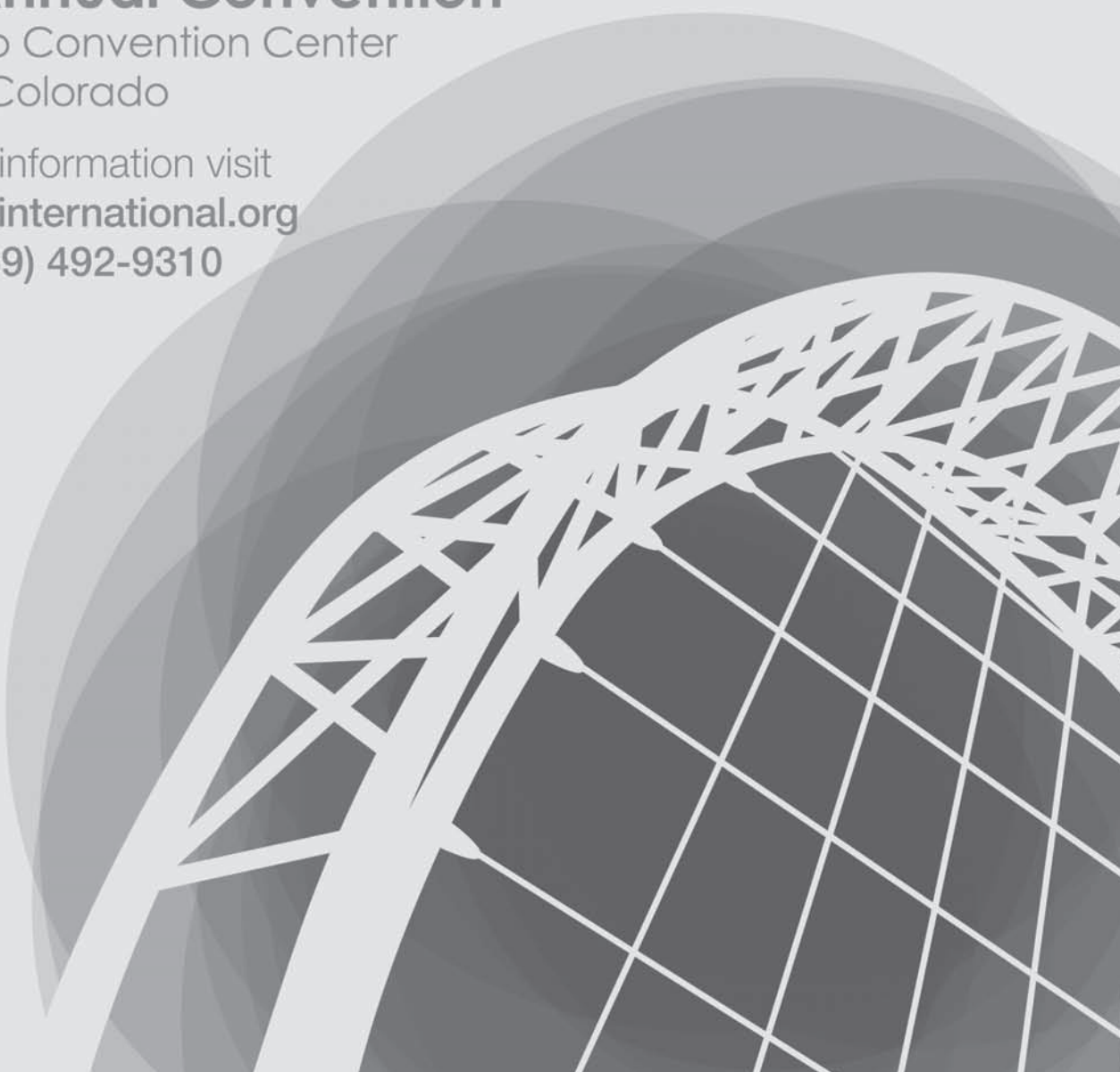

Our Kind of Town: The 2010 Autism Conference

BY MARIA E. MALOTT

"Fantastic! A perfect location."

ABAI kicked-off 2010 with its popular annual autism conference. Perhaps there is no better indication of the quality and success of this event than the quotes displayed at left and throughout this article, which were taken directly from the follow-up surveys received from attendees. The conference, "Translational Science and Effective Practice," took place from January 22nd to the 24th in Chicago, Illinois. Chicago, as many of you may know, is a truly significant place for ABAI, as it was host city for our very first convention in 1975. Therefore, it seemed somewhat fitting that we bring the autism conference, which has become something of a second focal point on the ABAI calendar, to this terrific town.

The autism conference is a single-track event that focuses on pragmatic, research-based information relevant to improving the lives of children and adults with autism spectrum disorders (ASD). The 2010 Autism Conference

"This was the best autism ABAI event yet!"

"Thanks so much for moving this field forward and inviting compelling presenters!"

"I learned a lot! Very worth coming!"

Photography: MARTIN BURCH

1 Gregory Hanley and Oliver Wendt discuss Wendt's poster at the conference poster session. **2** L to R, back row: Thomas Zane, Michael Dorsey, Travis Thompson, and Robert Remington. Second row: Joe Reichle, William Heward, Glen Dunlap, and Kathryn Saunders. Third row: Gregory Hanley, Mary Jane Weiss, and Cathleen Piazza. Front: Dorothea Lerman and Maria Malott. **3** Robert Remington delivers his presentation.

was attended by 660 people from 17 countries and 43 U.S. states. This event, which has become a staple for ABAI members, has also been hosted in Boston, Atlanta, and Jacksonville. Past conferences have been instrumental in generating discussions and informing the public about behavior analysis' role in ASD treatment including progress and challenges in treatment, practical strategies for home and school treatment, and the transition from research to practice.

"Thought provoking information."

The conference featured a distinguished group of nine invited speakers who offered their insight into a wide variety of topics. Perhaps the most rewarding feedback from registrants was that these speakers—among the very best in the field—made significant contributions to expanding the knowledge of attendees:

- Glen Dunlap discussed the need for standardized approaches to dealing with challenging behaviors in the classroom. He presented evidence supporting the "prevent-teach-reinforce" model of intervention as a solution to address this need. Dr. Dunlap's presentation was titled "A Standardized Approach for Individualizing School-Based Interventions for the Challenging Behaviors of Students with Autism."
- Gregory P. Hanley's talk—titled "Identifying Effective and Preferred Behavior-Change Programs: A Case for the Objective Measurement of Social Validity"—reviewed social validity assessments and the role they play in determining which interventions an individual will receive. He highlighted several tactics for determining and measuring social acceptability of critical intensive behavioral intervention features and described how these measures could inform clinical and educational decisions.
- Craig H. Kennedy discussed how various health conditions can act as confounding variables in a therapist's efforts to predict and influence an individual's behavior. He outlined several common health factors, their behavioral effects, and suggested mechanisms for addressing health-influenced behavior. Dr. Kennedy's presentation was titled "Health Conditions in Antecedent Assessment and Intervention."
- Dorothea C. Lerman emphasized the importance of data collection and analysis in developing effective teaching strategies. In her talk, she compared various data gathering methods and identified those that strike the best balance between precision and ease of use. Dr. Lerman's presentation was titled "A Comparison of Methods for Collecting Data on Students' Performance During Discrete Trial Teaching."
- Cathleen C. Piazza's talk—titled "Assessment and Treatment of Feeding Problems in Autism"—addressed

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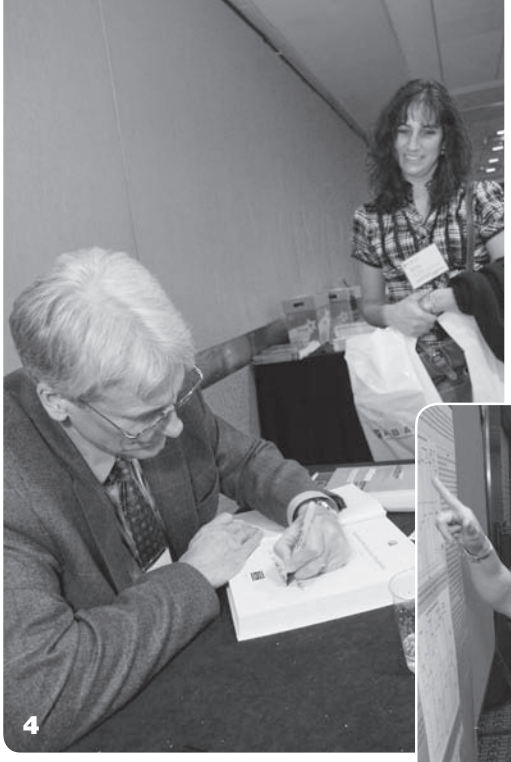

4 William Heward autographs his book at the book signing. **5** Melissa Nosik describes her poster to a fellow attendee. **6** The Hope Network displays their puppets. **7** Jacqueline Harth peruses the Autism Conference bookstore. **8** Attendees applaud after a presentation.

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the issue of feeding disorders in individuals with ASD. She stressed the importance of defining and quantifying such behaviors as a necessary step to prescribing and evaluating effective treatment.

- Joe Reichle described advances in augmentative communication strategies for individuals with ASD and presented a model for establishing these methods in educational service delivery systems. Dr. Reichle's talk was titled "Augmentative Communication Strategies With Children With Autism and Severe Disability."
- Robert Remington discussed home-based early intensive behavioral intervention (EIBI) programs and highlighted the need for increased study of how families adjust to the introduction of these therapies. He provided arguments for how increased therapist sensitivity to complex family roles could lead to improved EIBI methods. His talk was titled "Early Behavioral Intervention and Family Psychological Adjustment."
- Kathryn Saunders' talk—titled "The Science and Practice of Discrete Trial Training: Why Some Teaching Procedures Are More Effective Than Others"—described various approaches to teaching matching-to-sample procedure and included a comparison of the methods that analyzed the effectiveness of each.
- Travis Thompson discussed EIBI and the disparity in outcomes of such treatments in young children with autism. Dr. Thompson identified genetic factors in brain development as a possible reason for varying degrees of EIBI success with his talk "Intensive Early Behavioral Intervention and Brain Development."

Brief articles by all speakers are included on pages 35–52.

"Fantastic array of posters."

Poster sessions remained a vital and informative part of the conference. This year, 113 posters were offered on autism-related research and information covering experimental analysis, applied behavior analysis, service delivery, and theory. Also featured this year was an overview of ABAI's special interests groups devoted to autism and other areas that especially concern parents and professionals.

"Useful and educational."

The ABAI cooperative bookstore was a key source for supplementary information to the concepts discussed by our speakers. This year's bookstore featured over 300 titles focused on the topic of autism, including titles from some of the invited presenters. Author signings provided conference guests with opportunities to meet invited presenters and have their books signed.

The ABAI organizational members that contributed to the conference were Autism Spectrum Therapies and the National Autism Center. Autism Spectrum Therapies is a leading provider of applied behavior analysis (ABA) services for individuals with ASD in Southern California. The National Autism Center is dedicated to serving children and adolescents with ASD by supporting effective, evidence-based treatment approaches. ABAI would like to thank these organizations for their participation.

Exhibitor booths remained a popular feature. The organizations at this year's event added to the robustness of the conference by presenting their work and services to

the larger ABAI community. The following groups were featured at the 2010 Autism Conference:

- Autism Training Solutions provides on-line training videos to parents and professionals aimed at educating them about best practice methods for teaching individuals with autism and related disabilities.
- Behavior Analysis Online offers internet courses from the Department of Behavior Analysis at the University of North Texas to human service professionals and other individuals who have difficulty accessing on-campus classes.
- Behavior Tracker Pro is a behavioral data collection software program for therapists, teachers, parents, and aides.
- The Center for Advanced Learning offers a consultation and training program that is designed to help parents establish their own home-based ABA programs.
- The Florida Institute of Technology ABA Online Program offers comprehensive instruction in behavior analysis, with all courses taught at the master's level.
- Health Net Federal Services provides health care to active duty soldiers, National Guard and Reserve members, military retirees, and military families.
- Hope Network Behavioral Health provides comprehensive outpatient services across Western Michigan for families struggling with autism and other disabilities.
- NSU Mailman Segal Institute for Early Childhood Studies showcases best practices in the fields of early childhood education, special education, family support, and parenting education.
- The Professional Crisis Management Association has provided training, certification, and consultation to education and human service professionals for over a quarter century.
- Rethink Autism specializes in making effective and affordable treatment tools to parents and professionals.
- Spectrum Technologies specializes in web-based technology, treatment curricula, and therapy materials designed for parents, professionals, and organizations.
- STAR Autism Support offers training, workshops, and curriculum materials to school and agency staff working with students with autism.
- Wellspring Autism Network is a national consortium of ABA providers who specialize in the treatment of children with ASD and developmental disabilities.
- William Beaumont Hospital's Hope Center offers hands-on parent education in ABA interventions to aid in the treatment of children with autism.

The conference would have not been possible without the dedicated work of the Program Committee Co-chairs: Gregory Hanley and Travis Thompson. The success of this year's event can largely be credited to their commitment and efforts. Additionally, a very special thank-you is owed to William Heward; the fact that the autism conference now thrives as an annual event is due to Bill's work in managing the first three conferences.

"Superb content. Excellent in every way."

A DVD of the 2010 Autism Conference is available from ABAI. This DVD contains audio and slides of each invited speaker's presentation and includes an option for

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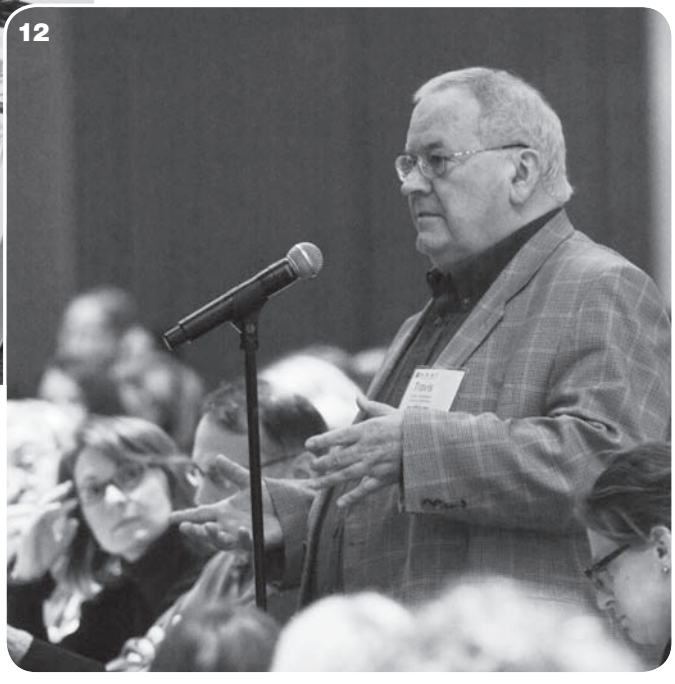

9 Craig Kennedy looks on during a panel session. **10** The audience listens attentively to Robert Remington. **11** Marja Huzevka speaks during a question and answer session. **12** Travis Thomspon asks a question following a presentation.

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Board Certified Behavior Analysts to earn continuing education (CE) credits. This DVD is the latest in ABAI's series of autism conference recordings. Aside from being a valuable source of CE credits, these DVDs are also being used in university classrooms as quality educational materials. All DVDs can be purchased through the ABAI on-line store (**http://portal.abainternational.org/shopping/frmShoppingDefault.aspx**).

"I look forward to returning next year."

We are excited to announce that the 2011 Autism Conference will take place at Washington, DC in the Grand Hyatt from January 28–30. Titled "New Tools for Translating Science to Practice," the conference will maintain ABAI's high standards with presentations from an esteemed group of speakers: James W. Bodfish, Iser G. DeLeon, Wayne W. Fisher, Richard P. Hastings, William L. Heward, Linda A. LeBlanc, Richard W. Malott, Dawn B. Townsend, and Krista M. Wilkinson. This conference will also feature a workshop lead by Gregory Hanley titled, "Understanding and Addressing Sleep Problems of Children and Young Adults With Autism Spectrum Disorders." This workshop is just another example of new services that will be available at the 2011 Autism Conference. Early registration ends on December 13, 2010, and pre-registration ends on January 10, 2011. Continue the check the ABAI web pages for this event (**www.abainternational.org/events/autconf2011/index.asp**) for important information and updates. Don't miss this exciting, informational event! ❖

The History of the ABAI Autism Conference

2007, Boston, MA—*Progress and Challenges in the Behavioral Treatment of Autism*

2008, Atlanta, GA—*Issues and Recent Advancements in the Behavioral Treatment of Autism: Practical Strategies for Changing Behavior at Home and School*

2009, Jacksonville, FL—*Research to Practice: Making Real Changes in the Lives of People with Autism*

2010, Chicago, IL—*Translational Science and Effective Practice*

2011, Washington, DC—*New Tools for Translating Science to Practice*

Translational Science and Effective Practice

A Standardized Approach for Individualizing School-Based Interventions for the Challenging Behaviors of Students With Autism

BY GLEN DUNLAP

Glen Dunlap

Challenging behaviors are likely the greatest impediment to the social and intellectual development of children with autism. Serious challenging behaviors, such as aggression and persistent tantrums, often serve to exclude children from social interactions, integrated educational settings, and many learning opportunities. Because of these serious ramifications, behavior analytic researchers have been engaged in developing effective interventions for challenging behaviors for more than four decades. Using single subject experimental designs, hundreds of researchers have demonstrated the influence of a rich array of practices based on the principles of contingency management and stimulus control (Carr et al., 1999; Dunlap & Carr, 2007; Horner, Carr, Strain, Todd, & Reed, 2002).

In the late 1970s and early 1980s, behavioral scientists advanced our understanding of challenging behaviors by introducing the notion of behavioral "function," and this conceptual foundation led to the attendant technologies of functional analysis, functional assessment, and function-based interventions (Carr, 1977; Iwata et al., 1982, 1994; O'Neill et al., 1997). This pivotal development shifted the emphasis from topography, meaning that the form of the behavior tended to determine the intervention procedures, to function, meaning that the purpose of the behavior was the determining factor in the identification of the interventions. The emergence of function-based interventions required that serious challenging behaviors be preceded by an assessment to identify the behavior's controlling variables, and this meant that effective interventions had to be highly individualized.

The development and implementation of individualized interventions that are based on functional assessment data has proven to be difficult for many schools serving children with autism and other developmental and behavioral disabilities (Blood & Neel, 2007; Payne, Scott, & Conroy, 2007). Even though the federal statute mandating special education services specifies the need for functional behavioral assessments, schools often lack the resources and expertise needed to conduct assessment and develop and implement effective, function-based interventions. As a result, effective, individualized and function-based behavior support plans are rarely evident in school environments. Therefore, it has been suggested that a standardized and manualized approach might help school-based professionals to develop effective individualized support plans for students with serious problem behaviors. The prevent-teach-reinforce (PTR) model was developed to address this need (Dunlap, Kincaid, & Strain, 2005; Dunlap, Iovannone, Wilson, Kincaid, & Strain, in press).

Prevent-Teach-Reinforce

PTR is a systematic, structured process for developing and implementing behavior support plans for students with significant behavior problems. It is designed to be used by school-based teams, including the student's teachers and all others who are directly involved in the student's instruction and curriculum. PTR is derived from the principles of applied behavior analysis and the framework of positive behavior support. The model was designed for and tested with students in the K-8 grade range, however it may be applied effectively with pre-K and secondary students as well.

As much as possible, the PTR model has been manualized, with each step being detailed in terms of objectives, actions for the team to take, and a self-evaluation to be completed before the team moves to the following step. The PTR assessment is scripted so that team members contribute observational information pertinent to behavioral functions and antecedent influences. The PTR intervention step is linked to the assessment results and is menu-driven, with numerous options available for each intervention component. An important aspect of the intervention development is that each intervention plan must include at least one strategy from each of the three key components: (1) prevent, which involves antecedent manipulations; (2) teach, which involves instruction on replacement behaviors and other important competencies; and (3) reinforce, which involves adjustments to the reinforcement schedules.

There are five steps in the PTR process: teaming, goal setting, PTR functional assessment, PTR intervention, and evaluation. The process for completing the steps is the same for all students. In this way, the PTR model is a standardized approach. However, the content that is developed within each step is based on the idiosyncratic characteristics of the student, the setting, and the school

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professionals who will be responsible for implementing the intervention. In this way, the model is both standardized to meet the needs of all students, yet individualized to address the special characteristics and circumstances of the student in need of assistance.

Step 1: team building. The first step in the PTR process is the establishment of a well-functioning team consisting of those individuals who are responsible for the intervention and who are invested in the well being of the student. Teams usually include three to seven individuals and must include the student's teacher, any other school employee who spends substantial time with the student, and at least one individual who is knowledgeable about behavioral approaches and experienced with functional behavioral assessment, assessment-based interventions, and positive behavior support. In addition, it is desirable for teams to include parents or other primary caregivers, administrators or other school officials with direct access to school resources and policies, and anybody else who cares about the student and is in a position to facilitate optimal interventions.

Step 2: goal setting and data collection. The second step is to develop a clear, unified consensus regarding the short and long-term goals for the student. Often these goals have already been developed in the form of an individualized education plan, but it is nevertheless important for the team to review such goals in the context of a behavior support plan, and to determine if they are the most significant for this phase of the student's development. When goals are agreed upon, practical data collection strategies are developed in order to evaluate the status of the student's behavior, to evaluate progress, and to determine whether revisions to the intervention plan are needed. It is essential that the data collection procedures be simple enough for typical classroom personnel to implement.

Step 3: PTR assessment. The next step in the process is a version of a functional behavioral assessment. The PTR assessment is structured in such ways that all team members contribute information that relates to the three key components of the intervention: prevent, teach, and reinforce. The assessment process involves answering a series of questions that are then summarized to represent a functional understanding of the student's behavior problems and how they are influenced by events in the social, instructional, and physical environment.

Step 4: PTR intervention. The fourth step involves using the results of the PTR assessment to create an individualized intervention plan. Menus are provided to help teams select intervention strategies that are apt to be effective and fit well within the school settings where they will be used. As indicated previously, a vital aspect of the PTR intervention is that at least one strategy is selected from menus in each of the three components of prevent, teach, and reinforce.

Step 5: evaluation. The final step in the process is ongoing data collection and evaluation. The PTR model includes realistic procedures for evaluating the effects of the PTR intervention, and indicates what teachers and team members can do on the basis of evaluation results.

All of the PTR procedures are described in detail in a manual authored by Dunlap, Iovannone, Wilson, Kincaid, Christiansen, Strain, & English (in press).

Research on PTR

The efficacy of the PTR model has been evaluated in a number of time series designs with direct observations of disruptive behavior, academic engagement, and social behavior. A description of the model with illustrative case study data was reported by Dunlap, Iovannone, Wilson, Kincaid, & Strain (in press). A multiple baseline analysis of PTR's beneficial effects with three students with autism has also been completed (Strain, Wilson, & Dunlap, in preparation).

A large experimental examination of the efficacy of the PTR process was conducted with 245 students in several school districts in Florida and Colorado (Iovannone et al., 2009). This investigation involved random assignment of children with the most severe behavior problems into either the PTR group or a comparison group that was provided the districts' "services as usual." Analysis of data from these 245 students revealed significant beneficial effects of PTR on reducing the occurrence of behavior problems, increasing evidence of social skills, and increasing the occurrence of academic engaged time (Iovannone et al., 2009). Analyses of additional data from children who were initially in a wait control condition and then transitioned to the PTR process are underway.

Summary

The PTR model was developed in order to provide schools with a standardized process with which to develop and implement an individualized behavior support plan. Initial data are encouraging in that students receiving PTR showed significantly improved behavior relative to students who received services as usual. Future research will be needed to examine the sustainability of observed benefits and to identify characteristics of those students who performed well as opposed to those students who continued to display challenges. With ongoing study and refinement, it is hoped that the PTR model can help schools address the behavioral needs of students with autism—and, indeed, all students—more effectively.

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Identifying Effective and Preferred Behavior-Change Programs: A Case for the Objective Measurement of Social Validity

BY GREGORY P. HANLEY

The adoption of effective behavioral interventions and teaching strategies for young children is largely influenced by the extent to which stakeholders find the procedures appropriate and the effects important. Stakeholder values have been extracted from measures of *social validity* in applied behavior analysis, and these measures have been a part of behavior-analytic research and practice since their important characteristics were described the late 1970s (Kazdin, 1977; Wolf, 1978). Based on his experience developing effective programs for rehabilitating delinquent youth, Wolf asserted that "… if the participants don't like the treatment then they may avoid it, or run away, or complain loudly. And thus, society will be less likely to use our technology, no matter how potentially effective and efficient it might be" (p. 206). Because he then focused on developing socially validated programs, his teaching family model continues to be implemented across the country and around the world today (Fixsen, Blasé, Timbers, & Wolf, 2001).

Gregory P. Hanley

Like Wolf and the teaching family model, I think today's behavior analysts are at a similar crossroads with the technologies being discovered to address a range of socially important behavior problems, such as early intensive behavioral intervention (EIBI) for young children diagnosed with autism spectrum disorders (ASD). We are confident that EIBI based on the principles and procedures of behavior analysis works. We still have a lot of refining to do, and we still are not clear on the moderators of the effects (Herbert, Sharp, & Gaudiano, 2002; Rogers & Vismara, 2008; Smith et al., 2006), but the intervention improves the developmental trajectories of those who receive it (Campbell et al., 2003; Cohen, Amerine-Dickens, & Smith, 2006; Eldevik, Eikeseth, Jahr, & Smith, 2006; Helt et al., 2008; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Lovaas, 1987; Morris, 2009, National Institute of Mental Health, 2007; Odum et al., 2003; Smith, Groen, & Wynn, 2000). We know much less, however, about the acceptability of critical features of EIBI to the children experiencing it, and it is these data and our responses to these data that I believe will have the greatest impact on children to be diagnosed with ASD in the upcoming decades. It will essentially determine whether effective practices are experienced by these children or not.

But, you may be wondering, why should the recipients of behavior-change procedures be involved in the social validation process; is it not sufficient to program behavior-change procedures that work, that can be implemented with fidelity, and that caregivers find acceptable? There are many good arguments for including the recipients in the social validation process, but perhaps the most important reason they should be involved is because staff's and caregiver's values are not necessarily the values of the recipient of the behavior-change procedure. The golden rule of "do unto others as you would have them do unto you" is not so golden if their preferences are different than your own. Allowing recipient participation also allows for members of dependent populations to exert counter control in an acceptable manner (Skinner, 1972), and allowing children with ASD or intellectual disabilities to select the contexts they will routinely experience may result in less problem behavior, serving to escape or avoid habilitative, educational, and therapeutic contexts (Dunlap et al., 1994; Heal & Hanley, 2007).

A review of the social validity literature with regard to behavior-change procedures applied to young children revealed that recipients of the behavior-change procedures were not well represented (less than 3% of applications; Heal & Hanley, unpublished manuscript). Why are recipients of behavior-change procedures not involved in the social validation process? It is not because professionals do not agree that recipients of the behavior-change procedures should have influence over their selection. This has been advocated by many different people in many

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different ways for quite some time (Bannerman, Sheldon, Sherman, & Harchik, 1990; Carr et al., 2002; Holburn, 1997; Lundy & McEvoy, 2009; Van Houten et al., 1988). My guess as to why is related to another main finding of our social validity review—most social validity assessments involve indirect measures (e.g., verbal responses to questions about the appropriateness of procedures), and perhaps it is this historic *reliance on indirect measures* that the recipients of behavior-change procedures are not involved in the social validation process. In other words, if someone's language skills are not strong, it is unlikely they will be asked their opinion as to the appropriateness of a given behavior-change procedure.

Including recipients of behavior-change procedures in the social validation process simply involves giving them the opportunity to experience and then choose among several viable behavior-change procedures. The opportunity to choose, in general, is usually reinforcing because it results in greater access to items and contexts that are momentarily or typically valuable to the person choosing. Furthermore, studies on the value of choosing show the opportunity to choose, in and of itself, is highly reinforcing, in that children will work much more for conditions involving the opportunity to choose even when the same outcome is available for much less effort (Schmidt, Hanley, & Layer, 2009; Thompson, Fisher, & Contrucci, 1998; Tiger, Hanley, Hernandez, 2006).

The technology for allowing persons with intellectual disabilities to choose from among two or more items, often referred to as preference assessments, has steadily advanced over the past 20 years (DeLeon & Iwata, 1996; Fisher et al., 1992; Pace, Ivancic, Edwards, Iwata, & Page, 1985). However, preference assessments usually allow people to choose only from among items that can be placed in one's hand or on a table top. Determining the acceptability of behavior-change procedures with young children or those with ASD is complicated by the fact that these same individuals often show limited verbal competence, have a limited history with the procedures in question, or both. But, it is possible to do. I will describe applications of concurrent chains schedules, methods borrowed from basic behavioral research (e.g., Catania & Sagvolden, 1980), to provide objective assessments of children's preferences for behavior-change procedures.

In applied studies involving concurrent chains schedules, different colored poster boards are correlated with different behavior-change procedures (e.g., teaching strategies, behavioral interventions), and children repeatedly experience the procedures in the presence of the colored poster boards. Smaller colored cards or micro-switches, one associated with each procedure, are then made available to the children outside of the room in which the procedures are experienced, and the child is asked to select the one he likes best. When the child hands a card to the adult (or presses a micro-switch), the adult and child enter the room and briefly experience the procedures associated with the selected color. This process of handing cards (or pressing switches) and experiencing correlated procedures is repeated until the child selects one option on a regular basis (or some other pattern emerged). Thus, preferences for behavior-change procedures, which are difficult to describe to young children, are directly assessed by recording each child's selections of cues correlated with the behavior-change procedures. It is important to note that concurrent-chains arrangements are designed to provide an objective measure of children's preferences for behavior-change procedures—a child's preference for a given procedure is detected by measuring the extent to which the children select and experience particular procedures, and not by, for example, measuring indices of happiness while the child experiences each context. In addition, although the extent to which the context reduces undesirable behavior and increases desirable behavior is measured to determine the effectiveness of the behavior-change procedures, these measures are not used as indices of preference. In other words, there are two important *and independent* questions to be asked when developing a procedure to address a socially important behavior problem: Does it work and is it preferred by those experiencing it?

These questions were addressed by Hanley, Piazza, Fisher, Contrucci, and Maglieri (1997) when attempting to develop treatments for the problem behavior of two young children with intellectual disabilities. After learning via functional analysis (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982, 1994) that the two children's aggression and disruption were maintained by adult attention, two function-based treatments were designed. One provided the reinforcer for a socially desirable alternative behavior (functional communication training [FCT]), the other provided the same type and amount of attention independent of behavior (i.e., according to time; noncontingent reinforcement [NCR]). Both treatments were similarly effective in reducing aggression and disruption. When the children were then allowed to choose between FCT, NCR, and extinction in a concurrent chains arrangement, both children chose FCT. We think that children chose FCT because it allowed them to access social reinforcers at times they were most valued. This study provides an example of the use of an objective social validity assessment with the recipients of the behavior-change procedures when those procedures are similarly effective. This preference for contingent over noncontingent reinforcement also has some generality. Luczynksi and Hanley (2009) recently showed that 7 of 8 children of typical development preferred contingent to noncontingent social reinforcement (one child was indifferent).

For some children, FCT results in an acceptable reduction in problem behavior only when a punishment

procedure is added to the treatment (Fisher et al., 1993; Wacker et al., 1990). This was also the case in a study by Hanley, Piazza, Fisher, and Maglieri (2005), who showed that for two children with intellectual disabilities and autism, FCT was ineffective, whereas FCT plus punishment (e.g., 30-s hands down procedure) was effective in reducing severe self-injury, aggression, and disruption. When the two children were provided with repeated opportunities to choose between FCT, FCT plus punishment, or punishment only, both children consistently chose FCT plus punishment. These results underscore the fact that if treatment options were restricted to those considered nonaversive or positive, the children in this study would have been prescribed treatments that were both ineffective and nonpreferred. Taken together, the studies by Hanley et al. (1997, 2005) suggest that the values guiding the selection of treatment strategies can be data-based. Treatment decisions need not be based on the name or structure of the intervention; they can be based on measures of efficacy and child preference.

Children's values with respect to teaching procedures have also been assessed in a similar manner (Heal, & Hanley, 2007; Heal, Hanley, & Layer, 2009). In Heal et al. (2009), the efficacy of and preferences of four children of typical development for teaching strategies that varied in the amount of teacher directedness were evaluated. The results showed that children preferred the strategy that involved direct teaching in addition to embedded and discovery-oriented teaching over strategies that were devoid of direct teaching (the preferred strategy was also the most effective in teaching target relations). As an aside, it seems important for this sort of study to be systematically replicated with young children with autism. Multiple teaching tactics based on learning principles are currently used to teach young children with autism social and language skills, among other socially important behaviors, but the extent to which each is more or less effective than the other and the extent to which each is valued by those experiencing them (i.e., young children with autism) remains unknown.

Because children often experience behavior-change procedures simultaneously (e.g., class-wide or group contingencies, classroom schedules), Layer, Hanley, Heal, and Tiger (2008) examined the accuracy of a group-oriented concurrent-chains assessment. This assessment essentially involved all children making independent selections of a behavior-change procedure and then simultaneously experiencing the same one that was randomly selected from those that were chosen. This *group* assessment was shown to be accurate and efficient for determining preferences for behavior-change procedures. Layer and Hanley (unpublished manuscript), then used this group assessment to determine preschoolers preferences for three behavior management strategies commonly used during free-play periods. An efficacy evaluation showed that rule reminders following the aggressive or disruptive behavior of four preschoolers resulted in the highest levels of these problem behaviors. Talking about the behavior and practicing an alternative behavior in addition to the rule reminders resulted in a decrease in problem behavior, but to unsatisfactory levels. Inserting a brief time-out (formally consistent with a "sit and watch;" Porterfield, Herbert-Jackson, & Risley, 1976) between the rule reminder and talk and practice resulted in near elimination of problem behavior for all four preschoolers during free play. When given an opportunity to choose from among these three alternatives, two preschoolers were indifferent, and two preferred the strategy involving time-out in addition to rule reminders and talk and practice. These data show social validity assessments can be conducted with groups of children simultaneously (and that children's preference for contexts involving punishment has some generality).

Concurrent chains arrangements are but one way to objectively determine children's values for our behavioral programming. Another means of doing so is to simply observe where children allocate their time when multiple activities or contexts are concurrently available. For instance, we used a momentary time sampling procedure to record the location and engagement level of 20 preschoolers in order to detect their preferences for nine simultaneously available activities (Hanley, Cammilleri, Tiger, & Ingvarsson, 2007). When we discovered that the majority of the children did not prefer our direct instructional, science, and library activities, we added more effective prompting and higher quality reinforcers to those activities while keeping the other activities as they were (Hanley, Tiger, Ingvarsson, & Cammilleri, 2009). By doing so, we were able to shift children's preference toward these educationally important activities while still respecting their original choices. This study shows that the value of our behavior-change procedures can be determined in different ways with the recipients of the procedures (e.g., you can allow them to "vote with their feet"). In addition, when children make less-than desirable choices we encourage them, but don't require them, to make good choices by improving the quality of important activities that are not preferred initially while leaving other options intact.

In summary, it is possible to objectively determine the acceptability of multiple types of behavior-change procedures with any child and any size group experiencing the procedures.

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Health Conditions in Antecedent Assessment and Intervention

BY CRAIG H. KENNEDY

Craig H. Kennedy

A range of variables influence the occurrence of behavior. Some of these, such as reinforcing stimuli and contingencies of reinforcement, play a direct role in the selection and maintenance of behavior. Others, such as discriminative stimuli, predict the availability of reinforcement, setting the occasion for behavior to occur. Still others, such as motivating operations, alter the value of reinforcing stimuli and correspondingly change the likelihood that responses will be evoked. Each of these types of behavioral processes alters the probability that responses will be emitted by a person. The classification, estimation, and manipulation of these behavioral processes help determine whether a person engages in socially acceptable behavior or behaviors that society deems inappropriate.

There are, however, other variables influencing the probability of responding that have not been as extensively characterized. One such set of events—which we will call

health conditions—can increase or decrease the occurrence of behaviors in ways that researchers are only beginning to understand. By health conditions, what we are referring to is any illness, injury, impairment, or physical condition that negatively impacts a person's well-being. Health conditions of interest in relation to problem behavior can include chronic and acute conditions. That is, such conditions can be long-standing health challenges that persist over extended periods of time (e.g., gastroesophageal reflux disease) or be brief and transient (e.g., otitis media). In addition, health conditions are often cyclical in their occurrence or change in their intensity over time. Such cyclicity can occur at ultradian (e.g., esophageal pain following meals), circadian (e.g., sleep cycles) or longer time scales (e.g., dysmenorrhea).

Health conditions are particularly important in understanding the occurrence of problem behaviors in people with developmental disabilities because these individuals have a greater rate of occurrence of special health care needs than the general population. For example, between 44% and 83% of children with autism have sleep problems, whereas 11% of children without disabilities are reported to have sleep anomalies. Similarly, 25% of adults with developmental disabilities are reported to have some form of epilepsy, a prevalence rate 25 times greater than the general population. Adding to this pattern, the greater the degree of intellectual disability the more likely a person is to have multiple health care needs. Because of the greater prevalence of health care needs among people with developmental disabilities, there is a higher probability that health issues may be present and contribute to problem behavior.

In general, health conditions may exacerbate some aspect of behavior-environment relations shaping and maintaining problem behaviors, contributing to a greater probability these behaviors will occur. In some instances, the influence of health conditions may be evocative or discriminative; in other instances health conditions may create new response-reinforcer relations. An example of the former type of process would be the discomfort associated with dysmenorrhea, making stimuli that are typically ineffectual as negative reinforcers noxious enough to evoke escape-related behaviors. An example of the latter process would be the onset of otitis media (an inner-ear infection) whose painful somatosensory effects can be temporarily alleviated by head hitting or head banging. In both examples, biological variables serve a role in changing how behaviors are negatively reinforced.

In the examples just provided, the onset of a health condition contributes to the occurrence of problem behavior. To incorporate such antecedents into both assessment and intervention for problem behavior, functional behavioral assessments (FBAs) and behavioral intervention plans (BIPs) need to adopt an interdisciplinary approach. Individuals with in-depth knowledge of health conditions need to work alongside individuals with educational and behavior-analytic skills to identify both biological and environmental variables contributing to problem behaviors. In addition, these individuals need to work in tandem in the development, implementation, and monitoring of interventions. Often, interventions will need to focus on both environmental and biological aspects contributing to problem behaviors when health care issues are present.

In this talk, I will review common health conditions that have been identified as having an association with problem behavior. I will define the health conditions, review assessment techniques, and discuss possible interventions within the context of reducing both the health care concerns and problem behavior that may be exacerbated by them. My goal is to provide the audience with an opportunity to consider how health care needs contribute to problem behavior and the importance of treating a broader range of variables, including health conditions, within the context of FBAs and BIPs.

A Comparison of Methods for Collecting Data on Students' Performance During Discrete Trial Teaching

BY DOROTHEA C. LERMAN, LAURA HARPER, TAIRA LANAGAN, SUSIE BALASANYAN, AND LYNN WILLIAMS

Dorothea C. Lerman

On-going data collection and progress monitoring are essential components of discrete trial training, a common approach for teaching skills to individuals with developmental disabilities. Practitioners use a number of methods to collect data on performance during discrete trial teaching. These methods vary in terms of frequency and specificity. For example, the practitioner may record the outcome of every learning trial during teaching sessions (i.e., continuous recording). Alternatively, the practitioner may record the outcome of just a sample of instructional trials, such as the first instructional trial of each teaching session (i.e., discontinuous recording). Relative to discontinuous recording, continuous recording may provide a more sensitive measure of changes in performance, minimize the impact of correct guesses, and lead to more stringent mastery criteria (Cummings & Carr, 2009). On the other hand, discontinuous recording is more efficient and easier to use than continuous recording. Discontinuous recording also reveals the level of performance in the absence of immediately preceding learning trials or prompts when data are collected on just the first instructional trial.

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The specificity of the data collected also may vary during continuous and discontinuous recording. For example, the practitioner may record whether a correct response occurred on an instructional trial (nonspecific recording), and, if so, the prompt level that occasioned the correct response (specific recording). Although specific recording may increase the sensitivity of the measurement system, nonspecific recording may be easier to use.

Because effortful measurement systems could compromise data reliability and treatment integrity, research is needed on the accuracy and utility of discontinuous, nonspecific recording methods. Thus far, only two studies have addressed this question within the context of discrete trial teaching (Cummings & Carr, 2009; Najdowski et al., in press). The outcomes of these studies were somewhat inconsistent. The purpose of the current study was to extend this previous work by examining a broader range of recording methods using a within-skill analysis. Specifically, we re-analyzed data collected via continuous, specific recording to address the following questions: (a) What is the correspondence between data collected via continuous versus discontinuous recording methods? (b) What are the advantages (if any) of specific versus nonspecific recording methods? (c) How sensitive is each method in revealing the child's progress?

Method

Participants were 9 children, ages 5 years to 15 years, who were receiving one-on-one teaching sessions with trained therapists at private clinics and day programs. The children were diagnosed with moderate to severe developmental disabilities or autism. A total of 22 targeted skills were included in the analysis (i.e., two to three targets for each participant). Each teaching session consisted of eight or nine acquisition trials, interspersed with trials that assessed previously mastered skills. For some participants, the therapists taught more than one acquisition target in each session. The therapist used most-to-least prompt fading, and the participant had an opportunity to exhibit a correct, unprompted response on each learning trial. The therapist faded the prompt to a less intrusive prompt after one correct response at a given prompt level. The training termination criterion was a minimum of three consecutive sessions with correct unprompted responses at or above 88% of the trials (continuous data). A correct unprompted response also had to occur on the first trial of those three sessions.

Using a specially designed data sheet, the therapist recorded the occurrence or nonoccurrence of a correct unprompted response or the prompt level needed to obtain a correct prompted response on each trial (continuous, specific recording) for each targeted skill. The prompt levels were quantified for data summary purposes (e.g., physical prompt = 4, model prompt = 3). A second observer collected data independently during at least 25% of the sessions.

To conduct the data analyses, we generated discontinuous data records by inspecting the continuous recording forms. The discontinuous data for each targeted skill included the outcome of the first trial and the mean outcome of the first three trials for each teaching session. We also generated nonspecific data records by determining the percentage of trials with correct (unprompted) versus incorrect (prompted) responses.

Continuous and discontinuous data were compared in several different ways. First, to replicate the comparisons conducted by Cummings and Carr (2009) and Najdowski et al., in press), we determined the number of sessions required to meet the mastery criterion (i.e., responding at or above 88% of the trials for continuous data and responding at 100% for the discontinuous data). This was determined in two ways: One criterion was based on performance across two consecutive sessions (Cummings & Carr, 2009), and the other criterion was based on performance across three consecutive sessions (Najdowski et al., in press). We also calculated the probability that correct responding was above 50% (continuous) given (a) a correct response on the first trial (impact of lucky guesses), and (b) an incorrect response on the first trial (impact of prior instructions/prompts). To examine differences in the sensitivity of continuous versus discontinuous measurement, we determined the number of sessions that were required to reveal any improvement in responding (i.e., the first non-zero point). This latter analysis was conducted with the continuous data to compare the sensitivity of specific and nonspecific recording. A subset of the discontinuous data (those showing poor sensitivity relative to continuous data) also was included in the analysis to determine if the use of specific recording would improve the sensitivity of these data.

Results and Discussion

Continuous versus discontinuous recording. The majority of targets met the mastery criterion in fewer sessions when data were collected on performance during the first trial only (M = 12.5 sessions) compared to performance on the first three trials (M = 17.8 sessions) or on all trials (M = 18.2 sessions). However, this percentage dropped to about 35% of targets when the mastery criterion was based on performance across three sessions rather than across two sessions (M = 16. 8 for first trial, M = 20.3 for the first three trials, and M = 20.1 for all trials). No differences were obtained when comparing the three-trial and continuous data recording methods. The probability that correct responding would exceed 50% of trials was 0.87 when a correct response occurred on the first trial and 0.28 when an incorrect response occurred on the first trial. The mean number of sessions that occurred before the data revealed any change in performance during initial acquisition was 8.1 (range, 3 to 21 sessions) for first-

trial recording, 5.8 (range, 2 to 17 sessions) for three-trial recording, and 3.8 (range, 1 to 11 sessions) for continuous recording. This specific pattern was observed for 64% of targets. A greater number of sessions were required to reveal a change in performance for first-trial recording relative to continuous recording for nearly all targets (95%).

Specific versus nonspecific recording. The mean number of sessions that occurred before the continuous data revealed any change in performance during initial acquisition was 2.5 (range, 2 to 8 sessions) for specific recording and 3.8 (range, 1 to 11 sessions) for nonspecific recording. No difference in sensitivity was obtained for the majority of targets. However, for the discontinuous data that showed reduced sensitivity relative to the continuous data, the mean number of sessions required to reveal a change in performance was 2.6 (range, 2 to 6) for specific recording and 7.1 (range, 2 to 21) for nonspecific recording. This outcome was observed for 100% of the targets.

These results suggest that first-trial recording would have led to premature determinations about skill mastery, particularly if the criterion was based on performance across two sessions. This finding is consistent with that obtained by Cummings and Carr (2009). However, targets would have been considered mastered in approximately the same amount of time if data were collected on a subset of trials (e.g., the first three trials) or if the criterion was based on performance across three consecutive sessions. Nonetheless, a criterion based on first-trial only performance would have been inappropriate for determining mastery of some targets even across four to six sessions. On the other hand, performance on the first trial was a fairly good predictor of whether performance on all trials would exceed or fall below 50% of correct trials. This finding suggested that first-trial data were not inflated due to lucky guesses. Moreover, performance on the remainder of the trials was not inflated due to the prior instruction/prompts that occurred early in the teaching session Finally, results showed that both continuous and specific recording were much more sensitive to changes in responding than either discontinuous or nonspecific recording. Although monitoring prompt levels did not increase the sensitivity of continuous recording, it was beneficial when using discontinuous measurement, particularly first-trial recording.

Together, these findings suggest that data collected on a subset of trials (i.e., 3 out of 8 or 9 trials) would have adequate correspondence with continuous data and reveal similar changes in performance over time. Recording data on just the first trial would give a rough estimate of overall performance in the session, but this approach may lead to premature determinations of skill mastery. First-trial data also would be relatively insensitive to initial changes in performance.

In terms of implications for best practice, we recommend the use of continuous, highly specific recording if ease and efficiency are not a top concern. Continuous recording provides greater sensitivity and may lead to more stringent mastery criteria. Furthermore, information about prompt level is useful for other reasons (e.g., to track fading steps). If ease and efficiency are a top concern, we recommend recording performance on a small subset of trials (rather than the first trial only), including the prompt level needed on these trials, and basing the mastery criterion on performance across more extended sessions (e.g., 4+ consecutive sessions).

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Assessment and Treatment of Feeding Problems in Children With Autism

BY CATHLEEN C. PIAZZA

Cathleen C. Piazza

Feeding problems are quite common in children with autism, but caregivers often have difficulty determining when a feeding problem warrants treatment. One method of understanding the severity of a feeding problem is to compare the target child's feeding behavior with those of typically eating children. During infancy, the suck response should improve over time. Problematic eaters often demonstrate non-rhythmic suck-swallow-breathe responses that may be interrupted by intermittent choking and gagging. Over time, typically eating infants will display temporal patterns of "hunger responses" (e.g., crying, rooting) and eat most of what is offered. Problematic eaters may infrequently display hunger responses, have periods of inconsolable crying, and may appear to satiate after only a few minutes of feeding.

Although typical eaters may show initial difficulties (e.g., thrusting food with the tongue) during the transitions to baby foods (4 to 6 months of age) and mashed foods (12 months of age), these problems are transient and improve with time. Problematic feeders will have difficulty transitioning to baby food and/or mashed foods and problems with tongue thrust, choking, gagging, or chewing will not improve.

Selective eating emerges among most toddlers at about 18 months of age. However, variety (the number of foods that the child will consume willingly) typically increases over time. Although problematic eaters may add foods to their diet, they also will eliminate other foods, with variety maintaining at low levels. Typical eaters will eat less

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preferred foods when hungry, will be influenced by what peers eat, and eating will not be disrupted by changes in environmental conditions. Problematic eaters rarely will eat less preferred food, will not be influenced by what peers eat, and eating will be disrupted when the environment changes.

The child's growth also can be used as an indicator of the severity of a feeding problem. Pediatricians routinely plot a child's growth on a "growth curve". This curve shows how the child's weight, height, and head circumference compare to same-age and same-sex children. The curve also will show how the child is growing relative to previous levels of growth. The expectation is that a child will grow along his or her own curve. For example, if the child "plots" on the 50th percentile at birth, he or she should remain on the 50th percentile over time. A child should not "fall off" the growth curve (e.g., plot at the 50th percentile at 6 months of age and at the 10th percentile at 12 months of age). Other reasons to seek professional assistance for a feeding problem include use of a nasogastric (NG-) or gastrostomy (G-) tube for 3 or more months with no increase in oral intake, more than 3 visits to the emergency room for dehydration in a 3-month period, or the presence of nutrition related diseases (e.g., anemia, osteoporosis).

Children who gain weight appropriately or who are overweight but not meeting their nutritional needs (i.e., they intake sufficient calories, but not sufficient nutrients) may be appropriate for treatment. Surprisingly, few of these children exhibit overt signs of malnutrition (e.g., anemia), even though they clearly are not consuming the recommended nutrients for their age and size. Other indicators for treatment include high levels of reported caregiver stress during meals, the child's failure to meet age or developmentally appropriate milestones for eating, dependence on an inappropriate source of nutrition (e.g., bottle dependence for a 2 year old), consistent inappropriate mealtime behavior (e.g., tantrums), and excessive meal length. In fact, meal lengths consistently longer than about 30 min are the best predictor of feeding problems in children.

Prior to initiation of treatment, consider an interdisciplinary evaluation to identify possible etiologies for the problem. Although the current literature suggests that children with autism do not have a higher prevalence of gastrointestinal problems, a comprehensive work-up will help rule out physical causes for the feeding problem. For example, some children who are selective eaters lack appropriate oral motor skills to manage certain textures of food. Therefore, although the child's selectivity may appear "behavioral", there may be physical reasons why the child refuses certain textures of foods. Appropriate interdisciplinary team members include a behavior analyst to assess the contributions of environmental factors for the child's feeding problem, a dietitian to evaluate the adequacy of the child's calories and nutrition, a gastroenterologist to rule out medical causes of the feeding problem, a speech and/or occupational therapist to evaluate the child's oral motor competence and safety for oral feeding, and a social worker to evaluate family stressors that may contribute to the feeding problem and the family's ability to participate in treatment.

The remainder of the paper will focus on the behavior analyst's contribution to assessment and treatment, but keep in mind that assessment and treatment is delivered most appropriately within the context of an interdisciplinary team. The first step is to identify the problem. Once the problem has been identified, the caregiver(s) and behavior analyst should set goals for treatment. Goals should be individualized, observable, and measurable.

Next, it's time to set up the assessment, which will be used as a baseline from which to measure progress toward goals. Every baseline should have some basic components such as mealtime rules that are stated to the child before every meal and an assurance from caregivers that feeders will use the mealtime rules consistently. Add some basic structure to the meal, which will create a predictable environment for the child, ensure that the expectations of the meal are clear to the child, and allow for systematic changes when implementing treatment. Additional factors that need to be considered include (but are not limited to) food type, food texture, bolus sizes for solids and liquids, utensils, and meal length. Tables 1 and 2 show sample bolus sizes and utensil types by age for solids and liquids.

The assessment and treatment plan should include some method for recording what and how much the child eats. The most accurate method is to have caregivers provide a quantitative record of food volume or weight pre and post meal (e.g., have caregivers weigh individual food items before and after the meal).

The next step is to develop operational definitions for target behaviors that will be the focus of treatment. Operational definitions should be concise, detailed descriptions of observable behavior. The operational definitions should be sufficiently clear such that multiple observers independently recording the same event will produce a high level of interobserver agreement. Commonly measured child behavior in our program include 5-s acceptance, mouth clean (a product measure of swallowing), expulsion, pack, gag, cough, emesis, and inappropriate mealtime behavior, using a frequency count, and tantrums, using a duration. Consider measuring the integrity with which feeders implement the protocols by recording presentation of the bite, duration of spoon or cup at lips, delivery of appropriate and inappropriate attention, delivery of escape, and appropriate and inappropriate delivery of tangible items.

A functional analysis is used to identify the reinforcers for inappropriate mealtime behavior, and this information

then can be used for treatment prescription. Currently, we use a procedure in which the feeder presents bites or drinks across all conditions on a fixed time (FT) 30-s schedule. Each session consists of five bite or drink presentations. In the escape condition, if the child engages in inappropriate mealtime behavior, the feeder removes the bite or drink for 30 s. In the attention condition, the feeder provides attention in the form of coaxing and reprimands for 30 s following child inappropriate mealtime behavior while keeping the bite or drink at the child's lips. In the control condition, the feeder provides no differential consequences following inappropriate mealtime behavior, and the feeder interacts with the child throughout the session.

We summarized functional analysis data from 39 children with a pediatric feeding disorder who were admitted to an intensive day treatment program. The results suggested that negative reinforcement in the form of escape from eating was the most commonly identified reinforcer. Both escape and attention were reinforcers for the inappropriate mealtime behavior of over 50% of the children. These results suggest that negative reinforcement plays an important role in the maintenance of inappropriate mealtime behavior, but other sources of reinforcement (attention, access to tangible items) may contribute as well. The reader may refer to Bachmeyer et al. (2009), Girolami and Scotti (2003), Najdowski et al. (2008) and Piazza, Fisher, et al. (2003) for descriptions of functional analyses of inappropriate mealtime behavior.

Given the importance of negative reinforcement in the maintenance of inappropriate mealtime behavior, our group has conducted a series of studies to evaluate the effectiveness of escape extinction as treatment. For example, Piazza, Patel, et al. (2003) assessed the effectiveness of differential reinforcement of appropriate behavior (DRA) alone, DRA with escape extinction, and escape extinction alone as treatment. DRA alone was not effective for increasing acceptance and decreasing inappropriate mealtime behavior. By contrast, acceptance increased and inappropriate mealtime behavior decreased when the feeder implemented escape extinction, independent of the presence or absence of DRA. DRA combined with escape extinction was associated with decreases in inappropriate mealtime behavior and/or tantrums relative to escape extinction alone for some (but not all) participants. Reed et al. (2004) replicated these findings with NCR alone, NCR with escape extinction, and escape extinction alone.

Bachmeyer et al. (2009) identified participants whose inappropriate mealtime behavior was maintained by both escape and attention. Initially, the feeder implemented treatments that were matched to one of the functions (i.e., either escape or attention extinction) while delivering reinforcement for the non-treated function. Escape extinction, but not attention extinction, was effective in increasing acceptance and decreasing inappropriate mealtime behavior. The combined extinction technique (escape and attention extinction) produced the highest levels of acceptance and the lowest levels of inappropriate mealtime behavior.

Although the results of a number of studies have shown that escape extinction is effective as treatment for feeding problems, escape extinction is not without side effects (Lerman & Iwata, 1995; Lerman, Iwata, & Wallace, 1999). Therefore, evaluation of alternative procedures may be warranted. Mueller, Piazza, Patel, Kelley, and Pruett (2004) demonstrated that blending preferred and non preferred foods was associated with increased mouth cleans. Feeders presented preferred and nonpreferred foods in specific proportions (90% preferred food/10% nonpreferred) and then gradually increased the proportion of nonpreferred to preferred food. Blending preferred and non preferred foods or liquids is a method that has been demonstrated to be effective in a number of studies (Kern & Marder, 1996; Patel, Piazza, Kelly, Ochsner, & Santana, 2001; Piazza et al., 2002; Tiger & Hanley, 2006).

Although increasing acceptance and decreasing inappropriate mealtime behavior often forms the focus of initial treatment, children with feeding problems display a variety of inappropriate behaviors such as expelling (spitting out) or packing (pocketing) accepted food. Patel, Piazza, Santana, and Volkert (2002) showed that reducing the texture of food (e.g., from a ground to a pureed texture) was effective in reducing expulsion. Patel, Piazza, Layer, Coleman, and Swartzwelder (2005) showed that texture reductions also were effective in reducing packing. Gulotta, Piazza, Patel, and Layer (2005) showed that redistribution (removing packed food and replacing it back on the child's tongue) also was an effective method for reducing packing.

Feeding problems are common in children with autism. Comparisons to norms of typical eating may be helpful in identifying when a feeding problem warrants intervention. Intervention should be preceded by an interdisciplinary evaluation to rule out physiological causes of the feeding problem. Although the behavior analyst can play a critical role in the treatment of feeding problems, treatment is implemented most appropriately within the context of an interdisciplinary team. Functional analysis of inappropriate mealtime behavior suggests that negative reinforcement in the form of escape plays a primary role in the maintenance of feeding problems, and procedures based on escape extinction are most often effective as treatment.

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Communication Approaches With Students Who Have Autism Spectrum Disorders

BY JOE REICHLE

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This article is a shortened version of one that appeared in Cadigan, K., Craig-Unkefer, L., Reichle, J., Sievers, P., & Gaylord, V.(Eds.). (Fall/Winter 2006/07). Impact: Feature Issue on Supporting Success in School and Beyond for Students with Autism Spectrum Disorders, 19(3). [Minneapolis: University of Minnesota, Institute on Community Integration]. You can download the entire document at the web at **http://ici.umn.edu/products/impact/193/default.html**.

Typically, individuals with autism exhibit a wide range of communication needs. Somewhere between 33% and 50% of individuals with autism do not develop functional speech (Lord & Paul, 1997) while other individuals with autism will have sizable communicative repertoires. However, their language may include extensive repertoires of echolalia (delayed and or immediate), verbal perseveration, neologisms, and/or incessant questioning among other characteristics. Additionally, persons with autism tend to have difficulty understanding some aspects of language. Fortunately, a growing instructional technology in the area of social/communication skill intervention has resulted in significant strides in our ability to teach beginning communicative skills to young children with autism. The presentation will focus on considerations when beginning to teach communication skills.

Typically developing children begin to demonstrate that they understand spoken words between approximately 8 and 12 months of age (Windsor, Reichle, & Mahowald, 2008). They have a propensity to produce their first spoken word between 10 and 14 months of age. Gesturally, typical children will begin pointing to direct a listener's attention slightly prior to their first spoken word (Reichle & Brady, in prep). Additionally, they are able to follow a pointing gesture used by their parent between 9–14 months but will not become proficient in following a point to a more distant object until slightly before their second birthday. In examining the evidence-based practice literature describing successful intervention strategies accumulated during the past 20 years, a number of straightforward caregiver actions can be summarized that appear to enhance beginning communication skills.

Attend to children's focus of attention. Increasingly, evidence supports the importance of caregivers who are diligent in attending to the focus of their child's attention and are immediately responsive to their children's communicative overtures. By providing active models and facilitating actions on objects that are the focus of the child's attention, caregivers can insure that the child's motivation to learn is as great as possible. Children whose caregivers named objects that were already the focus of their child's attention have been shown to have substantially larger repertoires than children for whom this happened less often (Tomasello & Todd, 1983).

Be responsive to children's communicative overtures. It is becoming increasingly clear that responding to children's behavior is critically important in facilitating their communicative production. In a longitudinal study, Hart & Risley (1995) found that children whose caregivers were most responsive to their communicative attempts developed larger vocabularies at earlier ages. Although talking to children is important, being responsive to a child's communicative attempts (which may be nonverbal) appears to be very important in creating highly motivating communicative contexts.

Identify and implement a number of joint activity routines. Joint activity routines are social games that parents play often with children. For example, with very young children

these include games such as "peek-a-boo," "I'm gonna get you," "Eensy-weensy spider," etc. With older children, these may include tossing a Frisbee. Joint activity routines offer a number of components that facilitate social exchanges. They have a very simple purpose and are composed of simple actions. The parts of the routine can be easily used by either participant. The games allow slight variations to facilitate generalized use. For example, peek-a-boo can be played with a wash cloth at bath time or behind a paper plate at a picnic. Finally, joint routines allow a large number of repeated opportunities in social situations without looking artificial or contrived. Taken together, these characteristics permit familiar practice across a range of situations. Familiar routines provide an opportunity for the child to focus on turn taking without having to think as much about what to do during their turn.

Utilize gesture and graphic symbols very early with children who appear to be at risk for timely development of language comprehension and production. Within the autism community, there has been some controversy regarding the implementation of augmentative communication systems. Some have expressed the point of view that augmentative systems should not be implemented concurrently with attempts to establish spoken communicative output. However, in a global review examining the effects of augmentative communication intervention on speech, Millar, Light, & Schlosser (2006) found no evidence that augmentative communication implementation had an impeding influence on the development of speech. Additionally, some emerging literature suggests that augmentative communication applications may have a facilitating effect for some children's communicative production. Several studies have concluded that systematic implementation of the Picture Exchange Communication Program can result in an increase in vocal and/or verbal output (Bondy & Frost, 1994; Schwartz, Garfinkle, & Bauer, 1998). Mirenda (2005) and Layton & Yoder (1988) have suggested that when implemented carefully with children who are good at vocal imitation, sign implementation can facilitate speech production.

An important misinterpretation is that children with autism who require augmentative communication support will benefit more from gestural symbols (signs) than from graphic symbols (pictures, line drawings, printed words). The extent of the relative benefit of each of these appears to be somewhat learner specific (Bopp & Mirenda, 2005).

Address a variety of communicative functions. Among typically developing children, acts are used to behaviorally regulate others (e.g. request and protest), to establish joint attention in directing a partners attention to events (e.g. commenting on events) and to further social interaction (calling, greeting, communication associated with social games). Children with autism, often have a skewed distribution of communicative acts with behavioral regulation being the prominent communicative function produced.

Communicatively, joint attention involves coordinating one's attention between an event in the environment and a prospective listener. Recent intervention programs (Prizant, Wetherby, Rubin, & Laurent, 2005) emphasize the introduction of different communicative functions matched to particular regularly occurring situations that can be used to establish predictability for the learner.

Another important area receiving increasingly more attention from interventionists involves strategies to facilitate building rapport (Carr et al., 1994). Because some children with autism are more reluctant to approach individuals who are not very familiar, interventionists have considered decreasing demands from potential social partners and given them strategies to share desired items and activities without any expectations for child performance. These low demand high benefit situations appear to show promise in increasing social approaches from children with autism and may further enhance our ability to teach joint attention and social interaction communicative functions.

Implement strategies to teach children to refrain from overusing communicative acts. Once a new communicative skill has been taught there is a possibility of overuse (overgeneralization). For example, once a child learns that he can request assistance, he may discover that it requires less effort to request assistance than to independently complete work that does not require help. In the past several years, strategies have emerged (Reichle & McComas, 2004) that are successful in teaching the conditional use of newly established communicative acts. For example, the case of a skill like requesting assistance, the learner must be taught that reinforcement is greatest for working independently. The next greatest reinforcement is available by requesting assistance and no reinforcement is available if the task is abandoned.

Make sure that newly established communication competes successfully with old and less socially acceptable communication strategies. Evidence suggests that after initial and intense intervention to establish a new behavior, it may be possible to extend the use of that behavior to other environments by implementing a softer, less intense intervention in those environments. The degree to which the newly taught communicative behavior is efficient for the learner can have a significant effect on the degree to which this is possible. Drasgow, Halle, and Ostrosky (1998) reported findings for three preschool aged children with autism/PDD and severe language delays. Baseline data showed that children requested using marginally acceptable to unacceptable means (reaching, grabbing, leading). Each child was taught a replacement request (signing "please") in school but rarely used it at home (generalization setting). The

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"lower-dose" intervention implemented at home was to stop reinforcing the "old" communicative means. Two of the three learners very quickly began using the newly taught communicative alternative. These investigators concluded that when teaching a request, one shouldn't assume that failure to use the behavior in an untrained setting is the result of a failure to realize that using the new behavior is an option. An alternative explanation is that the child may have considered the new option and concluded that as long as the old "easy to produce option" results in the same outcome, there is no reason to switch.

Both social pragmatic and discrete trial approaches to intervention can play a successful role in developing a social communicative repertoire. Among the continuum of available intervention approaches are behavioral and social-pragmatic. The characteristics associated with each outlined below. A number of characteristics associated with discrete trial approaches include, a) one to one instruction, b) a highly prescriptive curriculum, c) initial emphasis on responding to interventionist delivered cues/prompts, and d) tend to minimize context not directly related to the skill or discrimination being taught, e) a sequential introduction of intervention objectives. On the other hand, components of a social pragmatic approaches tend to emphasize, a) an initial focus on turn taking and interactive exchanges, b) a limited amount of interventionist directiveness, c) concurrent consideration of gestural graphic and vocal mode communication, d) teaching new behavior in the situation that it is expected to be used, and e) a concurrent implementation of multiple intervention targets.

Behavioral approaches for addressing the delays and deficits common in autism have been recognized by many as among the most effective treatment methods to date (numerous sources). Others suggested that more discrete trials in the absence of concurrent more natural teaching opportunities may interfere with opportunities for spontaneous and initiated communication because intervention focuses primarily on adult directed activities and provides fewer opportunities for interventionists to follow the child's lead. This, in turn, results in children being less active learners.

In spite of the dichotomous camps that sometimes arise with respect to the most productive intervention approach, each appears to have been productive. It is possible that the most effective programs may combine aspects of discrete trial intervention along with the implementation of more concurrent natural teaching opportunities. This option may allow interventionists to consistently implement in accordance with their teaching style. Regardless of the intervention strategy chosen, being consistent and precise in its implementation repeatedly has been demonstrated to be important.

Summary

Regardless of a child's primary communicative mode, or the intervention approach emphasized, this presentation summarized a number of general considerations that have been validated in evidence-based practice. There are promising strategies available to those responsible of meeting the communicative needs of young children with Autism regardless of their communicative limitations. Augmentative communication systems are potentially facilitating of speech production (among children who imitate) and of speech comprehension.

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Early Intensive Behavioral Intervention and Family Psychological Adjustment

BY ROBERT REMINGTON

Robert Remington

When early intensive behavioral intervention (EIBI) is delivered at home—to the heart of the family—it can be a dramatically successful intervention for young children with autism. Historically, the home became the locus for EIBI because it was quickly learned that the benefits of behavioral interventions delivered in institutional settings were not

maintained following discharge, and because there was ample evidence that parents could become skilled behavioral therapists, capable of delivering sustainable change. This line of argument runs unbroken to the present day and parents are, of course, routinely involved in home-based EIBI programs.

Before considering the relationship between EIBI and *family adjustment*, it is useful to clarify both italicized nouns. The family of a child with autism extends beyond his or her parents, to encompass a rich and extended network of relationships, including siblings and grandparents. *Family adjustment* refers to a range of indicators of well-being—both positive and negative—for each individual family member, for the parents as a couple, and for the family as a systemic whole. On first reflection, we might expect adjustment to be affected by factors that arise from the program itself (e.g., primarily the child's progress, but also wider family reactions to EIBI, social support, program management issues). Couched in these terms, it is natural to think that adjustment may change as a result of EIBI, in other words to think of it as a dependent variable (DV). From this perspective, adjustment measures might be regarded a proxy indicator of the social validity of the intervention, essentially its acceptability to the consumers of the services that applied behavior analysts can provide.

Additionally, however, it is important to consider how family factors that pre-date intervention (e.g., parenting style, coping style, mental health, relationship stability) may determine whether EIBI is selected and implemented, and may influence its effectiveness once implemented. In this sense, adjustment may be considered an independent variable (IV) capable of moderating intervention outcome, for better or for worse. Although both interpretations are meaningful, in practice transactional effects probably dominate. For example, any initial EIBI-produced changes in adjustment may subsequently accelerate or slow a program's future progress, producing further effects on the family's adaptation to the program.

Family Adjustment and Applied Behavior Analysis

Although issues relating to family adjustment may be critical both to characterizing EIBI and to ensuring its success, they have attracted very little research interest from applied behavior analysts. The reasons for this may be both historical and methodological. Historically, applied behavior analysis (ABA) has concentrated its attentions chiefly on developmental disabilities and education; work with adult populations has been primarily organizational, with little research interest in the verbal processes associated with adjustment. Methodologically, a focus on continuous monitoring of observable behavior using single case designs does not at first glance lend itself to psychological adjustment analysis. In fact, research on adjustment has typically been tackled using qualitative or psychometric data, and correlational or group-comparison research designs.

Experimental Research

Group-based research methods relying on psychometric data may at first seem anathema to behavior analysts, but of course they are not. Since Lovaas's (1987) ground-breaking study, the growing corpus of evidence on which we rely to persuade others of the value of EIBI has made extensive use of clinical trial methodology. A brief review of some of the more significant of these studies reveals that all describe the role of the family in delivering the intervention (albeit briefly), but very few consider the impact of EIBI on family adjustment.

One recent exception (Remington et al., 2007) compared EIBI for children with autism with treatment as usual, assessing changes in children's cognitive and adaptive function prior to intervention and after 12 and 24 months treatment. Psychometric measures of stress, depression, and anxiety were monitored at the same three time points for both parents. Although EIBI produced significant improvements in children's functioning, there were no corresponding differences in measures of parental adjustment. Intervention neither undermined nor bolstered parental adjustment.

Qualitative Research

The simplest, and perhaps most reasonable, explanation for the absence of strong evidence for improved adjustment is that EIBI produces both benefits and costs. To investigate this further, Grindle, Kovshoff, Hastings, and Remington (2009) carried out qualitative interviews with 53 parents whose children had received two years of EIBI intervention. All reported a balance of positive and negative outcomes for themselves, their child with autism, and his or her siblings—a finding replicated by similar studies. Qualitative methods have also been used to identify adjustment factors that parents believe influence program delivery. For example, parents in Johnson and Hastings's (2002) study reported that support from the intervention team, family, and friends increased their capacity to implement EIBI, whereas family and personal resource constraints, team organization issues, and funding all limited it. Qualitative studies are best used to identify themes in parents' experience of EIBI. If such themes can subsequently be quantified, it becomes possible to determine their relationship with adjustment more precisely, for example by using multivariate analysis.

Multivariate Research

The majority of research on adjustment has, for practical reasons, looked cross-sectionally at variables related to adjustment in cohorts of families that are currently engaged

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in EIBI. For example, Hastings and Johnson (2001) survey of parents who had opted for EIBI showed that high parental stress was associated with their children's autism symptomatology, whereas lower stress was associated with better social support, good coping skills, and a greater belief in the efficacy of behavioral intervention. Although several similar studies have explored the relationships between intervention and parental adjustment indicators (e.g., depression and stress), its impact on other family members has attracted very little research. The problem with multivariate research is that, while revealing associations between adjustment and EIBI, it cannot describe the direction of any causal linkages. Before causality can be attributed, experimental studies are needed or, at the least, prospective studies with data obtained at two or more time-points so that lagged effects can be identified.

Adjustment Factors in the Uptake of EIBI

The work considered so far has concerned ongoing adjustment to involvement in EIBI, but it has not addressed issues surrounding the initial uptake of intervention. This matter is somewhat critical to the development of ABA services, but again there is little research. To pinpoint and characterize sources of variability, Tzanakaki, Grindle et al. (2009) interviewed parents to discover how and why they had chosen ABA. Normative beliefs about the intervention and expectations that it would be effective were frequently mentioned. In a similar questionnaire study (Solish and Perry, 2008), both EIBI staff and parents identified parental self-efficacy as a key predictor of program involvement.

Interestingly, the results of these studies and the predominance of multivariate methods in this area leads naturally to consideration of another approach to behavior change, very different from ABA's. Grounded in social psychology, Ajzen's (1985) Theory of Planned Behavior (TpB) has been widely used to predict uptake of health and other services at a population level. In the EIBI literature, however, the fact that parents must be recruited, trained, and participate as therapists is taken almost as a given, rather than seen as a target for behavioral analysis and intervention. TpB suggests that the decision to participate is a lawful function of subjective beliefs (attitude towards behavior; subjective norms; perceived behavioral control) that, if reconceptualized in terms of environmental antecedents, can potentially be manipulated experimentally. It is a little ironic that *social* psychological analyses lead rather directly to consideration of EIBI uptake as a *behavioral* problem.

In behavioral terms, Ajzen's model can be viewed as a generalized account of antecedents in the verbal community that determine a decision to engage in a pattern of rule-governed behavior (i.e., following the program). If a functional analysis of initial parental engagement with EIBI were carried out, some of the salient variables would undoubtedly bear a close relationship to those Ajzen has identified. Perhaps the most important in terms of family adjustment is perceived behavioral control or self-efficacy.

Family Training for EIBI

Families may believe EIBI is socially acceptable (subjective norm) and understand that such intervention is demonstrably effective (attitude toward behavior), but they may not believe that they are able to accomplish what is required to participate in a program (perceived behavioral control). They may also fear the costs, both material and psychological, of their participation. These important adjustment variables can be the target for intervention for parents considering EIBI. For example, Blackledge and Hayes (2006) have already shown that a brief intervention for parents of children with autism that was based on acceptance and commitment therapy (ACT) produced marked, if short-lived, reductions in psychological distress. As yet, however, no research has systematically evaluated this intervention as an adjunct to EIBI. Such an innovation could markedly affect uptake and outcome of EIBI.

Conclusions

Behavior analysts have learned much about how to develop and evaluate high quality interventions for children with autism. We know that the family must play a critical role in this process, but its ability to do so effectively has been largely assumed. To date, there has been little research on understanding the impact of EIBI on family adjustment, and less still on how family adjustment affects our ability to provide services for families that could benefit from them. Although the available research evidence speaks to the importance of these issues, it is virtually all based on methodologies that are unfamiliar to most applied behavior analysts. There is no reason that this should continue. Single case methods can, with imagination, be used to monitor family adjustment and to identify the variables of which it is a function. It is possible to devise (and evaluate the impact of) training to increase therapists' sensitivity to family issues; similarly, families can be shown how to engage meaningfully with the EIBI process.

If, as a result of its demonstrable effectiveness, EIBI becomes more readily available through public provision, family issues will loom larger. In the future, it will be increasingly important to understand what leads parents to select—and then to stick with—EIBI. Thus, we will need to ensure not only that they fully embrace a behavioral stance to the education, but also that they have the psychological tools required to find and maintain a commitment to the values that underlie their efforts on behalf of their children.

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The Science and Practice of Discrete Trial Training: Why Some Teaching Procedures Are More Effective Than Others

BY KATHRYN SAUNDERS

Kathryn Saunders

Discrete trial training procedures are widely used to teach early language skills to students with autism and other developmental disabilities. This talk focuses on one discrete trial procedure—matching to sample—that is often used in teaching receptive language. In a matching-to-sample procedure, for example, a student might be taught to select the picture that corresponds to a spoken word (the spoken word is referred to as a sample stimulus) from a choice pool of two or more pictures. Although this behavioral objective is relatively straightforward, choosing effective teaching procedures is more complicated.

Ideally, instructional programming should be based on an analysis of the skill. That is, a complex skill is broken into smaller components, and instruction is designed to ensure the acquisition of each and every component. What are the components that a student must master to perform a matching-to-sample task? First, the stimuli in the choice pool must be discriminated from one another. This discrimination can be assessed by presenting only the choice stimuli on each teaching trial, and reinforcing the selection of the same choice stimulus on every trial. Second, the learner must discriminate the sample stimuli from one another. In the present example, the samples are spoken words. Requiring the student to repeat the spoken word is a simple way of ensuring that the student is making this discrimination (providing the learner can imitate spoken words). Importantly, repeating the spoken word involves *making a different response to each sample stimulus*, thus providing clear evidence of the sample discrimination. The third component is control of the choice-stimulus selection by the sample stimulus (the spoken word). This third component may seem too obvious to mention, but it is possible for a learner who discriminates the sample stimuli and the choice stimuli to, have great difficulty learning relations between samples and choices.

Some often-used procedures for teaching matching to sample do not ensure that all components are taught. Consider delayed-prompting procedures. These procedures typically involve prompting the selection of the correct choice stimulus. For example, after allowing time for the student to make a response, the teacher might point to the correct stimulus and require the student to imitate that point. If all goes well, the student begins to respond before the prompt is presented (during the delay). This procedure is effective for some students, but used as described here, it does not ensure the discrimination between the sample stimuli; the student can make the correct prompted response without attending to the sample at all. This may be why the procedure is not universally effective.

Another commonly used teaching procedure, sometimes called the "three-step" procedure, involves presenting the same sample on every trial. This is done for one of the samples until accuracy is very high for a number of consecutive trials. Next, the second sample is presented until accuracy is very high with that sample. In the third step, the samples are presented randomly across trials. It is not unusual for accuracy to fall to chance levels in the third step, when the samples are mixed, but this outcome should not be a surprise. The contingencies involved in the first two steps of the procedure do not require that the learner attend to the sample stimuli, much less discriminate them.

It is important to note that the aforementioned procedures are sometimes effective, which accounts for their frequent use. The effectiveness of any teaching procedure depends on the student's pre-existing skills. Students who have a history of learning a number of matching-to-sample problems, for example, are more likely to learn with simple teaching procedures. It seems efficient to determine whether a simple delayed-prompt procedure is effective with a particular student prior to using more elaborate procedures. Building on the analysis presented thus far, I will describe a teaching procedure designed to ensure the initial acquisition of matching to sample by ensuring that all three component skills have been established.

Building on the analysis presented thus far, I will describe several relatively simple teaching procedures that

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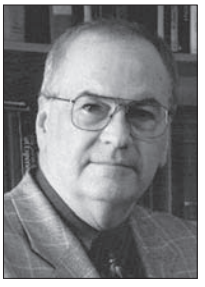
have been shown to facilitate acquisition of matching to sample, along with a rationale for their effectiveness. Some examples include putting the more difficult discrimination in the choice position, prompting the correct choice-stimulus selection by presenting a stimulus identical to the correct choice (instead of a physical prompt), presenting the choice pool first and delaying the sample, or requiring a differential response to the sample stimuli.

Autism: Early Intervention and Brain Development

BY TRAVIS THOMPSON



Travis Thompson

In 1987 two important studies were published which no relation to one another at that time, but which had laid the foundation for our understanding of effects of early behavioral intervention in autism spectrum disorders. The first was Ivar Lovaas's landmark study demonstrating that intensive early behavioral intervention enabled 47% of children receiving that service to be able to function similarly to their same age peers by 7 years of age. No one had any idea why the intervention was so remarkably effective for half of the children, but why it was much less effective for the other half. Also in 1987, Peter Huttenlocher and his colleague Courten published a paper concerning the density of brain connections (synapses) in human brain tissue from birth to 20 years of age. They reported that from around 6 months of age to 2 years of age there was a remarkable increase in new synapses, dropping somewhat but remaining high until around 5-6 years of age. The combination of these two studies holds the answer as to why intensive early behavior therapy is highly effective for approximately half of the children.

Three subsequent studies provide insights into why half of the children learn extremely rapidly and permanently but the other half do not. In 2005 two independent studies provide important leads. Sallows and Graupner (2005) conducted a replication of Lovaas's original 1987 study. Like Lovaas they found that around half of the children learned very rapidly and functioned similar to same age peers by 7 years of age. But they also reported a very important finding. The rapid and slow learners did not overlap in their increases in language and IQ. They were two dichotomous groups. Though the same interventions were used at the same intensity, only half of the children were rapid learners. The second 2005 study was published by Judith Miles et al., concerning genetic subtypes of autism. She studied a large population of children and youth with autism in central Missouri. She found they fell into two non-overlapping groups, one called *complex autism* and the other *essential autism*. Those with complex autism had smaller head size and more subtle anatomical features that were different from their typical peers. Their IQs and language scores were lower, and they had more MRI and EEG abnormalities. Complex autism was much less likely to run in families than essential autism. Children with essential autism had fewer brain differences, tended to better in most interventions, and essential autism tends to run in families, i.e., it is inherited. This suggests that essential autism overlaps to a large extent with Sallows and Graupner's (2005) Rapid Learners. This raises the question of how the two groups differ at a brain level that accounts for these differential outcomes.

July 11, 2008, Murrow and coworkers under the guidance of Christopher Walsh at Harvard Medical Center, studied a large group of children with autism in the Middle East. They specifically studied individuals with autism whose parents were cousins, which greatly increases the risk of neurodevelopmental disabilities. They found three important things: Several genes were identified uniquely associated with these autism cases, those genes produced proteins that were highly expressed in brain tissue, and though the genes were on different chromosomes, all of the genes played a role in formation of synapses. Finally, those genes do not become active without experience, which turns on those genes so they produce their proteins necessary for forming synapses. Morrow et al., speculated that autism is caused by lack of activation of genes necessary for synapse formation, and hence, learning. This was the missing link explaining why intensive early behavioral intervention was effective for half of the children with autism spectrum disorders. That also suggests whatever causes autism among the other half must involve a different brain mechanism which is not as amenable to correction through carefully programmed experience. Though improvements are obtained they are more limited in the latter group. ❖

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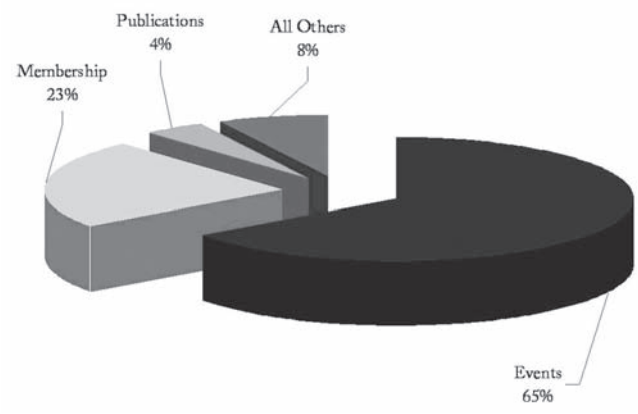

Figure 1. ABAI Income Sources in 2009

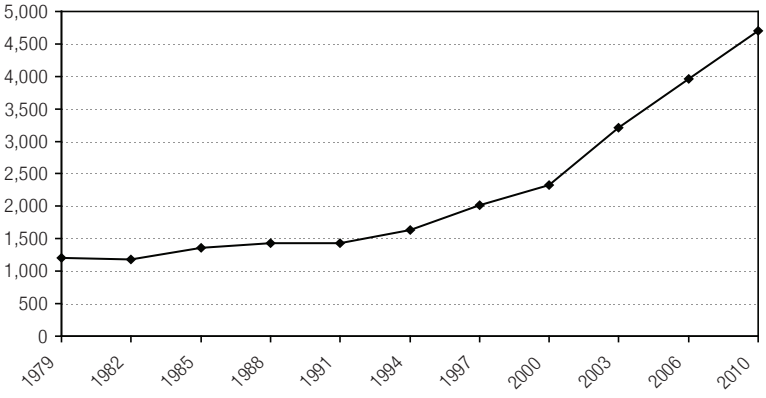

Figure 2. ABAI Annual Convention Registration Trends

ABAI Finances and Services

BY MARIA E. MALOTT

It is no secret that economic changes over the past several years have presented significant financial challenges to all of us around the world. However, ABAI closed 2009 in a sound fiscal state. At the end of last year, ABAI had approximately $1.9 million in fixed assets and about $1 million in investments to protect the Association against unforeseen emergencies and liabilities. Return on investments was a healthy 13.6%.

As shown in Figure 1, ABAI's income in 2009 totaled $2,825,526, the majority of which (65%) came from the events we host. Membership fees provided ABAI's second largest source of income (23%), followed by publications (4%), and all other miscellaneous income (8%). Miscellaneous income includes the rent ABAI receives from the tenant in the Association's new building, where the ABAI offices are also housed; additional segments of its property are also being offered for rent, which will further increase income. Expenses, on the other hand, totaled $2,602,038 in 2010, including staff (45%), events (29%), publications (6%), and miscellaneous (20%).

Both convention registration and membership decreased slightly in 2009 from the previous year. These drops proved to be temporary and membership and registration have rebounded in 2010—with over 10% growth, in each case—breaking previous records. Figure 2 shows the growth trend in convention registration.

ABAI strives to deliver good events focused on the dissemination of the science of behavior analysis in education, research, and practice. Surveys have shown that our events are regarded very highly, with a majority of participants scoring them as either *excellent* or *very good*: 85% for the 2010 Annual Convention (based on 1,170 participant surveys received); 90% for the 2010 Autism Conference: Translational Science and Effective Practice (94 surveys received); and 80% for our most recent international conference in Oslo, Norway (90 surveys received). Specific efforts are underway to enhance the quality and scientific emphasis of presentations at the annual convention.

In 2011, ABAI will offer four events, starting with the 5th Annual Autism Conference: New Tools for Translating Science to Practice, in Washington, DC, January 28–30. This single-track event will be followed by another, Behavioral Research and Translation: Behavioral Economics, which takes place in Chicago on March 25–27. The 37th Annual Convention in Denver is shaping up to be one of our best; we have received over 1,500 submissions for the event and are in the early stages of review and scheduling. Finally, ABAI closes the event year on November 24–26, with the 6th International Conference in the beautiful and historic city of Granada, Spain. ABAI is working with ABA España and other long-standing international members on this event.

Logically, as events represent a major source of income, they also consume a significant portion of our expenses through both direct and indirect costs. The annual convention, for example, has grown into a city-wide, convention-center model more costly than in earlier years. Furthermore, event planning and execution is very labor-intensive. The annual convention alone involves 46 staff members (full-time and seasonal) working behind the scenes, in addition to long hours generously given by the Program Board Coordinator and Committee Co-chairs, Area Coordinators, CE Review Committee, and other volunteers. Planning typically begins several years before the event and includes the participation of over 320 people from convention centers and hotels as well as many other vendors, all arranging the details, tasks, and

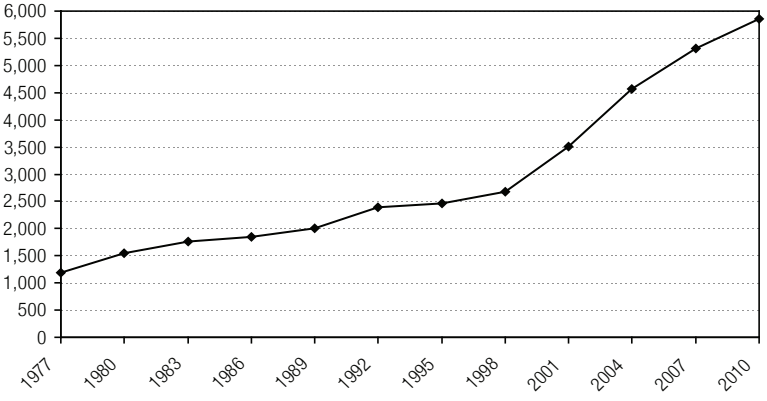

Figure 3. ABAI Membership Trends

processes for security services, graphic design, exhibit hall layout, computer and technical assistance, publishing, exhibiting, audiovisual services, airlines and travel, printing, and mailing.

ABAI's membership continues to grow, as shown in Figure 3. We do our best to respond to members quickly and efficiently; services to members consume significant time and resources.

It is hard to appreciate what goes behind the scenes to provide daily member support. Who would have thought that the ABAI office handles, on average, 1,500 regular e-mails a day, or 390,000 a year? When we take into account mass e-mails, total electronic correspondence averages 23,000 a day and a total of 8.6 million e-mails annually! Every year, the ABAI office handles over 13,000 phone calls and processes and records over 10,400 financial transactions. Would have you guessed that the ABAI website contains over 23,000 pages and is linked to 45 critical databases, all of which need to be managed as invisibly and smoothly as possible to provide all our services?

ABAI now publishes three academic journals, *The Behavior Analyst* (Henry D. Schlinger, Editor), *The Analysis of Verbal Behavior* (Caio Miguel, Editor), and *Behavior Analysis in Practice* (Gregory P. Hanley, Editor), each of which fills an important niche in the field and for our members. We are grateful for the work of the editors and editorial boards for their dedicated commitment to the dissemination of quality scholarship and research.

ABAI is continuously seeking new ways to serve our members. We are excited about the development of our new online learning center, which offers audio recordings and slides of invited addresses for 2011 ABAI events. Members will be able to stream presentation content directly onto their computers; additionally, we are exploring the possibility of using this new format to expand continuing education opportunities for members.

This year our members will be receiving a membership card that has a unique member identifier in the form of a UPC code. The card will provide multiple benefits to members over the next few years, including improvements in efficiency of on-site registration and sign-in processes at events. ABAI has also negotiated on members' behalf with numerous vendors to arrange for member discounts on such services as car rentals, hotel stays, and computer purchases. More detailed information about these opportunities is located on your ABAI Portal. Finally, ABAI continues to offer members professional liability insurance at a discounted rate. This year, we are pleased to say that the ABAI member plan includes discounts approaching 20% on premiums in comparison to nonmember rates.

ABAI continues expand its services and commitment to quality. And we look forward to continuing serving all of our members in 2011 and forward. ❖

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Thanks to the 2010 Supporting and Sustaining Members for their additional support of ABAI.

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May 13–15
www.atferd.no

37th Annual ABAI Convention
May 27–31
Denver, CO
Colorado Convention Center
www.abainternational.org

October

Australian Association for Cognitive Behaviour Therapy
October 26–30
Sydney, Australia
Hilton Hotel Sydney
www.aacbtwa.org.au

Opportunities for Behavior Analysts

The Institute of Professional Practice
Clinical Coordinator—Adult Services

Responsibilities include: coordination of clinical programming with day services; supervising the development, implementation and analysis of all behavioral intervention programs; ensuring quality and consistency of program implementation; interacting with regulatory agencies; in-servicing staff in ABA and related subjects. While candidates with a bachelor's degree and relevant experience will be considered, preferred candidates will have a master's degree in a relevant field (or be enrolled in a master's degree program) and prior experience in ABA with individuals with developmental disabilities and physically handicapping conditions. Candidates should submit resume to **amartin@ippi.org** or mail to Allison Martin, IPPI, 1764 Litchfield Turnpike, Woodbridge, CT 06525. Tel. 203.389.6956 x110.


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autism conference
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