Evaluation of Behaviour Supports in a School for Students with Developmental Disabilities

by

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Abstract

Behaviour interventions are used in a wide variety of settings to support students who may display challenging behaviours. Though there is extensive literature on the effectiveness of behaviour supports, research is limited in the effectiveness of such services in schools that provide highly individualized support, such as St.Amant School, which was the focus of the present evaluation. Two studies were conducted to: (1) evaluate the use of behaviour supports and interventions in the St.Amant School and (2) to understand the impacts on behaviour when supports were suddenly removed due to the COVID-19 pandemic. Participants included teachers and instructional assistants who completed a social validity questionnaire, and psychology staff who shared their perspective of the behaviour support model. The data included a combination of the archival behaviour tracking data, clinical plans for students, and questionnaires sent to the school and psychology teams. Where possible, students were grouped and their data were examined in a multiple-baseline approach. For the first study, the findings suggest that the model of service is applied consistently, with some minor flexibility noted by the respondents, and a review of the clinical plans suggest they contain an acceptable level of detail that would be expected in a behaviour plan. The interventions showed some positive effects on behaviour, but this finding was not present with all students. Finally, when school staff were surveyed, they provided responses that led to two main conclusions. First, school staff reported moderate to positive feedback on the use of interventions that are recommended for students. Second, school staff also reported that data tracking was a useful tool. With respect to the second study, the impacts of the school shutdown were found to be minimal, and that suddenly removing a behaviour intervention did not have notable adverse impacts when students returned to class.

Keywords: behaviour supports, developmental disabilities, effectiveness of interventions

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Chapter 1. Introduction

All students have the right to an education (Manitoba Justice, n.d.) that should provide the opportunity to succeed to the best of their abilities, and this includes students with developmental disorders, which "are characterized by significant impediments in intellectual and adaptive functioning from a very early age" (Chartier et al., 2016). For these students, modifications are sometimes required to adapt the level of instruction to be in line with the cognitive and physical abilities of the student. In Manitoba, the prevalence of developmental disorders among children aged 19 and under was 2.9% during a four-year period from 2009-2013, and included those who were diagnosed with: an intellectual disability, Autism Spectrum Disorder, Fetal Alcohol Spectrum Disorder, or a chromosomal anomaly (Chartier et al., 2016).

In some cases, challenging behaviours present a barrier to an effective education and can be addressed with the use of applied behaviour analysis (ABA), which is "the science in which tactics derived from the principles of behavior are applied to improve socially significant behavior and experimentation is used to identify the variables responsible for the improvement in behavior" (Cooper, Heron, & Heward, 2007). In the broadest sense, challenging behaviours are defined as "culturally abnormal behaviour(s) of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities" (Emerson, 1995). Challenging behaviours are subjective, as different individuals may judge the same behaviour differently, but typically may include behaviours such as aggression, outbursts, and refusal to engage with a task or request. It is also noted that the challenging behaviours may, in some cases, begin early in life and can continue to persist (Green

et al., 2005). In the school setting, ABA is becoming more accepted as an effective option for minimizing challenging behaviours (Runyon et al., 2018). One limitation is that there are schoolwide evaluations (e.g. Kurth & Zagona, 2018), but very limited evaluations in school settings which provide highly individualized support for students (e.g. Miller, 2016).

When behaviour interventions are used in a clinical setting, they are typically implemented with a certain degree of precision and removed only when goals have been obtained. How effective are these supports? What are the effects over time? What happens when interventions are abruptly removed and reintroduced at some time in the future? Will behaviour gains be lost? Will the effects remain? In the ensuing sections, what behaviour consultation is and how these interventions are applied in school settings are reviewed, followed by a discussion on the types of interventions that can be used. Finally, two studies will be presented. The first study describes an evaluation of the effectiveness of behaviour supports in a school setting for individuals with developmental disabilities, and some of the outcomes obtained through both a retrospective analysis of data and surveys from staff involved in implementing behaviour interventions. The second study took an emergent approach and explored the effects on challenging behaviours when behaviour supports have been abruptly halted due to school shutdown as a result of the COVID-19 pandemic.

Chapter 2. Literature Review

This chapter focuses on a review of literature related to behaviour consultation, positive behaviour support, a description of St.Amant School, and types of behaviour interventions. This chapter concludes with a focus on school interruptions related to the COVID-19 pandemic.

Behaviour Consultation

As more schools seek to remove barriers and allow all children their right to an education, there is an increasing need for specialized service providers. One such discipline is applied behaviour analysis, which has provided various forms of consultation to schools to help teachers manage challenging behaviours on all levels, from individual to school-wide. There are a number of benefits to using a consultative model, which include reduced costs, skill generalization to support other students, interventions based on empirical evidence, and a relation between treatment acceptability and treatment integrity (Watson & Sterling, 1997). There are several levels of behavioural consultation, including student, school, and district-wide, which all have a common goal of providing framework that will promote positive behaviours (Putnam et al., 2005), and there exists different types of consultation, which include mental health consultation, behavioural consultation, and organization development which focuses on changes at a systems level. In one meta-analysis, these three types of consultation were compared, with no significant differences noted among the groups (Medway & Updyke, 1985).

With any consultative support, it is important to get the perspective of those who implement and receive the supports. One study asked both school psychologists and teachers to view and rate a videotape of a consultation using a mental health model and one using a behavioural model. The results showed that school psychologists rated the mental health approach higher, whereas the teachers rated the behavioural approach higher. One limitation

identified was that the videos only showed the initial phase of support, so it is possible that opinions may vary as support was provided (Medway & Forman, 1980). This study suggests that it is important to consider the approaches and preferences of those implementing recommendations.

Medway (1979) reviewed 29 articles that discussed school consultation and although the majority found that the process was effective, there were a number of limitations including a lack of experimental control and standardized measurement across studies, limited dependent measures, and a lack of follow-up data. The literature has presented research on two types of consultative models, namely conjoint behaviour support and positive behaviour support. These are discussed below.

Conjoint Behaviour Support

The first consultative model to be discussed is the conjoint behavioural consultation or family partnership model (Sheridan & Kratochwill, 1992). The focus of this model is to bring together families and school staff to work towards goals and implement interventions to ensure that student outcomes are improved, there is some continuity across settings, and that there is programming for generalization across settings (Bellinger et al., 2016; Sheridan & Kratochwill, 1992).

There have been three goals identified in a conjoint behavioural consultation model which include: (1) using evidence-based strategies, (2) involving and engaging families as part of the student's educational plan, and (3) facilitate and build relationships between the school and family (Garbacz et al., 2008). The theme of these goals does suggest that collaboration is of necessity. Research on this model further supports these goals such that the collaborative approach by both parents and school staff results in stronger treatment integrity, treatment gains,

and social acceptability compared to parents and school staff separately implementing interventions (Galloway & Sheridan, 1994). These results have been replicated, and have included additional parties as part of the collaborative team, such as mental health practitioners, further suggesting the benefits of collaborative approaches (Bellinger et al., 2016).

Positive Behaviour Support

Generally speaking, positive behaviour support is a framework employing evidence-based practices to minimize behavioural challenges and promote the development of adaptive behaviour (Hieneman & Fefer, 2017). The idea of positive behaviour support was developed as an alternative to aversive behaviour management, as aversive responses tend to disrespect the dignity of the individual (Horner et al., 1990). In a school setting, a child who engages in an act of defiance may be punished with consequences ranging from meetings with school administration or notes to parents, up to expulsions or involvement from law enforcement agencies, but may not receive attention or reinforcement when engaging in socially appropriate behaviours.

The emergence of positive behaviour support has been attributed to three main sources, which combine a person-centered approach, with goals on improving the quality of life of an individual who is experiencing challenges. The three main sources of positive behaviour support are: applied behaviour analysis, the normalization/inclusion movement, and person centered values (Carr et al., 2002). The outcomes possible with the implementation of positive behaviour support not only benefit the individual but may also provide an indirect benefit to their circle of care. As one specific example, Bradshaw et al. (2012) found that the application of a positive behaviour support model resulted in a reduction of disruptive behaviours and improvements in prosocial behaviours compared to schools that did not employ the model. This may be realized

through an overall improvement in the relationship between the individual and those who provide support.

There are a number of different perspectives on the main features of positive behaviour support although they all share some commonalities. One set of features which make up positive behaviour support include: (a) basing the model on a behavioural science; (b) using practical interventions which are empirically validated, and making decisions based on observable behaviours; (c) considering social values through the use of interventions which are not aversive, attempting to obtain socially significant behaviour change, and ensuring that any interventions implemented are culturally appropriate; and (d) adopting a systems perspective, which considers all members who may contribute to the implementation of the support (Sugai et al., 2000). At the core of these features, there is certainly an emphasis on using a behavioural and person-centered approach, which closely relates to the three foundational components previously described. The use of non-aversive procedures is another important consideration, as this may further promote the development of adaptive skills and ensure the dignity of the individual receiving the support. Finally, the consideration of a systems approach is necessary, as the framework does require the perspectives and efforts of a number of individuals, which could include school staff, families, and other clinicians, in order to ensure successful outcomes of the support.

A more extensive list of the main features was published by Carr et al. (2002), which built on and considered some features similar to those presented by Sugai et al. (2000). As positive behaviour support is a framework for how support could be provided, evolution and improved practices are inevitable and necessary. The main features described by Carr et al. (2002) were: (a) comprehensive lifestyle change and quality of life, which refers to making a meaningful change positively impacting the individual; (b) life span perspective, which suggests

taking a long-term benefits approach, and that any change should be useful after supports terminate service; (c) ecological validity, which extends the utility of the support to various settings; (d) stakeholder participation, which uses the opinions and abilities of the stakeholders to ensure successful outcomes, as opposed to the clinician directing the supports; (e) social validity, which refers to the acceptability of the supports by the stakeholders; (f) systems change and multicomponent intervention, which bases the supports on the systems being adapted to the individual receiving the support, and the use of several interventions which may complement each other; (g) emphasis on prevention, with goals to be proactive, and prevent the occurrence of any future challenging behaviour; (h) flexibility with respect to scientific practices, which implies that the scientific method should be considered the gold standard, but may be adjusted in order to work towards the goals of the intervention; and (i) multiple theoretical perspectives, which accepts the varying viewpoints of all professionals involved, with the common goal of supporting the individual effectively.

Carr et al.'s (2002) list is much more extensive than that of Sugai et al.'s (2000); however, there are many similarities, which include the use of evidence-based interventions, incorporating the support network of the individual in the planning phases, and considering the person as the centre of the support. The similarities also relate back to three foundations described above, such that there is an emphasis on a behavioural approach, and the individual receiving the support is considered as the foundation for the development of any interventions. There are a few differences, between Carr et al. (2002) and Sugai et al. (2000), which do highlight some important components as systems and services continue to evolve. The first difference is being flexible with respect to the practices and accepting differing perspectives. Quite often, supports involve a multi-disciplinary support team, with clinicians from many

different backgrounds. As part of a successful clinical plan, one single clinician may not be able to implement a plan as intended, but may accept some deviation as the benefits of doing so in conjunction with other clinicians may outweigh the risks. Even though individual clinicians may be reluctant to accept procedures from other disciplines, research has shown that when multidisciplinary teams share similar processes and goals, the overall outcomes tend to be more positive (Fay et al., 2006).

A second difference is the discussion of multicomponent interventions. Incorporating several components may result in a more effective or efficient outcome, as different interventions may be addressing different components of the challenging behaviour, but as a whole address the different functions of challenging behaviour presented by the individual (Carr et al., 2002). Finally, Carr et al. highlighted that interventions should consider the life span of the individual. Behaviour change takes a significant amount of time and energy, so the discussion surrounding consideration for long-term impacts is necessary. Even though there may be a desire to see immediate results, these results may not last, or new challenges may be present when supports are no longer offered.

Overall, the specific features of positive behaviour support may continue to evolve with advancements in science, evolution of society, and governmental policies. One important consideration is that at the core of positive behaviour support, there is a focus on using applied behaviour analysis ensuring that the dimensions described by Baer et al. (1968) are present, there is a vision of inclusion and removing barriers, and that a person-centered approach is adopted.

Main Features of Positive Behaviour Support in a School Setting

Positive behaviour support can be used across many settings; however, much of the research discusses the implementation in school settings. The features described above would

apply across a variety of settings; however, there has also been specific guidelines developed for the implementation of positive behaviour support in a school-wide context (Sugai & Horner, 2002). The guideline consists of five steps, with Step 1 being the establishment of a leadership team. This would involve establishing a group of staff who would be willing to oversee the development, implementation, and monitoring of the overall program. Step 2 involves securing agreement for implementation from at least 80% of the staff. If a positive behaviour support model is to be successful, it requires consistent implementation from as much of the team as possible. Step 3 is to develop action plans, based on objective data measures. This data can be used to identify areas which need attention, but also those which are working well. Step 4 is to implement interventions with a high degree of fidelity. It is important that those implementing any interventions are well-versed on the processes and can consistently follow the implementation of programs as designed. If implementation is not carried out as intended, the outcomes may not be as impactful. Finally, Step 5 is to conduct data-driven monitoring. This could involve formal data collection at an individual level, but can also include school-wide data based on any discipline notes or incident reports written by school staff (Sugai & Horner, 2002).

This list of guidelines (Sugai & Horner, 2002) does hold similarities to the guidelines discussed by Sugai et al. (2000) and Carr et al. (2002), as well as highlights the three foundational components described above. There is certainly an emphasis on making evidence-based decisions, and the interventions are done in the best interest of the students (i.e. to reduce discipline). One of the major differences is the expectation of developing highly trained staff who will implement the interventions accurately and consistently. In a school setting, this is important as it ensures that all students know the expectations, and that the expectations are consistent across all classrooms.

Tier system of Positive Behaviour Support

School-wide positive behaviour support is an approach designed to improve the adoption, accurate implementation, and sustained use of evidence-based practices related to behaviour and classroom management and school discipline systems (Sugai & Horner, 2009). The application of positive behaviour support in schools has been proven to be quite successful, as will be discussed. The implementation of schoolwide positive behaviour support is generally organized and implemented using a three-tier system. At Tier 1, interventions are designed to have an impact on all students and are designed to be simple to implement. These interventions adopt a classroom-wide or school-wide approach and may include interventions such as classroom rules or expectations, which would apply to all students. At Tier 2, interventions are targeted toward the 15-30% of students who are not responsive to interventions implemented under Tier 1. These interventions are generally implemented to smaller groups of students and may include interventions such as increased instruction or reinforcement, and increased supervision from teachers or other staff. Finally, at Tier 3, highly individualized and specialized interventions are used to address the challenging behaviours. These interventions are designed to be targeted toward the 5% of students who do not respond to a Tier 1 or Tier 2 intervention. These interventions are tailored to the specific student, and generally include the development and use of a behaviour management plan (Sugai & Horner, 2009). An additional adaptation to the tier system has also been proposed, referred to as PBIS*plus*, in which there is a focus on providing more specific training on the different components of positive behaviour support, such as the implementation of functional behaviour assessments and the use of evidence-based interventions, in an effort to improve the integration of Tier 2 supports (Bradshaw, Pas, et al., 2012). At this time, the results do suggest positive outcomes, but additional research is warranted.

Application of Schoolwide Positive Behaviour Support

Schoolwide positive behaviour support is a form of positive behaviour support designed to be used in a classroom or school-based setting. One meta-analysis of school-wide positive behaviour support explored variables which contribute to positive behaviour change (Solomon et al., 2012). Some of the key findings were that school-wide positive behaviour support was moderately effective as an intervention for reducing challenging behaviour in students, and more specifically decreasing challenging behaviour related to unstructured settings, such as recess. In this study, moderately effective was defined based on the obtained R^2 values that ranged from .27 to .60 and applying the obtained values to effect size cut-offs based on quartiles of R^2. There were several limitations to the studies reviewed within this analysis, which may have impacted the overall results. Treatment fidelity was only reported in 60% of the studies used in the analysis, which raises the question of how consistent the supports were being implemented accurately and consistently. A second limitation was that the specification of the tier of support was lacking. Having this information may provide a better insight on the overall effectiveness and implementation of specific levels of support. More specifically, perhaps students receiving a Tier 3 level of support tend to have better outcomes compared to a classroom of students who receive a Tier 1 level of support (Solomon et al., 2012).

When considering the implementation of school-wide positive behaviour support, it is important that research is done in a way that allows for confidence in the results. A review of the literature by Chitiyo, May, and Chitiyo (2012) attempted to explore this question. This study evaluated articles on five criteria used in a previous analysis, namely: (a) precise description of practice and participants, (b) valid and reliable measures have been used, (c) the research designs are well-planned, (d) any experimental effects are noted, and there must not be any adverse

effects, and (e) outcome effects are described (Horner, Sugai, & Anderson, 2010). The researchers identified 10 articles that were considered experimental in nature and met their criteria for analysis. Out of the 10 articles, only two met the five outlined criteria. The low number of studies initially considered does indicate that the descriptions of the research undertaken lack detail. Furthermore, since only two studies met the criteria for a complete study, the support and research on school-wide positive behaviour support does need to be interpreted cautiously, and any claims of the support being evidence-based should also be used carefully (Chitiyo et al., 2012). As research continues to grow, researchers should consider these criteria when conducting studies.

A more specific analysis of school-wide positive behaviour support was conducted by Bradshaw, Mitchell, and Leaf (2010), and was one of the two studies highly rated by Chitiyo et al. (2012). This study used a longitudinal design to explore the effectiveness of school-wide positive behaviour support in 37 schools. Some schools were assigned to receive training and implement a positive behaviour support model, whereas others did not receive the training and agreed not to implement any positive behaviour support interventions until the study was completed. Measures were taken annually which evaluated the implementation of positive behaviour support, the outcomes of students as measured by office discipline referrals, and a staff-report, which was used as an indicator of fidelity. With respect to the procedures and implementation, schools trained on positive behaviour support were able to implement and sustain components such as defining and teaching expectations for students, implement a reward system, and monitor the program and progress much more often and consistently than the control schools. The student outcomes were not as clear, but one key finding was that the number of suspensions in schools using a positive behaviour support significantly declined over time,

whereas this was not the case with the control schools. Finally, academic gains did reveal a positive trend among positive behaviour support school; however, despite gains in this condition, the results were not significant compared to the control schools (Bradshaw et al., 2010). Overall, this study did show excellent control and positive outcomes in favour of positive behaviour support over the five-year period; however, the authors suggested that the main limitation with this study is the relatively small sample size of 37 schools, located in a single state. Despite promising results, which show merit for replication, additional data from across the United States, and other countries such as Canada, is necessary before firm conclusions can be drawn regarding the effectiveness of positive behaviour support. This limited and localized study highlights the need for a more widespread evaluation of positive behaviour support models, both at a public school level, as well as at schools that provide highly individualized and specialized education.

Most of the research on positive behaviour support has focused on the application of the model in early or middle years. However, there is a limited amount of research in which positive behaviour support model has been looked at in a high-school setting. One study by Freeman et al., (2016) explored outcomes related to areas such as academics, behaviour, and attendance. The study found positive effects related to behaviour and attendance, but no correlation between the implementation of positive behaviour support and academic achievement. Another study conducted by (Freeman et al., 2015), looked at the implementation of positive behaviour support and the relationship with attendance and dropout rates. The study found that there was a correlation between the implementation of positive behaviour support and attendance, but no correlation between positive behaviour support and dropout rates. The authors did argue that there may be an indirect impact, as attendance and dropout rates are related (Freeman et al.,

2015) The results of these studies provide some evidence that the model is versatile, and that the benefits of a positive behaviour support model can extend to high school students and schools.

Finally, the framework employed by positive behaviour support models in a school setting may also be of benefit to students who are in an alternative education system. In this case, alternative education refers to educational settings where the children display severe challenging behaviour, and includes children who are currently in juvenile detention centres. Despite a larger proportion of the individuals within these education settings requiring Tier 3 support, the logic behind providing the support remains the same, and all three tiers should be considered as options. Namely, there should be a focus on positive preventative practices which use evidence based interventions, and a team approach to sustain long-term feasibility (Simonsen & Sugai, 2013). An additional consideration for alternative educational settings is that due to the higher level of support required, there is a need for additional training, planning, and supports to ensure success (Scott & Cooper, 2013).

One main conclusion to draw from providing support to students in alternative education settings is that the framework remains the same as would be seen in a typical school setting; however, the intensity of support at each level may need to be adjusted based on the specific needs of the population. In other words, a Tier 2 support may still involve a small group intervention, but may involve more direct support than would be seen in a typical school setting.

Criticisms of Positive Behaviour Support

Despite the extensive literature on positive behaviour support, there are some criticisms from the field of applied behaviour analysis that warrant discussion. There is overlap and similarities between positive behaviour support and ABA, but there are some differences that include differing theoretical perspectives, whereby positive behaviour support holds a much

more broad approach; positive behaviour support focuses on systems-level variables, as opposed to immediate environmental factors; and positive behaviour support explores ecological validity at a much higher proportion than that of ABA (Dunlap et al., 2008). Positive behaviour support also presents itself as a more generic but applicable approach, which therefore allows it to market itself better to various levels of government that would allocate funding (Johnston et al., 2006). Even though positive behaviour support evolved from ABA, there is concern that it has shifted too far from behaviour principles, and places more emphasis on staff implementation as opposed to student outcomes (Weiss et al., 2010). Overall, despite these criticisms, it is important to recognize that positive behaviour support is a framework that evolves with the education system, which may both stray from and accept the behavioural approach.

St.Amant School

St.Amant School is located in Winnipeg, Canada, and provides individualized education to students with developmental disabilities who require significant support, which would be determined in part through educational planning and assessments with the student. Should the school in the student's catchment area determine that the resources available do not meet the current needs of the student, they may be referred to St.Amant School. The school operates on a continual basis throughout the year (i.e., there are no extended breaks over summer or winter). Students may be community-based and live in Winnipeg or may live at St.Amant Health and Transition Services (i.e., they live within the same campus as the school). St.Amant School is not part of a particular school division, but rather receives referrals and funding from the school division in which the student resides. Students are referred due to needs that cannot be met in community schools; however, St.Amant does not promote the segregation of students. The goal is to allow students to still receive their education, and to also have them return to the community

school if goals are met. Furthermore, research has shown that parental satisfaction with a quality education were correlated with quality of life indicators (Ncube, Perry, & Weiss, 2018). This finding may be of importance if families do find that their child is receiving a good education, even if they may not currently be in a community school.

The school supports approximately 30 students who may have multiple physical and intellectual disabilities, with approximately 4-6 students per classroom. Students are able to attend St.Amant School from age 5 to 21, and can be referred to the school as long as they are eligible to be registered in a community school. Additional demographics and specific challenging behaviours observed will be discussed in the ensuing sections. The classrooms are set up such that each student has their own workspace, which has been adapted to maximize learning. Students are assigned to a particular classroom based on the specific supports required, as well as the overall interactions among students. Some adaptations which are individualized for each student include type of seat, table, and materials freely available. Each student has at least one instructional assistant working with them at a given time to assist with educational tasks, as well as any other daily skills which require assistance, translating to a minimum of 1:1 support. There is also a teacher in the classroom who may facilitate larger group activities, and also acts as additional support to the instructional assistant. As each student has their own individualized education plan (IEP), the learning experience is very much tailored to the student, but the ultimate goal would be for students to receive their education based on the Manitoba education curriculum. Throughout the day, students may also attend activities in other classrooms or areas of the school. These activities may include physical education, music, swimming, and cooking classes.

St.Amant School Clinical Service Model. The St.Amant School offers a number of clinical supports to their students, which include behaviour supports, occupational therapy, physiotherapy, speech language pathology, and music therapy. Looking specifically at behaviour supports, should a teacher deem that the student would benefit from services, they will make a referral to the psychology program. This referral will then be assigned to a behaviour analyst, who has at minimum a master's degree in applied behaviour analysis, and either has or is in progress of obtaining their Board Certified Behaviour Analyst (BCBA®) credential. The behaviour analyst will oversee the behaviour consultation process, but may also rely on a psychology technician to aid in service delivery. The psychology technician will have at minimum a bachelor's degree, and some experience in ABA. The behaviour analyst will report to the psychology manager, who holds a PhD in ABA, a doctoral level BCBA® credential (BCBA-D) and is also a certified psychologist through the Psychological Association of Manitoba. Some pertinent roles of the manager are to review the reports written by the analyst, and also to provide guidance and ensure that the service is being delivered in a way that follows all policies, laws, and regulations.

St.Amant School has one behaviour analyst who is assigned to receive the referrals from the school, but other behaviour analysts who provide services to other areas and programs offered by St.Amant may also receive referrals on occasion, should they have the capacity to accept additional referrals. There is also one psychology technician that supports the behaviour analyst, but others may also help should the need arise. The behaviour analyst assigned to provide support to school referrals also provides support to other programs within St.Amant, so as to best maximize the use of available resources, as there may only be about 5 new referrals for

behaviour supports from the school each year. The average active caseload for a behaviour analyst is approximately 20-30 individuals.

The behaviour consultation process will always start with an interview, to identify the behaviour of concern, as well as any variables that may be related to or affecting the occurrence or severity of behaviour. The interview typically used is the Functional Analysis Interview Form (O'Neill et al., 1997), and covers topics such as the problem behaviour, environmental variables, medical/health variables, routines, and possible antecedents. Data will then be collected, which may include the behaviour tracking datasheets in use for all students, and may be complemented by additional datasheets developed by the behaviour analyst to obtain more specific information related to the antecedents and consequences of the challenging behaviour. If the function of the behaviour cannot be identified from the interview and data, further functional assessments, which may include some of the procedures outlined in Iwata et al. (1982) may be considered. In-person observations are also typically conducted by the behaviour analyst or psychology technician. This information will be used to provide an assessment report and recommendations to the teacher, at which point the teacher can decide if a formal clinical plan is required. If so, the behaviour analyst will write up a plan which can be implemented within the school setting. Once implemented, the behaviour analyst or psychology technician will train staff and provide monitoring to ensure that the interventions are working. During this monitoring phase, data will continue to be collected, and may rely on the behaviour tracking data to determine if the frequency of challenging behaviours are decreasing. Throughout the process, there will be regular meetings, at a frequency established between the school and psychology services. Initially, these meetings will be more frequent, and will occur less often over time. Within the clinical plan, there should also be some direction on when services will be faded, which will

generally occur when behaviours are reduced to a socially acceptable level, or when no further gains are believed to be obtained. This may vary across referrals but would generally be agreed upon by all parties involved. This would be followed up with a formal closure report which outlines the progress made and any ongoing recommendations.

Although the psychology supports that St.Amant School receives share some similarities with positive behaviour support, it has never been evaluated. For example, is the service being delivered as planned? Are users (e.g., teachers) satisfied with the service? Most importantly, is the consultation service effective in producing the desired outcomes in students referred for support? Answers to these questions not only address the needs of the St.Amant organization in its service quality assurance efforts, but also adds to the literature on evaluations of school consultation services. It is important to note the St.Amant School does not formally use a positive behaviour support model, but similarities and differences between positive behaviour support and the model used at St.Amant School will be discussed in Chapter 6.

Behaviour Interventions

When identifying the best approach to minimize or reduce the occurrence of challenging behaviours using behaviour analytic principles, behaviour analysts may choose one or more of many different types of interventions. These interventions may be broken down into three broad categories, namely antecedent, consequent, and instructional strategies. Each of these will be explored in greater detail.

Antecedent Strategies. Antecedent strategies involve making modifications to the environment before the onset of challenging behaviours, essentially preventing their occurrence. These types of strategies may include environmental modifications, such as moving a desirable object out of sight, altering the workspace, or altering the staffing pattern. Additional antecedent

strategies may require more planning and work to implement and can involve a strategy that uses non-contingent reinforcement, which requires the delivery of a reinforcer on a time-based schedule. These types of interventions have been shown to be effective in academic settings, if implemented with high fidelity (Austin & Soeda, 2008). Finally, some antecedent strategies may focus on offering a combination of stimuli, such as preferred items and social reinforcement during a task to try and prevent challenging behaviours, but are still relatively easy to implement with minimal effort (e.g. Sigafoos et al., 2009). Another interpretation of this finding is that the preferred items may be a form of a motivating operation, which allows for higher on-task performance and lower levels of challenging behaviour (Rispoli et al., 2011). Since these types of strategies focus on prevention of challenging behaviour, they may be preferred to those implementing interventions, and have been found to be more effective in some cases (Schulz et al., 2018).

Consequent Strategies. These strategies are used following the onset of challenging behaviour, essentially responding to the challenging behaviour, and attempting to address it based on its function. These strategies may involve components to address attention seeking, such as ignoring challenging behaviour; components to address gaining access to tangible items such as withholding the item until desirable behaviour is observed; and components to prevent the individual from escaping a demand such as prompting until the task is completed (Gable et al., 2009). Additionally, differential reinforcement procedures, such as differential reinforcement of alternative behaviours, can be used. This procedure would involve providing reinforcement for an alternative or appropriate behaviour, but withholding reinforcement following the target challenging behaviour (Flynn & Lo, 2016). Both antecedent and consequent strategies can be effective, and the effectiveness can further be increased by using function-based strategies

(Ingram et al., 2005). An example of a function-based strategy would be to strategically withhold attention for child who is engaging in challenging behaviour in order to gain social attention from another individual. In one particular case, Sigafoos & Tucker (2000), provided behavioural support to an individual who presented with challenging behaviours maintained by multiple functions. Using a package of several treatments matched to the functions, they were able to reduce the challenging behaviours.

Instructional Strategies. These are strategies used by a teacher to help a learner develop independence. One example is direct instruction where a learner is given clear instructions and prompts, followed by numerous opportunities to respond. Second, there is peer tutoring whereby students can teach and learn from each other. Third, is computer aided instruction, which uses technology to provide instruction and opportunities for a learner to engage. Finally, there are guided notes which involve providing a learner with an outline and the learner is responsible to fill in the detailed information (Simonsen et al., 2008). Additional research suggests that even though teachers may be able to implement these instructional strategies, the use of performance feedback can improve the implementation and use of these strategies (Simonsen et al., 2010).

Pandemic Related Support Interruptions

In December 2019, a sudden increase in a pneumonia-like illness was initially reported in Wuhan, China. The World Health Organization termed this illness the 2019 novel coronavirus (2019-nCov) in January 2020, and formally named the disease coronavirus disease 2019 (COVID-19) in February 2020. The most common symptoms are fevers, coughs, fatigue, muscle pain, and shortness of breath (Sun et al., 2020). By December 2021, COVID-19 had been reported on all continents, with the number of cases approaching 280 million, and the number of deaths approaching 5.4 million (*Coronavirus Disease (COVID-19) Situation Reports*, December

28, 2021). Countries have responded by imposing various levels of restrictions, including temporary curfews and lockdowns as needed, and offering vaccinations to members of the public. As more is being learned about COVID-19, these restrictions are being adjusted, removed, or tightened in response to varying case numbers.

One notable restriction was the sudden closure of schools. In Manitoba, this occurred in March 2020, with the public schools remaining closed until September 2020. One variation to this restriction was the St.Amant School, which reopened to students in July 2020. The St.Amant School does differ from other schools, such that it runs on a continual basis, with the academic year running from September 1 to August 31. When classes resumed in July 2020, some environmental changes were required to ensure appropriate safety measures were in place. The students did not necessarily return to their original classrooms, as St.Amant School provides education to students who live within St.Amant Health and Transition Services, and also students from the community. In order to minimize risk, these students were not allowed to be in the same classroom, but rather remained with other students from a similar cohort. The students also attended a modified schedule, namely that they were attending half days in order to ensure all students could attend, due to limitations on the number of students permitted in a classroom at a single time as a result of social distancing practices.

As a result of the COVID-19 shutdown, behavioural interventions that were in place at the St.Amant School were abruptly suspended, and students were forced to stay home until in-person resumption in July 2020. Though there were efforts to provide some form of academic activities for the students to work through at home, these were limited. Some examples included daily phone calls between the student and the teacher, virtual lessons, physical learning materials sent to the home, regular morning routines, and visits between staff and students at parks, while

respecting any social distancing guidelines. This sudden removal of behavioural interventions in March 2020 and their reinstatement after school resumed in July 2020 provide a unique opportunity to evaluate the effects of behaviour interventions in a withdrawal design.

Chapter 3. Research Questions

The research on positive behaviour support does suggest it is an effective approach; however, the research specifically on the effectiveness of school consultation is limited. Furthermore, there is limited information available on the effectiveness of such approaches in a school that only supports individuals with developmental disabilities. Finally, it is also important to assess the acceptability of the data collection and clinical procedures from the teachers and instructional assistants who collect the data and use the interventions regularly through the use of social validity measures. Though social validity has been looked at in terms of classroom-wide approaches using a positive behaviour support model (Farkas et al., 2012), it has not been evaluated in terms of individualized or Tier 3 approaches. The goal of this study was to focus on the evaluation of the behaviour supports that are used by St.Amant School

The first study addressed the following questions through an evaluation of the school consultation service:

(a) Did behaviour analysts providing consultative supports to the St.Amant School follow a standardized consultative process, and if so, what were the key features and how well are they followed?

(b) What was the overall level of detail and breadth of information in the clinical plans?

(c) What effects did behaviour interventions have on decreasing challenging behaviours in the St.Amant School environment?

(d) Did staff deem behaviour tracking and the clinical plans to be effective and acceptable tools?

As a secondary component, the school shutdown due to the COVID-19 pandemic provided an opportunity to evaluate impact on prevalence of challenging behaviour due to the abrupt withdrawal and resumption of psychology services several months later. The goal of this

study was to better understand what impacts, if any, the shutdown had on the rates of challenging behaviours. The second study addressed the following question: what was the effectiveness of various behaviour interventions when established supports are suddenly withdrawn due to the pandemic?

Differing from previous research on positive behaviour support, this study looked at a school that only supports students with developmental disabilities, and focused more on the outcomes of clinical interventions as opposed to the implementation of a positive behaviour support model. Additionally, this study also looked at the effectiveness and social validity within a specialized school environment, as opposed to a general public school environment.

Ethical Considerations

Both Study 1 and Study 2 received ethical approval from the University of Manitoba Research Ethics Board 1, and approval from St.Amant Research Centre before commencement. Furthermore, as the author was also a behaviour analyst working with St.Amant at the time of the studies, although with community based clients unrelated to the school, a third party from St.Amant sent out surveys to staff, and anonymized the data before it was made available to the researcher. Throughout the process, discussions were held with St.Amant to ensure that the steps taken were approved and acceptable.

Chapter 4. Study 1: Evaluation of the St.Amant School Behaviour Consultation Model

The purpose of this study was to evaluate the behaviour consultation model that is in use at the St.Amant School by examining different components of the model, such as behaviour tracking data, clinical plans, and staff perceptions. In recent years, St.Amant has adopted a Behaviour Data Tracking system to capture what types of challenging behaviours are occurring, and when, for each student. Though revisions to the data collection approach have occurred, such as initially tracking the same set of behaviours for each students to now using an approach that specifies a number of behaviours for each students, no formal evaluation of this program, and the impacts of the behaviour consultation model that may be evaluated as part of examining this data have been conducted.

Methods

Design

This study relied on archival data provided by the behaviour tracking data to evaluate the effectiveness of the consultation model, examined existing clinical plans to evaluate their quality, and social validity survey conducted prospectively at the time of the study. The behaviour tracking data was primarily analyzed using a multiple baseline across students approach. The specific approach used was not a traditional multiple-baseline approach as the data was retrospective. Instead, students were grouped together based on a function of time and when clinical plans were implemented. This was done in order to account for any external factors that may be reflected in the data. One of the multiple-baseline charts is presented in a non-concurrent manner due to the timeline of the data, and is noted in the results.

Participants and Student Data

Psychology Staff. Psychology staff were invited to describe their perspectives and procedures to providing behaviour supports through an online survey. Due to a small sample size and to maximize anonymity, limited demographic information was collected on the participants, but they may have included the Psychology Manager, Behaviour Analysts, and Psychology Technicians. The qualifications for each of these roles were previously described. The survey was sent to approximately 35 psychology staff, however, not all these staff worked directly with the school. The decision was made to send the invitation to all St.Amant Psychology staff as opposed to specific staff as a number may have had minimal experience working with the school team, but primarily work with another program. This approach was taken in order to allow staff to opt-in and self-determine if they felt that they have enough experience working with the St.Amant School. In total, 2 participants completed the survey. A low response rate was expected due to the small number of Psychology staff that provide behaviour support to the school on a regular basis.

Teachers and Instructional Assistants. All teachers and instructional assistants from the school were invited to complete an anonymous survey to evaluate the acceptability of data collection procedures and the use of various behavioural interventions. There were 9 teachers who hold a degree in education and are certified to teach in Manitoba. Each teacher oversees approximately 4-6 students within their classroom, as well as the instructional assistants who work with the students. There were approximately 30 full and part-time instructional assistants. These workers must have at minimum a grade 12 education, as well as at least one year in a certificate program in a relevant field, such as developmental disabilities, early childhood education, or educational assistant. A total of 11 participants completed the survey, which included 5 teachers and 6 instructional assistants, for a total response rate of approximately

28.2% of all possible staff. Of the participants who completed the survey, 6 identified as female, 4 identified as male, and one participant did not disclose their gender. Staff reported being in their current role for an average of 76.4 months (median = 60 months, range = 2-240 months). Though the response rate for teachers was acceptable (55.6%), the response rate for Instructional Assistants was low (20%). Though no particular factor can be attributed to this response rate, it is possible that staff did not have time to complete the survey during their working hours as student support would take priority.

Characteristics of Behaviour Tracking Data. This study evaluated retrospective data previously collected by school staff on students who previously attended or were attending St.Amant School, in Winnipeg at the time the data was extracted. St.Amant School provides an IEP to each student with intentions of having them integrate into a public school once behavioural concerns have been eliminated or reduced to an acceptable level and any other academic goals have been achieved. The type of programming is analogous to Tier 2 or 3 of positive behaviour support described earlier.

The initial data request made to St.Amant was for all students who had data from the beginning of their data collection program that was implemented in January 2017 to June 2021, which was when the request was made. Any students who graduated or were no longer attending school for any reason prior to the implementation of the data collection system were excluded. The data was anonymized by St.Amant staff prior to it being made available for analysis. Data for 30 students was received for this study. Data on age was available for 17 of the 30 students and they ranged from 12 to 21 years of age (mean = 14.7 years), as of December 31, 2021. The sample included 12 students who were identified as male, 7 students who were identified as female, and 11 students whose gender and age were not provided as these students did not have

clinical plans available. The earliest data available was from January 9, 2017, and the latest data available was from June 4, 2021. The specific start and end dates of the data varied by student, depending on when the student started with the school, or when the data collection was implemented. On average, the span of data covered 912 days per student (range = 112-1575 days). Note that this does not represent the total number of days the student attended school, but rather the interval between the earliest and latest entry. This approach was used in order to have a sense of how long each student has been enrolled in St.Amant School, limited by no behaviour tracking data being available prior to 2017. Furthermore, attendance was not considered as a main variable, and was not believed to have any impact on the findings of the studies. The rationale for not considering attendance was that the data was rather complete and consistent for each student. Additionally, any substantial lapses in the data would have shown up in the graphs and these time periods would have been excluded.

Dependent Measures

School Consultation Process Survey. A survey was developed and sent out to Psychology Staff in order to better understand their perception of the behaviour supports model. The survey was open-ended in nature and included 9 questions that served as prompts that asked for detailed information about that particular component of the service model. The prompts asked the respondent to describe the referral process, what happens when a referral is assigned, what the assessment phase includes, how an assessment report is disseminated, how the model moves from an assessment phase to the development of a clinical intervention, how the clinical plan is disseminated and how staff are introduced to the intervention, what the process is for monitoring the intervention, what fading out the intervention would include, and finally an option to provide any additional comments. The survey was sent to all psychology staff by a

member of the St.Amant Research Centre in order to maximize anonymity. Participants received an email invitation with a Qualtrics® survey link. As the psychology team includes staff that provide services across a variety of different areas, they were asked to opt-in to complete the survey if they felt that they had a reasonable amount of experience working with the school. Due to the anticipated small sample size, participants were informed that anonymity could not be guaranteed, and they could withdraw their responses by contacting the researcher. No participant reached out to have their data excluded, and no participant responses were excluded from the survey for any other reason. In total, 2 respondents were recorded.

Component Checklist to Evaluate Clinical Plans. Clinical plans were written by a behaviour analyst to reduce challenging behaviour(s) exhibited by the student. The overall quality of clinical plans was evaluated using a checklist (adapted from Williams and Vollmer, 2015) by scoring the presence of 14 essential components (see Appendix B). Examples of these components included the specification of the target behaviour(s), description of the intervention procedures used, the reinforcement schedule, and the specific times for the intervention to be used. The adaptations to the original checklist were done to better reflect the current needs and reflect some of the processes that happen but are not captured in the clinical plans, such as staff training. Each component was marked as present or absent, with higher scores indicating that the clinical plan contained more of the essential components. Each component was assigned 1 point, for a maximum of 14 points per clinical plan.

The process to obtain clinical plans involved Psychology Staff sending the electronic file to a staff member within St.Amant, who would anonymize the plans and make them available for review. In total, 20 clinical plans were evaluated. Initially, 31 clinical plans were obtained, 10 were not included as they were written before the behaviour tracking data occurred and 1 was

excluded as it was an update to a pre-existing clinical plan. The decision to not include clinical plans that fell outside of the available data range that was established prior to reviewing the clinical plans, as there would be no behaviour tracking data to support any effects. The plans that were not considered were used to train and ensure that an observer was competent in conducting the interobserver agreement checks.

Interobserver agreement checks were conducted for all clinical plans and involved training a second observer on some mock plans until 100% agreement was reached with the primary observer. The second observer then assessed each clinical plan independently, and agreement was calculated by taking the number of agreements divided by the number of agreements plus disagreements and multiplied by 100. An average agreement of 97.5% was obtained, with a range of 85.7% to 100%.

Types and Frequencies of Challenging Behaviours Being Tracked. For all students, the challenging behaviours that were recorded by staff were extracted from the student datasheets. The datasheets used to identify the behaviours were the most recent version, which accounts for any changes that may have been made over time to refine the quality of the data. The behaviours were then reviewed for similarity in topography, by looking at the definition, and combining these specific definitions into more general definitions and categories, where applicable. In a few instances, some items being tracked were excluded as they were not identified as challenging behaviours, but rather staff's responses to a behaviour. These excluded items included the use of an approved restraint as a safety protection measure (e.g., helmet, physical hold) and were not part of the intervention procedures, and coping strategies being offered to a student.

In order to ensure that the classifications were appropriate, interobserver agreement checks were conducted on the behaviours. A trained observer was provided with the list of behaviours and definitions, and asked to classify them into the behaviours initially determined to be the broad categories. In total, nine categories were identified, and are further described below. The interobserver agreement was calculated by taking behaviours in which agreement was noted divided by the total number of agreements plus disagreements. The agreement obtained was 93%, indicating a high level of agreement. In total, 28 behaviours were classified, and the main observer and second observer agreed on 26 of the 28 behaviours. The two behaviours in which there were disagreements held definitions that contained some subjectivity and may have slightly different interpretations.

Types and Frequencies of Behaviour Interventions. Clinical plans were reviewed to determine what types of intervention(s) were used by psychology staff. The interventions were broken down into two main categories, those that were explicitly stated in the clinical plan and those that could be inferred based on how the interventions were written in the clinical plan.

Behaviour Tracking Data. Data was collected by the instructional assistants or whomever was working with the student on a daily basis, in 15-minute intervals for each student during the time they were in school. This was used as the primary data for evaluating the types and frequencies of challenging behaviours being tracked, the effectiveness of clinical interventions and the impacts of the COVID-19 shutdown on challenging behaviours. Each data sheet contained 4-10 target behaviours (mean = 6), which were identified by the teachers, and were defined based on the topography of the behaviours observed for each student. Should a student not have been referred for behaviour supports, the teachers still identified several target behaviours that were deemed the most prevalent or of interest to track and monitor. In a few

cases, behaviours were further broken down over time to look at a more specific topography of the target behaviour.

On a regular basis, such as several times per week, the data was entered by one of the teachers or assistants into a spreadsheet, which had been set up to graph the frequency of the behaviours by date and time of day. The available data dated back to 2017, or when the student started St.Amant School, whichever occurred later. Data was analyzed from the initial entries to the most recent data available, which was June 2021, with attention given to specific periods that were of interest for analysis. In order to obtain a consistent and single measurement of prevalence of behaviour for each student, a single value of percentage of intervals in which challenging behaviour was computed, as opposed to analyzing each challenging behaviour separately. Specifically, a formula took the total number of intervals with at least one challenging behaviour was indicated, divided by the total number of intervals in which the student was present and awake. Intervals in which the student was not present, asleep, or could not be observed were excluded. A partial-interval approach was used, such that intervals that contained multiple challenging behaviours were only counted as a value of one. An example of the behaviour tracking form used by the St.Amant school staff is included in Appendix A.

Reliability of Behaviour Tracking Data. Since the behaviour tracking data had already been collected, reliability checks could not be conducted. However, when the data collection system was initially rolled out in 2016, members from Psychology Services would shadow and coach the staff to ensure that the data was being collected accurately. For the behaviour tracking data, the author of this paper was part of a small team who conducted interobserver reliability checks when the system was initially implemented. Training involved conducting reliability checks with a member of psychology services until recording was at 100% across several

sessions. The observers then recorded the occurrence of challenging behaviours or reported that no behaviours occurred. Each student had one data sheet filled out per day by school staff, with each data sheet containing up to 32 data points if the student attended the full day of school. The observers would observe a random sample of students, for 15 or 30-minute intervals (thereby obtaining 1-2 data points per student), during a block of approximately 3 hours once a week. This sample of data was compared to the data collected by the staff members working with the students and made up less than 1% of all available data. This data was collected and assessed from the initial rollout in 2015 to late 2017, and the reliability between the observers and staff was approximately 75% during the final 3 months of data collection.

Data entry by staff from the tracking datasheet to the database was also checked by a second observer over a period of approximately 1.5 years. The second observer sampled at minimum 1 datasheet per student per week. Any errors were highlighted, and feedback was provided to the teachers to share with their teams. Accuracy was at least 95% during the final 3 months in which the data was analyzed.

Effectiveness of Interventions. The effectiveness of the clinical interventions was assessed by applying a multiple-baseline-across-students design retrospectively to archival data. The date of the clinical plan was used as the phase change in the graphs, and data was then analyzed 4 months before and after the date of the clinical plan, or until the earliest or latest data point was included. This rule was put in place to give a representative sample of the data, but to also ensure that the included data captured any effects from the clinical interventions. A summary of the target behaviours and interventions used for each student can be found in Table 1. These target behaviours may differ from what was being tracked as challenging behaviours in the behaviour tracking database

The first multiple-baseline series included Students 6, 17, and 7. Intervention for these students occurred following the COVID-19 shutdown. The data analyzed for this group was within the range of August 2020 to May 2021. The second multiple-baseline series included Students 25, 23, and 1. Intervention for these students occurred before the COVID-19 shutdown. The data analyzed for this group was within the range of March 2017 to June 2021. The third multiple-baseline series included Students 26, 3, 11, and 16. Intervention for this group occurred before the COVID-19 shutdown. The data used for this group was from September 2017 to December 2019.

Table 1

Target Behaviours and Interventions for Students

Student	Target Behaviour(s)	Intervention(s)
6	Increase adaptive behaviours, decrease noncompliance, aggression, and disruptive behaviours	Contingent reinforcement
7	Increase requesting attention, decrease disruptive and aggressive behaviours	Requesting attention
17	Increase compliance to instructions	Contingent reinforcement
25	Increase group activity time, decrease non-compliance	Differential reinforcement
23	Increase adaptive behaviours, reduce challenging behaviours	Token economy
1	Increase adaptive behaviours, reduce outbursts	Token economy
26	Increase participation and prosocial behaviour, decrease socially problematic behaviours	Token economy
3	Reduce stripping	Visual schedule
11	Reduce self-injurious behaviours	Differential reinforcement and visual schedule
16	Increase co-operation	Contingent reinforcement

Teacher and Instructional Assistant Social Validity Survey. A survey was administered to the instructional assistants and teachers to evaluate their satisfaction with the behaviour tracking, and their ease of understanding and implementing clinical plans (Appendix C). The survey was sent via email to all of the staff by the principal of the school to ensure anonymity of the staff. Those who were interested in participating were instructed to click on a Qualtrics® link, and were presented with a consent screen. If consent was provided, the survey began by asking some demographic questions, such as age and work experience, and asked about familiarity and experience with data collection and implementing interventions. Then, five questions related to the implementation of clinical plan interventions were presented. To further understand the data, a series of potential interventions were presented to the staff, and they were asked to indicate if they used one or more of the interventions. For the interventions that were selected, staff were then asked if the interventions were implemented as part of a clinical plan, and also asked the same questions related to implementing the clinical plan, but with a focus on the different interventions. Finally, there were three questions related to behaviour tracking data collection. An example of a question related to clinical plan interventions was "The interventions recommended by psychology staff are appropriate for the student" and an example of a question related to the behaviour tracking data was "The behaviour tracking datasheets are a useful tool." Questions were responded to on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with an additional option for the staff member to select "don't know". If staff indicated that they had no experience with the behaviour tracking data or that they had no experience implementing clinical plans, the relevant questions were not be presented, meaning they did not see or have the opportunity to respond to those questions.

These questions were adapted from the Primary Intervention Rating Scale (Lane et al., 2002), and were modified to be applicable to the staff at the St.Amant School. One question in the scale, Question 6, was reverse scored. The overall score was interpreted such that higher scores imply greater satisfaction with the interventions and data collection procedures. The measure was sent out to all Teachers and Instructional Assistants via an email link, where staff completed the survey online through a Qualtrics survey. The staff were first presented with a consent form, and should they have consented, would have proceeded to the remainder of the survey. Exclusion criteria for the survey included participants who did not agree to providing consent, did not complete a reasonable amount of the questions, or indicated that they wished to have their responses excluded from analysis. In total, 14 participants entered the survey, one was excluded for not consenting, and 2 were excluded as they did not respond to questions (blank surveys were submitted). On average, participants completed the full survey within 7 minutes.

Summary of Research Questions and Data Sources

A summary of how each of the above sources of data relate to the research questions are presented in Table 2. Beside each research question the relevant data sources are noted.

Table 2

Research Questions and Dependent Measures

Research Question	Data Source(s)
Did behaviour analysts providing consultative supports to the St.Amant School follow a standardized consultative process, and if so, what were the key features and how well are they followed?	School consultation process survey
What was the overall level of detail and breadth of information in the clinical plans?	Clinical plans and component checklist
What effects did behaviour interventions have on decreasing challenging behaviours in the St.Amant School environment?	Student behaviour tracking data
Did staff deem behaviour tracking and the clinical plans to be effective and acceptable tools?	Teacher and instructional assistant social validity survey

Results

School Consultation Process

Psychology staff were asked about their perception of the model of service, and what steps they typically follow. This survey addressed the main component of the first research question, which looked at the process of the consultative support. Two staff responded to the survey, and this low sample size was expected due to the small number of staff that regularly worked with the St.Amant School. The summary of responses for each question are described below:

The referral process. Both respondents indicated that a referral was submitted by a school staff member, and priority for service was given based on the severity of the referral and resources available. One respondent indicated that referrals may be indicated as urgent to help expedite the process. This respondent also indicated that the school may also try to manage the challenging behaviours on their own prior to submitting a referral.

Steps after a referral has been assigned. Both respondents indicated that the behaviour analyst would make contact with the classroom teacher to set up intake meetings and identify the behaviour(s) of concern. One respondent also indicated that consent would be obtained prior to this meeting.

Components of the assessment phase. Both respondents indicated that ABC tracking data was collected to better understand the functions of the challenging behaviour. One of the respondents further indicated that sometimes there were also observations and/or experimental functional analyses used if the ABC data did not provide enough information. The other respondent indicated that at times the assessment phase might be skipped if the student was previously referred and if the function of the behaviour appeared to be the same as before.

Dissemination of the assessment report. Both respondents indicated that the report was shared with the school and a meeting was set up to discuss the findings. At that point, the teacher would decide if they would like to move forward with developing clinical interventions.

Development of the clinical plan. Both respondents indicated that during the development of the clinical plan, a small number of individuals that may include psychology staff, the teacher, and instructional assistants might try out some procedures listed in the draft of a clinical plan to ensure that the interventions were feasible and to identify any potential issues. Once any feedback and potential issues had been resolved, a finalized version of the plan was prepared.

Dissemination of the clinical plan. Both respondents indicated that the plan was disseminated to the school team, and a meeting was held with the classroom teacher and any other staff who may need to be familiar with the clinical plan. This meeting allowed for any questions to be answered, and to also ensure everyone understood the plan and its goals. Following this meeting, one or a few staff were trained by the psychology team on how to implement the interventions. Once the psychology staff have deemed that the initial teachers or instructional assistants have mastered the implementation, they would be asked to train their colleagues. No specific training procedures were described, but one respondent stated that direct training was used with the staff, and this training could include components such as modeling and feedback.

Monitoring the clinical interventions. The respondents indicated that regular review meetings were held, typically on a bi-weekly basis. In addition, observations were also conducted by the psychology technician to ensure that the interventions were being used correctly. One of the respondents further indicated that procedural changes would not usually

occur due to the collaborative way in which interventions were developed, but on occasion an update to the clinical plan was written.

Fading out services. Respondents indicated that the behaviour analyst would initiate a conversation with the teacher and would close if the teacher is in agreement. One respondent indicated that they would ensure that staff were competent with maintaining any final recommendations and the other respondent indicated that the conversation to fade out services happened once a clear improvement is seen.

In summary, both respondents alluded to a very similar process, albeit a few minor noted differences. The general process did include obtaining consent, conducting an assessment, developing interventions, and finally monitoring and fading out services when appropriate. As part of some general comments left by the respondents, they also noted that having an understanding of service models used by other disciplines (such as psychiatry, speech-language pathology, and occupational therapy) may be helpful due to the frequent collaboration that occurred.

Component Checklist Evaluation of Clinical Plans

The second research question was addressed by assessing clinical plans for key components based on a checklist modified from Williams and Vollmer (2015). Table 3 shows the percentage of plans in which the items were present. In general, clinical plans had an average of 11.85 of the 14 components, with a range of 8-14. The data shows that the five components that were present in all 20 clinical plans (100%) were: a specification of the treatment times and locations, a reinforcer being specified, a reinforcement schedule being specified and appropriate, and finally consequences for problem behaviours being stated. The remaining 9 components were found to be present in 60% to 90% of the clinical plans (see Table 3).

Table 3

Results from Analysis of Clinical Plan Component Checklist

Item	Percentage of clinical plans with item present
Treatment times and locations are specified for replacement behaviours	100
A functional reinforcer is specified, or the reinforcer is one that is motivating to the student based off preference assessment	100
Reinforcement schedule is specified	100
Reinforcement schedule is appropriate	100
Consequences for problem behaviour are specified	100
Method for data collection is described and appropriate	90
Generalization strategies are described	90
Target behaviour is defined	80
Objectives are measurable and time limited	75
Baseline for target behaviours has a quantitative measure over time	75
A functional assessment was conducted and included a questionnaire and direct observation or functional analysis	75
Review schedule is specified	70
Criteria for determining revisions is described	70
Maintenance strategies are described	60

Types of Challenging Behaviours

Upon initial review of the data for all 30 students, there were 37 unique behaviours listed across all individualized datasheets, with each student having 4-10 unique behaviours being tracked, with an average 6.37 behaviours being listed. While reviewing the data, it was also apparent that many of the behaviours overlapped in their definitions, and behaviours were condensed into 9 general categories based on their definitions. After condensing, the data showed a range of 3-8 behaviour categories, with an average of 5.10 behaviours per student. The three most commonly tracked behaviours were being aggressive to others, which was tracked in 25 (83%) of the 30 students; outbursts, which was tracked in 22 (73%) of the 30 students, and socially inappropriate behaviours, which were tracked in 22 (73%) of the 30 students. Table 4 contains a summary of the behaviours recorded across students. The typical definitions or descriptions for each of the 9 categories were as follows:

Aggressive behaviours towards people: Behaviours may include hitting, punching, kicking, pulling hair, and biting. Behaviours that could cause physical pain or tissue damage to other individuals.

Outbursts: Behaviours in which there is an escalation of emotional arousal, and includes behaviours such as crying, yelling, and stomping. Outbursts generally had a time constraint, whereby the behaviour must occur for a period of a specified period of time, that is individualized to the student before being considered an outburst. Outbursts could co-occur with other behaviour categories such as aggressive or self-injurious behaviours.

Socially inappropriate behaviours: Behaviours that other individuals would deem as inappropriate for the current social context. May include behaviours such as stripping, swearing, inappropriate sexual behaviours, smelling others, invading personal space, stealing from others.

Aggressive behaviours towards objects: Any instance (or attempt) to break, deface, or damage an object or part of the physical environment. May include behaviours such as ripping paper or clothes, or banging objects forcefully.

Uncooperative behaviours: Refusal to follow instructions or prompts to complete tasks. There was generally a time constraint, which was specific to the student, in which refusal must persist for a minimum period of time.

Disruptive behaviours: Any behaviour that interferes with the activities of other individuals, and persists for a minimum period of time that was individualized to each students. May include behaviours such as yelling or screaming.

Self-injurious behaviours: Any forceful behaviours targeted toward oneself that cause or may cause tissue damage or injury. May include behaviours such as hitting one's head forcefully with the hand, biting one's hand to the extent that discoloration occurs, and throwing one's body or part of the body against another surface.

Perseverative behaviours: The repetition of the same movement or behaviour, and/or intense interest on a particular person/object/activity for a minimum period of time that was individualized to each student and staff may not be able to re-direct the student away.

Running away: Running away from staff where staff may not be able to redirect the individual, running into areas where the student is not currently permitted, or running in areas where walking is expected, such as a hallway (but excluded areas where running is appropriate such as the gym).

Table 4

Summary of Challenging Behaviours Tracked Across Students

	Frequency	Percentage of datasheets with behaviour listed
Aggressive behaviours towards people	26	86.7
Outbursts	22	73.3
Socially inappropriate behaviours	22	73.3
Aggressive behaviours towards objects	19	63.3
Uncooperative behaviours	18	60.0
Self-injurious behaviours	14	46.7
Disruptive behaviours	12	40.0
Perseverative behaviours	10	33.3
Running away	8	26.7

Types of interventions used. Upon review of 20 clinical plans, the most commonly used intervention was token economies to strengthen desirable behaviours, which were described in several different ways, but all included the main components of the student earning tokens and being offered a preferred reinforcer once a certain number of tokens have been obtained. The other interventions used included those that focused on the antecedents, such as the use of a visual schedule; those that focused on consequences, such as contingent reinforcement; and those that focused on developing and using a new skill such as coping or requesting attention. The strategies used and the frequency in which they were used in this sample can be seen in Table 5. The clinical plans were also analyzed for interventions that may not have been directly indicated but could be inferred from the description of the procedures. All the plans contained a reinforcement component contingent on desirable behaviours. Half of the clinical plans (10/20) contained a description of a possible extinction component where no reinforcement or attention followed challenging behaviours. Five of the plans contained evidence of differential reinforcement, in which the intervention included statements indicating the use of extinction of the problem behaviour and reinforcement of an alternate desirable behaviour. More specifically, the plans typically indicated circumstances in which reinforcement was to be withheld until a desirable behaviour occurred. Finally, two plans contained an escape from demands procedure, where the student would be able to have work demands removed following repeated refusal or challenging behaviour. This may be viewed as a safety procedure as it is in place to prevent further escalation of challenging behaviours.

Table 5

Frequencies of Interventions in 20 Clinical Plans

Intervention	Frequencies of procedures stated by name in clinical plan	Frequencies of procedures inferred (not stated by name) in clinical plan
Token economy	7	
Prompting for a response	3	
Contingent reinforcement	3	20
Behaviour management (both antecedent and consequent)	3	
Using coping strategies	2	
Visual schedule	2	
Behaviour momentum	2	
Requesting attention	1	
Offering choices	1	
Noncontingent reinforcement	1	
Possible extinction		10
Differential reinforcement of alternate behaviours		4
Escape from demands		2
Differential reinforcement of incompatible behaviours		1

Effectiveness of Behaviour Interventions

Behaviour tracking data was looked at for students who had clinical plans that were implemented to address the third research question, which examined the effectiveness of interventions. The first group of students includes those who had an intervention implemented for the first time following the school shutdown due to COVID-19. This group included students 6, 17, and 7 (see Figure 1). For all three students, the data points showed a large amount of overlap during baseline and after the intervention was initially implemented, and the data also showed quite a bit of variability. For Student 6, the data showed a gradual decrease in intervals with challenging behaviour during the first 2 months following the date of the clinical plan, followed by an increase during the last 2 months. Student 17 initially showed similar levels of behaviour, followed by a decrease in behaviour for 2 months before a slight resurgence during the final month of data. Finally, Student 7 did not show any difference from baseline to post-implementation of the clinical plan.

The second group of students included Students 25, 23, and 1 (see Figure 2) and one commonality was that all these students had the intervention initially implemented within a 7-month period (June 2017 to January 2018). A trend similar to the first group was noted, whereby there was a high level of overlapping and variable data points, with the exception of the post-intervention data for Student 23, which appeared to be less variable. Student 25 showed a similar level of challenging behaviour during baseline as well as after the implementation of the intervention. Student 23 showed a decrease in challenging behaviours following the implementation of the interventions, as well as rather stable rates of challenging behaviour. Finally, Student 1 initially showed a decrease shortly after the intervention was implemented, but

then showed an increase in challenging behaviours comparable to baseline approximately 2 months after the date of the clinical plan.

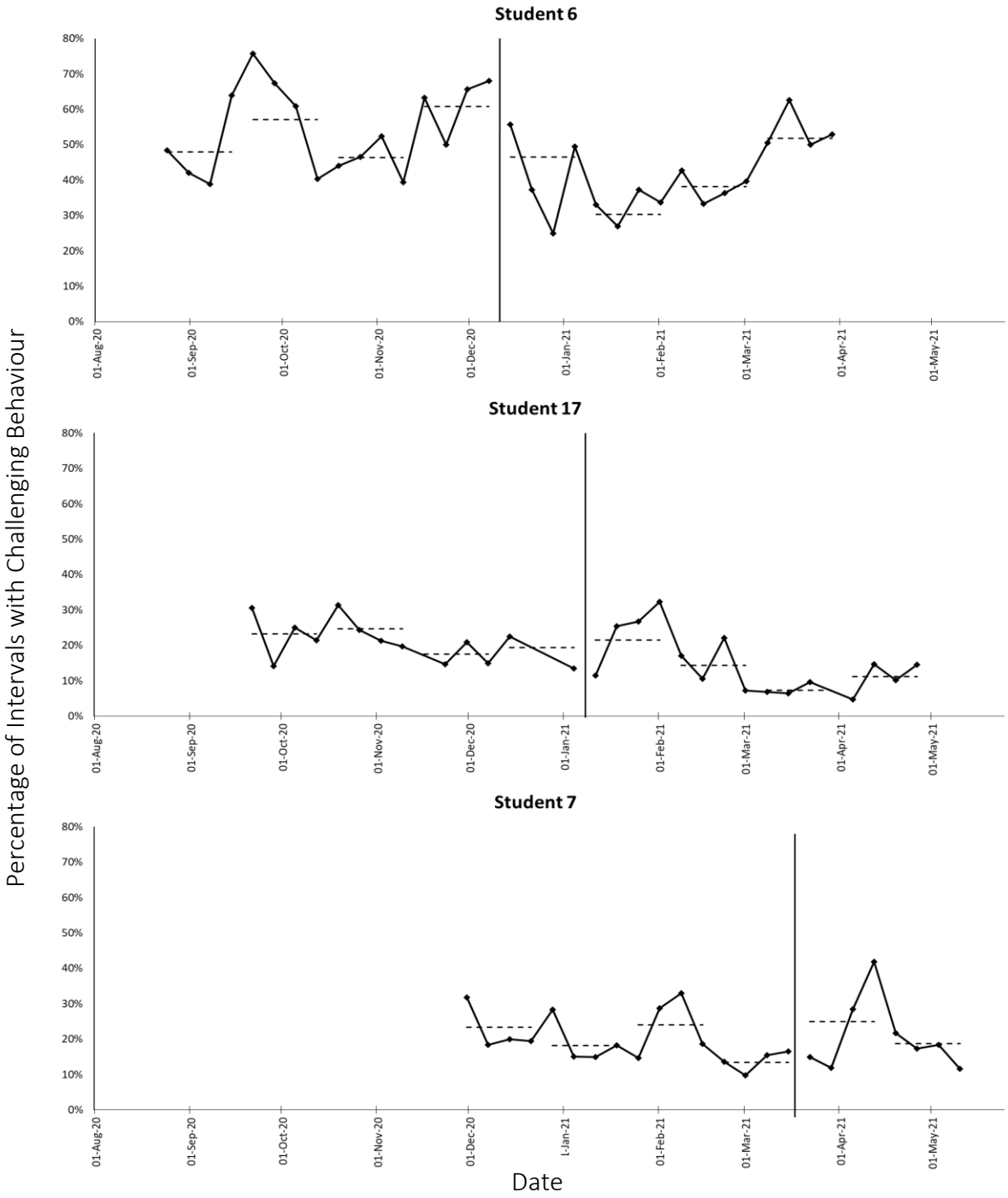
The final multiple-baseline included Students 26, 3, 11, and 15 (see Figure 3). The graph is non-concurrent in nature, as the clinical plans were implemented at different time periods. Student 26 showed similar levels of challenging behaviour both during baseline and following the date of the clinical plan. Though there was some variability, the data for this student was rather stable throughout. Student 3 showed a decrease approximately 2 months before the implementation of the clinical plan that remained consistent with the rate of challenging behaviour following the introduction of the clinical plan. Student 11 showed a decrease in challenging behaviours as well as less variable data following the introduction of the clinical plan. Finally, Student 15 showed a slight decrease in the prevalence of challenging behaviours following the implementation of the clinical plan. There was then a 2-week period in which no data was recorded, suggesting the student was not at school. The remainder of the data showed a slight increase after a two-week period of lower rates.

Finally, effect size calculations were conducted using the percentage of non-overlapping data points method (Parker et al., 2011). Effect sizes ranged from .13 to .87, with an average effect size of .51. This represents effect sizes which would range from small to large, with an average effect size that would be considered moderate to large. Effect sizes by student are listed in Table 6.

Overall, these data suggest that some effects from clinical plans can be observed in the behaviour tracking data.

Figure 1

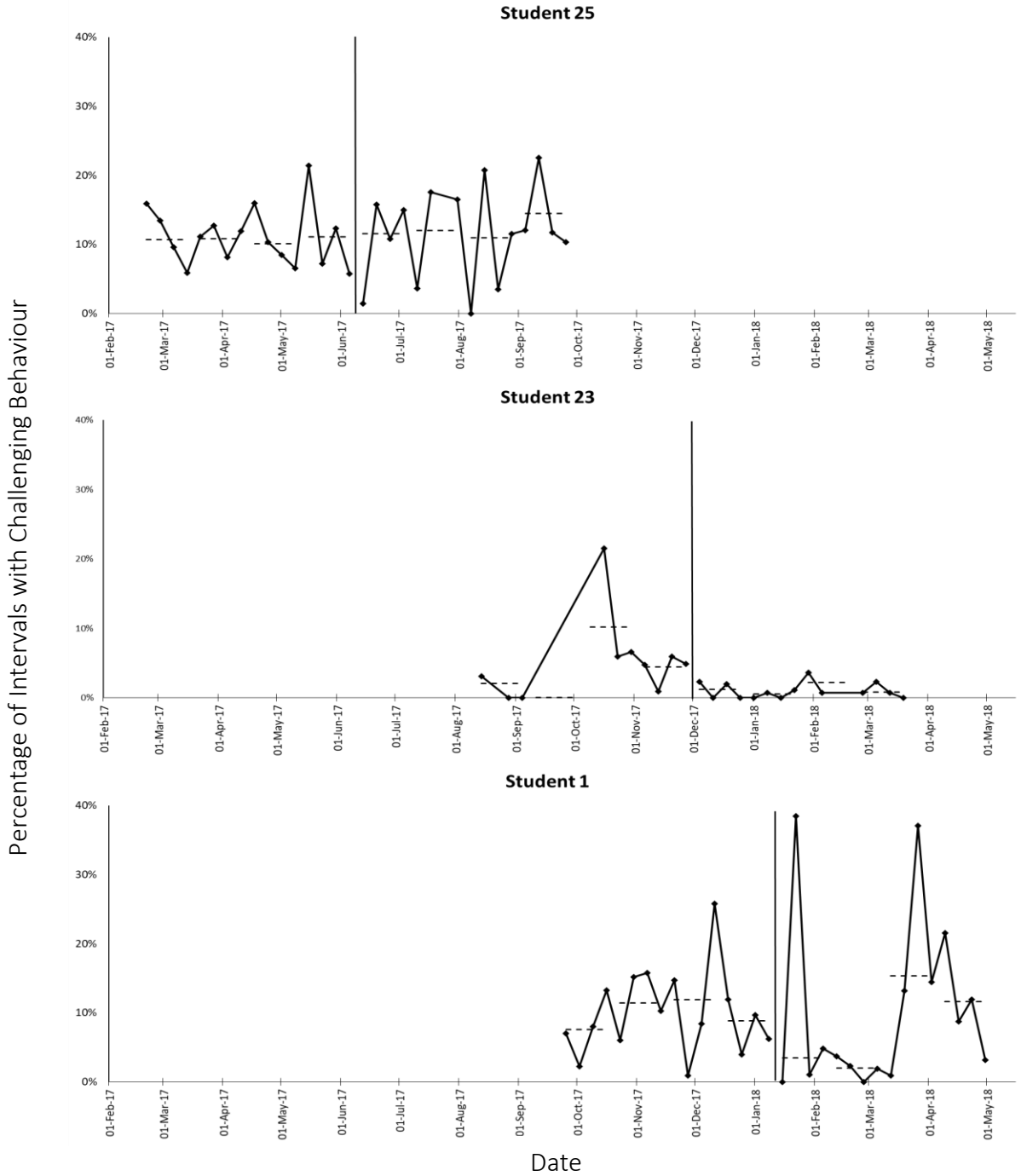
Behaviour Tracking Data for Students with Intervention Implemented Following the COVID-19 shutdown.



Note: Horizontal dash lines represent the average during a 4-week period and vertical lines represent the date of the clinical plan.

Figure 2

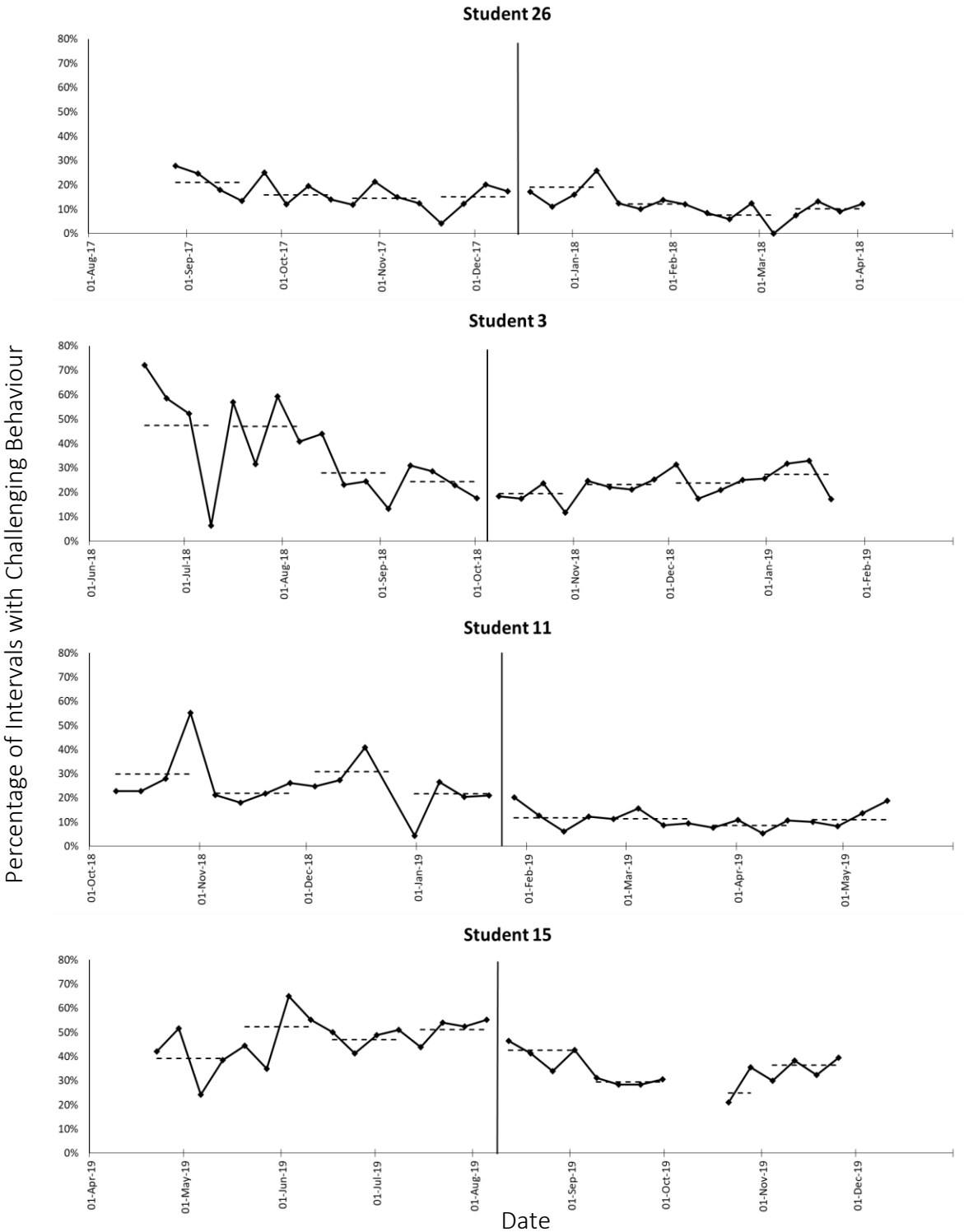
Behaviour Tracking Data for Students with an Intervention Implemented Prior to the COVID-19 Shutdown.



Note: Horizontal dash lines represent the average during a 4-week period and vertical lines represent the date of the clinical plan.

Figure 3

Behaviour Tracking Data for Students



Note: Horizontal dash lines represent the average during a 4-week period and vertical lines represent the date of the clinical plan.

Table 6

Effect Size Using the Percentage of All Non-Overlapping Data Method

Student	Effect Size
6	.75
17	.23
7	.13
25	.33
23	.87
1	.63
26	.13
3	.38
11	.87
15	.75

Teacher and Instructional Assistant Social Validity Survey

To address the fourth research question, which explored the effectiveness of the clinical plans and acceptability of the behaviour tracking system, the results of the teacher and instructional assistant survey were evaluated. The social validity questionnaire was completed by 11 participants. Six were female, 4 were male, and one participant did not disclose their gender. Of the 11 participants, 5 were teachers and 6 were instructional assistants, with the average length in their current role being 76.36 months, and the median length being 60 months (range 2-240 months). All but one of the participants (90.9%) reported that they implemented interventions developed by Psychology Services with an average of 4.2 students (range 0-15 students). Results from the social validity questionnaire are presented in Table 7.

When asked about interventions, staff indicated that the most common interventions they have used were First-Then boards, token boards, and withholding attention from the student. One participant wrote in a response, which was a “waiting” program. The programs used by staff were generally those directly recommended by psychology staff, but there were some instances where staff reported using the interventions, but not necessarily on the recommendation of psychology staff. This was determined by looking at the interventions that staff stated they personally used compared to those that were recommended by psychology staff. This was noted for First-Then boards (2 respondents), non-contingent reinforcement (1 respondent), withholding attention from the student (1 respondent), and behaviour momentum (2 respondents). These are likely underestimates as the question did not specify the use of the intervention outside of the recommendation of psychology services, but rather if the respondent personally implemented the intervention.

Overall, staff showed a neutral to positive response when asked about the appropriateness of the results of different interventions, with withholding attention from the student (4.29) being the highest rated. The lowest rate intervention was the wait program (3) and non-contingent reinforcement (3 with a range of 1-5). Staff felt that the interventions may be easy to use with other students, with responses ranging from 3 to 4.5 for the different interventions, with non-contingent reinforcement being the highest rated. For the wait program, the sole respondent indicated that they were unsure if the intervention would be easy to use with other students. Finally, staff generally felt that the interventions are somewhat effective, with values ranging from 3 (non-contingent reinforcement) to 4.25 (behaviour momentum). It is important to note that the number of respondents for some of the interventions is low, so these values should be interpreted with some caution.

When asked about the behaviour tracking datasheets, 10 out of the 11 staff (90.9%) reported that they were familiar with the behaviour tracking datasheets in use with all students. All staff reported that they either somewhat agree (two staff, 18.2%) or strongly agree (nine staff, 81.8%) that the behaviour tracking datasheets are a useful tool to measure the frequency of challenging behaviour. When asked if they felt that the datasheets were too time consuming to fill out, five staff (45.5%) strongly disagreed with the statement and two (18.2%) somewhat disagreed. Three staff (27.3%) somewhat agreed with the statement and one (9.1%) was unsure. The final question related to the behaviour tracking datasheets asked staff whether they agreed with the statement that the datasheets allow for an effective monitoring of the students' progress, and all staff responded with either somewhat agree (five staff, 45.5%) or strongly agree (six staff, 54.5%).

Table 7

Results of Social Validity Survey Sent to School Staff

Intervention	Used with Students (with or without recommendation of psychology staff)	Used with a recommendation by psychology staff	Intervention appropriate for student (mean and range presented)	Easy to use with other students, if recommend (mean and range presented)	Interventions are effective (mean and range presented)
Token board	8	8	4.25 (3-5)	4.13 (2-5)	3.88 (2-5)
First-Then board	10	8	4.25 (3-5)	3.38 (1-5)	3.75 (2-5)
Non-contingent reinforcement/ proactive attention	4	3	3 (1-5)	4.5 (4-5)*	3 (3)*
Differential Reinforcement	1	1	4 (4)	3 (3)	4 (4)
Not providing attention to the challenging behaviour	8	7	4.29 (3-5)	3.29 (1-5)	4 (3-5)
Behaviour momentum	6	4	4.25 (3-5)	4 (3-5)	4.25 (3-5)
Other – Wait program	1	1	3 (3)	N/A	N/A

Note: * indicates 1 participant did not respond; N/A means that the staff member responded with "don't know" and was the only respondent for this item

Discussion

The purpose of this study was to evaluate the components of behaviour supports in use at St.Amant School, and to understand the effectiveness of behaviour interventions. Four research questions were examined:

(a) Did behaviour analysts providing consultative supports to the St.Amant School follow a standardized consultative process, and if so, what were the key features and how well are they followed?

(b) What was the overall level of detail and breadth of information in the clinical plans?

(c) What effects did behaviour interventions have on decreasing challenging behaviours in the St.Amant School environment?

(d) Did staff deem behaviour tracking and the clinical plans to be effective and acceptable tools?

With respect to the first research question, the general outcome was that a typical approach is used by clinicians. Though there was some flexibility with the specific way the behaviour services are used with individual students, the behaviour support model followed a typical process that includes an assessment, intervention, and maintenance phase. The respondents to the survey provided very similar responses, indicating that their perception and understanding of the model of service is similar to each other as well as the expectations that St.Amant would require. Specific to the supports provided in the school, some of the key features that were also described were the soft implementation of an intervention, where one staff is trained, and adjustments are made before the clinical plan in finalized, and regular meetings where the data of multiple students may be discussed as a way to maximize the use of available

clinical hours. Overall, the process described seems to follow a typical approach that has been developed to best accommodate the needs of the school and the availability of resources.

The second research question focused more on the clinical plans, and assessed the information contained within. In general, the clinical plans did contain the key items that were being looked for. One limitation with reviewing only the clinical plans was that some information may be contained within other documents but were indicated as not present as it was not within the document. As an example, target behaviours were only defined in 80% of the clinical plans, but these target behaviours may have been previously defined in the behaviour tracking datasheet or assessment reports. However, it would be important to include the definition within each document so that the document can function independently, and the information is readily accessible. Other components that were present at a lower rate (70%) included specifying the review schedule and describing a criterion for determining revisions. Though these are important, the school and psychology teams do meet regularly to discuss students, so this information missing would likely not impact the quality of service. However, it would be desirable to include these components in the clinical plan to facilitate the implementation of the intervention and consultative process.

Despite a few items that were not present on occasion, several of them were consistently present. These included specifying the treatment times and locations, specifying the reinforcer, and describing the reinforcement schedule. These items can be deemed essential as they provide guidance on where and when to reinforce behaviours. If these items were missing, there may be an impact on treatment fidelity and effectiveness. Overall, the plans did contain detailed descriptions of the interventions, and appear to act as quality documents that can help ensure any individual involved in supporting the student understands the expectations. The results from

(Williams & Vollmer, 2015) and the current analysis of the clinical plans do align with the results from a survey sent to Board Certified Behaviour Analysts and Board Certified Behaviour Analysts – Doctoral, which asked to identify items that they considered essential in a clinical plan (Quigley et al., 2018). Some examples of items that were deemed as essential included the definition of the target behaviour, assessment data, description of procedures, data collection procedures, and data review procedures. All of these components were present in the plans assessed in this study at least 70% of the time. One component that was deemed essential by (Quigley et al., 2018) but not measured in the current study was procedures for training implementers. Even though this component was not explicitly described in the clinical plans, there is a typical process that the Psychology staff will follow when implementing a plan. Overall, the above provide some evidence that the layout of the programming provides a solid foundation for effective implementation of behaviour interventions due to the consistency of the approach and the quality of the clinical plans. Though not part of the evaluation, the ongoing training required by staff (such as Continuing Education required to maintain a BCBA® certification) may also contribute to these positive results.

The effectiveness of behaviour interventions was examined by looking at the behaviour tracking data, and specifically the databases in which clinical plans were in used to determine if the clinical plan had any effect on rates of challenging behaviours, and this addresses the third research question. The results from the multiple-baseline graphs showed that in general there were noticeable effects, but there were also some instances where improvement was not noted. For example, Students 25 and 7 showed similar results both before and after the implementation of the intervention. One factor that may have contributed to these results is that the data show the summary for all behaviours being recorded, as opposed to looking at each behaviour separately,

which may be masking some of the effects. A second factor is that if the goal is to teach a new skill, the clinical interventions may not be directly targeting challenging behaviour, so though a new skill might be improving, the challenging behaviour still occurs. Unfortunately, the development of new skills was not recorded in the data tracking system. Finally, the clinical interventions may have been implemented prior to the date on the clinical plan, as they were being trialed and developed. As such, the effects from the interventions may have begun sooner. As could possibly be the case for Students 23 and 3, where a drop in challenging behaviours were observable before the implementation of the intervention. It is possible that interventions were implemented informally, where treatment fidelity may be lacking, resulting in interventions that may be less effective. Previous research does suggest that informal interventions do carry risks (Feldman et al., 2004). The other possibility, and one that is more likely with students that have clinical plans, is that the Psychology Staff were piloting the intervention, and making modifications before a formal implementation. The specific date on when an intervention was initially trialed was not readily available, but as part of the survey sent to Psychology staff, the responses indicated this is a common approach. Overall, it does appear that the clinical interventions have positive impacts on the occurrence of challenging behaviours.

Finally, the group that had clinical plans implemented following the COVID-19 shutdown showed the most variability, with one student showing a decrease in behaviours and three showing an increase in challenging behaviours. Though there was a decrease in challenging behaviours for one student, which may be a factor suggesting that an intervention is not needed, it is possible that the intervention was in a pilot phase, and the effects were being noted in the data before the clinical plan was formally introduced. For the students that showed the increase in challenging behaviour, it is possible that these students were recently referred as a result of the

challenging behaviour, or that some interventions were being slowly introduced and the result of the increase was due to an extinction burst.

The final research question explored the perceptions of staff on the acceptability of the interventions, understanding of the interventions, and use of behaviour tracking system. Staff generally showed moderate to positive responses when asked about the appropriateness, ease, and effectiveness of the interventions, indicating that the interventions are generally accepted. The psychology staff at St.Amant do consult with the teachers and staff, and pilot the interventions before a full implementation, so the school staff are provided with an opportunity to voice their opinions or concerns. Relating to the previous literature, collaboration is described as an important feature and may result is more positive outcomes (Sugai et al., 2000; Carr et al., 2002; Fay et al., 2006). Taken together, staff appear to be satisfied with the interventions they are asked to implement.

Although the behaviour tracking datasheets are filled out in 15-minute intervals each day, staff did not find it to be a burden overall. When asked about the behaviour tracking datasheets, all the staff responded positively to the datasheets being a useful tool. Most of the staff indicated that the sheets were not too time consuming to fill out, but a small number of staff somewhat agreed with the statement, indicating that they felt that the datasheets were somewhat time consuming. Finally, all staff indicated positively that the datasheets are a useful tool to monitor student progress. All together, the results suggest that the datasheets are well accepted by the staff, and they recognize the value in collecting the information on a regular basis.

Chapter 5: Study 2 – Impacts of a COVID-19 Shutdown on Levels of Challenging Behaviour

This study was developed to evaluate the effects of a service interruption on the rates of challenging behaviour were explored. This study used retrospective data that was previously collected, and applied an approximation of a pre/post design to evaluate the rates of challenging behaviours before and after the shutdown, with the shutdown being used as the independent variable.

Methods

Behaviour Tracking Data Sample

The data included in this study was from students who had data both before and after the COVID-19 shutdown, which occurred from March to July 2020. The sample consisted of 14 students, split into 3 groups: Those without a clinical plan (N = 7), those who had a clinical plan implemented after the COVID-19 school shutdown (N = 4), and those who had a clinical plan implemented prior to the shutdown, but the interventions are either still in use or not formally closed until after the resumption of classes (N = 3). For the students who had clinical plans implemented following the COVID-19 school shutdown, the date of the clinical plans were between December 2020 and April 2021. Student 23 was one exception where there was a clinical plan introduced in 2017, but behaviour supports were closed in 2018. Due to the length of time that has elapsed since behaviour supports were closed, this student was included into the no clinical plan group.

Dependent Measure

To better understand how the sudden shutdown of a structured education program impacted challenging behaviours, the Behaviour Tracking Database (described in Study 1) was

reviewed. Specifically, the percentage of intervals where challenging behaviour was observed during the school day was analyzed. To calculate the percentage, the number of intervals in which there was at least one challenging behaviour reported was divided by the total number of intervals in which the students was present and awake and multiplied by 100.

The data was extracted using 3 time points, using 40 days of school attendance immediately before the shutdown, the rate of challenging behaviours during any return to classes, and 40 days of attendance following a typical return to school. The percentage of intervals with at least one challenging behaviour was taken from the Behaviour Tracking Database. Due to students being absent for any reason, an absolute number of days was selected as opposed to a fixed time period (i.e., 2 months). The return to school was examined by first looking at the student's typical attendance before the COVID-19 shutdown, looking at the most recent data and comparing it to the pre-shutdown data, and finally looking at the data immediately following the return to school and stopping when attendance was similar to the typical attendance pre-shutdown. Of the 14 students, 12 had a gradual return that followed either half-days or alternating days (i.e. Monday, Wednesday, Friday) and lasted on average 2.2 weeks (range = 1 - 6.5 weeks). One student did not have a gradual return and resumed school as they were before the shutdown and another student had inconsistent data so it was not possible to determine if there was any sort of gradual return.

Results

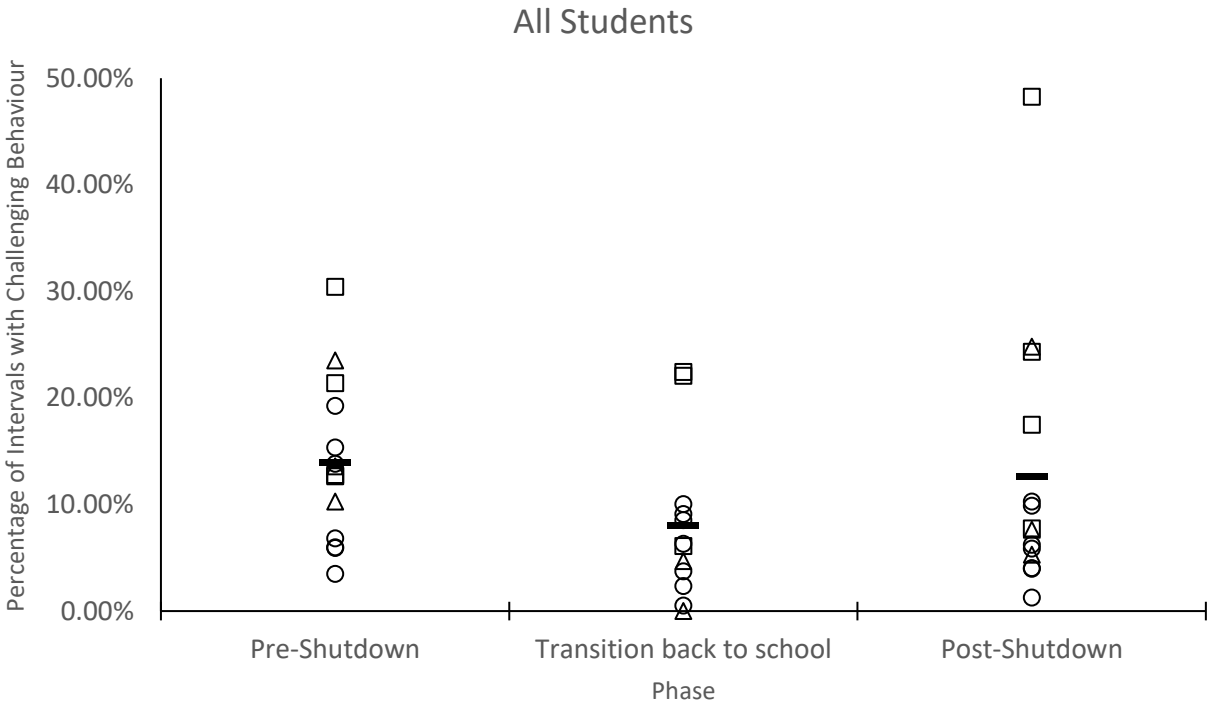
The COVID-19 shutdown lasted at St.Amant School from March to July 2020. During this time, the students were mostly at home and may have received a very limited amount of contact with their teacher through video calling. Any clinical interventions in place were halted by the school team, but no information was available on whether families implemented or

continued any interventions with the students. Figure 4 shows the percentage of intervals with challenging behaviour the 40 days attended before the shutdown, any gradual return to school, and the 40 days when the student returned to a typical school routine. There were 14 students who had data prior to and after the shutdown, and have been included in this analysis. Prior to the shutdown, the mean percentage of intervals with challenging behaviours noted was 13.95%. For the 12 students that had a gradual return to class, the mean percentage of intervals with challenging behaviours during the gradual return was 7.99%. During the 40 days after returning to a typical school schedule, the mean percentage of intervals with challenging behaviour for all students increased to 12.65%.

This data was also looked at by group, and the results are presented in Figure 5. For the group that did not have any clinical plans (N = 7), the mean percentage of intervals with challenging behaviour was 10.10% prior to the shutdown, 5.79% during the gradual return, and 5.93% during the 40 days after return to a typical schedule. The second group, in which clinical plans were introduced following the return to school (N = 4), the mean percentage of intervals with challenging behaviour was 19.30% prior to the shutdown, 16.87% during the gradual return, and 24.46% during the 40 days after return to a typical schedule. Finally, the group that had a clinical plan implemented prior to the shutdown but no indication that supports were faded out (N = 3) showed a pre-shutdown mean percentage of intervals with challenging behaviour of 15.79% prior to the shutdown, 2.35% during the gradual return, and 12.58% during the 40 days after return to a typical schedule. It is important to note that the sample sizes were small for both groups that had clinical plans, so their results should be interpreted with caution.

Figure 4

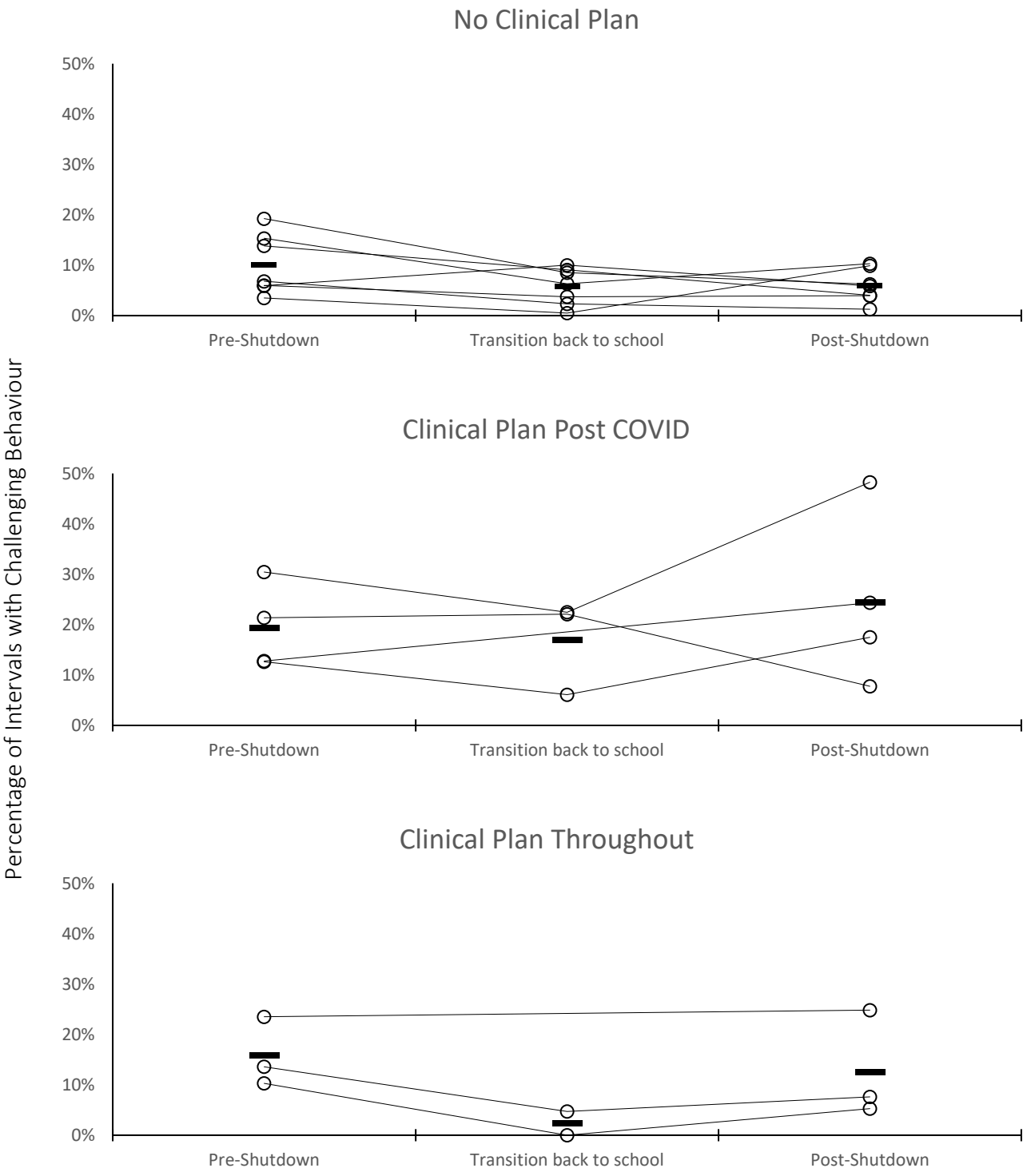
Mean Percentage of Intervals with Challenging Behaviour



Note: Circles represent no clinical plan, squares represent clinical plan implemented post-COVID-19 shutdown, triangles represent a clinical plan implemented prior to the COVID-19 shutdown and in use following the resumption of classes. Dashes represent the average percentage of interval with challenging behaviour.

Figure 5

Percentage of Intervals with Challenging Behaviour by Implementation of Clinical Plan



Note: Dashes represent the average percentage of interval with challenging behaviour.

Discussion

The purpose of this study was to look at the impacts of the COVID-19 shutdown on the abrupt shutdown of the school and any behaviour supports that may have been ongoing. The results from this study suggest that there are minimal impacts when considering all students sampled. Though the differences are minimal, there was a slight improvement in the group that did not have clinical plans, and a slight worsening of behaviours in the group that subsequently had a clinical plan implemented following the shutdown. It is important to highlight that it cannot be determined if the shutdown was responsible for the worsening of behaviours and the eventual implementation of a clinical plan, but rather that more challenging behaviours were recorded when the student returned to school. Some possible factors that were not accounted for but may have impacted the rates of challenging behaviour while the students were not attending school could include: reduced demands on the students, variations in social interaction, changes in routine, and any virtual education that may have been offered to the student.

There was also a decrease in behaviours during the gradual return, compared to before the shutdown, followed by an increase in behaviour when the schedule returned to a pre-shutdown level, though it is important to note that the sample sizes are low and the results should be interpreted cautiously. It is possible that since the students were at school for fewer days in a week or fewer hours at a time, less demands were placed on the students which may translate into less challenging behaviour. The students in the no clinical plan group and those who had the clinical plan in place before the shutdown showed rather similar and consistent data trends. There was one student in the clinical plan throughout group that had higher levels of challenging behaviour compared to others in the group, but showed similar levels before and after the shutdown, consistent with the other students in the group.

One consideration that may impact the rates of challenging behaviours is stimulus control. It may be possible that there were certain stimuli or reinforcers that were only available in the school setting and not at home, which may have resulted in desirable behaviour when the students returned to school. Additionally, it may be possible that if the function of the challenging behaviours was to escape from demands, and there were lower demands upon returning to school, challenging behaviour may have also decreased as a result.

Chapter 6: General Discussion

The purpose of the above studies was to (1) conduct an evaluation of the behaviour support model in use at St.Amant School and (2) evaluate the impacts of the school shutdown due to COVID-19. Overall, with respect to the first study, the behaviour support model in use by St.Amant School does show effectiveness, acceptability, and a methodological approach. Further discussion will describe how this process fits within the context of a positive behaviour support model. The second study, which focused on the sudden removal of services, provided evidence that suggests that behaviour is not necessarily impacted, unless a clinical plan was implemented in the future. Since conclusions cannot be drawn, further research is warranted on this topic.

Though St.Amant School does not formally apply a positive behaviour support model, it possesses features similar to Tiers 2 and 3 of the model. Tier 2 would apply to all students, as they were referred to St.Amant School due to limitations such as behavioural challenges that could not be addressed with the resources available at their previous school. Examples of Tier 2 support in St.Amant School include an instructional assistant for each student, individualized programming based on goals set by the school and family, and generalized behaviour management techniques taught to all staff, that would be applicable to all students. Tier 3 would apply to some of the students, and would involve a higher degree of support, which would include a formal behaviour intervention plan developed in conjunction with a behaviour analyst (described below). There are a few main differences between a school-wide positive behaviour support model and the St.Amant School. First, St.Amant school only targets Tier 2 and Tier 3 levels of support and each student has a highly individualized education plan, as opposed to a positive behaviour support model, in which each student will start off with the established curriculum and deviate only if needed. Second, St.Amant School only serves students with

developmental disabilities, whereas a school that typically uses positive behaviour support will be implemented in an integrated school that serve students of all abilities.

Furthermore, the approach taken at St.Amant School also follows the 5 steps on implementing a positive behaviour support model, as outlined by Sugai and Horner (2002). For the first step of establishing a leadership team, St.Amant has a Safety Facilitator whose duties include overseeing the regular data collection, and to act as a liaison between the School and the behaviour team with any concerns. Step 2 involves agreement for implementation from at least 80% of the staff. All staff are required to collect behaviour tracking data for all students, even if there is no involvement from a behaviour analyst. If the staff member works with a student for whom a clinical behaviour plan is being implemented, they must also learn and follow that plan. This is further overseen by the teachers, the safety facilitator, and sometimes psychology staff. Step 3 of developing action plans occurs when a teacher deems that a clinical plan and behaviour interventions are required for the student. This step would be completed by the behaviour analyst, in conjunction with the student's education team. Step 4 of implementing with high fidelity would have similar approaches to Step 2, but the behaviour analyst would be more involved on training and monitoring staff to ensure the clinical plan is being implemented as intended. Finally, for Step 5, which involves data driven monitoring, the behaviour tracking system in place provides detailed information about the frequency, time, and types of challenging behaviour.

Referring back to the characteristics that make up a model of positive behaviour support, which include: (a) basing the model on a behavioural science; (b) using practical interventions which are empirically validated, and making decisions based on observable behaviours; (c) considering social values through the use of interventions which are not aversive, attempting to

obtain socially significant behaviour change, and ensuring that any interventions implemented are culturally appropriate; and (d) adopting a systems perspective, which considers all members who may contribute to the implementation of the support (Sugai et al., 2000), it is apparent that the St.Amant School uses an approach in which all four of the above are considered. The psychology staff follow the best practices for selecting and implementing the interventions, which are covered in points (a) to (c) above. Points (c) and (d) are addressed as the school team is involved in the process, which helps ensure that positive outcomes can be attained.

When considering the overall results obtained, they do seem to align with previous research on the implementation of positive behaviour research. First, the research by Solomon et al. (2012) found that moderate effects were observed and students receiving a higher level of support, such as Tier 3, may have better outcomes. In this study, the behaviour interventions were shown to have effects, but not in all cases. Second, the study by Bradshaw et al. (2010) showed that staff that received training on positive behaviour support were better on implementing procedures compared to control schools. With respect to St.Amant School, the staff are expected to collect data and implement interventions as required as part of their job duties. Though there is no comparison available at St.Amant School, staff who are not appropriately trained may find collecting data and implementing interventions to be difficult.

Strengths

One of the strengths of this study was that it explored the impact of clinical interventions aimed to reduce challenging behaviours in a school setting using individual-level data. Though research has been conducted on individual interventions, previous studies that were focused on evaluations of behaviour support models looked at school-wide level outcomes. By understanding how the supports implemented by schools may impact each student differently,

smaller adjustments could be made on an individual basis as needed. A second strength was the quality of the data. As the staff collecting the data were trained and filling out the datasheets is an expectation of the job, confidence in the results can be held. Finally, this study was able to examine the COVID-19 school shutdown in order to understand how a sudden removal of behaviour interventions impacts behaviour. As clinical interventions are typically in place and faded out gradually, this was an area in which no prior research existed.

Limitations

Several limitations need to be noted. The first is the reliability of the behaviour tracking data. As this is archival, it is possible that the collection methods result in some errors. Though staff training and reliability checks occurred when the data collection system was developed, no regular checks were made after the data collection system was implemented. A similar limitation is also present with the implementation of the interventions by the school staff. Though they would have received training until they were deemed competent, there was no procedural reliability check conducted.

The second limitation was small sample and group sizes for the student behaviour data. It was known that the sample size for students was going to be limited. However, the sample size obtained did not allow for groups to be formed of sizes that would allow statistical analyses to be conducted with an adequate power level. Furthermore, as the research design for evaluating the student data did not involve random assignment, but rather assignment based on some given criteria, there may be additional limitations imposed.

A third limitation was the implementation of the interventions. It is possible that in some instances staff would use behavioural interventions (such as a token board) with other students at the classroom level, but there would be no formal procedures or interventions in place from the

Psychology team. These undocumented interventions could be interpreted in one of two ways. First, they are undocumented in the sense of the psychology team not being responsible for the implementation of the intervention, thereby the behaviour analyst being unaware of any effects or outcomes. Second, it is possible that the teachers and instructional assistants have acquired behaviour management skills, which may have been generalized to other students. Though this second interpretation may impact the effectiveness of any interventions written in a clinical plan, the fact that the interventions are having a positive effect could be seen as a desirable outcome.

A fourth limitation was that the clinical plan dates may not align with the actual date of the intervention. This is caused in part due to the piloting of the interventions as the final plan is written, and any potential delays from the time the plan was finalized to the time it was formally implemented. Though the rationale used by Psychology services in order to ensure that the intervention works for the team is valid, it also imposes a limitation as a specific start date cannot easily be determined.

Fifth, there are risks of uncontrolled variables that may impact the data. One noteworthy variable is what students were doing during the school shutdown, and how these activities may have impacted behaviour. Additionally, other factors such as impacts to family with respect to unemployment or illness may have also contributed to changes in rates of challenging behaviours.

Finally, the multiple baseline design across participants used does not represent a traditional design. The design used in this study considered target behaviours and interventions that differed across participants, whereas a traditional multiple baseline across participants design would use the same intervention for all participants (Kazdin, 2011). Though this study was looking at the impacts of behaviour interventions from a more general sense, it is possible

that different interventions may have different effectiveness, which could impact the overall results across participants. This could be mitigated in future research by using a more prospective approach in which students would receive a similar intervention.

Implications

Several potential implications can be identified in this study. The first is that there is a better understanding of the effectiveness of behavioural consultation and the impact of the clinical plans on behaviour tracking data. This can be helpful in introducing a behaviour tracking system to a new setting or classroom, where there may be some reluctance from staff to collect data regularly. The second implication is that given there were minimal impacts on behaviour as a result of the COVID-19 shutdown, this information could be used as part of future planning, should an intervention in use need to be halted abruptly. For example, should there be any instance where a classroom must shutdown temporarily and suddenly, the individuals in charge of the situation could consider that once students return, any sort of behaviour interventions that were implemented prior to shutting down should not be significantly impacted, once students resume. One reason this may be important is that prior to an interruption, stimulus control for the intervention may have been established, and this stimulus control may still be in effect when the interruption ends. Also, clinicians could take active steps to strengthen stimulus control during the interruption to maintain problem behaviours at a low rate (e.g., maintaining video contacts with the student, programming stimuli associated with the intervention school in the home). Finally, the results obtained can be shared with St.Amant School and Psychology Staff to help further improve the services and supports offered. Specifically, the social validity questionnaire provided feedback which indicates overall staff satisfaction with behaviour data tracking and interventions recommended by psychology services. The consultation survey provided details on

how staff approach a referral, and may allow for discussion on recommendations for future adjustments to any service model. Psychology Staff may also benefit from the use of the Clinical Plan Assessment Checklist (Appendix B) to ensure that the plans that are being written are of high quality and contain components that would allow an individual to effectively implement the intervention. Staff may also benefit from reviewing the data collection system in place and looking for additional efficiencies such as further limiting the number of behaviours collected per student and exploring the possibility of electronic data collection.

Future Research

Future research should continue to look at the impact of behaviour interventions in school settings. For example, future research is needed to evaluate the use of undocumented clinical interventions that are familiar to staff, and to understand if these interventions contribute to student success. Though there may be some difficulty in identifying these types of interventions, having a systematic approach to collecting information throughout the day may help identify when an intervention was used by a staff member.

Second, it would be useful to further assess the social validity of collecting data on a larger sample. The staff at St.Amant school are required to collect the data for every student, but in a public school setting, an educational assistant may only collect data for some of the students for a limited time. Staff are already completing a multitude of tasks with their students, and adding the requirement to collect data is another task they must complete. By finding out how to make the data collection process more efficient can be beneficial. An additional area of research related to this may be to explore the representativeness of the students, as other schools that may operate similar to St.Amant School may serve different populations or support students that have similar characteristics.

Third, replicating this study prospectively as opposed to using retrospective data will help address the concerns associated with unknown reliability. Due to limitations surrounding COVID-19, this study was unable to conduct a prospective analysis and was limited to the archival data available. Though a study of this nature would be time-consuming, it would allow for a very high degree of confidence in the results.

Fourth, future research may also look at how the behaviour tracking data might be linked to other data sources. Though the focus was strictly related to psychology supports, it is possible that a student may also be receiving support form another discipline such as occupational therapy or speech-language pathology. Students may have other sources of data, that could potentially be linked and examined on a larger scale.

Finally, it may also be beneficial to look at the critical components of a clinical plan, and what would the necessary information be in order to provide quality service without including too much information. Overall, this study provided more insight into the effectiveness of clinical interventions, the social validity of implementing interventions and collecting data, and the impacts of a sudden removal of behaviour supports.

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Appendix A

Behaviour Tracking Datasheet

Datasheet Instructions: (record something every interval)

1. Write today's **date and** the **day of the week** at the top of the page.
2. Use a checkmark to indicate whether one or more challenging behaviours were observed during each 15min interval OR check Nothing to Report.
3. Check Asleep only when the student is asleep for the entire 15 minute interval.
4. Check No Client only when the student is not observable for the entire interval.

Behaviour Definitions

Running Away *- Any instance where student leaves the classroom without permission, and is gone for more than 15 seconds*

Outburst/Tantrum *- Any instance where student may cry, become upset, fall to the floor, or become aggressive for more than 30 seconds*

Scratching others *- Any attempt or successful instance when student grabs onto and scratches another individual*

	Nothing to Report	No Client	Asleep	Running Away	Outburst/Tantrum	Scratching Others	Other (Please specify)	Other (Please specify)	Comments:	Initials
8:30	Q	W	E	A	S	D	F	G		
8:45	Q	W	E	A	S	D	F	G		
9:00	Q	W	E	A	S	D	F	G		
9:15	Q	W	E	A	S	D	F	G		
9:30	Q	W	E	A	S	D	F	G		
9:45	Q	W	E	A	S	D	F	G		
10:00	Q	W	E	A	S	D	F	G		
10:15	Q	W	E	A	S	D	F	G		
10:30	Q	W	E	A	S	D	F	G		
10:45	Q	W	E	A	S	D	F	G		
11:00	Q	W	E	A	S	D	F	G		
11:15	Q	W	E	A	S	D	F	G		
11:30	Q	W	E	A	S	D	F	G		
11:45	Q	W	E	A	S	D	F	G		
12:00	Q	W	E	A	S	D	F	G		
12:15	Q	W	E	A	S	D	F	G		
12:30	Q	W	E	A	S	D	F	G		
12:45	Q	W	E	A	S	D	F	G		
13:00	Q	W	E	A	S	D	F	G		
13:15	Q	W	E	A	S	D	F	G		
13:30	Q	W	E	A	S	D	F	G		
13:45	Q	W	E	A	S	D	F	G		
14:00	Q	W	E	A	S	D	F	G		
14:15	Q	W	E	A	S	D	F	G		
14:30	Q	W	E	A	S	D	F	G		
14:45	Q	W	E	A	S	D	F	G		
15:00	Q	W	E	A	S	D	F	G		
15:15	Q	W	E	A	S	D	F	G		
15:30	Q	W	E	A	S	D	F	G		
15:45	Q	W	E	A	S	D	F	G		

Appendix B

Clinical Plan Assessment Checklist (Based on Williams & Vollmer, 2015)

Component	**Present?**
1. The target behaviour to be reduced is defined	Yes / No
2. Objectives are measurable and time limited – there is indication that psychology supports are to be consultative in nature, and will be faded out at some point in the future	Yes / No
3. Baseline for target behaviours has a quantitative measure over time, that is, the behaviour is counted in some numerical way	Yes / No
4. Method for data collection is described and appropriate – This could be behaviour tracking data, or other if the behaviour is not typically collected.	Yes / No
5. A functional assessment was conducted and included a questionnaire and direct observation or functional analysis	Yes / No
6. Treatment times and locations are specified for replacement behaviours	Yes / No
7. A functional reinforcer is specified, or the reinforcer is one that is motivating to the student based on staff reports, preference assessment, or reinforcer assessment	Yes / No
8. Reinforcement schedule is specified	Yes / No
9. Reinforcement schedule is appropriate. The reinforcer should be encountered at a reasonable frequency, which may change over time	Yes / No
10. Generalization strategies are briefly described (e.g., across people, settings, etc.)	Yes / No
11. Maintenance over time strategies are briefly described	Yes / No
12. Consequences for problem behaviours are specified	Yes / No
13. Review schedule is described	Yes / No
14. Criteria for determining revisions is described	Yes / No

Appendix C

Social Validity Scale – Adapted from the Primary Intervention Rating Scale (Lane et al., 2002)

Please read and indicate your response or agreement with the following statements. When answering, consider your general perception – that is, do not base your responses on a single student, but rather consider all the students you've worked with.

Demographics
Gender:____
Years working as a Teacher or Instructional Assistant:_____
Familiarity with the behaviour tracking forms:

Not at all familiar	Somewhat familiar	Very familiar

Have you implemented behaviour interventions (from a clinical plan)? Yes/no.
If yes, approximately how many over the past year?_____

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. The interventions recommended by psychology staff are appropriate for the student						
2. The interventions recommended are easy to implement						
3. I like the interventions recommended for students						
4. The interventions could be applied to other students with similar challenging behaviours						
5. The interventions I've used with students are effective						
6. The behaviour tracking datasheets are a useful tool						
7. The behaviour tracking datasheets are too time consuming						
8. The behaviour tracking datasheets allow for an effective monitoring of the students progress						

Note: Question 7 is to be reverse scored