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# the ANALYST

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# Featured Article:

**A Systematic Evaluation of the Essential Elements Required in an Intensive Behavioural Program Template for use With Children with Autism**

**By: Shannon Staley**

**INTRODUCTION/PURPOSE**

A systematic evaluation of elements to include in a written behavioural program template has never previously been conducted. A review of the literature has revealed twenty-one potential elements (e.g. mastery criteria, behavioural goals, and prompt hierarchy) that could be included in a behavioural program template (Anderson, 1996; Bondy, Dickey, Black, & Buswell, 2002; Ernsperger, 2002; Harris & Weiss, 1998; Lear, 2000; Maurice, 1996; Quill, 1995). Inconsistencies in the selection of elements to include when writing an intensive behavioural program template may result in discrepancies in treatment implementation.

Further, insufficient research evaluating the systematic approach to designing a program template, including how it was designed and who it was designed for may inadvertently affect other aspects of treatment including procedural adherence. A program template designed primarily by a supervisor with the soul intention of benefiting the child, without any consideration of the needs expressed by the implementer, may negatively influence implementation accuracy, user satisfaction, and ultimately, the services provided to the child.

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# From the President's Desk

Greetings from the President's Desk!

Well, our annual Conference and AGM - a highlight in our year - is just around the corner.

- The venue, the Intercontinental, in downtown Toronto, looks great.
- There's a fantastic lineup of presenters and speakers on topics of both practical and theoretical significance.
- Presentations will address a number of topics including autism, verbal behaviour, dual diagnosis and staff training.
- There will be BACB® CEUs available each day of the conference (ONTABA has successfully become a CEU provider!).
- We are again offering a full-day workshop, CEU eligible, on the Saturday, with Dr. Mark Sundberg presenting on VB -MAPP language assessment and intervention

Thanks are due to conference organizers, especially Jen Porter, for tireless work in putting the conference together.

This issue of the Analyst features both an article and feature article from graduating students of St. Lawrence College. This past April, St Lawrence conducted a Poster Gala that provided opportunities for up-and-coming behaviour analysts to learn, to share their knowledge and research, and to celebrate their successes. The ONTABA board saw the opportunity to sponsor this event as fitting with ONTABA's mission *to demonstrate leadership, knowledge, and innovation in education, training, and research for the ethical and effective application of behaviour analysis*. ONTABA plans to devote space in future editions of the Analyst to featuring information from the several educational programs in behaviour analysis now available in Ontario.

Hoping to see you at the Conference,
Peter Wyngaarden

# St. Lawrence Poster Gala 2009—sponsored by ONTABA

The Bachelor of Applied Arts in Behavioural Psychology held their second annual poster gala at the St. Lawrence College, Kingston campus on April 8th. The second graduating class presented posters on applied theses completed during 14-week placements beginning in early September and ending in early December of 2008. Populations receiving services from St. Lawrence students included individuals with intellectual and developmental disabilities, autism, acquired brain injury, dual diagnoses, mental health concerns, and in correctional, geriatric, and educational settings. Shaping and chaining, motivational interviewing, group or individual cognitive behavioural therapy, social skills training, fluency training, precision teaching, stress inoculation training, visual cues and delayed reinforcement, activity scheduling,

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**ONTABA's Vision:** Fostering a culture of excellence, integrity, and expertise for the advancement and the promotion of the science of behaviour analysis.

**ONTABA's Mission:** To demonstrate leadership, knowledge, and innovation in education, training, and research for the ethical and effective application of behaviour analysis

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# St. Lawrence Poster Gala 2009

St. Lawrence College

Snoezelen therapy, differential reinforcement, point systems, and peer-monitoring were just a few examples of methods used by students. Placement projects were also conducted in place of formal ABA/CBT programs in specific settings and included: an evaluation of the essential items of an IBI template, development of an anger and aggression awareness manual for at-risk youth, the behavioural load of geriatric patients over 4 years, and an extensive literature review on the abilities of persons with developmental disabilities to identify hazards. Student's were spread across Ontario from Kingston, Ottawa, Cornwall, Belleville, Brockville, to areas further west such as Toronto, Oakville, London, and Chatham. Two students travelled to Colorado to Learning Services with Dr. Mike Mozzoni in Colorado to do brain injury work.

Following the poster session, Gerald Bernicky (Surrey Place Centre) gave a presentation on modulated reinforcement and the importance of properly training staff to implement reinforcement protocol in IBI and skill acquisition programs. It is always important to reserve a highly preferred reinforcer for skills which may spontaneously emerge or those that require more effort, but the value of reinforcement may be altered by variables other than quantity. Changing the properties of a reinforcer, for example decreasing the delay to or increasing the duration of engagement with a reinforcer, may suffice in effectively changing the value of a reinforcer.

Tiffany Dubuc, a member of the 2008 (the first graduating class), also spoke at the gala. Tiffany described her work at the New England Centre for Children and her MA studies at Northeastern University.

The students of the 2009 graduating class would like to thank ONTABA for it's sponsorship of their event and also all the exhibitors who brought posters, including: The Developmental Services of Leeds and Greenville, Frontenac Community Mental Health, Tri-County Community Support Services, Lennox and Addington Family and Children's Services, New England Centre for Children (Boston, MA), Operational Stress Injury Social Support Program (Canadian Forces), and Surrey Place Centre.

# Featured Article Continued... (from cover)

The current study measured the opinions of front-line therapists and expert clinicians in the field regarding what elements to include in a written behavioural program template to teach skills to children with autism. The analysis included the opinions of both program designers and program implementers to measure similarities and differences in element selection between those who develop programs and those who use them. It was anticipated that this analysis would provide insight into the elements required within a program template and provide some clarity regarding the variability in element selection existent within the literature. Additionally, it was hypothesized that both commonalities and differences would be found when assessing element selection between program designers and program implementers.

## LITERATURE REVIEW

### *Intensive Behavioural Intervention (IBI) & Program Design*

The most recognized and empirically supported treatment method for children with autism is based on the work of Ivar Lovaas and colleagues, who in the 1960's introduced Intensive Behaviour Intervention (IBI) methods to increase functioning in children with autism (Smith, 1996). IBI is a highly structured operant learning paradigm used to improve behavioural deficits in children with autism. It provides intensive, high quality services with the objective of teaching skills that facilitate development and promote independence (Leaf & McEachin, 1999). The approach is grounded in principles that allow for individualized service delivery and the modification of treatment to best fit the child's needs (Smith, 1996). Several studies have demonstrated the effectiveness of IBI in improving various areas of functioning in children with autism (Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Lovaas, 1987; McEachin, Smith & Lovaas, 1993; Sallows & Grauper, 2005; Smith, Donahoe, & Davis, 2000).

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" The real problem is not whether machines think but whether men do" - BF Skinner

" ...one can picture a good life by analyzing one's feelings, but one can achieve it only by arranging environmental contingencies"- BF Skinner

Research to date suggests that there are several common programmatic elements (e.g. age, treatment intensity, and parental involvement) incorporated into effective intensive behavioural interventions for children with autism (Birnbrauer & Leach, 1993; Dawson & Osterling, 1996; Fenske, Zalenski, Krantz, & McClannahan, 1985; Lovaas, 1987; Powers, 1992). However, Anderson and Romanczyk (1999) argue, these programmatic commonalities are simply the minimum starting point for program development. They state that further analysis is necessary to reveal the common specific elements that are subcategories within each of these general components. For example, little evidence has been presented indicating the specific elements to be included in a written program template used in intensive instruction.

***Evaluating Instructional Design Components***

Assessing specific aspects of an instructional design model is critical to building a system that optimizes desired instructional outcomes (Rothwell & Kazanas, 2004). Morrison et al. (2004) suggest that an instructional design procedure should be both systematic and attentive to details within the plan; attention to specific procedural details while developing instruction will increase the potential of creating an effective and beneficial system. Similarly, Gagne et al. (2005) argued the importance of designing a system of instruction that is systematic, replicable, and predictable.

***Assessing User Needs***

Previous research stresses the importance of evaluating the needs of program users when assessing potential performance problems and changes that need to occur in order to create a more efficient system. Incorporating the opinions of program users into the development of their own system of instruction may improve user satisfaction, procedural adherence, and treatment outcome (Carr-Chellman, 1997).

***Assessing Treatment Integrity***

Little attention has been given to assessing treatment integrity in behavioural programs (Smith, 2007). Understanding what aspects influence procedural inconsistencies and factor into treatment outcome is critical when determining methods of improving the integrity of treatment (Symes, 2006). Gresham et al. (1993) suggested potential strategies to improving treatment integrity might include providing clear, unambiguous details when writing a program. Gottfredson (1993) further supported this conclusion and stated that clear standards for implementation and regular adherence checks are likely to increase treatment integrity.

## METHOD

***Participants***

***Internal participants.*** All Instructor Therapists (ITs), Supervising Therapists (STs), and Clinical Supervisors (CSs) employed with five IBI agencies in Toronto, Ontario, Canada were asked to complete a questionnaire. Surveys were distributed to approximately 250 employees; there were no exclusions in the sample selection and all volunteers were accepted.

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***External participants.*** Clinicians providing IBI services to children with autism external to the five partner agencies were asked to complete a questionnaire. Surveys were distributed to approximately 200 clinicians across Canada and the United States; eligibility was based on their willingness to participate and previous experience designing or implementing IBI programs. The external survey was also posted on five listservs, which had a group focus of either autism or IBI.

***Measures***

Adobe LiveCycle Designer 8.0® was used to develop the surveys which were distributed electronically to ITs, STs/CSs, and external clinicians using a desktop e-mail application. *Part A* of the surveys evaluated a number of factors related to current program template availability, construction/design, and utility. *Part B* of the surveys was designed to determine the elements considered essential to include in a written behavioural program template. This section was separated into three components measuring element selection, the relevance of each element, and how likely the element would directly effect implementation.

***Statistical Analyses***

The survey results were sent anonymously to the student researcher; all names and identifying information were removed by agency supervisors. Completed questionnaires were exported to a Microsoft Excel ® data file and statistically analyzed. Basic descriptive statistics were calculated to determine the mean percentage of element selection and the mean response rating of relevancy and effect on implementation. The Statistical Package for the Social Science software (SPSS ®, Version 16) was utilized for statistical analyses. The Spearman product correlation was used to measure potential relationships between responses to IT, ST/CS, and external clinician questionnaires. Further, analyses of variance (ANOVA) were conducted in order to determine if there were significant differences among the groups in terms of the inclusion and relevance of specific elements and whether the element would facilitate implementation.

## RESULTS

***Questionnaire Distribution***

One-hundred internal surveys were returned; this included 73 surveys completed by ITs (program implementers) and 27 by STs and CSs (program designers). Twenty-four external surveys were returned and program designers completed all.

***Part A Main Findings***

Part A results indicated that ITs, STs/CSs, and external clinicians reported specific details of a written behavioural program were important and were likely to have a direct effect on the implementation abilities of the therapist. Additionally, all sample groups indicated that program templates should contain sufficient information to ensure multiple therapists can implement it in the same way. However, disagreement was found when participants were asked if their current IBI program template contained the information and details necessary to ensure that all program implementers were able to execute it in the same way. Contrary to ITs and STs/CSs, externals clinicians were more likely to report having sufficient details in their current program template to ensure multiple implementers could execute it in the same way. Additionally, ITs and STs/CSs reported finding the current state of programs disorganized, unavailable, and not containing sufficient details.

ITs, STs/CSs, and external clinicians were in agreement that a revised program template that incorporated elements selected by both program implementers and program designers would be beneficial to children in service, increase treatment integrity across teams, and enhance the quality of programming. Program implementers indicated that the elements included in a program template would likely have a direct effect on implementation abilities, and thus should include components of user satisfaction in its development.

***Part B Main Findings***

***Elements selected.*** It was found that the percentage of element selection by survey respondents was on average 75% by ITs, 80% by STs and CSs, and 79% by external clinicians. No significant correlations pertaining to element selection were found among sample groups. However, a significant difference found indicated that STs/CSs were more likely to rate the generalization method as an essential element when compared to external clinicians.

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# Featured Article Continued... (from Pg 5)

## ONTABA 2008 Excellence in Education Award Winner

**Dr. Andrew McNamara**

Andrews nomination commented on his dedication to the transmission of behaviour analysis to the next generation and his commitment to his students as educator and mentor.

Congratulations Drew!

***Relevance of elements selected.*** Based on a scale of 1 to 4, where one is the minimum and four is the maximum, mean ratings for relevance of elements ranged from 1.75 to 3.73 for ITs, 2.00 to 3.84 for STs and CSs, and 2.00 to 3.88 for external clinicians. Two significant correlations were found between sample groups when rating the relevance of a material list as an element of a written program template. Compared to external clinicians, ITs did not rate a material list as being a relevant element, whereas STs/CSs and external clinicians both rated the material list as a relevant element of a written behavioural program template.

Two significant differences were found among sample groups when rating the relevance of the equivalent ABLLS code. Contrary to external clinicians, ITs and STs/CSs rated the equivalent ABLLS code as a relevant element of a written behavioural program. Further, ITs rated the presentation setup as a relevant element, differing from STs/CSs. ITs were also more likely to rate the graphing method as a relevant element when compared to external clinicians. Post-hoc results indicated that STs/CSs and external clinicians were more likely to rate the data collection procedure as relevant when compared to ITs. Further, external clinicians were more likely to rate the generalization method as a relevant element, than ITs.

***Effect on implementation of elements selected.*** Mean ratings for effect on implementation ranged from 2.05 to 3.73 for ITs, 1.77 to 3.88 for STs and CSs, and 1.94 to 3.89 for external clinicians. Four significant correlations were found among sample groups when rating the effect on implementation of each selected element. Both STs/CSs and external clinicians were less likely to rate the learner's name as having an effect on implementation. Further, ITs and external clinicians were less likely to rate the example data sheet as an element to effect implementation. However, ITs and external clinicians rated the presentation setup as an element likely to have a direct effect on implementation. Additionally, STs/CSs rated the reinforcement schedule as being more likely to effect implementation than external clinicians.

Significant differences were found among sample groups when rating the effect on implementation of the reinforcement schedule. As mentioned above, STs/CSs rated the reinforcement schedule as more likely to effect implementation than external clinicians. Further, external clinicians were more likely to rate the example data sheet as having a potential effect on implementation when compared to ITs. However, as stated above, both sample groups rated this element as being less likely to effect implementation when compared to STs/CSs.

***Criterion-Based Selection of the Essential Elements***

Based on the inclusion criteria developed from a review of the literature and standards for the development of psychometric instruments (Gregory, 2007), the essential elements to include in a written behavioural program template were determined. The inclusion criteria required a collective agreement among sample groups of greater than 45% element selection and a relevancy and effect on implementation rating of greater than 1.8. When assessing 21 potential elements to be included,

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sample groups selected 17 elements as essential. Clinicians rated 20 of the 21 elements as being relevant to a written behavioural program and 20 out of 21 as having a direct effect on implementation. The elements considered essential to a written behavioural program template according to the criteria for inclusion and survey results include the learner's name, skill/domain area, task name, start date, mastery criteria, revision criteria, behavioural goals, discriminative stimulus, materials list, prompt hierarchy, target behaviour, presentation setup, task analysis, reinforcement schedule, error correction procedure, data collection procedure, and generalization. According to these same criteria, the elements not considered essential include the client background information, equivalent ABLLS code, example data sheet, and the graphing method.

***Comparing Results to Literature Findings***

***Instructional design.*** Results of the current study indicate the elements selected systematically and scientifically to include in a written program template. Future research should include additional measurements of element selection by clinicians in the field to support or disprove current findings. Additionally, research should assess the replicability and predictability of implementation accuracy when using program templates that incorporate the elements selected as essential within this study.

***User needs.*** Part A survey results indicated the dissatisfaction of program users regarding the organization, availability, and utility of programs in use within the partner agencies. Results suggest that changes to these core areas may improve performance, quality, and efficiency issues, while considering elements of user satisfaction.

It was found that few differences in element selection existed between program designers and implementers. However, certain elements were rated as more relevant or more likely to have a direct effect on implementation by program users. Thus, inclusion of these elements may serve to enhance user satisfaction and procedural adherence.

***Treatment integrity.*** Results of this study indicate that both program designers and implementers felt that clear, detailed instructions were essential in a program template. Further, results indicated that survey respondents felt information presented in a program template was likely to directly affect implementation abilities and should contain sufficient details to ensure multiple users can implement in the same way. Additional research is needed to determine the outcome of procedural adherence measurements and implementation consistency checks when enhancing the integrity of treatment implementation.

**SUMMARY/FUTURE RESEARCH**

This study outlined the elements to include when writing a behavioural program template to meet the expectations of program designers, while also considering the user satisfaction of program implementers. Additionally, the analysis considered each element's importance in relation to each other and in consideration of their potential effect on implementation. Results provided support to findings from the literature indicating the requirement of detailed expectations when developing a system of instruction.

Future research should include a systematic evaluation of the inclusion and exclusion of elements of a written behavioural program template and whether this has an observable effect on implementation. This study focused on verbal opinions of experts in the field, comparing results obtained with measurable behaviours may provide additional support to the findings. Understanding what affects therapist's implementation behaviours may be critical when developing a system of instruction to improve user satisfaction, procedural adherence, and treatment integrity. Further, understanding how these elements ultimately affect treatment outcome may be important when analyzing ways to improve the quality of services provided.

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