Best Practice in Interventions for Children with Anorexia Nervosa

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Anorexia Nervosa (AN) is a category of eating disorder characterized by a refusal to maintain body weight at or above the normal level for an individual's age and height, an intense fear of gaining weight or becoming overweight even when currently underweight, and significant disturbances in the perception of one's body weight or shape (American Psychiatric Association, 2000). The onset of AN typically occurs in mid-to-late-adolescence, affecting between 0.3% and 1% of women, and often begins as innocent dieting (Palmer, 2008). There are two clinical sub-types of anorexia nervosa; anorexia nervosa restricting sub-type (ANR), and anorexia nervosa binge-eating purging sub-type (ANBP). ANR is characterized by weight loss through severe restrictions related to eating behaviour such as extreme dieting or starvation and excessive exercise (American Psychiatric Association, 2000). On the other hand, ANBP is characterized by the regular occurrence of binge-eating behaviour followed by purging behaviours including self-induced vomiting and the use of laxatives as a means of food expulsion and elimination (American Psychiatric Association, 2000).

Ideally, a multidisciplinary team and a combination of treatments can aid the individual with the medical, psychological, and practical support they need. It is essential that school psychologists and other educational professionals be cognizant of the effects AN may have on the neurological and learning abilities of students struggling with AN so that best practices in the design, implementation, and evaluation of empirically based intervention strategies can be put in place to support students upon their return to the educational environment as well.

Neurological Consequences of Anorexia Nervosa

AN affects all areas of a child's and adolescent's growing and developing bodies; including organ and nerve, cognitive, social, behavioural and emotional functioning (Katzman,

2005; Mash & Barkley, 2003). Specific areas of neuropsychological domains that can be affected by AN often include verbal and visual memory, visuospatial ability, set shifting and sustained attention skills, as well as disordered thinking and confusion (Moser, Benjamin, Bayless, et al., 2002). In some cases, neurological changes from sustained lack of nutrients and nourishment result in the rewiring of the brain and possible permanent brain damage and mental health concerns, however, there are also evidence that these changes can return to normal after the individual gains and remains at a healthy weight for their body type (Chui, Christensen, Zipursky, et al., 2008).   It is important for school psychologists and other educational members to determine, monitor, and provide interventions to aid individuals with any learning and executive functioning difficulties they may be experiencing due to AN.

School-Based Intervention Planning for Anorexia Nervosa

In the design, implementation, and evaluation of interventions, adherence to standards of best practice is of critical importance in yielding successful outcomes. Upah (1988), as cited by Upah and Tilly (2002), identified a 12 step quality model of best practice in the development, implementation, evaluation and documentation of intervention strategies. These 12 steps are presented within the four problem solving stages of behavioural consultation; problem identification, problem analysis, plan implementation, and plan evaluation (Bergan & Kratochwill, 1990, as cited by Upah & Tilly, 2002).

Problem Identification

The first stage of this model focuses on the identification and definition of the problem in terms of the differences observed between the expected behaviour of the student and the actual behaviour being demonstrated (Upah & Tilly, 2002). It is also essential that the targeted

behaviours for intervention be described in specific, observable, and measurable terms (Upah &

Tilly, 2002). Within this stage, behavioural definition is established, baseline data representing

the student's current level of functioning, and the problem validation is determined through the

examination of discrepancy between a student's current level of performance and the

environmental expectations.

Behavioural Definition

In addition to the severe medical, physical, and emotional consequences of AN, executive

functioning, learning abilities, and academic performance can also be affected (Yanover, &

Thompson, 2007). Some factors that are associated with and influence the onset, recovery, and

relapse of AN can be depression, anxiety, obsessive behaviour, perfectionism, and heightened

self-consciousness (Bulik, Reba, Siega-Riz, & Reichborn-Kjennerud, 2005; Mash & Barkley,

2003). The school team must also keep in mind that the lack of nutrients and inadequate

nourishment and weight level of an individual with AN may temporarily or permanently cause

measurable cognitive and executive functioning deficits that will influence their learning

abilities. It is imperative that the educational team members ensure that the presenting cognitive

deficits be clearly defined, including both examples and non-examples, so that the deficits are

plainly understood by all involved in the implementation of the intervention (Upah & Tilly,

2002).

Baseline Data

Just as the medical and mental health professionals assisting the individual in their

struggles with AN establish a level of functioning prior to intervention so that levels of progress

can be determined throughout their intervention, the school team must develop baseline data to

evaluate the existence of cognitive and executive functioning deficits, the effectiveness of

intervention, and the degree of student progress (Upah & Tilly, 2002). This collection of

baseline data between the relationships of deficit cognitive and executive functioning and other

environmental or academic variables provide critical information that can guide the functional

analysis and intervention design (Upah & Tilly, 2002). It is important to ensure that the

cognitive and executive functioning deficits are measured directly, an accurate and objective

measurement strategy be used to collect the data, and this same measurement strategy be

consistently and reliably employed throughout the intervention process as a means of

documenting and evaluating student progress (Upah & Tilly, 2002).

Problem Validation

The magnitude of the presenting cognitive and executive functioning deficit can be

determined by examining the discrepancy between the student's current level of cognitive and

executive functioning while performing academic tasks and the expected level they should be

performing at (Upah & Tilly, 2002). Once again, it is important for the educational team to be

aware of how cognitive and executive functioning deficits may present and affect academic

activities is vital in the early detection and intervention process for students with AN. The

expected performance of the student's age-peer group, curriculum standards, and teacher/course

expectations can be used when comparing the expected skills and abilities to be performed

during academic activities (Upah & Tilly, 2002).

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Problem Analysis

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Problem Analysis, as outlined by Upah and Tilly (2002), involves the identification of why

a problem is occurring. Standards of best practice during problem analysis include: identifying

relevant known and unknown information, generating and validating a hypothesis or prediction

regarding the problem behaviour, and the use of assessment information to select an intervention

design. The final step in this stage involves linking the assessment pertaining to the individual

child to the intervention design, as successful interventions should be individually tailored to

meet the specific needs and characteristics of the student (Upah & Tilly, 2002).

The extent of how AN can affect an individual's cognitive and executive functioning

abilities is not consistent across all sufferers of AN. As mentioned earlier, some individuals with

AN are seemingly able to recover the cognitive and executive functioning deficits that were

present during the peak of their illness, however, once their body weight reaches and maintains

at a healthy weight for their body type, whereas for others, any changes or damages caused by

lack of nutrients are unrepairable (Chui, Christensen, Zipursky, et al., 2008). Before a school-

based intervention plan, it would be beneficial for the school psychologist to be aware of any

medical or mental health interventions are already in place to ensure these areas of concern are

being addressed as well. At a school-based level, Functional Behavioural Assessment (FBA)

and Curriculum-Based Evaluation (CBE) are two methods of problem analysis school

psychologists and other educational professionals can employ to address suspected cognitive and

executive functioning deficits in an individual with AN (Upah & Tilly, 2002). Therefore, one

step into investigating suspected cognitive and executive functioning deficits is to conduct

psychoeducational assessments, along with observations made by teachers and parents, can guide

the direction to developing an intervention plan to ensure the core areas of concern are being

addressed.

Plan Implementation

Plan implementation encompasses standards of best practice in the development and implementation of the intervention strategy (Upah & Tilly, 2002). Best practices associated with this stage include; identifying the outcome goals of the intervention, designing the intervention in accordance with meeting the established goals, developing a measurement strategy for interpreting goal attainment and measuring intervention outcomes, and developing a decision making plan in response to the outcome of the success rate of meeting the established goals (Upah & Tilly, 2002).

Goal setting

To ensure the success of an intervention, Upah and Tilly (2002) stress that the goals should be clear, concrete, observable, and measurable. This promotes a focused plan for implementation, a clear method for assessment and evaluation, and explicit plan on what the student's outcome will be upon completion of the intervention (Upah & Tilly, 2002). While determining the most effective school-based intervention for a student with AN, goal setting involves determining which cognitive and executive functioning deficits the intervention will target, how it will be implemented, and how and when progress will be assessed.

Intervention Plan Development

Once the cognitive and executive functioning deficits are identified, it is essential that the intervention plan sets clear commonly agreed upon procedures on how and who will implement each of the intervention strategies depicted to aid the student achieve the desired outcomes (Upah & Tilly, 2002). The integrity of the intervention plan depends on the clarity of the procedures and goals (Upah & Tilly, 2002).

It is important for school psychologists and other educational professionals involved in the intervention plan to be conscious that many individuals with AN, especially so with individuals with ANR, often have perfectionism and/or obsessive tendencies, as well as pro-anorexia beliefs or denial, which have made some medical and mental health interventions difficult to implement and conduct on a successful basis (Schmidt & Treasure, 2010). Therefore, it can be assumed that these factors may influence the success of cognitive and academic school-based interventions that are to be implemented as well. Awareness of these factors should be taken into account as intervention goals, as well as how and who will be implementing the determined strategies, are set to aid the individual in the success of addressing any cognitive and executive functioning deficits that may be presenting themselves in the school setting.

Measurement Strategy

It is of the utmost importance that the method and materials determined during the baseline data step continue to remain the same when establishing the measurement strategy to employ to ensure its integrity (Upah & Tilly, 2002). Modifications in the areas of where, who, and when the data will be collected can occur, however, the overall method must remain unchanged (Upah & Tilly, 2002). Continual observations and evaluation of interventions is necessary, as improvements in cognitive and executive functioning deficits may occur as the student with AN gains the expected weight level and necessary nutrients through their intervention plan developed by their medical professionals. However, as mentioned earlier, it should not be assumed that cognitive and executive functioning deficits will correct themselves with an improvement in the student's physical health.

Decision-Making Plan

The final step in the Plan Implementation stage focuses on verifying how decisions will be made in making decisions regarding the school-based intervention plan. Confirming the frequency for which data will be collected, strategies to employ to address the areas of concern, the best means of summarizing data to be evaluated, the time frame for when data should be analyzed and how much data is required to ensure sufficient information is gained, and determining an agreed upon guidelines or decision rule regarding collected data need to be made in the decision making step (Upah & Tilly, 2002). These decisions are critical in that they influence the reliability and dependability of the data collected on the effectiveness of the implemented intervention.

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Program Evaluation

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The final stage involves problem evaluation. Best practices encompassed within this stage include; formative evaluation and monitoring of progress made during intervention implementation to evaluate the effectiveness of the intervention strategy, evaluating treatment integrity or the degree to which the intervention is being implemented as intended, and a summative evaluation of the effectiveness of the intervention strategy in supporting the individual to achieving the desired goals (Upah & Tilly, 2002).

Progress monitoring

Frequent monitoring and evaluation of the student's progress throughout the implementation of the intervention is absolutely essential to ensure the appropriate strategies chosen are effective and accurate in addressing the student's needs (Upah & Tilly, 2002). Continuous evaluation provides an opportunity for any modifications to be made to an intervention if strategies are not to aiding in the student's progress in their targeted behaviours

(Upah & Tilly, 2002). It is important to remember that unless the targeted cognitive and executive functioning deficits were present before the onset of AN, these deficits may improve as the student's health improves; therefore, intervention strategies may need to be adjusted to address the changing cognitive and executive functioning strategies needed by that individual.

Upah and Tilly (2002) suggest a variety of methods for monitoring and evaluating data of student process, which may include anecdotal observation notes, checklists, portfolios, rubrics, percentages, and frequent count; however, it is essential to ensure that the method employed for monitoring is consistent with the methods used during the baseline data collection and method strategy steps to make certain it is the actual intervention strategies that have improved the targeted behaviour, and not because of the differing forms of measurement being employed. One effective way of tracking and displaying student progress is through graphs and charts, as these visual representations of collected data can easily display changes in behaviour, whether it is growth, setbacks, or plateaus, throughout an intervention (Upah & Tilly, 2002).

Formative evaluation

Formative evaluation investigates the probability of success an intervention is demonstrating during its implementation by comparing the current collected data with the baseline data (Upah & Tilly, 2002). Results from this evaluation may depict modifications to the intervention plan is necessary to ensure success the set goals for the student is achieved (Upah & Tilly, 2002). The process of how modifications to the intervention will be determined and described in detail within the decision making plan step, and deviating from the set criteria may influence the reliability of the final results of the intervention (Upah & Tilly, 2002). At times, changes occurring throughout an intervention process may not be obviously evident, therefore a visual analysis of the collected data's performance throughout the intervention, such as changes

in the mean, level, trend, and latency, will aid in the decision process of whether to change the intervention in any area (Upah & Tilly, 2002).   As mentioned throughout this paper, so many factors influence the cognitive and executive functioning of an individual with AN, therefore, a detailed and clear understanding of how the school-based intervention plan is proceeding, and when to make changes to the plan to encourage success, is of great importance.

Treatment integrity

The school psychologist and educational professionals must have confidence that an intervention has been implemented and carried out correctly and in full compliance with its design to ensure a student received the full benefits of that intervention. Treatment integrity can be promoted by ensuring there is a written document of the plan available and understood by all parties involved, training in the strategies to be implemented is provided, ensure observations can be conducted throughout the implementation, and the treatment plan is clear and understood by all those involved (Utah & Tilly, 2002). Upah and Tilly (2002) provide a variety of approaches that can be employed to evaluate the integrity of a treatment, including interviews with teachers and parents, direct observations during implementation of intervention strategies, and a checklist to use and guide the process of the implementation of the intervention. There could be a variety of overlapping cognitive and executive functioning deficit areas an individual with AN may be experiencing, therefore, it is critical that the specific strategies employed to address any one or more deficits be documented and adhered to faithfully to ensure the integrity of the intervention remains intact.

Summative evaluation

The summative evaluation is conducted upon the completion as a means to determine how successful the intervention was on improving the student's area of need (Upah & Tilly, 2002).

Examining data provided through the decision rule, as well as comparing the data collected prior to the implementation of the intervention (baseline data) and upon the completion of the intervention are two sources of information the school-based intervention team may conduct to perform a summative evaluation (Upah & Tilly, 2002). If the intervention is deemed unsuccessful, then reanalyzing the problem and means of addressing the presenting concerns will need to be conducted (Upah & Tilly, 2002). The exact factors or reasons for the successfulness of an intervention plan in addressing the cognitive and executive functioning deficits presented by an individual with AN can be difficult to determine, as these deficits are often the result of inadequate nutrient and nourishment intake of that individual. Therefore, all interventions being implemented, such as medical, mental health, as well as school-based, will need to be examined before determining the success rate of school-based interventions for cognitive and executive functioning deficits can be determined.   Upah and Tilly (2002) also stress the importance of monitoring and checking in on the student's progress after a successful intervention has been completed to ensure progress has been continued.

Conclusion

At a school-based level, it is important that not only school psychologists, but other educators, the family, and the individual with AN themselves, recognize that the physical and mental health factors involved in AN can also cause temporary or permanent cognitive and executive functioning deficits for the student struggling with AN. These cognitive and executive functioning deficits can greatly influence the student's ability to learn and perform academic tasks. Upah and Tilly's (2002) four-phased 12 step for best practices in designing, implementing and evaluating quality interventions is one reliable method of ensuring effective intervention for addressing students with AN cognitive and executive functioning deficits at a school-based level.

References

American Psychiatric Association (1994). *DSM-IV diagnostic and statistical manual (4ᵗʰ ed.).*

Washington, DC: American Psychiatric Association.

Bulik, C.M., Reba, L., Siega-Riz, A., & Reichborn-Kjennerud, T. (2005). Anorexia nervosa:

Definition, epidemiology, and cycle of risk. *International Journal of Eating Disorders,*

37(1), 2-9. doi: 10.1002/eat.20107

Chui, H.T., Christensen, B.K., Zipursky, R.B., Richards, B.A., Hanratty, M.K., Kabani, N.J., et

al., (2008). Cognitive function and brain structure in females with a history of adolescent-

onset anorexia nervosa. *Pediatrics, 122*(2), 426-437. doi: 10.1542/peds.2008-0170

Katzman, D.K. (2005). Medical complications in adolescents with anorexia nervosa: A review of

the literature. *International Journal of Eating Disorders, 37*(1), 52-59. Retrieved from

http://onlinelibrary.wiley.com/doi/10.1002/eat.20118/pdf

Mash, E.J., & Barkley, R.A. (Eds.). *Child Psychotherapy*, Second Edition. New York, NY. The

Guilford Press, 2003.

Moser, D.J., Benjamin, M.L., Bayless, J.D., McDowell, B.D., Paulsen, J.S., Bowers, W.A, et al.,

(2002). Neuropsychological functioning pretreatment and posttreatment in an inpatient

eating disorder program. *International Journal of Eating Disorder, 33*(1), 64-70. doi:

10.1002/eat.10108

Palmer B. Epidemiology, diagnosing and assessing eating disorders. Diagnosis, aetiology and

assessment. *Psychiatry 2008, 7*(4):143-146.

Schmidt, U. & Treasure, J. (2010). Anorexia nervosa: Valued and visible. A cognitive-

    interpersonal maintenance model and its implications for research and practice. *British*

    Journal of Clinical Psychology, 45(3), 343-366. doi: 10.1348/014466505X53902

Upah, K., & Tilly, D.W. (2002). Best practices in designing, implementing, and evaluating

    quality interventions. In Thomas, A. & Grimes, J. (Eds.), *Beat practices in school*

    psychology (pp.483-501). Bethesada, MD: NASP Publications.

Yanover, T., & Thompson, J.K. (2007). Eating problems, body image disturbances, and

    academic achievement: Preliminary evaluation of the eating and body image disturbances

    academic interference scale. *International Journal of Eating Disorders, 41*(2), 184-187.

    doi: 10.1002/eat.20483