

Development Trial of *The Enhanced Flexibility Intervention*

We began the development of this intervention using a “bottom-up approach” (Sullivan et al., 2005), including classroom observations, needs assessment and focus groups to find out what teachers, school staff and parents are already using that is successful to improve flexibility, and what further resources they would like. We also had an exceptional special educator on the development team, Lynn Cannon, MEd who we noticed in our observations was already doing much of what we hoped to capture in the EFI. She is first author on the EFI teacher manual for that reason.

We developed the manual for the EFI through a participatory framework, which means that we got extensive input and direct participation from the students, teaching staff and parents who would ultimately be using the intervention once developed. We did not write the intervention in our “ivory tower” and then ask schools to adapt it to their needs, we developed it within the school to create an intervention that is appropriate for teachers, administrators, students and their parents. The development of the EFI Teachers’ Manual proceeded through a series of activities to ensure that it is scientifically valid, grounded, useable, and relevant to school settings. The first phase of the project completed the needs assessment, the focus groups and the classroom observations. Teachers used their usual intervention techniques during this development phase, and investigators conducted 13 hours of classroom observations to collect a list of positive behavioral targets, vocabulary, as well as pitfalls. Building on all of this information, we wrote the manual, which included background resources, scripts for EFI components, lessons for activities, forms, classroom and home extension activities and other EFI resources, and the teacher training workshop presentations.

Next, we conducted a small study to evaluate the EFI for feasibility and pre-post change in three AS/HFA classrooms at Ivymount. EFI activities began with the teacher-training workshops, all 14 school staff in the Asperger’s program were trained in the EFI through these workshops. The teachers also had on-site supervision by Lynn Cannon, Ivymount’s Education Coordinator and author on the manual, to monitor implementation and make adjustments as needed. The effects of the EFI were measured by evaluating the students’ executive functioning skills before and after the EFI was implemented. These measurements were conducted by classroom observations, the Flexibility Challenge Tasks (a group-based ADOS-like measure with standardized presses for flexibility), and parent and teacher questionnaires.

Throughout the intervention, the instructors and students were asked to give immediate feedback on the lessons and activities. The instructors rated each lesson on how easy it was to implement and how much the students liked the activity and learned from the activity. This feedback was collected and used to make revisions to the manual. Additionally, at the end of the school year, the students created power point presentations and presented to the research team what they learned from the intervention, what they liked best about it and what they recommended that we change. These presentations were also video taped and sent home for parents to watch. The students provided valuable feedback, all of which was incorporated in a major revision of the manual. Two self-advocates (young adults with ASD) completed a detailed review of the intervention and provided additional feedback. Their suggestions were also included in the revisions. Collectively, this feedback has yielded major revisions to the EFI, including the format of the lessons, additional topics to be covered, and at the

participating children's request, "absolutely no worksheets" to be completed as part of the intervention.

Results:

Needs Assessment: In terms of opinion on flexibility on the needs assessment questionnaire, 77% of all adult focus group participants rated having flexibility techniques in the classroom as essential, while 15% rated it as very important, and 8% rated it as important. 73% of participants rated flexibility techniques as likely being very useful in other settings, while 12% rated it as likely being somewhat useful, and 15% rated it as likely being useful. Thirty-nine percent of teachers rated student inflexibility as interfering academically very often, while 28% rated it as interfering somewhat often, and 33% rated it as interfering often. In terms of flexibility impacting the students socially, 55% of teachers rated this as impacting them very often, 39% rated it as impacting them somewhat often, and 6% rated it as impacting them often. Also, 50% of teachers rated themselves as being very likely to use a flexibility manual in the classroom if one were available, 40% said they were somewhat likely, and 6% said they were likely to use such a manual. Forty percent of teachers had some experience with flexibility techniques, and 44% of parents said they had such experience as well.

Focus Groups: The following themes were prominent:

1. One overarching theme was that inflexibility impacts children with ASDs academically, socially, and emotionally. Not only does their inflexibility cause distress and frustration in the child, it may also decrease success in school and with homework, prevent them from forming and maintaining friendships, and cause stress for the adults involved in their lives.
2. The flexibility of adults working with children with ASD is critical in order to prevent inflexibility in the children.
3. It is essential that the resources are simple, quick, and easy to pick up and use (no books that sit on the shelf!) and include live training opportunities.
4. Teachers recommended that the EFI manual use a lesson plan format to make it easiest to use.
5. Kids: "Being flexible is like being a lobster slowly submerged in boiling water"; importance of rewards for doing such hard work.

Pilot Trial: Nine students from Ivymount have successfully completed the curriculum and provided both pre and post data to the research team. The results from parent and teacher reports indicate that this intervention had a positive impact to most students who received it. One student did not improve in flexibility skills at home and a different student didn't improve at school. Observations suggest a positive effect in the classroom as a whole, too.

We have also had some anecdotal suggestions that the intervention has had an effect on the students. For example, on the playground, two students had made a plan for an activity which wasn't possible for some reason. One student was then overheard telling the other student, "That was our Plan A. That didn't work. Let's come up with a Plan B," which they did successfully (Topic 2, Lesson 3 in the EFI manual). Another student approached an administrator and said "You are not going to believe this! We are brainstorming for a video game based on Harry Potter! Of course, because of copyright issues we are changing his last name to Porter." When asked about what Harry would do in this video game (Topic 4, Lesson 3) he said, "Be flexible of course, and when he makes a flexible choice he gains a power." When asked why he would gain a power, he said, "So that he learns to like being flexible". When asked why he

thought it would be important to like being flexible and he said, "Oh you know, when you are flexible in real life you get more things like privileges from your parents."

We also wanted to evaluate the feasibility and acceptability of the intervention. In general, both the students and the staff felt that the techniques and materials were easy to use and fun. Both students and staff suggested many areas for improvement, which were incorporated into the revisions of the manual. We had originally hoped to keep the EFI to under 20 sessions, but the interventionists suggested other content areas that needed to be included, (such as coping skills, or an exploration of how being flexible will help you meet your goals) to ensure the success of the EFI.

Discussion/Implications for Future Research

The participatory research process has enriched this intervention in ways we couldn't possibly have predicted (which is the whole point of the participatory process). The partnership between the Ivymount School and CASD has proved to be the most valuable part of the project. The opportunity to work with colleagues who share our world view, but bring very different areas of expertise to the development of a new intervention is why this intervention will be successful. Additionally, the opportunities to learn from the participating parents, teachers, and students were highly informative and beneficial. The participants expressed many similar points of view and experiences, which helped inform the project team of the most relevant factors impacting the functioning of children with HF-ASD and the adults involved in their lives, as well as the best way to address them. Including the perspective of the student participants, older students and young adults has helped to ensure that the intervention is respectful, culturally-competent, and helps the students meet their own goals. We feel that the participatory process has been crucial in intervention development. We are now continuing this work with a larger study in mainstream school settings funded by the National Institutes of Mental Health.