



ALTERNATIVES TO PSEUDOSCIENTIFIC AND NON-EVIDENCED BASED PROCEDURES LIKE SOCIAL THINKING AND SOCIAL STORIES: MAKING CORRECT ETHICAL DECISIONS

JUSTIN B. LEAF
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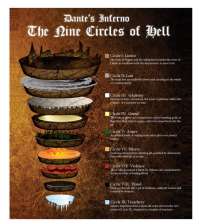


RETRIEVAL

- Go To:
 - <http://www.autismpartnership.com/conferences>
- Scroll Look for Dr. Justin Leaf Presentations
- Title of Talk: Evidence Based
- Password: Evidence Based
- Email: jblautpar@aol.com




MY JOURNEY INTO THE NINE CIRCLES OF HELL






JOURNEY STARTS IN

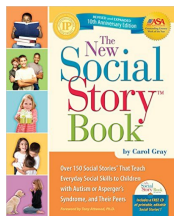
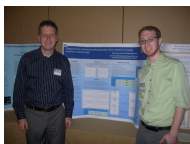




WHEN I WAS YOUNG



AT THE 2008 ABAI CONFERENCE



1ST CIRCLE: LEARNING ABOUT SOCIAL STORIES



SOCIAL STORIES

- **Systematic Form of Intervention Where a Brief Text is Written to Describe a Social Behavior** (Gray & Garand, 1993)
- **Text Contains Information About:**
 - When
 - Where
 - Why
 - What

RESEARCH USING SOCIAL STORIES

- **Not Inherently Social Behaviors**
 - **Choice Making** (e.g., Barry & Burlew, 2004)
 - **Reducing Tantrums** (e.g., Lorimer, Simpson Myles, & Ganz, 2002)
 - **Sitting** (e.g., Conner & Tincani, 2007)
- **Social Behaviors**
 - **Appreciation** (e.g., Delano & Snell, 2006)
 - **Smiling** (e.g., Scattone, 2008)
 - **Peer interaction** (e.g., Scattone, Tinsmeier, & Wilczynski, 2006)

SOCIAL STORY GUIDELINES

- **Learner Must be in the “Trainable Mentally Impaired Range or Higher who Possess Basic Language Skills”** (Gray & Garand, 1993, p. 103)
- **Individualized**
- **Types of Sentence**
 - Descriptive
 - Perspective
 - Affirmative
 - Directive
- **Correct Ratio**
- **Written in the First Person**
- **Sit Side by Side**

EVER CHANGING GUIDELINES: SENTENCE TYPES

SENTENCE TYPES	DEFINITION	YEAR INTRODUCED
Descriptive	Where, Why, and How	1993
Perspective	Mental States Others Feel	1993
Directive	What to Do	1993
Control	Student Explaining the Story	1994
Partial	Fill in Blank	1994
Affirmative	Commonly Shared Belief	2000
Cooperative	How Others Can Help	2000

EVER CHANGING GUIDELINES: RATIO'S	
GUIDELINE	YEAR
No Guideline	1993
Optional Ratio of: 1 to 3/5	1994
Ratio Should be Heavily Considered	1995
Required: 1 to 2/5	1998
Required 1 (Now Control) to 2/5	2000
Every Coaching Sentence must to 2 Other Types	2010


EVER CHANGING GUIDELINES: ILLUSTRATIONS	
GUIDELINE	YEAR
No Illustrations	1993
Illustrations Optional	1994
Illustrations Discouraged	1995
Illustrations Optional	1998
Illustrations Encouraged	2010

EXAMPLE

- VIDEO


EXAMPLE: SOCIAL STORY

Sally and Jim were deeply in love 30 years ago.




But for the last 29 years Sally and Jim haven't been very connected. In fact they often want to rip each others' eyes out!

(DESCRIPTIVE SENTENCE)




However, when they are very angry during disagreements Sally and Jim should take deep breathes.




And understand each others' feelings.

(DIRECTIVE SENTENCE)



Because communication with your partner is not only essential in a good relationship but it helps make us self evolved and loving human beings.

(AFFIRMATIVE SENTENCE)



And when Sally and Jim communicate, it makes them feel at peace.

(PERSPECTIVE SENTENCE)

LEVEL TWO: SOCIAL STORIES VS TIP

JOURNAL OF APPLIED BEHAVIOR ANALYSIS 2012, 45, 281–298 NUMBER 2 (SUMMER 2012)

COMPARING THE TEACHING INTERACTION PROCEDURE TO SOCIAL STORIES FOR PEOPLE WITH AUTISM

JUSTIN B. LEAF, MISTY L. OPPENHEIM-LEAF, NIKKI A. CALL, JAN B. SHELDON, AND JAMES A. SHERMAN
UNIVERSITY OF KANSAS

AND
MITCHELL TAUBMAN, JOHN McEACHIN, JAMISON DAYHARSH, AND RONALD LEAF
AUTISM PARTNERSHIP

This study compared social stories and the teaching interaction procedure to teach social skills to 6 children and adolescents with an autism spectrum disorder. Researchers taught 18 social skills with social stories and 18 social skills with the teaching interaction procedure within a parallel treatment design. The teaching interaction procedure resulted in mastery of all 18 skills across the 6 participants. Social stories, in the same amount of teaching sessions, resulted in mastery of 4 of the 18 social skills across the 6 participants. Participants also displayed more generalization of social skills taught with the teaching interaction procedure to known adults and peers.

Keywords: autism, behavioral skills training, social skills, social stories, teaching interaction

PARTICIPANTS & SETTING

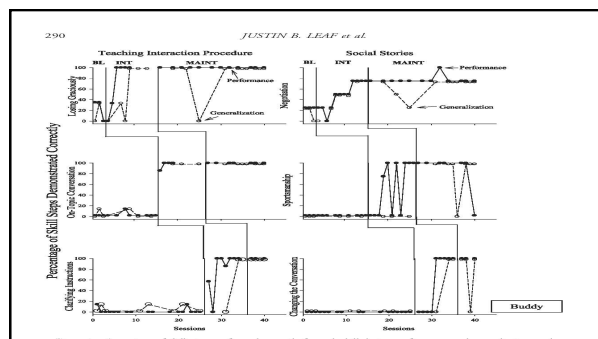
Name	Age	Diagnosis	IQ Score	Peabody Score	School Placement	Setting
Buddy	6	Autism	87	69 (2 nd Percentile)	Gen Ed without supports	KU and at Home
Hank	5	PDD-NOS	117	128 (98 th Percentile)	Early Intensive School	KU and at Home
Nick	5	Autism	68	79 (2 nd Percentile)	Gen Ed without Supports	KU and at Home
Lang	5	Aspergers	89	104 (66 th Percentile)	Gen Ed with Supports	Home
Apollo	12	Autism	80	99 (47 th Percentile)	Gen Ed without Supports	Home
Mickey	13	Autism	82	109 (39 th Percentile)	Gen Ed without Supports	Home

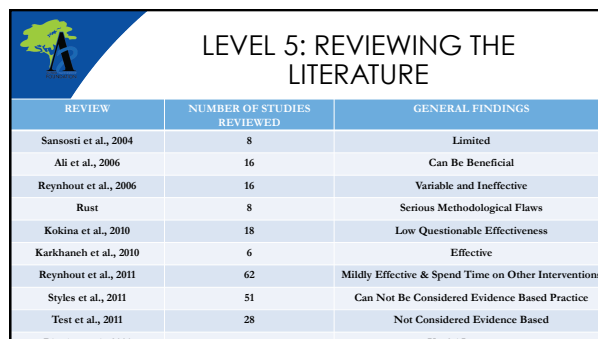
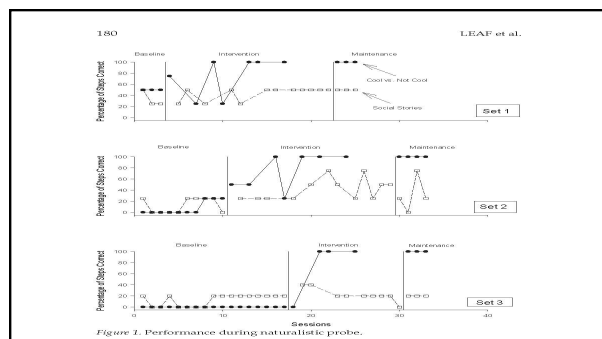
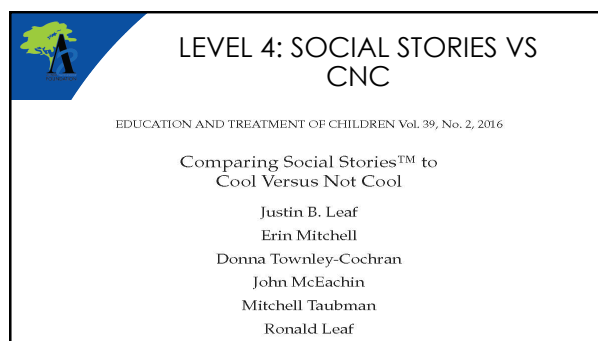
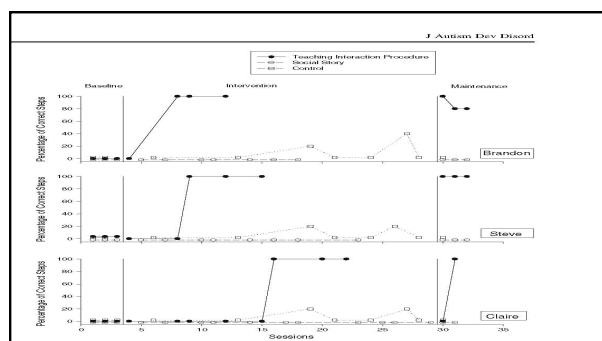
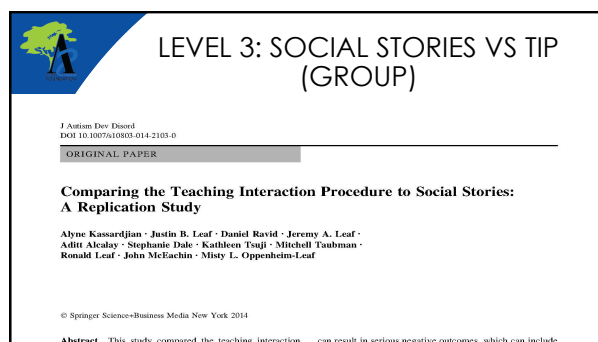
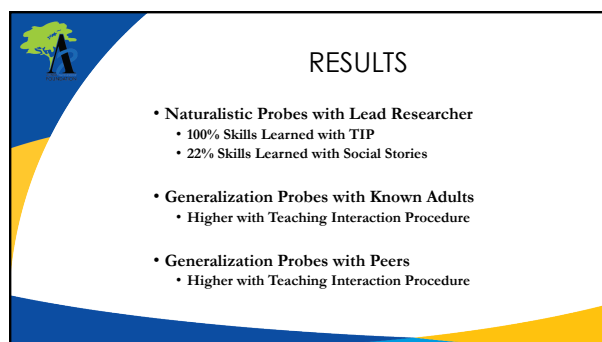
SOCIAL BEHAVIOR

- Taught 6 Skills to Each Participant
 - 3 with TIP
 - 3 with Social Stories
- Each Skill Task Analyzed
- Random Assignment of Skills

MEASURES

- Naturalistic Probes with Lead Researcher
- Generalization Probes with Known Adults
- Generalization Probes with Peers





LEVEL 5: REVIEWING THE LITERATURE		
REVIEW	NUMBER OF STUDIES REVIEWED	GENERAL FINDINGS
Sansosti et al., 2004	8	Limited
Ali et al., 2006	16	Can Be Beneficial
Reynhout et al., 2006	16	Variable and Ineffective
Rust	8	Serious Methodological Flaws
Kokina et al., 2010	18	Low Questionable Effectiveness
Karkhanch et al., 2010	6	Effective
Reynhout et al., 2011	62	Mildly Effective & Spend Time on Other Interventions
Styles et al., 2011	51	Can Not Be Considered Evidence Based Practice
Test et al., 2011	28	Not Considered Evidence Based
Rhodes et al., 2014	7	Useful Instrument

Education and Training in Autism and Developmental Disabilities, 2015, 50(2), 127-141
© Division on Autism and Developmental Disabilities

What is the Proof? A Methodological Review of Studies That Have Utilized Social Stories

Justin B. Leaf, Misty L. Oppenheim-Leaf, Ronald B. Leaf, Mitchell Taubman, John McEachin, Tracee Parker, Andrea B. Waks, and Toby Mountjoy
Autism Partnership Foundation

Abstract: Social stories are a commonly empirically evaluated and implemented procedure to increase pro-social behaviors and decrease aberrant behaviors for individuals diagnosed with an autism spectrum disorder. Despite their widespread use there have been questions raised to the soundness of the research methodology and the results which have been demonstrated within these research studies. This paper is a methodological review of 41 studies that evaluated social stories for individuals diagnosed with autism. We classified each study as one that utilized either a case study design, a reversal design, or a multiple baseline design. After classification we evaluated each study across multiple methodological dimensions and used this analysis to determine if a study showed either a clear demonstration, partial demonstration, or if there was no clear demonstration that the social story was responsible for behavior change. Results of this analysis indicated that the majority of studies either showed only

TABLE 1

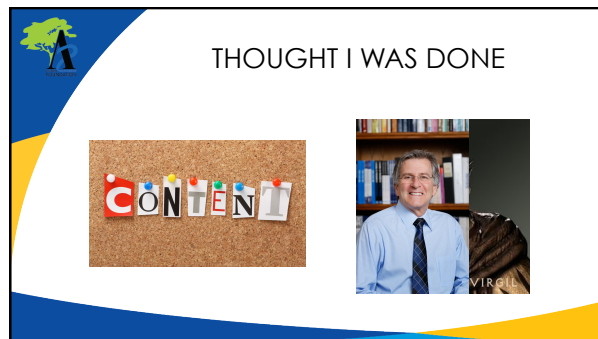
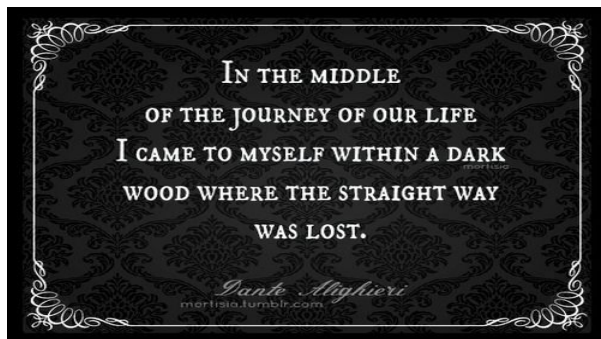
Measures and Demonstration Levels for Case Study Designs

Level of Demonstration	Type of Data	Length of Baseline	Baseline Trending	Effect Immediate	Overlapping Data	Combined with other procedures
Convincing Evidence	Objective	3 or more sessions of baseline	Stable or trending in correct direction	Behavior change demonstrated within 3 sessions	20-6% overlapping data between baseline and intervention	Not combined with other procedures
Partial Evidence	Objective	1 or 2 sessions of baseline	Stable or trending in correct direction	Behavior change demonstrated within 3 sessions	40-21% overlapping data between baseline and intervention	Combined with other procedures
No Convincing Evidence	Subjective	0 sessions of baseline or baseline not reported	No stability or not trending in the correct direction	Behavior change occurring after 3 sessions	100 to 41% overlapping data between baseline and intervention	Combined with other procedures

TABLE 4

Results: Levels of Demonstration

Design	Number of Studies	Level of Convincing		
		No Convincing Evidence	Partial Evidence	Convincing Evidence
Case Studies	9	9 (100%)	0	0
Reversals	13	6 (46.2%)	7 (53.8%)	0
Multiple Baselines	19	6 (31.6%)	10 (52.6%)	3 (15.8%)
Total	41	21 (51.2%)	17 (41.5%)	3 (7.3%)



LEVEL 6: LEARNING ABOUT SOCIAL THINKING

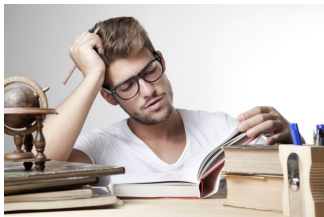



COMING TO LONG BEACH







TIME TO STUDY AGAIN



SOCIAL THINKING®

- “Social thinking is the process by which we interpret the thoughts, beliefs, intentions, emotions, knowledge and actions of another person along with the context of the situation to understand that person's experience. If we are engaging or sharing space with another person, we use this information to determine how to respond to affect the thoughts that person has about us to achieve our social goals”

<https://www.socialthinking.com/LandingPages/mission>



EVIDENCE FOR SOCIAL THINKING®

Brief Report: Measuring the Effectiveness of Teaching Social Thinking to Children with Asperger Syndrome (AS) and Functioning Autism (HFA)

Parula J. Crooke, Ryan E. Hordle, Justin Y. Rothman

Research in Autism Spectrum Disorders

Efficacy of cognitive behavior therapy-based social skills intervention for school-aged boys with autism spectrum disorders

Cydney Kauting¹, Joyce Magill-Evans², Joanne Volden³, Bruce Dick⁴

The Outcome of a Social Cognitive Training for Mainstream Adolescents with Social Communication Deficits in a Chinese Community

Kathy Y. S. Lee^a, Pamela J. Crooke^a, Anne L. Y. Lai^a, Peggy P. K. Kuo^a, Yuen-mai Man^a, Charles Andrew van Hasselt^b and Michael C. F. Tong^a

^aDepartment of Orthodontology, Head and Neck Surgery, Institute of Human Communication Research, The Chinese University of Hong Kong, Hong Kong, Hong Kong; ^bCommunication Disorders & Sciences Faculty, Central U. Laue College of Education, San Jose State University and Social Thinking Center, San Jose, CA, USA; ^cCarroll Rehabilitation Service, Carlin, Hong Kong, Hong Kong

DIDN'T GINA TALK ABOUT THIS



CHAPTER TWO

Evaluating Claims about Treatments for Autism

Gina Green

SCIENCE, PSEUDOSCIENCE, & ANTISCIENCE

Science	Pseudoscience	Antiscience
<ul style="list-style-type: none"> Direct objective observation and measurement Systematic Experimental design Repeated demonstrations 		

LEVEL 6: WRITING ABOUT SOCIAL THINKING®

Behavior Analysis Practice
DOI: 10.1007/s40617-016-0108-1

DISCUSSION AND REVIEW PAPER

Social Thinking®: Science, Pseudoscience, or Antiscience?

Justin B. Leaf¹ · Alyse Kasarijjan¹ · Misty L. Oppenheim-Leaf² · Joseph H. Chon¹ · Mitchell Teubman¹ · Ronald Leaf¹ · John McEachin¹

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Abstract Today, there are several interventions that can be implemented with individuals diagnosed with autism spectrum disorder. Most of these interventions have limited to no empirical evidence demonstrating their effectiveness, yet they are widely implemented in home, school, university, and community settings. In 1996, Green wrote a chapter in which she outlined three levels of science: evidence science, pseudoscience, and antiscience; professionals were encouraged to implement and recommend only those procedures that would be considered evidence science. Today, an intervention that is commonly implemented with individuals diagnosed with autism spectrum disorder is Social Thinking®. This intervention has been utilized by behaviorists and non-behaviorists. This commentary will outline Social Thinking® and provide evidence that the procedure, at the current time, qualifies as a pseudoscience and, therefore, should not be implemented with individuals diagnosed with autism spectrum disorder, especially given the availability of alternatives which clearly meet the standard of evidence science.

Keywords Applied behavior analysis · Evidence based · Social behavior · Social thinking · Autism

In 1996, Green wrote a seminal chapter entitled, *Evaluating*

SCIENCE, PSEUDOSCIENCE, & ANTISCIENCE


Science	Pseudoscience	Antiscience
<ul style="list-style-type: none"> Direct objective observation and measurement Systematic Experimental design Repeated demonstrations 	<ul style="list-style-type: none"> Promoting Quick and High Levels of Success Little to No Objective Data Other Therapies are Not Useful Procedures Would be Difficult to Evaluate Slogans Having "Expert" Endorsement 	<ul style="list-style-type: none"> Rejection of science and the scientific method

(Green, 1996; Normand, 2008)

SCIENCE, PSEUDOSCIENCE, & ANTISCIENCE

Science	Pseudoscience	Antiscience
<ul style="list-style-type: none"> Direct objective observation and measurement Systematic Experimental design Repeated demonstrations 	<ul style="list-style-type: none"> Promoting Quick and High Levels of Success Little to No Objective Data Other Therapies are Not Useful Procedures Would be Difficult to Evaluate Slogans Having "Expert" Endorsement 	<ul style="list-style-type: none"> Rejection of science and the scientific method


(Green, 1996; Normand, 2008)



SCIENCE, PSEUDOSCIENCE, & ANTISCIENCE

Science	Pseudoscience	Antiscience
<ul style="list-style-type: none"> • Direct objective observation and measurement • Systematic • Experimental design • Repeated demonstrations 	<ul style="list-style-type: none"> • Promoting Quick and High Levels of Success • Little to No Objective Data • Other Therapies are Not Useful • Procedures Would be Difficult to Evaluate • Slogans • Having "Expert" Endorsement 	<ul style="list-style-type: none"> • Rejection of science and the scientific method


(Green, 1996; Normand, 2008)



SCIENCE, PSEUDOSCIENCE, & ANTISCIENCE

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(Green, 1996; Normand, 2008)



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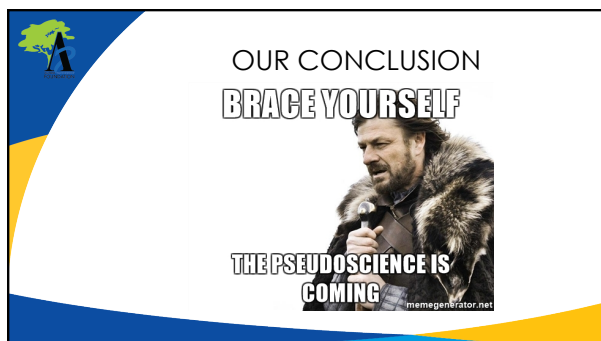
(Green, 1996; Normand, 2008)



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(Green, 1996; Normand, 2008)




LEVEL 7: SOCIAL THINKING RESPONSE ®

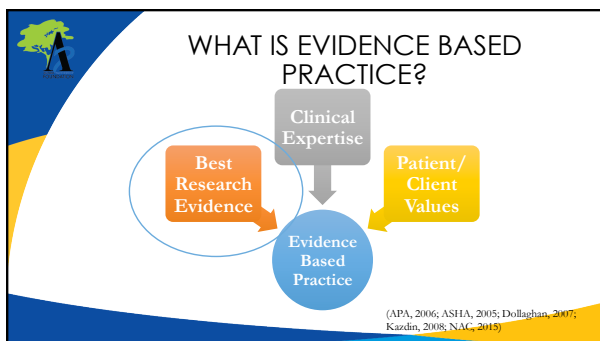
Behav. Analysis Practice (2016) 9:403–408
DOI 10.1007/s40617-016-0151-y










DISCUSSION AND REVIEW PAPER

Social Thinking® Methodology: Evidence-Based or Empirically Supported? A Response to Leaf et al. (2016)

Pamela J. Crooks¹ · Michelle Garcia Winner²

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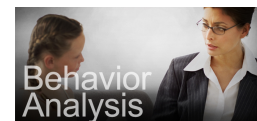
- # EVIDENCE BASED PRACTICE?
- | | | | |
|---|-------------------------------|---|----------------------------------|
|  | APA (2006) |  | Dollaghan (2007) |
|  | ASHA (2005) |  | National Autism Center (2015) |
|  | Kazdin (2008) |  | Wong et al. (2015) |
|  | La Roche & Christopher (2009) |  | Council for Exceptional Children |
| | |  | Horner et al. (2005) |

NOT AN EVIDENCE
BASED PRACTICE

NOT ALIGNED WITH ABA

STILL IS A
PSEUDOSCIENCE

LEVEL 9: WHAT PEOPLE ARE
SAYING




FACEBOOK RESPONSES

- **They Are Effective**
 - "This is about Social Thinking, but it has some interesting information..." (SOCIAL THINKING)
 - "We use them in our class with 2 of our students. They allow our students to see the flow of the necessary transition and what the achieving outcomes might be easier. Work well." (SOCIAL STORIES)
 - "Imma big fan of Social Thinking and it's pretty cognitive." (SOCIAL THINKING)
- **Misinterpreting the Information**
 - "The evidence supports using them as part of a package. I have had success with combining with BST." (SOCIAL STORIES)

FACEBOOK RESPONSES

- **In-conjunction**
 - "This comes up a lot. It is a useful tool when used in conjunction with ABA teaching methodologies, like behavioral skills training. It is not ABA on its own." (SOCIAL THINKING)
- **Using Them**
 - "My Daughters ABA team makes them for us. They really seem to work." (SOCIAL STORIES)
 - "Social story about winning and losing, work on flexibility, Superflex is awesome to help with this." (SOCIAL STORIES AND SOCIAL THINKING)
- **No Harm**
 - "I think it's always worth a shot. Some kids utilize them more than others. I've seen great success though. There are apps to make stories, I worked with a kid who liked to help make his." (SOCIAL STORIES)




FACEBOOK RESPONSES

- Importance of Evidence Based
 - "I think it's helpful that, rather than sort things as evidence based or non evidenced, it can be helpful to look at how we can use the wonderful ideas and materials so many people have come up with over the years in a more evidenced base way." (SOCIAL STORIES)
 - "It doesn't lend itself to that kind of measurement and progress is going to be different." (SOCIAL THINKING)





From there we came
outside and saw the stars.

Dante Alighieri




MY THOUGHTS

- Effectiveness
- Understanding Research
- In-Conjunction
- Using Them
- No Harm
- Importance of Evidence Based and Empirically Supported
- It Works for My Child
- Ethical




ETHICAL COMPLIANCE CODE

- 1.01 Reliance on Scientific Knowledge
 - "Behavior analysts rely on professionally derived knowledge based on science and behavior analysis when making scientific or professional judgments in human service provision, or when engaging in scholarly or professional endeavors (p. 4)."
- 2.09 Treatment/Intervention Efficacy
 - (a) "Clients have a right to effective treatment (i.e., based on the research literature and adapted to the individual client). Behavior analysts always have the obligation to advocate for and educate the client about scientifically supported, most effective treatment procedures. Effective treatment procedures have been validated as having both long-term and short-term benefits to clients and society (p. 8.)"




ETHICAL COMPLIANCE CODE

- 2.09 Treatment/Intervention Efficacy
 - (c) "In those instances where more than one scientifically supported treatment has been established, additional factors may be considered in selecting interventions, including, but not limited to, efficiency and cost effectiveness, risks and side-effects of the interventions, client preference, and PR actioner experience and training (p. 9)."
- 4.01 Conceptual Consistency
 - "Behavior analysts design behavior-change programs that are conceptually consistent with behavior analytic principles (p. 12)."




MY THOUGHTS: AS A BEHAVIOR ANALYST WE CANNOT...

- Endorse
- Recommend
- Implement
- Implement In-conjunction with ABA



MY THOUGHTS: AS A BEHAVIOR ANALYST WE NEED TO...

- Stand Up to All Pseudoscience and Antiscience
- Implement Empirically Supported and Evidence Based Procedures
- Not Implement an Eclectic Approach
- Do What is Right For Individuals with ASD

BETTER WAY


- Discrete Trial Teaching
- Pivotal Response Training
- Video Modeling
- Script Fading
- Behavioral Skills Training
- Cool Versus Not Cool
- The Teaching Interaction Procedure
- Social Skills Groups



Abstract 100-1000 words. The abstract should include the purpose of the study, the research questions, the methods, the results, and the conclusions. It should be written in a clear, concise, and objective manner. The abstract should be no longer than 100-1000 words.

Keywords 3-5 words. The keywords should be chosen from the list of keywords provided in the journal's online database. The keywords should be entered in the following order: 1. The most important keyword, 2. The second most important keyword, 3. The third most important keyword, 4. The fourth most important keyword, 5. The fifth most important keyword.

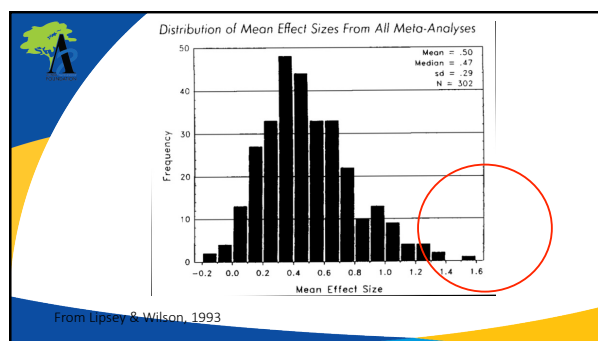
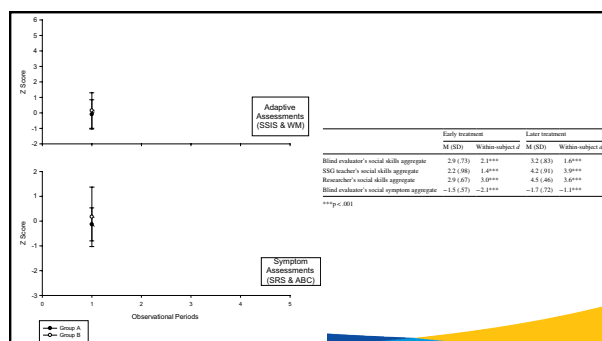
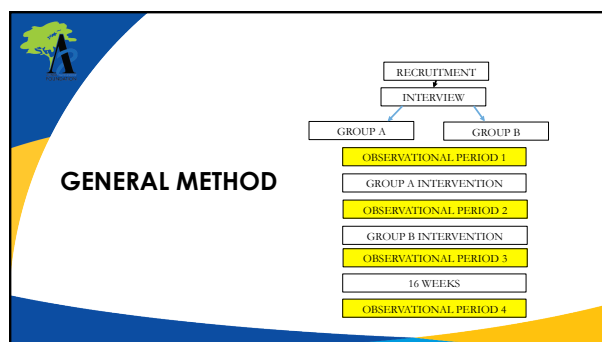
References 10-15 references. The references should be listed in alphabetical order of the author's name. The references should be formatted according to the journal's style guide. The references should be entered in the following order: 1. The first reference, 2. The second reference, 3. The third reference, 4. The fourth reference, 5. The fifth reference, 6. The sixth reference, 7. The seventh reference, 8. The eighth reference, 9. The ninth reference, 10. The tenth reference, 11. The eleventh reference, 12. The twelfth reference, 13. The thirteenth reference, 14. The fourteenth reference, 15. The fifteenth reference.



PARTICIPANT OVERVIEW

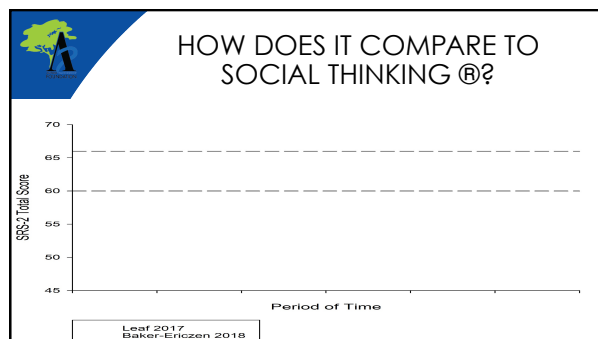
Domain	Group A	Group B	P Value	Significant Difference
Number of Participants Meeting Inclusion Criterion	8	7	N/A	N/A
Average Age in Months	55 Months	58 Months	0.555	Not Significant
Average IQ Score	101.4	105.7	0.448	Not Significant
Average Vineland Adaptive Score	83.9	82.9	0.918	Not Significant
Average Expressive 1 Word Standard Score	108.8	109.1	0.933	Not Significant
Average Peabody Picture Vocabulary Standard Score	104.2	108.6	0.435	Not Significant

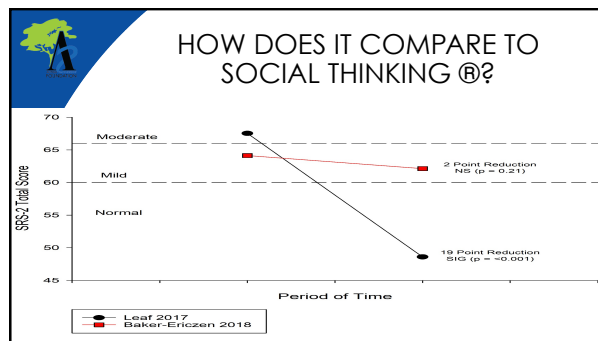
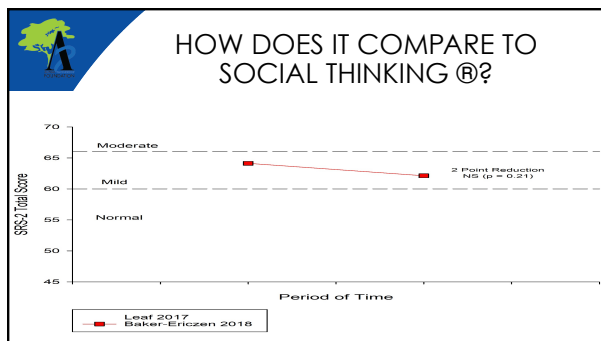




FROM FACEBOOK

“Justin Leaf why is it so difficult to admit that another field may be better equipped to work on a particular area that is not really our strong point?”





FINAL THOUGHTS

- What is Social Stories?
- What is Social Thinking?
- Why Are These Procedures Popular?
- We Need to Implement Evidence Based and Empirically Supported Procedures
- You Cannot be a Behavior Analyst Only Part of the Time
- Do What is Right



RETRIEVAL

- Go To:
 - <http://www.autismpartnership.com/conferences>
- Scroll Look for Dr. Justin Leaf Presentations
- Title of Talk: Evidence Based
- Password: Evidence Based
- Email: jblautpar@aol.com