



# Population Health: Enhancing Community Outcomes through an Inter-Professional Collaborative Education Project on Executive Functions

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## Abstract

Population health looks at health outcomes for specific populations. Researchers, clinicians and policy makers analyse issues/concerns and data regarding health outcomes to determine best practices and programs to improve community health. Programs should focus on social determinants of health (SDH). Programs, which are inter-professional, collaborative ventures between organizations within a community, have improved outcomes. Executive Functions (EF) is a set of skills required to perform high-level cognitive functions and regulate behaviors. Weakened EF is commonly found in children with developmental disabilities, and in those without disabilities. Failure to assist children with weak EF may result in academic failure and disruptive behaviors, resulting in poor outcomes as they mature.

Parents Reaching Out (PRO) is a non-profit organization devoted to improving the outcomes of families with children who have developmental disabilities. In collaboration with the University of New Mexico College of Nursing (NMCON), PRO has partnered to create an inter-professional evidence-based educational project to improve the outcomes of children with weak EF throughout New Mexico. Commencement of the project began in April 2016 and continues today. The program has dual processes and goals: (a) Upgrading and training of PRO staff in Executive Functions, (b) development of workshops, trainings and supportive materials for PRO staff to teach EF issues in the community and (c) enhance management of current health concerns (EF weakness) throughout the state of New Mexico.

This project received wide acceptance by the PRO staff and the several community members who participated in the various forms of education provided. The project is on-going and the areas of outreach and education continue to grow.

**Keywords:** Population health; Community; Health

## Background and Significance of the Problem

Population health looks at health outcomes for specific populations (groups of individuals), and the distribution of outcomes within that population [1]. The purpose of population health is for researchers, clinicians and policy makers to determine how to improve health outcomes for communities and develop programs that will work towards enhancing these outcomes [2]. Programs should focus on social determinants of health (SDH) in the area of health promotion, disease prevention, or enhanced and equitable management of current health concerns. Outcomes in community health are expected to improve when different organizations collaborate on important issues within the community.

Executive Functioning (EF) refers to mental processes and skills required to organize the brain to act on information to reach a goal. These skills include: working memory, initiating and planning tasks and regulating behavior (Appendix A). Weak EF can occur in children with developmental disabilities as well as those without developmental disabilities. While weak EF is not a diagnosis, it will increase the difficulties of managing day-to-day activities and educational success, for persons with this disorder. While the exact number of children with weak EF is not known, it is becoming an increasingly more common concern. Some special education specialists recognize the effect that weak EF has on academic success, while others in the community are still unaware of this disorder [3].

Persons with disabilities represent about 18.7 percent of the population in the United States (Healthy People, 2020). Healthy People 2020 recognize the goal of promoting full community participation and quality of life for individuals with disabilities of all ages. While (SDH) for persons with disabilities are the same as those who do not have disabilities, persons with disabilities are generally less visible and are likely short-changed in population health programs [4].

Weak EF can be a significant learning disorder for children without developmental disabilities. For children with developmental disabilities and weak EF, learning can be much more difficult, with poorer outcomes and decreased opportunities within the community as they mature. In addition, academic failure can lead to decreased self-esteem and altered peer/social interaction. Issues of weak EF are new concepts for community members. School staff and community members must become educated with the issues associated with weak EF in order to better advocate for their children/students, so that all children can reach their full potential as adults.

## Purpose of Inter-Professional Collaborative Education Project

PRO strives to enhance positive outcomes for families and children with disabilities and others who are disenfranchised throughout New Mexico. PRO achieves their outcomes by: a) developing family leadership, b) connecting families to each other, c) building collaborative partnerships, and d) providing families knowledge and tools to enhance their power (empowerment) [5]. Parents Reaching Out provides services to families throughout the state of New Mexico.

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While they focus on persons with disabilities, educational programs are available to anyone wishing to attend. They are in a prime position to educate community members about the significance of Executive Functions/Functioning and EF weakness. PRO staff travels throughout New Mexico providing programs free of charge. This reduces some of the obstacles community members face when becoming educated about issues affecting their family. In addition, PRO has developed a resource workbook/manual, which provides instructions/information on helping families with EF issues. This manual is available to families whether they attend a program or not.

Through a joint effort The University of New Mexico College of Nursing and PRO collaborated to have a DNP student teach the PRO staff about weak EF. The DNP student provided education, skill development and materials (booklet on EF) and a staff involved poster presentation. This enabled PRO staff to educate school staff, families who have children with disabilities, and interested professionals throughout the New Mexico community.

The purpose of this evidence-based project was to provide PRO staff with the education, skills and materials (booklet and others) regarding weak executive functioning so they can better support families and professional staff about this disorder. Families will be better prepared to address their children's needs both at home and at school. They will also have better understanding of weak EF, which will empower them through the Individualized Education Plan (IEP) process and other areas where accommodations are required.

A secondary goal for the PRO staff was to encourage professional development through enjoyable academic activities. The PRO staffs specialists are well prepared to assume the roles they play within the organization. The range of educational background and experience, however, varies among the staff. Throughout the projects initiation and completion staff involvement was continually encouraged. This involvement was needed to ensure a product that all staff could use, and to activate their learning interests.

## Literature Review

Executive Functions are a set of skills required to perform high-level cognitive functions and regulate behaviors. These skills include: a) working memory, initiating tasks, planning, shifting area, organizational skills, and the ability to regulate behavior and manage emotions (Appendix A). Weakened EF is commonly found in children with developmental disabilities. Current literature is now acknowledging that weak EF is also common in students without developmental disabilities.

Executive functions (EF), such as working memory, have a great effect on academic success. In two studies performed by Kroesbergen et al. [6] they studied kindergarteners and the effect of executive functions on mathematical ability. In the first study the researcher examined the relationship between success on the Early Numeracy Test (ENT) and executive function aspects. 240 children were enrolled in the study and the executive functions measured included inhibition, shifting and planning, along with working memory. The results of this correlational study demonstrated that working memory, shifting, and planning are highly related to children's math competence. These functions can explain 50 percent of the variance in early math [6]. A second study by the same researchers looked at planning and the ENT. This study also revealed that there is a correlation between planning skills and EF. Both studies demonstrated that those children with difficulty in math had weaker EF. One important result of interest was that EF seemed to have a greater effect on learning math skills than did intelligence.

The authors recommend early intervention for students that are noted to have difficulty in math, especially when that difficulty is related to weak EF. Interventions should continue throughout school to ensure that students are able to succeed in mathematics [6].

Cantin et al. [7] validated the premise of EF affecting academic success through their research. They looked at EF skills of working memory, flexibility, and inhibition and compared the results to reading, math and theory of mind skills (social skills). Their sample of children included 87 students between the ages of 7-10. The children took various tests evaluating each of the above-mentioned skills and abilities. The researchers were able to demonstrate that there is a relationship between EF skills and reading, math, and theory of mind skills. While the sample size was small, it confirms other research stating the weak EF affects a student's abilities in math, reading and social skills. They reinforce the importance of different EF skills in ensuring academic and social success. They recommend screening for executive functioning along with traditional instruments that help schools and families predict success in their children and areas of needed support.

EF is also involved in regulating behaviors and emotional control. Romer et al. [8] studied the effects of working memory, cognitive control, and reward processing by assessing risk-taking ability and impulsivity. Their study group involved 387 preadolescents between 10-12 years of age. Through their research they were able to determine the relationship between low EF and impulsive behavior tendencies. They recommend looking at children with impulsive tendencies related to low EF and provide early interventions to prevent the dysfunctional trajectory associated with early risk behaviors [8].

It is clear throughout the literature that weak EF is detrimental to academic and social success. The above authors recommend that screening begin in the early school years to determine EF function and its' impact on the students' school and social performance. Schools and community organizations have strategies to help children improve in many of the EF areas. It is important that families and community members be aware of EF and its' impact on educational success and risky behaviors, so that interventions can be started as early in a child's life as possible.

While evident in practice, there is a dearth of literature regarding weak EF in adults. It became noted through interaction with families that adults may/do have weak EF in some/many areas. Managing EF weakness is a fairly new concept. Many of the educational endeavours available today were not available to community parents when they were in school. This is an area that PRO addresses in their educational components, assuring families that they, too, can be assisted, if desired.

This issue was addressed through the many components created for PRO on EF Functioning. This educational endeavour is unique in that the workshops are created for families and not a segregated program for adults or children. It enables families to learn about EF weakness in a supportive environment, while allowing all attendants to learn how to manage this most important issue.

## Components of Inter-Professional Collaborative Evidence-Based Educational Project

Included in the inter-professional collaborative educational endeavour were the following components: (a) a 1 ½ h seminar for families/professionals as an introduction to Executive Functioning weakness, (b) a Train the Trainer Program for professional staff (Appendix B), (c) 5 module, 1 and ½ h each workshop, with accompanying PowerPoint slides (Appendix C), (e) a resource/workbook manual on Executive Functions and (f) a poster presentations on EF, attended by

PRO staff, promoting Parents Reaching Out. Staffs were involved in every step of the process, as they chose. Several meetings were held to discuss the projects and encourage input from PRO staff.

Each component accomplished individual goals in addition to the global purpose of the project. The seminar in April provided an introduction to community members and to PRO staff. Approximately 50 people attended the lecture. Following the lecture, several participants asked for continued programs on the topic of Executive Functions/Functioning. Evaluations from participants reflected a need for more education regarding the topic. The seminar was well received, with excellent reviews.

In July, 2016, the Train the Trainer program was presented to the PRO staff. Approximately 10 staff members attended (Appendix B). The course was 7 h in length and required a high level of active participation. Evaluation average of 3.9/4.0 for the speaker and the lecture; 3.7/4.0 for the content and format of the program. While the main purpose of the program was education and skill development for the staff, a secondary goal was to discuss the project and obtain staff input. Following the 7 h class, a meeting was held with the staff to encourage participation in the development of the workshop and resource manual. Several staff expressed an interest in participating in the project. Staff received copies of the workshop and manual as they were developed. Input from the staff was included in revisions.

The workshop created by UNM College of Nursing and PRO is unique in that it is inclusive for families (Appendix C). Both adults and children are invited to come to the same workshop. Exercises and activities were created for both parents and children. Several activities require that families interact together to complete the assignment(s). There is little information in the literature supporting this type of education for families. However, it is clear that this workshop encourages/demands communication among family members, which enhances family relationships [9].

The workshop series is designed as 5, 1½ h modules. They can, however, be offered in various time schedules and groupings as time and resources allow. Since there is an accompanying workbook/resource manual, there is information to assist learners if they are unable to attend an entire workshop series. Another unique aspect of the workshop is it addresses the issue of Executive Function weakness in adults. While there is some information regarding this issue in the literature, it is limited. In addition, the issue of reasonable accommodations for adults when working with the schools is not found.

It is imperative that more education be provided for entire families regarding health issues. Families function as a unit. While each family member may have a different perception regarding an issue, in family education, each person has an opportunity to be heard and participate in developing solutions.

In New Mexico the academic year begins in mid-August. The academic environment provides many opportunities for professional growth and networking. PRO/UNM staffs applied and were accepted for three poster presentations in the fall of 2016. The process of creating and exhibiting a poster presentation provided PRO staff to work together for personal/professional growth. It also provided networking opportunities within the academic environment. Poster presentations are a great opportunity for staff to promote the great work that they are doing and explain the mission and goals of the PRO organization [10].

## Summary

Evidence-based inter-professional collaborative educational

projects are beneficial to both staff and community members. Staffs receive education and skill development along with the opportunity for professional growth and networking. When different organizations work together to benefit the community, outcomes are enhanced. While the UNMCON/PRO project is on-going, it is clear that the relationship between the two organizations has benefitted both organizations. Community members/professionals have also benefitted from these programs as the mission and goals of PRO have been well communicated, and the availability of different workshops has also been conveyed [11,12].

## Implications for Practice

Projects that combine the professional perspectives and skills from two different organizations have the greatest potential for enhancing community outcomes. Pooling resources to provide these projects may also reduce the costs of producing stated programs. Executive Functions/Functioning weakness, while not a new issue, has come of age in respects to understanding its impact on academic success and social skill development. Since EF weakness affects both children with and without developmental disabilities it is important to educate families/communities/professionals about this most important topic. Learning about EF issues and strategies to improve EF functioning will enable students/children to reach their full potential. Comprehensive projects as stated in this paper enable the educational process for all community members.

In addition to meeting goals of the current project, this educational endeavour can support other important ventures such as: (a) evaluating family education, (b) evaluating the impact of the project on PRO staff members, (c) using a similar process for other important topics (managing difficult behaviors) and (d) enhancing professional development through continued and on-going poster presentations, oral presentations, and written articles.

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