The Use of Critical Incident Stress Management, Hostage Negotiation Tactics, and Mindfulness to Intervene on Maladaptive Behaviors of a Child Affected by Trauma in a Diverse Educational Setting.

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Abstract: The United States Federal Bureau of Investigation's Behavioral Analysis Unit 2 (BAU-2), housed out of the agency's headquarters in Quantico, VA, uses the principles of behavioral analysis to assist local principalities and law enforcement agencies catch criminals that are beyond their individual capacities and resources. FBI hostage negotiators have, over the years, developed a psychology protocol when negotiating with individuals who are threatening their own life or the lives of others. This is now known as the Behavior Change Stairway Model. These techniques have shown varying degrees of empirical success but have never been applied to seek positive outcomes with young children. This study tests these two interventions, used in tandem with relational frame theory (RFT) and critical incident stress management (CISM). Using a reversal single-subject and alternating treatments experimental design, experimental control was demonstrated for two out of the three measured outcomes of the discrete trial teaching, and a functional relationship was demonstrated for the CISM component, providing empirical evidence that the independent variable was in fact responsible for the participant's positive outcomes.

Keywords: relational frame theory, teaching interactions, differential reinforcement, behavioral change stairway model, critical incident stress management, victim-offender mediation

Introduction:

Behavior analysis has been brought to bear to tackle some of societies' greatest problems using various methods and approaches. One such exemplar is the work of the United States' Federal Bureau of Investigation's (FBI) Behavioral Analysis Unit 2 (BAU-2), housed in Quantico, VA. The BAU-2 is famous for using the principles of behavior analysis to profile criminals, in order to predict their thoughts, movements and actions. This analysis of behaviors, used to aid and assist in the capture of some of the most dangerous and elusive criminals in the world today (Brown & Andelman, 2010) Halpern, 2011). However, the application of operant psychology by federal law enforcement does not end there. The BAU's sister unit is the Crisis Negotiation Unit, or CNU. These agents are expert negotiators, called upon during crisis and hostage negotiations. The role that the CNU is often tasked with is negotiation for the safe release of hostages and peaceful surrender of hostile subjects. This is done in conjunction with the most elite SWAT team in the world, the FBI's HRT (Hostage Rescue Team). Behavior analysis and profiling are key here as well and are now considered staples of hostage negotiation (Vecchi et al., 2005). More specifically is the development of what is now known as the Behavior Change Stairway Model, which is outlined and diagramed below. This model was invented at the CNU by then FBI Chief Negoiator, Gary Noesner, considered by many to be one of the leading crisis and hostage negotiator in the United States (G. Noesner, personal communication, January 7, 2020)/

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Figure 1 – The Behavioral Change Stairway Model.

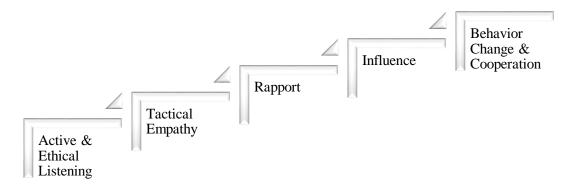


Table 1 – Details of the Behavioral Change Stairway Model

ACTIVE & ETHICAL LISTENING	Most critical step is <i>Active Listening</i> : 1. Ask open-ended questions	
	2. Effective pauses (remain silent at the right times)	
	3. Minimal encouragers (brief statements like yes and okay that let them	
	know you are listening)	
	4. Mirroring (repeat the last word or two they say)	
	5. Paraphrasing (repeat what they said in your own words)	
	6. Emotional labeling (give their feelings a name)	
TACTICAL EMPATHY	It implies an identification with, and understanding of, another's situation, feelings, and motives. The negotiator uses empathy to see through the eyes of the person in crisis and to absorb some of the tension. In crisis intervention, the goal is not to feel sorry for the subject, but to establish a relationship through effective communication, enabling resolution through collaboration.	
RAPPORT	As empathy is shown, rapport develops, which is characterized by increased trust and mutual affinity. Once rapport has been developed, the person in crisis is more likely to listen to (and accept) what the negotiator has to offer. At this stage, the negotiator, in collaboration with the subject, begins to build themes that provide face saving justifications minimizations, or blending which serve as precursors to ending the crisis	
INFLUENCE	At this stage, a relationship has been established and the subject is willing to accept the suggestions of the negotiator as a prelude to behavior change. In negotiator parlance, the negotiator has beaned the right to recommend a course of action to the subject as a result of collaborative problem solving.	
BEHAVIOR CHANGE	At this final stage, the subject will likely follow the negotiator's suggestions to the extent that negotiator tasks in the previous stages have been effectively carried out.	

The common pedogeological question that comes to one's mind is the relevance of this methodology in the context of public education. A case will be made for this later.

Critical Incident Stress Management, or CISM, has evolved over the past three decades as the premier care and crisis model for individuals or groups *after* they have experienced a traumatic event. The CISM literature takes wide latitude in its definition of such events, ranging from hurricane and terrorist attack survivors to smaller scale disasters, such as a multiple car accident scene on a highway or a drowning of a young child. CISM has many protocols and complex flowcharts to address this wide array of needs. This study focused on one of the most tested interventions for individual critical incident management, the SAFE-R Model (Everly, (1996). This model is explained on the following chart:

Table 2 – The SAFE-R Model (Individual CISM) (Everly, 2017)

S	Stabilization	
A	Acknowledgement	
F	Facilitation of Language	&
	Normalization	
E	Encourage Effective Coping	
R	Recovery or Referral	

The same pedogeological inquiry challenges to the Behavioral Change Stairway Model are also applicable here. The connection between multi-tiered, large scale, disaster relief, and response, and educating children in US public schools is contortioned and not an intuitive one. These two contexts, to the common eye, are two worlds apart. Some might go so far as to say incontrovertible with regards to public policy, morality and ethics, design application, epistemology, and even scholarly knowledge itself. In this study, we make the case for just the very opposite.

Discrete trial teaching (DTT) was used to train the participant in bidirectional responses (mutual entailments) associated with vocal replacement for socially maladaptive mands, tacts, and intraverbals. Derived responses were also tracked and charted (combinatorial mutual entailments) (Skinner, 1957; Törneke, 2010) These discrete trials were done with secondary targets (Tullis, Gibbs, Butzer, & Hansen, 2018). This process occurred concurrently with the reversals without error correction to build frames of human language [Relational Frame Theory (RFT)] (Hayes, Blackledge, & Barnes-Holmes, 2001; Thompson & Iwata, 2005). After the student became more successful and independent, the discrete trials were faded into Teaching Interactions sessions. These sessions were eventually morphed into sessions exclusively focusing on Mindfulness (Leaf, Leaf, McEachin, & Taubmann, 2011; Hayes & Smith, 2005; Ullmen, 2016)

The final component of our independent variable was restorative justice mediation and crisis resolution

negotiations, more specifically, the victim-offender reconciliation program (VORP), based on the works of Drs. Ron and Roxanne Claassen, were utilized outside the confines of the Discipline That Restores (DTR) model. Community Justice Conferencing (CJC) was also used for mediation and negotiation purposes for conflicts between the school and the participant's family. The mediation protocols served as reactive measures and were used in place of the school district's traditional, heavily punitive discipline system (Aitchison, 2018; Claassen & Claassen, 2008).

Purpose

This purpose of this study was two-fold. The first research question was to see whether or not the discrete trial sessions would result in greater accuracy and more frequent positive replacement intraverbals per session. This time we also tracked and charted the derived relational responses that resulted from the direct training of the bidirectional contextual responses (Hayes, et al., 2001; Törneke, 2010). The second research question was to test the viability of the Behavioral Change Stairway Model used in conjunction with the SAFE-R model to manage and improve the participant's maladaptive behaviors that were disruptive to the entire school that she attended (Everly, Flannery, & Mitchell, 2000; Vecchi, Van Hasselt, & Romano, 2005).

Method

Participants and Setting:

The participant in this study was an eight-year-old Hispanic-American female student with an aversive childhood experiences, or ACES, score of ten (Hirt, Schalinski, & Rockstroh, 2019). Before this experiment began, she had a long history of witnessing and being a victim of acts of verbal and physical violence. Like many children who experience trauma from abuse, she acted out similar violence on others (Kazdin, 2008). English is the primarily language spoken in the home. She resides with her grandmother, foster brother, and aunt. She was abandoned by her mother and father, which accounted for several of her ACES.

The general education classroom population was predominantly African American. The other students in the classroom were not identified with anything that would distinguish them as anything other than neurotypical fifth grade students. The setting for the study was a public elementary school in the suburbs of a large metropolitan area, for a period of fourteen weeks. The classroom had twenty-two desks arranged in a "U" formation. There was also one kidney table used for small group interventions in the rear of the room. The room was located in the southern wing of

the building. The students each had access to an individual laptop computer. The participants' general education teacher was operating primarily under a constructivist onto-epistemology but was coachable to viewing this participant's actions from more of a behaviorist lens (Barad, 2007; Bates, 2015). Some components of this multi-layer independent variable were also conducted in one-on-one teaching sessions, such as discrete trial teaching (DTT), teaching interactions (TI), and Mindfulness training, and were conducted in a variety of rooms throughout the school building.

Recording and Reliability:

Recorded sessions were scored on a variable time duration schedule, ranging from one to five minutes. During each session, a percent correct for the total number of learning trials during that session was calculated. The percentage of correct responses per session for both bidirectional responses and combinatorial mutual entailments (or derived relations) were recorded every session and graphed accordingly (Törneke, 2010). Trial by trial interrater agreement was conducted and calculated for the DTT sessions, while partial agreement between intervals IOA was used for functional analysis (Cooper, Heron, & Heward, 2019).

Functional Assessment:

After a brief but thorough review, medical, cultural, and social parsimonious factors were ruled out, and the formal analysis of the patient's maladaptive behaviors was conducted. The first level consisted of indirect measures, specifically the Open-Ended Functional Assessment Interview. The assessment was given with integrity and fidelity, according to protocols described by Hanley (2014). The purpose of the interview was to identify establishing operations, setting events, and antecedents that may have been triggering problem behaviors. Two brief observations were also made at this stage. From there the researchers began Phase II, which was a recent variation to the experimental functional analysis. The assessment that was chosen was the latency-based interview-informed synthesized contingency analysis (IISCA) (Jessel et al., 2018). The latency IISCA was chosen due to the severity of both the primary problem behaviors, as well as the precursors that were deemed too dangerous and too risky to submit staff to during the assessment. The latency version follows the same procedures as the original IISCA, with the sole difference being that measurements of problem behavior are charted as latency to the first occurrence instead of responses per minute (Hanley, 2014, Jessel et al., 2018).

Baseline:

The targeted maladaptive behaviors were defined as follows. The participant engaged in an escalation cycle of disruption, which was specifically operationally defined as raising the volume of her voice to an intensity level so that it can be heard by the adjoining classrooms (a distance of five meters or longer), then slamming her hand lightly on a desk or table, then walking out of class, followed by hitting other students and running the halls of the school building making verbal homicidal threats toward herself and others. Baseline for the frequency of this behavior was recorded and charted accordingly.

Intervention:

The independent variable that was used was a component package consisting of four distinct subcomponents, which are the following:

- the Behavioral Change Stairway Model (negotiation).
- SAFE-R (critical incident stress management),
- Discrete Trial Teaching with Secondary Targets (relational frame theory), and
- the Victim-Offender Reconciliation Program (restorative justice),

Independent Variable		
The "Good Samaritan" Intervention Components		
(Component 1)	The Behavioral Change Stairway Model	
(Component 2)	The SAFE-R Model	
(Component 3)	Discrete Trial Teaching with Secondary Targets (RFT design) Mindfulness training	
(Component 4)	Victim Offender Reconciliation Program	
Single-Subject Design	Parallel Treatments with Reversal [ABABAB] [DTT] Alternating Treatments [SAFE-R, BCSM, VORP]	

Design:

The experimental design(s) for the study was the concurrent reversal designs arranged in a parallel treatments format (Gast & Worley, 1988). This is when repeated measures of a behavior are made in a given setting that requires at least three consecutive phases: (a) an initial baseline in which the independent variable is absent, (b) an intervention phase during which the independent variable is introduced and remains in contact with the behavior, and (c) a return

to baseline conditions accomplished by withdrawal of the independent variable (e.g. A-B-A, A-B-A-B, B-A-B). (Cooper et al., 2019; Martin & Pear, 2014).

The first baseline will predict a level of responding. The first intervention phase then shows that a change in behavior has occurred. The second baseline is then verification of the data predicted in the first baseline condition. The second intervention phase then replicates the behavioral change shown in the first phase of intervention. The reintroduction of the independent variable that produces the same change in behavior is demonstration of a functional relation, or experimental control. (Bailey & Burch, 2002; Cooper et al., 2019).

Some of the positives of the reversal design are that it is the most straightforward and most powerful single-subject design to demonstrate a functional relation, and the easiest graphical representation to show the effect of the independent variable. Its drawbacks include that, in cases of irreversibility it is not feasibly applicable. Also, a reversal should not be used when treatment cannot be withdrawn. There are also social considerations; society can have objections to withdrawing treatment. Instructional time is also lost when treatment is withdrawn. Finally, there is ethics to consider. Sometimes withdrawing treatment is not ethically feasible (e.g. SIB) (e.g. SIB or verbal imitation) (Alberto & Troutman, 2012).

The second single-case design used was alternating treatments. This is an experimental design in which two or more conditions are presented in rapidly alternating succession independent of the level of the patient's responding. Positive aspects of this design include that it does not require withdrawal of the independent variable(s). Treatments can be compared quickly, and it minimizes irreversibility problems as well, with a lesser chance of sequence effects. Finally, it can be used to assess generalization. Its drawbacks include the possible confounding effects of one treatment on another, and the rapid switching of treatments is unnatural. The treatments should be significantly different from one another (Mayer, Sulzer-Azaroff, & Wallace, 2014).

Results

Reliability of measurement was 76% observer agreement (trial by trial IOA) and was taken for 30%

of the randomized variable time sessions. Interrater reliability was also taken during the latency based IISCA, 82% agreement (partial agreement within intervals IOA) was taken for 25% of the time sessions.

Functional Assessment:

The results of the Open-Ended Functional Assessment Interview are shown below.

IISCA Results: Theorized Functions of Problem Behavior

Participant 1	Combinatorial
•	Contingency: Escape + Peer
	Attention + Staff Attention

The latency based IISCA for the participant is presented below.

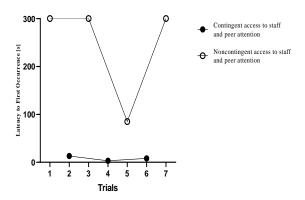
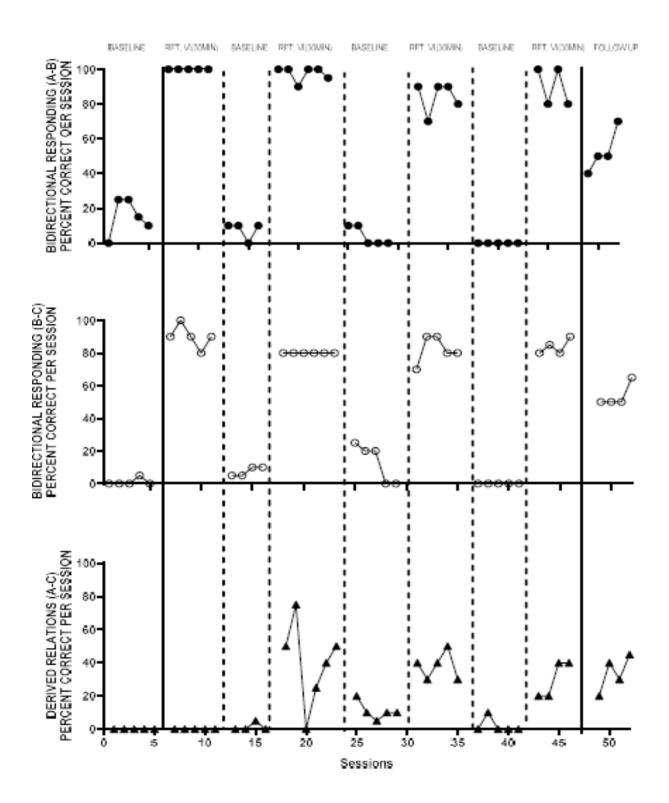


Figure 1: IISCA For Participant 1

Through visual analysis, the multi-element design graph confirms the hypotheses of the Open-Ended Interview. The behavior is likely maintained by social positive reinforcement in the form of both peer and staff attention.

Discrete Trial Teaching

The results of our discrete trial teaching sessions, which incorporated derived responses from Relational Frame Theory (RFT) are presented next.



The experimental design used was the standard ABAB reversal. Three separate designs were run concurrently and arranged in a parallel treatments format (O'Neill, McDonnell, Billingsley, & Jenson, 2011). The first bidirectional response (A-B) follows the logic of the reversal design with respect to steady state strategy and baseline logic. The baseline condition is relatively stable, with occurrences at very low levels. If the participant's behaviors were allowed to continue, it could be reasonably predicted that the behavior would remain at similar level and trend. This prediction is then verified by the return to baseline also occurring at low levels. The intervention condition then replicates these reversals with a change from baseline to intervention. There are three complete reversals in all. This meets the established criteria for demonstration of experimental control, which is offered as evidence that the teaching during the individual sessions was the cause of this participant saying and doing things differently. The second bidirectional response (B-C) follows a similar pattern of reversals, and also serves as evidence of experimental control.

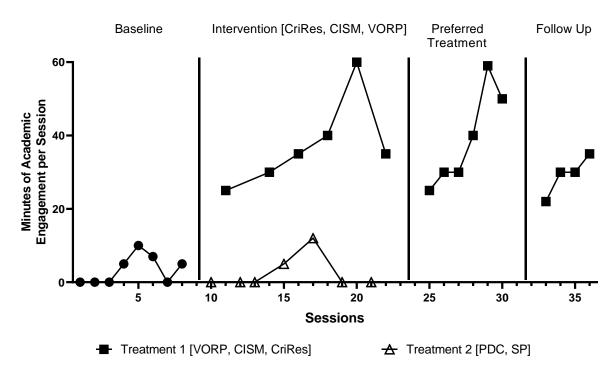
The final graph in the parallel treatments format the derived relations, otherwise known as combinatorial mutual entailments (A-C) (Hayes et al., 2001; Törneke, 2010). One can deduce, from visual analysis, that there is no evidence of derived relational response in the first three conditions, two of them being baseline and one when the intervention was in place. However, there is some small evidence of two reversals, although they are much lower in level than the reversals for the bidirectional, directly trained This cannot be accepted as a true responses. incontrovertible example of experimental control but could be served up as evidence of a functional relationship (Bailey & Burch, 2002; Cooper et al., 2019; Thompson & Iwata, 2005). This would suggest that, at least in the case of this participant, there was a correlation between the positives made in bidirectional responses and the combinatorial mutual entailments. Essentially, the more she became proficient in responding accurately to the conditional discriminations presented in the discrete trial teaching sessions, the more accurate she became at deriving stimulus relations as well. And although the rates were different, both the bidirectional and derived responses were both able to be influenced by differential reinforcement. This finding is significant, since it corroborates findings from numerous randomized control trial studies on Acceptance and Commitment Therapy (ACT) and Mindfulness training (American Psychological Association, 2016; Ullmen, 2016).

Critical Incident Stress Management & Conflict Resolution

The other components of our independent variable, the combination of the Behavioral Change Stairway Model, the SAFE-R crisis management model, and victim-offender mediation are charted below. This is an alternating treatments design, where two different interventions, in this case, the line with black boxes is the intervention, which was dubbed "The Good Samaritan" after the famous parable. The line with the white triangles represents the local education agency (LEA) standard plan rooted in the progressive escalated punitive discipline procedures, which is typical in most American schools.

The baseline was steady and remained at low levels. It can be reasonably predicted that continued measures would result in a similar level of responding under similar environmental conditions. The first intervention phase on the graph shows no overlap between the two treatment packages and considerable vertical distance between the T1 and T2. progression of data along the two paths is steady, showing a degree of verification. Replication occurred each time either the T1 or T2 levels are responses similar to previously recorded responses in their respective data paths, meaning that response rates were somewhat steady. The graph clearly shows that one treatment was more effective than the other, showing evidence of a functional relation (Bailev & Burch, 2002). There is also one more detail that cannot and should not be left out. Take a moment to look at this graph differently and compare each intervention to baseline. The participant's behavior with CISM and its accompanying components, substantially improved from a range of zero to fifteen minutes in class per session (which was one academic period), to a range of thirty to sixty minutes in class per period. Now look at the progressive discipline code, and it is evident that her behavior became worse under the business-as-usual. This is compounded by the fact that there is a good chance that there was some treatment interference that in all likelihood made the participant's behavior look better than it actually was during the progressive discipline code condition(s). This is not unexpected, as the side effects of aversive or punisher procedures are well documented (Meier, 2011).

Academic Engagement



Discussion

Social Validity:

Social validity measures were attempted with the teachers, students, and administrators affected by this study. All teachers indicated the intervention helped them teach more effectively, and they reported that they appreciated the extra support. The administrators indicated that they were happy to see less discipline referrals, and also that the student was in class for longer periods of time. The reports from the student and the guardian were mixed. The guardian said that she was appreciative of everything the clinical staff had done on this project. The student herself felt very much like she was persecuted and singled-out. She enjoyed working with the research staff but had become frustrated when the team challenged her, especially during the Mindfulness exercises.

Limitations:

There were some limitations to this study. First of all, this study was limited to only one participant. There is certainly more work to be done. Although these initial results were positive and very promising, they were with a sample size that is small. This study could, and should be, expanded to more students across the country. Some possible confounds should also be noted at this time (Cooper et al., 2019). There may have been some observer reactivity. The teachers

and students could have changed their behaviors because the behavior analyst and registered behavior technician were present during most of the data-collecting sessions. Also, the research team encountered severe treatment interference because of the manner in which the progressive discipline code is written,

Ethics and Possible Conflicts of Interest:

This project was conducted by the researcher on his own volition, in order to expand and add to the body of scholarly knowledge on the use of CISM to help young children who are in crisis during the school day. No monetary funding was sought out or provided. The researcher identifies himself as a white male trained in behavioral analysis, he acknowledges that his identity, schema, and history, both personal and professional, do in fact necessarily influence his interpretations. He operated under, constructed, and interfaced with through post-positivist knowledge a epistemology (Bates, 2015; Crotty, 1998). He openly acknowledges that his involvement in this study was to attempt to improve the experience of students who have traditionally been marginalized in the American public-school system, and to countermand the schoolto-prison pipeline (Mallett, 2017).

Efforts were made to abstain from any conflict of interest, and to comply with all relevant state, federal, and international law. It is noted that one of

the field researchers on this project was trained by Dr. Ron Claassen, one of the authors of the Discipline That Restores model and the modern Victim-Offender Reconciliation Program (VORP), which served as components of one of the independent variables and is also currently enrolled in Dr. Claassen's DTR certified train-the-trainer course. In the future, it is intended to further expand our quantitative research on educational-based CISM to more locales and wider populations. The research team adhered to the parameters outlined in the landmark Belmont Report, as well as the research standards from the American Education Research Association (AERA). The research team sought to hold themselves up to the following standards of conduct:

- the National Education Association's (NEA) Educators Ethics.
- the Council for Exceptional Children's (CEC) Special Education Professional Ethical Principles,
- the Behavior Analyst Certification Board's (BACB) Professional and Ethical Compliance Code for Behavior Analysts, and
- the Basic Principles on the use of Restorative Justice Programmes put forth by the United Nations Economic and Social Council.

The experimental design used with the CISM and conflict resolution created some ethical dilemmas. The alternating treatments design was not the first choice of the research team. This is for several reasons. We certainly did not want to alternate the participant to go back and forth between one independent variable that was positive, therapeutic, and restorative with one that was largely punitive. The LEA, however, insisted on using the progressive discipline code during the same time frame as the Good Samaritan. This is how the alternating treatments single-subject was finally selected. (Cooper et al., 2019). In the future, other designs might be better suited for future studies.

Implications:

The primary implications of this study were that the facts support the following rational and parsimonious conclusions.

- This adds to the growing body of evidence and scholarly knowledge showing the power and efficacy of the IISCA, and in particular the latency-based version, as a means to seeking out and identifying functions of behavior, and also being a means to help design effective treatment.
- This opens the doorway for more broad, systemic, and organized applications of techniques used in hostage negotiation and critical incident stress management in the public-school systems. Our data also suggests that these ideas can be

- implemented in tandem with empirically based restorative justice and behavior support plans, and that the model of evaluating and addressing a student in crisis does, in fact, have some parallels with individuals who are in crisis in situations involving law enforcement officers and first responders.
- It is the view that the inclusion of critical incident stress management was the link that held the entire intervention together. The SAFE-R Model filled an important gap that had been noted in prior work. This void that was filled by CISM is the answer to the evolving and difficult question, and that is, what does one do with a child who is not entirely rational at the moment and is not ready to mediate? And even further, what does one do when this student remains at this difficult state of mind for hours, days, perhaps even months? The use of the SAFE-R Model in our series of interventions accomplished this difficult task. We were regularly using the SAFE-R Model to get the participant from an irrational state to a locus of control where she could return to the general education classroom.

Future *Considerations*, Recommendations, and Thoughts

- These techniques could possibly benefit from other applications of RFT, in particular ACT, Acceptance and Commitment Therapy, and could also be applied to a classroom in conjunction with group contingencies such as the Good Behavior Game (Embry, Fruth, Reopcke, & Richardson, 2016).
- The core principles of ACT, along with Mindfulness techniques, could be applied to increase the positive outcomes of victim-offender mediations, as well as small and large scale CISM operations.
- Future practitioners who plan to study the Good Samaritan Model could use the disruptive innovation framework as a guide, then using human performance technology to institute continuous participatory change (Christensen, Horn, & Johnson, 2017; Dignan, 2019; Marker, Villachica, Stepich, Allen, & Stanton, 2014).
- This intervention tracked academics but did not directly intervene on them. Future studies should press on this issue. We have no reason to believe that helping this student with her academic struggles would have hindered our efforts, but it would have made things more complicated. Of the many options available, implantation of strategic formative assessments is the simplest and also the most effective thing individuals can

do at the classroom and individual student level (Wiliam, 2018).

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